Financial Stability Report

December 2015
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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 2015

Lee, Juyeol
Governor
the Bank of Korea

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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 their 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 the realization of 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 and report 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 during the period from June 2015 to November 2015 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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Financial Stability Overview
Korea’s financial system has maintained a generally stable picture, thanks to continuing favorable levels of soundness among financial institutions and in the foreign exchange sector. However, potential financial system risk is judged to have increased somewhat, as financial soundness in the household and corporate sectors has declined.

First, amid a lack of improvement in household income conditions, the amount of household debt has expanded greatly due to increased housing purchases for example. In the corporate sector, meanwhile, sales have fallen greatly and financial structure stability has lessened as well.

The slump in profitability at banks has persisted, but amid favorable capital adequacy the trend of improvement in asset soundness has been sustained, even despite the declines in household and corporate sector financial soundness, thanks to the easing of borrowers’ repayment burdens due to the continuing low interest rates. At non-bank financial institutions most management indicators have shown signs of improving. The financial markets have shown somewhat unstable movements, meanwhile, with stock price and exchange rate volatilities expanding and credit concerns in the corporate bond market rising.

Foreign exchange soundness has maintained a satisfactory level, with net external assets increasing and the ratio of short-term external debt falling.

These changes in the financial stability situation are reflected in the Financial Stability Map. \(^1\) 2) The Financial Stability Index (FSI) \(^3\), showing the situation related to financial stability, did meanwhile rise from 3.5 in April 2015 to the 5.0 level as of October 2015, but also remains below the “Warning” stage threshold (8).

\[ \text{Financial Stability Map} \]

\[ \text{Notes: 1) The closer to the center, the greater the degree of stability} \]

\[ 2) \text{Macroprudential soundness condition dimensions, Financial system dimensions} \]

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1) The Financial Stability Map presents a comprehensive picture of stability in six dimensions – two concerning macroprudential soundness conditions (the debt servicing capacities of the household and business sectors) and four concerning the financial system (banks, non-bank financial institutions, the financial markets and foreign exchange soundness). If the decile reading of a particular dimension is from 3 to 6, then this may be seen as a degree of stability in that dimension corresponding to its average levels in the past (since 1995).

2) The financial market infrastructure has been included as a sector related to financial system stability beginning from the H1 2015 FSR. Since this is a sector connected with the financial substructure, however, including the payment and settlement system for example, it is not included in the Financial Stability Map.

3) The Financial Stability Index (FSI) is an index created by converting a variety of different financial stability indicators into a single index, and can be used as one of the indicators for judging overall macroprudential conditions. Here the optimum critical threshold Warning and Crisis stages are calculated on the basis of the “noise-to-signal ratio” approach, at 8 and 22 respectively. For further details refer to the April 2012 Financial Stability Report. \(<\text{Box IV-1}>\) \"Outline of Financial Stability Index (FSI)\".
The financial soundness of the household sector has declined, despite improvements in the debt structure including expanded proportions of fixed-rate and amortizing loans, as the pace of increase in debt has been continually accelerating.

At 1,166 trillion won as of the end of September 2015, total household debt had risen by 10.4% year-on-year, with its pace of increase having continually grown since the third quarter of 2014. The household debt-to-disposable income ratio, at 143.0% (estimated) as of the end of September 2015, was also 5.0% points higher than at the end of March 2015 (138.0%).

Notes:
1) The Financial Stability Index is measured based on values from 0 (min) to 100 (max). The closer it is to 100, the higher the level of instability. <The level during the Asian financial crisis (Jan.1998) equals 100>

Source: The Bank of Korea
The ratio of household debt repayment expenditures to disposable income stood at 41.4% in the second quarter of 2015, having jumped by 2.7% points year-on-year. This was a result mainly of factors such as the expansion in the proportion of amortizing loans and a decline in business incomes. The household expenditure-to-income ratio on the other hand fell by 1.5% and 0.9% points year-on-year respectively in the second (76.8%) and third (76.9%) quarters, due mainly to a decrease in consumption expenditures in line with the outbreak of Middle East Respiratory Syndrome (MERS).

The household financial debt-to-financial assets ratio (44.0% at end-June 2015) meanwhile maintained a relatively favorable picture, in spite of the accelerated pace of increase in household debt, owing to the continuing high rate of increase in financial assets. At 44.9% as of the end of 2014, this ratio was higher than the 36.9% average of the 23 OECD member countries.

Profitability in the corporate sector has improved slightly but financial soundness has declined, with a large-scale deterioration in growth and a rising number of financially vulnerable firms.

The rate of sales growth recorded a substantial negative level (-7.1%) in the first half of 2015, and the sluggishness of growth deepened. The operating income-to-sales ratio was 5.6%, higher by 0.9% point than in the first half of 2014 (4.7%), as profitability improved. This result is seen as mainly because of firms having pursued productivity more than expansions in size as their business strategy priorities, in line with the worsening of external conditions.

The household financial debt-to-financial assets ratio (44.0% at end-June 2015) meanwhile maintained a relatively favorable picture, in spite of the accelerated pace of increase in household debt, owing to the continuing high rate of increase in financial assets.
The proportion of corporations with debt ratios of 200% or above has risen (end-2014 12.3% → end-June 2015 12.9%), and that of companies with interest coverage ratios below 100% has also shown a slight increase.

Looking at the individual industries’ debt ratios, meanwhile, most industries except for shipbuilding and shipping have not seen any great changes. In the case of the shipbuilding industry, however, its debt ratio has exceeded 200% in 2015, in line with a slump in overall business conditions.

Banking sector soundness has shown a generally favorable picture despite a structural slump in profitability, with asset soundness improving and so on.

Profitability has expanded, centering around loans, and asset soundness has also shown a trend of improvement due to a continuing trend of decline in substandard-or-below loan ratios for example. With financial soundness in the household and corporate sectors declining, however, potential default risks are seen to have increased.
Profitability has continued its trend of decline, with the return on assets (ROA) falling from 0.48% in the first quarter of 2015 to 0.44% in the third quarter for example. Banks’ structural margin ratio, indicating their capacities for generating sustainable profits, has continued to decrease, with declines in their loan-to-deposit interest rate spreads and net interest margins, and recorded 0.8% in the third quarter of 2015, the lowest level since compilation of this statistic began in 1999.

Capital soundness has remained at a satisfactory level. At 14.67% as of the third quarter of 2015, the BIS total capital ratio was lower by 0.18% point than in the previous quarter but still greatly above the regulatory standard (8.0%). The provision coverage ratio, which shows banks’ capacities for absorbing expected losses, was 141.5% (estimated) in the third quarter and had also sustained its trend of increase.
Non-bank financial sector soundness has improved overall, with trends of growth being sustained and capital adequacy showing favorable levels.

Rates of total asset growth have fallen slightly in some non-bank financial institution sub-sectors, but as of the end of September 2015 the sector as a whole was sustaining its trend of growth and showing a high level of 10.5% year-on-year.

Profitability has generally improved. Return on assets (ROA) have risen, owing to declines in loan loss provisions at mutual credit cooperatives, to expansions in fee incomes and decreases in interest expenses at securities companies, to increases in interest earnings and declines in loan loss provisions following reductions in bad loans at mutual savings banks, etc. These improvements in non-bank financial institution profitability owe mainly to the declines in market interest rates, however, and so the volatility of profits can expand in line with any changes in the financial market environments in the future.
Capital adequacy ratios have fallen slightly in some sectors, but are maintaining satisfactory levels greatly exceeding the financial supervisory standards in all sectors.

The domestic financial markets have shown some degree of instability, with the volatility of market prices expanding and credit concerns growing for example.

Stock price and exchange rate volatilities have increased, on concerns about a global economic slowdown and expectations of a policy interest rate hike by the U.S. Federal Reserve among other factors.

The Treasury bond (3-year) yield had fallen, due to spreading economic unrest in China and other emerging market economies, but has reversed to an increase since October 2015 on expectations of a domestic economic recovery and the possibility of a Fed rate hike.
The won / U.S. dollar exchange rate has fluctuated sharply, in line with changes in expectations related to monetary policies at home and abroad, while the won / yen rate, after having risen on a trend of safe asset preference, has reversed to a decline since October 2015 as global risk preferences have improved.

In the corporate bond market, meanwhile, owing to increased credit concerns following the slumps in corporate business conditions, credit spreads on both prime and non-prime corporate bonds have widened rapidly.

**Foreign exchange soundness has shown a favorable picture overall.**

The net external assets have continued to grow while the external payment capacity has maintained sound conditions, with the ratios of short-term external debt relative to foreign exchange reserves and to total external debt sustaining their low levels.

In the corporate bond market, meanwhile, owing to increased credit concerns following
Domestic banks’ foreign currency funding conditions have shown temporary deteriorations in the second half of 2015, with the highlighting of the likelihood of a policy rate hike by the U.S. Federal Reserve and of concerns about the economic slump in China, but have shown a favorable picture overall. In particular, although the spread on long-term foreign currency borrowings rose to 79 basis points in September 2015, it then fell from October with the continuation of the current account surplus and so on, and has since then shown a trend of small fluctuations at around the 60bp range.

The volatility of foreigners’ securities investment fund flows has expanded, on the influence of changes in global fund flows, etc. From June 2015 these funds showed a large-scale outflow, influenced by international financial market instability. Since October, however, foreigners’ securities investment funds have shown small degrees of net inflows and net outflows, in line with the expectations of a Fed rate hike within this year and so on.

Settlement risk in the major payment and settlement systems has been managed stably.

The maximum intraday overdraft cap exhaustion rate and the proportion of payment orders in queue for settlement, which reveal the levels of secured settlement liquidity of institutions participating in the large-value payment system, BOK-Wire+, have shown generally favorable pictures. Moreover, since the second quarter of 2015 there have been zero cases of operating hours extension due to computer system failures at participant institutions.
The proportion of foreign currency settlements carried out through the CLS system has fallen since the first quarter of 2015, owing for example to an increase in transactions involving the Chinese yuan, a non-CLS settlement currency, but has still maintained a high level in the 70% range. In the retail payment systems operated by the Korea Financial Telecommunications & Clearings Institute, the number of cases of net settlement participants' net debit cap utilization rates exceeding the 70% warning level has meanwhile risen since the second quarter of 2015, in line for example with temporary large-scale fund transfers due to some companies' subscriptions to public offerings and the related refunds.

The securities settlement systems have been operated stably, with a decrease in the proportion of payments for settlement of exchange-traded and over-the-counter stock and government bond transactions made after the settlement delay penalty deadline, etc.

**Securities settlement system risk indicators**

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Notes: 1) Settlement deadline under system operating rules 2) Deadline after which settlement delay penalty assessed 3) Shares of payment funds paid after the settlement deadlines 4) Institutional investors

Source: The Bank of Korea
[Analysis of Financial Stability Issues]

Compared to the cases of major countries, the speed of population aging in Korea is rapid, and so its effects on overall household debt through a variety of channels can become large.

Population aging is foreseen as likely to cause a slowdown in the pace of household debt growth—due to a decrease in the asset accumulating population aged 35 to 59, the core group with demand for debt, and to an increase in the population aged 60 and above, who have higher propensities to reduce their debts. But even if members of the elderly cohort liquidate parts of their debt after retirement, the proportion in total financial debt accounted for by this group appears likely to rise, as members of the 50s age cohort, the current main holders of financial liabilities, enter their 60s. It has been analyzed that Korean households in fact expand their debts up until the age of 57, after which they are repaying their debts through means such as disposals of real assets.

Meanwhile, population aging can cause risks of declines in real estate prices stemming from increased disposals of real assets in the process of debt deleveraging, and of increased numbers of vulnerable elderly families. These risks can be particularly large.
because the speed of Korean population aging is rapid and the 50s and 60s age cohorts, whose demand for debt deleveraging is great, are holding mainly real assets, while the proportion of marginal households in this group is also high. The effects of population aging are expected to be felt full-scale within three to four years, and since responding within a short period of time will be difficult it is necessary to respond preemptively, through continuing household debt management, the revitalization of real estate finance by the introduction of reverse mortgages, the creation of specially designed jobs for the elderly, and so on.

2 The number of chronically marginal firms unable to cover their interest expenses with operating incomes for a long period of time since the global financial crisis is increasing, and they are working as a factor burdening the macro-financial economy.

Among corporations subject to external audits, the proportion of chronic marginal firms rose by 2.4% points between 2009 and 2014 - from 8.2% (1,851 companies) to 10.6% (2,561). Among the different industries, this proportion increased by large extents in the shipbuilding, transportation, steel and construction industries. As of the end of 2014, chronically marginal firms accounted for levels of 7.8% (239 trillion won) of the total assets of all corporations subject to external audits, 14.1% (228 trillion won) of their total liabilities, and 5.4% (191,000 people) of their total employees. Compared to normal companies, chronically marginal firms have low degrees of contribution to the real economy, while their levels of dependence on debt are high.
Due to worsening cash flows stemming from their slumps in profitability, the majority of chronic marginal firms are managing to survive through reliance on borrowings. Financial institutions have continued their credit supply to these firms, based mainly on collateral and guarantees, in line with their practices of forbearance lending characterized by tendencies toward leniency in the rating of firms’ credit levels and in their own management of asset soundness. The ongoing low interest rates have also worked as a factor intensifying chronically marginal firms’ reliance on borrowings, by alleviating their interest payment burdens.

As the number of chronically marginal firms increases, their negative effects on investment and employment can expand and resource allocation efficiency can fall, thus constraining economic growth. Moreover, since chronically marginal firms’ financial conditions are weak, their large-scale defaults at times of domestic or external shock occurrence could work as a factor of destabilizing the financial system. Efforts will thus have to be redoubled to ensure that corporate restructuring can be pushed ahead with, preemptively and effectively, through for example improvement of the restructuring system and strengthening of the role of the creditor financial institutions.

Emerging market economies have shown trends of instability recently, with the values of their currencies falling and capital flowing out from them. In line with these developments there is a possibility of substantial effects on the Korean economy, which has close connections with EMEs.

Looking at the factors causing instabilities in emerging economies, the strengthened interlinkages with China in their real economies and financial sectors since the financial crisis have raised the possibilities of the slowdown in Chinese economic growth spreading rapidly to affect them. Since the second half of 2014, concerns have increased that EMEs’ international credit standings will decline as the current and fiscal balances of raw material-exporting countries deteriorate due to the slowdown in Chinese economic growth. Moreover, capital liberalization in EMEs has progressed greatly and their external borrowings have also expanded since the global financial crisis, centering around their corporate sectors. Owing to these factors there are potential risks of foreign debt repayment burdens and capital outflow volatility becoming large when the U.S. Federal Reserve raises its policy rate in the future.
Empirical analysis has also shown that the Korean economy, even if its economic fundamentals are sound, can experience greatly worsening foreign currency funding conditions in times of international financial market instability. This is because, due to Korea’s high interconnectedness with EMEs in the real and financial sectors, as well as to the trend of strengthening financial market synchronization, global risk aversion can spread to the domestic economy if factors such as an economic slowdown in China, a U.S. interest rate hike and instabilities in EMEs should appear together. As of September 2015 it was analyzed that the probability of Korea’s foreign currency funding conditions (CDS premium) worsening in the existing conditions was 23.2%, but that this would increase to 48.0% in the case where financial instabilities in EMEs expanded, and increase greatly to 75.0% should upward pressures on international interest rates rise due to rate hikes by the U.S. Federal Reserve appear.

Given the steadily expanded size of trade and capital transactions between Korea and other emerging market countries, instabilities in EMEs could not only have adverse impacts on the Korean real economy, but also cause pressures for outflows of foreigners’ securities investment funds.
From the standpoint of quantitative indicators of risk related to leverage and interconnectedness, the degree of risk accumulation in the Korean financial system is analyzed as not high at present.

(Risks from leverage perspective)

First, from the perspective of leverage, the private credit-to-nominal GDP ratio decreased in the first quarter of 2015 compared to the quarter before. The ratio however then reversed to an increase from the second quarter and hit its all-time high (182.6%) in the third quarter. The private credit-to-nominal GDP gap, which fell into negative territory in the first quarter, also recorded a modest positive figure from the second quarter (+2.2%p in the third quarter).

By sector, the credit-to-nominal GDP ratios of households and corporations stood at 74.3% and 108.3% respectively as of the third quarter of 2015, up by 1.7% points and 2.3% points compared to the end of 2014. As for the credit-to-nominal GDP gaps, the positive gap in the household sector has grown compared to the fourth quarter of 2014, while in the corporate sector the negative gap has reversed to a positive one.

1) Refers to the risks triggered by an oversupply or a sudden contraction in credit due to the herd behaviors or pro-cyclical actions of economic agents.
2) Refers to risks from deteriorations in asset soundness or liquidity crunches at individual companies spreading to the overall financial system, through direct or indirect exposures across financial institutions.
Given that the private credit-to-nominal GDP ratio is not much different from its long-term trend, it is judged that potential leverage-related systemic risks in Korea’s financial system are not considerably high. However, not only is the private credit-to-nominal GDP ratio high and growing, but the credit-to-nominal GDP gaps in both the household and the corporate sectors are also positive. More caution is thus needed concerning the possibility of a future build-up of risks.

(Risks from interconnectedness perspective)

A look at the financial sector interconnectedness matrix shows that the volume of assets and liabilities interconnected across financial institutions reached 411 trillion won as of the end of the third quarter of 2015, up by about 7 trillion won compared to the end of 2014 (404 trillion won). By sector, while the volume of interconnectedness across banks had decreased (-9 trillion won), interconnectedness across non-bank institutions (+4 trillion won) and between banks and non-bank institutions (+12 trillion won) had increased. Meanwhile, the proportion in total financial sector assets of the volume interconnected across financial institutions stood at 7.8%, down by 0.5% point compared to that (8.3%) at the end of 2014. This owed to the rate of growth (8.9%) in total assets having greatly exceeded that in the volume of interconnectedness (1.8%).

Although the volume of financial sector interconnectedness has expanded, given its decreased proportion relative to total assets the risks from the financial sector interconnectedness are not believed to be high. However, given that the volume of interconnectedness between banks and non-bank financial institutions is increasing, led by asset management companies, continuing caution in this regard is merited.

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3) As of end-September 2015 the volume of interconnectedness across banks, across non-banks, and between banks and non-banks was estimated to be 61 trillion won, 118 trillion won, and 231 trillion won respectively.
A ccording to the results of the Bank of Korea’s survey on systemic risks1) conducted in October 2015, the key risks2) to Korea’s financial system are ① a Chinese economic slowdown (90%), ② U.S. interest rate normalization (72%), and ③ the Korean household debt problem (62%). In terms of their time horizons, the Chinese economic slowdown is recognized as a risk over the short to medium term (within 3 years), and U.S. interest rate normalization and the Korean household debt problem as risks that could materialize in the short term (within one year) and the medium term (within 1~3 years), respectively.

In terms of the possibility of financial systemic risks materializing in the short term (within one year), the proportion of respondents considering that possibility low stood at 44%, greatly exceeding that of respondents considering it high (15%). As to the possibility of such risks materializing in the medium term (within 1~3 years), however, the proportion of respondents considering it high (37%) was larger than that of those saying that it was low (19%). The share of respondents feeling that financial systemic risks could materialize in the short term has risen compared to the first half of 2015, while that of those feeling that they could materialize in the medium term has also increased slightly.

---

1) To help accurately identify the potential risk factors affecting the Korean financial system, the Bank of Korea conducts a ‘Systemic Risk Survey’ of domestic and foreign financial market experts twice each year.

2) Risks recognized in 50% or more of the responses are regarded as key risks. The proportions of responses are calculated based on the multiple response method, by asking each respondent to identify the five greatest risks and then dividing the total number of responses per risk by the total number of respondents (81 people).
Korea’s Financial Stability Situations

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Financial Soundness of Household and Corporate Sectors

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1. Households

Decline in household financial soundness

Household financial soundness has deteriorated. Household income growth has stagnated, and as the pace of increase in households’ debts accelerates the household debt-to-disposable income ratio has sustained an upward trend and the ratio of debt repayment expenditures to disposable income has also risen greatly. The debt structure has however improved, with the proportion of fixed interest rate and amortizing loans increasing, and the financial debts-to-financial assets ratio has fallen slightly (Figure I-1).

Accelerated pace of household debt increase

At 1,166 trillion won as of the end of September 2015, total household debt (household credit statistics basis) had increased by 10.4% year-on-year, with its pace of growth having accelerated since the third quarter of 2014. On a value basis household debt expanded by 35 trillion won in the third quarter of 2015 – the largest quarterly increase since compilation of these statistics began in 2002. This was a result mainly of housing transactions expanding due to the improvement in the housing economy1), amid the LTV and DTI regulations having been eased and lending interest rates having fallen, and of steadily increased extensions of group loans2) due to the robustness of new housing sales (Figure I-2).

1) The likelihood is not high of the housing market, the main factor behind the increase in household debt, being adjusted within a short period of time, but in the medium to long term the possibility does remain of increased downside risks to housing prices, stemming for example from an increase in housing supply, from population aging or from a strengthening of financial institutions’ loan screening.

2) For details refer to <Box I-3> “Recent Trends of Group Loans Related to the New Housing Sales Market.”
Looking at the situations of household loan in the different financial sectors, from the second quarter of 2015 the rate of increase in household lending by banks slowed somewhat, while that among non-bank financial institutions accelerated greatly. This was a result of the transfer to the Korea Housing Finance Corporation (HF) of a large amount of Mortgage Refinancing Program that were extended between March and April 2015 (Figure I-3).  

Meanwhile, among total home mortgage loans extended by banks the proportions of fixed rate and amortizing loans have continued rising, under the influence for example of the government’s household debt management measures including its supply of Mortgage Refinancing Program, to stand at 33.6% and 37.5% respectively as of the end of September 2015. The average remaining maturity of bank home mortgage loans has in addition lengthened rapidly, from 11.6 years at the end of 2010 to 17.5 years as of the end of September 2015, and the debt structure has improved (Figure I-4).

3) Among 31.7 trillion won in Mortgage Refinancing Program extended by banks, 31.5 trillion won were transferred to HF between May and September of 2015. If bank home mortgage loans are transferred to this public corporation, then at the time of household credit statistics compilation the funds concerned are reclassified from among ‘Home mortgage loans of deposit banks’ into the ‘Public financial institutions’ item of other financial institutions (‘Non-bank financial institution’ household loans in Figure I-3).

4) If the portion transferred to HF is included, the rate of total bank household lending growth has been accelerating (Q1 2015 9.1% → Q2 12.3% → Q3 13.9%, year-on-year basis).

5) Through its July 2015 ‘Household Debt Management Measures’, the government adjusted upward the performance targets (proportions of fixed-rate and amortizing loans) in order to improve the bank home mortgage loan structure.

<table>
<thead>
<tr>
<th>Division</th>
<th>Yearly Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>End-2015</td>
</tr>
<tr>
<td>Fixed rate</td>
<td>25% — 35%</td>
</tr>
<tr>
<td>Amortizing</td>
<td>25% — 35%</td>
</tr>
</tbody>
</table>
Large increase in household debt compared to income

The household debt-to-disposable income ratio (household credit statistics basis) stood at 143.0% (estimated) at the end of September 2015, up by 5.0% points compared to the end of March (138.0%). This greatly exceeded the average annual extent of increase in the 2003~2014 period (+2.4%p), which was a result of the pace of increase in household debt having accelerated despite the stagnation in household disposable income growth due to the slowdown in the economic recovery (Figure I-5).

Decline in financial liabilities-to-financial assets ratio

Households’ financial liabilities-to-financial assets ratios (flow of funds statistics basis) stood at 44.0% at the end of June 2015, having fallen by 1.0% point since the end of June 2014 (45.0%). This resulted from household financial assets having also sustained a high rate of growth despite the accelerated pace of increase in household financial debt. As regards the proportions of household financial assets by type, as of the second quarter of 2015 cash and deposits made up the highest proportion at 41.7% of the total, with insurance & pensions next at 31.2% (Figures I-6, I-7).

Notes: 1) Household credit statistics basis 2) Disposable income for Q1~Q3 2015 estimated using the household disposable income-to-gross national income ratio (average for preceding three years) 3) Year-on-year

Source: The Bank of Korea

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6) As the household disposable income statistics are aggregated annually, quarterly disposable income is estimated by multiplying the annual household disposable income-to-gross national income ratio (52.5% in 2015, as the 2012~2014 average) by gross national income.
Meanwhile, as of the end of 2014 Korean households’ debt-to-disposable income ratio showed 164.2% (on a flow of funds statistics basis) and their financial liabilities-to-financial assets ratio 44.9% – 33.7% points and 8.0% points higher respectively than the 23 OECD member country7) averages (130.5% and 36.9%) (Figure I-8).

Comparing countries’ changes in household debt indicators since the global financial crisis, Korea’s household debt-to-disposable income ratio rose by 19.9% points between the end of 2008 and end-2014, greatly exceeding the OECD member country average rate of increase (+1.6%p).

Korea’s financial liabilities-to-financial assets ratio in contrast fell by 6.1% points over this period, to show a level similar to the OECD member country average (-6.2%p) (Figure I-9).

Notes: 1) Flow of funds statistics basis  
2) End-2014 basis, end-2013 for household debt-to-disposable income ratios of Greece, Switzerland and Poland  
Sources: The Bank of Korea, OECD

7) Based on 23 among the 34 OECD countries for which securing of statistics was possible. Among these countries, the household debt-to-disposable income ratios for Greece, Switzerland and Poland are end-2013 basis.

8) In Denmark and Norway the tax burden ratios are high and the proportions of public pensions and insurance are high as well, and so households’ disposable incomes and financial assets are quite low compared to those in other nations. In line with this households’ ratios of debt to disposable income and of financial liabilities to financial assets are greatly exceeding the OECD member country averages.
Rise in household debt repayment expenditure burdens, and decline in household expenditure-to-income ratio

The household ratio\(^9\) of debt repayment expenditures to disposable income was 41.4% in the second quarter of 2015, having jumped by 6.0% points since the first quarter of 2015 (35.4%) and by 2.7% points compared to the second quarter of 2014 (38.7%). This is seen to have been a result mainly of a decline in household business incomes due for example to a shrinkage in consumption following the MERS outbreak, on top of an increase in loan principal repayments due to the expansion in the amount of amortizing home mortgage loans (Figure I-10).

The household expenditure-to-income ratio\(^\) was 76.8% in the second quarter of 2015 and 76.9% in the third, decreased by 1.5% points and 0.9% point respectively year-on-year (Figure I-11). This ratio has since the second quarter of 2014 shown a picture of generally declining, as the rate of increase in household expenditures has been below that in household incomes. By income

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9) To evaluate households’ debt repayment burdens related to their incomes, the debt service ratio (DSR: ratio of principal and interest repayments to disposable income) is generally used, but as this is released annually (from Statistics Korea’s Survey of Household Finances and Living Conditions) we have used the household debt repayment expenditure-to-disposable income ratio (from Statistics Korea’s Household Income and Expenditure Survey) as a substitute indicator. There is meanwhile a need to keep in mind that the debt repayment expenditure-to-disposable income ratio of the Household Income and Expenditure Survey differs from the DSR of the Survey of Household Finances and Living Conditions (which was 21.3% in 2013). For example, while the former includes the total amount of all credit card repayments including lump sum settlement costs, the latter in contrast includes only the credit card repayment amounts related to cash advance services and installment purchases.

10) The household expenditure-to-income ratio is calculated based on Statistics Korea’s quarterly Household Income and Expenditure Survey. Here household expenditures encompass not only consumption expenditures, but also non-consumption expenditures such as taxes, public pension and insurance payments, interest expenses, etc.
quintile, amid the household expenditure-to-income ratios having fallen in most income quintiles, the extent of decline has appeared relatively large in the first income quintile in particular (Figure I-12).

Due to this revitalization of housing transactions as well as to changes in the leasehold deposit market, the pace of increase in household debt has accelerated greatly. But since the improvements in household incomes are relatively weak, household financial soundness has declined on the whole. Under these circumstances, should a future macroeconomic shock such as a sudden rise in interest rates occur there will be a possibility of increased numbers of insolvent households, centering around small self-employed business operators and other vulnerable groups, and there is thus a need to devote continuing attention to household financial soundness.
As leasehold deposit prices have continued to increase, the ratio of nationwide apartment leasehold deposit prices to sales prices rose from 52.3% in January 2009 to 73.7% in November 2015 (+21.4%p), the highest since these statistics were first compiled in December 1998.1) Since this high leasehold deposit-to-sales price ratio may lead to a situation in which lessees are unable to receive their deposits back on time in cases of shock such as sharp declines in housing prices, there is a need to examine the related risks. This report also considers the effects on household financial soundness of recent changes in the housing leasehold market structure, including the shifts from deposit-based leaseholds to housing purchases or monthly payment-based rentals.

1. Scale of deposit- and monthly rental-based tenancy deposits, and potential risks related to their return

(Scale of deposit- and monthly rental-based tenancy deposits)

The total number of lessee households that have paid housing deposits stands at 7.46 million (3.53 million households that have paid leasehold deposits, and 3.93 million households that have paid security deposits on monthly rental housing), to account for 41.4% of total domestic households (18 million households, based on 2014 Korea Housing Survey). Estimation using micro data from the Korea Housing Survey and the housing market price DB of the Ministry of Land, Infrastructure and Transport finds the deposits of these households to total around 530 trillion won (about 440 trillion won for leasehold deposits, and 90 trillion won for monthly rental security deposits, as of end-June 2014).2) By region, Seoul and its surrounding areas account for the largest part (408.5 trillion won, 76.5%) of this, and by housing type, apartments (378.4 trillion won, 70.9%) make up the greatest share.

---

1) The total housing leasehold deposit-to-sales price ratio (based on data compiled by Kookmin Bank) also stood at 66.2% as of November 2015, the highest since compilation of these statistics began in June 2011. This rise in leasehold deposit prices since the financial crisis is attributable mainly to a deepening of the supply and demand imbalance in the housing leasehold market, as demand for leasehold housing has increased due for example to the weakening of expectations of a rise in housing prices, while leasehold supply has declined owing among other factors to lessor preference for monthly rentals.

2) For the number of households by residential type, by region, and by type of housing, the micro data of the 2014 Korea Housing Survey of the Ministry of Land, Infrastructure and Transport was used. For the average deposits for deposit-based and monthly payment-based tenancies per household, estimation was carried out using the micro data (on about 2 million contracts, based on the housing market price DB of the Ministry of Land, Infrastructure and Transport) on deposits for deposit- and monthly payment-based tenancies paid during the period between July 2012 and June 2014 for apartments, row houses and multiplex houses, and the micro data of the Korea Housing Survey for single-family living detached houses, multi-family living detached houses and officetels. However, in cases of deposit- and monthly payment-based tenancies for which the deposits are small, many lessees do not register the fixed dates for their leasehold contracts at their area civic service offices, and so when the housing market price DB (which is based on the fixed dates) is used, the average deposits for deposit- and monthly payment-based tenancies can be overestimated.
This section estimates the scale of deposits for deposit- and monthly payment-based tenancies that could possibly fail to be returned on time or be lost, using the micro data of the 2014 Survey of Household Finances and Living Conditions (2014).3)

First, looking at the distribution of lessor households’ deposit debt-to-financial assets 4) ratios, 43.6% of all lessor households hold deposits in excess of their financial assets. However, given that in many cases lessors return lessees’ deposits using the subsequent lessees’ deposits, there will not be many lessor households that actually fail to return these deposits on time.

In a stress situation in which deposit prices for deposit- and monthly payment-based tenancies fell sharply by 20%, it is estimated that 11.9% of all lessor households would need to borrow additional funds (in the amount of 1.9% of total deposits) (Situation ①). It is in addition estimated that 5.1% of lessor households would find it difficult to return their deposits held even through borrowing⁵) (affecting 0.9% of total deposits) (Situation ②). The net amount of deposits carrying high risk related to their return is not large at present. Given the substantial number of households occupying housing through deposit- and monthly payment-based tenure contracts, however, should the deposit- and monthly payment-based rental markets become strained going forward, this could place burdens on the financial and real transactions of households overall.

3) To ensure accurate analysis, there is a need for detailed financial information on lessors, such as their financial assets and liabilities and the amounts of bonds they have issued to creditors with rights to collateral security, as well as the scales of deposits paid for individual deposit-based and monthly payment-based tenancies. It is however difficult to obtain such information.

4) Financial assets in this report exclude premiums and other savings from the financial asset item of the Survey of Household Finances, and are defined as follows:

Financial assets = Installment savings + Time deposit savings – Premiums + Deposit assets held for deposit- and monthly payment-based tenancies at current residences

5) Immediately after the Asian Currency Crisis, nationwide leasehold deposit prices for apartments fell by 20.2% year-on-year in 1998.

6) Real LTVs were calculated in consideration of lessees’ housing assets other than their residences, the amounts of their loans secured against these assets, and their debts on deposits held. For a real LTV below the current regulatory level (70%), it was assumed that additional borrowing could be taken out.
In addition, in cases where lessors go bankrupt, due for example to defaults on their loans, if there are senior bonds issued to them by creditors with rights to preferential payment then their lessees may be unable to receive their deposits back. In events of applications by senior creditors for compulsory housing sales, depending upon the housing auction sales prices subordinate lessees of deposit- and monthly payment-based tenancies may be unable to receive parts of their deposits back. The closer the housing leasehold prices are to the actual housing sales prices, the greater lessees’ risks of not receiving their deposits back even if housing prices decline only slightly.

2. Examination of possibility of additional borrowings in cases of shifts by households from deposit-based tenancies to purchases of their own homes or to monthly payment-based rentals

As households shift from deposit-based tenancies to purchases of their own homes or to monthly payment-based rentals, there may be effects on their overall financial soundness owing to changes in their asset and debt structures. Using the micro data of the 2014 Korea Housing Survey, this report targets deposit-based lessee households judged highly likely to shift to home ownership, and calculates the number of them that will need additional loans as well as the amounts of loans needed. According to the results of analysis, 430 thousand households (12.1% of the total of 3.53 million households) are likely to shift to owning their own homes, and among them 260 thousand, about 60%, are analyzed as likely to be in need of loans at the times when they make those shifts. A shift of a deposit-based lessee household to home ownership is found to...
trigger demand for additional lending averaging 130 million won (equivalent to about 44% of the LTV), and if these households all shifted to home ownership it is estimated that the lending amount would reach about 34 trillion won.\(^{10}\) Given that, since the end of June 2014 when analysis took place the leasehold deposit-to-sales price ratio has continued to rise\(^{11}\), and that the demand for housing transactions has increased, due mainly to the easing of the LTV - DTI regulations and declines in interest rates, it is possible that the additional lending volume required due to shifting by deposit-based lessee households to home ownership can be much greater than the above estimate.

**Estimated numbers\(^{10}\) of lessee households shifting to home ownership**

<table>
<thead>
<tr>
<th>(10 thousand households)</th>
<th>(10 thousand households)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposit-based lessee households</td>
<td>Households highly likely to shift to home ownership</td>
</tr>
<tr>
<td>353</td>
<td>43</td>
</tr>
<tr>
<td>Deposit-based households highly likely to shift to home ownership</td>
<td>Households in need of lending</td>
</tr>
<tr>
<td>130 million won per household Additional loans</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: 1) End-June 2014 basis

Sources: The Bank of Korea, Ministry of Land, Infrastructure and Transport (Korea Housing Survey)

(Deposit-based → monthly payment-based tenancies)

Considering that in the recent shifting from deposit-based leaseholds there has been an increased preference for semi-deposit- or semi-monthly payment-based tenancies, rather than simple monthly payment-based rentals\(^{12}\), there seems unlikely to be any great change in household debt due to households shifting from deposit-based to monthly-payment based rentals. Looking at the average deposit amounts for the various different rental types, that for semi-deposit-based tenancies rose by 59 million won from 88 million won in the first half of 2013 to 147 million won in the first half of 2015 – which was well above the extent of increase in deposits for deposit-based tenancies (+26 million won) – while the changes in deposits for semi-monthly and monthly payment-based rentals were in contrast not large. The great increase in the average deposit for semi-deposit-based tenancies seems to be attributable to the fact that some of the previous high-value deposit-based leasehold contracts have been shifted to semi-deposit-based ones, under which the increases in deposit amounts are paid in the form of monthly rents.

---

10) The additional lending amount required by households shifting from monthly rentals for which they have put down security deposits to house ownership is estimated at about 19 trillion won. Changes in the debts of households shifting from homeowners to homeowners or selling their existing houses are meanwhile hard to estimate at present, due to a lack of micro data related to disposal of existing houses.

11) According to the 2014 Survey on Demand for Housing Finance and Bogumjari (cheap public housing) Loans, by the Korea Housing Finance Corporation, lessee households’ desires to purchase their own houses increase dramatically once the leasehold deposit-to-sales price ratio exceeds 70%. Percentages of lessee households desiring to purchase their own houses depending upon leasehold deposit-to-sales price ratio: 38.5% when ratio is 50% → 49.1% when ratio is 60% (+10.6%p) → 69.2% when ratio is 70% (+20.1%p).

12) According to the Housing Market Price DB, the share in all rental contracts involving security deposits accounted for by deposit-based tenancies fell from 65.0% in H1 2013 to 59.0% during H1 2015 (+6.0%p), that of semi-deposit-based tenancy contracts (with deposit fees 240 times higher than the monthly rents) from 5.8% to 8.2% (+2.4%p), that of semi-monthly payment-based rental transactions (with deposits 12 times or more but 240 times or less than the monthly rents) from 26.0% to 28.3% (+2.3%p), and that of monthly payment-based rental transactions (with deposits less than 12 times the monthly rents) from 3.2% to 3.9% (+0.7%p).
Based on this, we have calculated the per-household differences in deposits that lessor households had to pay when deposit-based leasehold contracts signed in the first half of 2013 expired and were shifted to semi-deposit-based leaseholds, semi-monthly payment-based rentals, or monthly payment-based rentals in the first half of 2015. It is as a result estimated that lessors will have to pay 108 million won in the case of semi-monthly payment-based contracts, and 132 million won for monthly payment-based ones. For semi-deposit-based leaseholds, in contrast, it is estimated that the lessor households will receive an average of 12 million won. In events of shifts to semi-monthly payment-based or monthly payment-based contracts, the amounts of deposits that must be returned are large. Even so, however, given the scales of financial assets of the lessor households, such shifts are unlikely to have great effects on total household debt. Considering the average total financial assets (118 million won) of lessor households (excluding those that are lessee households as well), identified in the Survey of Household Finances and Living Conditions, it is estimated that they will be able to return the differences in the deposit amounts (of 108 million won for semi-monthly payment-based, and 132 million won for monthly payment-based rentals) without any need for large-scale borrowing. With regard to semi-deposit-based leaseholds, given the average financial assets of the lessee households (excluding those that are also lessors), which stand at 31 million won, they seem likely to be able to afford to pay additional deposits (12 million won) to their lessors without having to borrow from financial institutions.

Note: 1) Average deposits for nationwide apartments, row and multiplex houses, and single-family living and multi-family living detached houses during the given periods.
Sources: The Bank of Korea, Ministry of Land, Infrastructure and Transport (Housing Market Price DB)

Average deposits¹, by rental type

Differences¹ in deposits by type of shift in tenancy, and average financial assets of lessee and lessor households

Table:

<table>
<thead>
<tr>
<th>Rental Type</th>
<th>Difference in deposit prices</th>
<th>Average financial assets of lessee households</th>
<th>Average financial assets of lessor households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposit-based</td>
<td>(+)132</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>Monthly payment-based</td>
<td>(-)108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-monthly payment-based</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-deposit-based</td>
<td>(-)12</td>
<td>31</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1) Difference in deposits in H1 2015 (for monthly rentals) compared to those in H1 2013 (for leaseholds).
Sources: The Bank of Korea, Statistics Korea (Survey of Household Finances and Living Conditions), Ministry of Land, Infrastructure and Transport (Housing Market Price DB)

13) This report conducts analysis mainly from the perspective of the lessor, given the limitations in the micro data related to whether lessee households that have shifted from deposit-based to monthly payment-based rentals have moved to new housing, and to how they have used the deposits refunded to them.
With regard meanwhile to semi-deposit-based lease-holds, for which the existing deposits remain unchanged and the increases in the deposit amounts are shifted to monthly rental payments, the rise in monthly rents is steeper than those in other contracts. The consequent increases in housing costs may cause a worsening of these lessee households’ finances, thus leading to further growth in their borrowing for living expenses.

Average monthly rental fees, by type of borrowing involving security deposits

Note: 1) Average deposit for nationwide apartments, row and multiplex houses, and single-family living and multi-family living detached houses during the given periods
Sources: The Bank of Korea, Ministry of Land, Infrastructure and Transport (Housing Market Price DB)
Current Status and Major Characteristics of Self-Employed Business Owner Loans

As bank lending to individual entrepreneurs (self-employed business owner corporate loans) has grown even more rapidly in 2015, concerns are being raised about the risks of default on self-employed business owner loans as a whole. In this regard, using the results of the Bank of Korea’s joint inspections of financial institutions, together with Consumer Credit Panel data recently obtained by the Bank, this article estimates the total volume of lending to the self-employed, and analyzes its major characteristics.

As of the end of June 2015 the volume of lending to the self-employed (self-employed business owner corporate and household loans) was estimated at 519.5 trillion won (and the number of borrowers at 2,527 thousands).

Notes:
1) Year-on-year changes
2) Figures since 2013 include policy mortgage loans assigned to the KHFC
Sources: Financial institutions’ business reports, The Bank of Korea

As of the end of June 2015 the volume of lending to the self-employed (self-employed business owner corporate and household loans) was estimated at 519.5 trillion won (and the number of borrowers at 2,527 thousands).
Lending to the self-employed through both household (including those by loan companies) and corporate loans accounted for 63.6 percent of the total volume, equivalent to 330.5 trillion won (with the number of borrowers 1,008 thousands, 39.9%), while lending through corporate loans only totaled 60.1 trillion won, or 11.6 percent (252 thousands, 10.0%), and that through household loans only was 128.9 trillion won, accounting for 24.8 percent (1,267 thousands, 50.1%).

**Volumes** of self-employed business owner loans, by type

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Corporate loans</th>
<th>Household loans only</th>
<th>Both household and corporate loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>(trillion won)</td>
<td>253.9</td>
<td>128.9</td>
<td>125.7</td>
<td></td>
</tr>
<tr>
<td>(100.8)</td>
<td>(50.2)</td>
<td>(25.7)</td>
<td>(156.7)</td>
<td></td>
</tr>
<tr>
<td>(252.7)</td>
<td>(126.7)</td>
<td>(126.7)</td>
<td>(126.7)</td>
<td></td>
</tr>
<tr>
<td>(193.8)</td>
<td>(125.7)</td>
<td>(125.7)</td>
<td>(125.7)</td>
<td></td>
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<tr>
<td>(57.4)</td>
<td>(57.4)</td>
<td>(125.7)</td>
<td>(125.7)</td>
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<tr>
<td>(193.8)</td>
<td>(125.7)</td>
<td>(125.7)</td>
<td>(125.7)</td>
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<tr>
<td>(253.9)</td>
<td>(253.9)</td>
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<td>(253.9)</td>
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<tr>
<td>(519.5)</td>
<td>(519.5)</td>
<td>(519.5)</td>
<td>(519.5)</td>
<td></td>
</tr>
</tbody>
</table>

(Major features)

1. By type of financial institution, banks account for 67.4 percent of loans extended to the self-employed, and non-bank financial institutions 32.6 percent. By type of loan, the majority of lenders to those holding both household and corporate loans and those holding corporate loans only were banks (72.9 percent and 90.6 percent, respectively). Non-bank financial institutions mean-

2. In terms of loan type and credit rating, a majority of borrowers holding household loans only have middle and low credit scores, while those that have taken out both household and corporate loans have middle and high credit scores and those holding corporate loans only mostly high scores. Those who have borrowed only household loans appear to have vulnerable financial strength, as they have lower credit scores and rely more on non-bank financial institutions that extend loans at higher rates of interest than other borrowers.

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4) The volume of lending to self-employed business owners with corporate loans can be identified by information on borrowers, but it is difficult to identify the volume of lending to them through household loans only, since when extending household loans financial institutions do not check identifiable information such as whether the borrowers have completed business registrations. For this article the volume of lending to self-employed business owners through household loans only is estimated based on the number of borrowers with histories of having taken out individual entrepreneur loans during the past five years (Q1 2010-Q1 2015), or who have used automobile leases or have held mortgage loans for purposes such as business funds as of end-Q2 2015.
Loans extended to small-scale business owners and high interest rate household loans are found to account for the largest shares (15.5 percent and 19.9 percent, respectively) of all loans extended to those self-employed business owners who have taken out household loans only.6)

Looking at the trends of self-employed business loans by industry, loans extended to the real estate leasing industry have been leading the overall increase. Domestic bank lending to the real estate leasing industry grew by an annual average of 14.3 percent between 2010 and 2014, far exceeding the rates of growth in the food services & accommodation (8.4 percent), manufacturing (6.1 percent) and wholesale & retail (5.4 percent) industries, and showed an even faster pace of growth, of 24.5% year-on-year, from Q1 to Q3 2015. The results of the Bank of Korea’s joint inspections of five domestic banks showed that this growth in lending to the real estate leasing industry has centered around loans for purchases of non-residential property such as shopping centers. This seems attributable mainly to the increased demand for investment in real estate, as well as to the related tax incentives.7)

Rates of growth in self-employed business owner lending, by industry

<table>
<thead>
<tr>
<th></th>
<th>Q1 2010</th>
<th>Q1 2013</th>
<th>Q3 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real estate leasing</td>
<td>(%)</td>
<td>(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>Non-real estate leasing</td>
<td>(%)</td>
<td>(%)</td>
<td>(%)</td>
</tr>
</tbody>
</table>

Notes: 1) Year-on-year
2) Based on domestic bank lending to individual entrepreneurs
Sources: Financial institutions’ business reports

5) Small-scale business owners are those with annual incomes of 45 million won or less and credit ratings from 6 to 10, while borrowers of high-interest rate household loans are those holding loans from loan companies, unsecured loans from savings banks and installment finance companies, and card loans.

6) The joint inspections of five domestic banks showed as well that individual entrepreneur loans extended to small-scale business owners are very likely to go bad, as loans extended to the wholesale & retail and the food services & accommodation industries, which are vulnerable to economic fluctuations, account for 44.3 percent of these loans, while their delinquency rate on loans to small-scale business owners has also risen (1.63% at end-2011 → 2.09% at end-Q2 2015).

7) When a real estate lessor takes out a loan, he/she can receive a tax refund, with the interest paid on that loan recognized as an expense.
As a result, the share in total domestic bank lending to individual entrepreneurs of the real estate leasing industry has risen significantly, from 24.4 percent at the end of the first quarter of 2010 to 34.4 percent as of the end of the third quarter of 2015. The shares of lending to the manufacturing (25.0 percent → 21.3 percent) and wholesale & retail (20.7 percent → 16.9 percent) industries have on the other hand declined, while that going to the food services & accommodation industry has remained at 10.2 percent.

The soundness of lending to self-employed business owners seems good, given that the delinquency rate on loans to individual entrepreneurs has continually declined. However, as lending to the real estate leasing industry has grown significantly since 2011, and that to industries sensitive to the business cycle, such as the wholesale & retail and food services & accommodation industries, accounts for a large share, self-employed business owner loans may show higher vulnerability depending upon future economic circumstances. If so, defaults on loans, particularly those extended to small-scale business owners, can materialize, and so close monitoring of the trends of lending to the self-employed needs to be strengthened, along with efforts to expand information on self-employed business owning borrowers.
Recent Trends of Group Loans Related to the New Housing Sales Market

As conditions in the real-estate market improved from the second half of 2014, the number of new apartments for sale increased and the volume of group loans related to them did as well. For this article we took stock of the recent trends in the new home sales market and in group loans, and estimated the demand for group loans going forward.

New housing sales market trends

Real estate transactions have increased since the second half of 2014, in line with the easing of the LTV and DTI regulations and with the low market interest rates. Between January and October 2015 there were 1.01 million housing transactions, as annual sales exceeded 1 million for the second year in a row. The figure for 2015 as a whole is expected to be the highest annual one since compilation of these statistics was begun in 2006.

The new apartment sales market has also enjoyed a boom. The volume of new apartments for sale in 2014 was approximately 330 thousand units, the highest since 2004, and that figure for 2015 has reached an all-time record high of 460 thousand units (as of November 2015) since compilation of the statistics. This is seen to owe to the improved incentives for supply of housing by construction companies, in line with the easing of regulations on reconstruction and the repeal of upper limits on newly built apartment prices (in April 2015) for example, amid increased demand for new apartments stemming from factors such as the easing of conditions for subscription, continuing problems in the leasehold deposit market, and an increase in investment demand.

Notes:
1) Figures for 2015 are estimates (Korea Housing Institute, May 2015)
2) Performances between January and October 2015
Source: Ministry of Land, Infrastructure and Transport

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1) Group loans are batch-type loans approved for provision to groups of borrowers meeting certain requirements for receiving mortgage loans, such as intentions to reside in new, reconstructed or redeveloped apartments. They are divided up into loans for moving costs, for intermediate payments and for final balance payments. The payments are generally made over two years – via an initial downpayment (10~20%), intermediate payments (of up to a total 60%, generally paid on four or more occasions from the sixth month after signing of the contract), and the final balance payment (20~30%).

2) The time after original apartment construction that must pass before reconstruction can be undertaken was shortened (40 years → 30 years, September 2014), implementation of an excess earnings withdrawal system was postponed (2014 → 2017), and the number of new housing units that reconstruction union members are allowed to buy was increased (1 unit → 3 units, December 2014).

3) In March 2015 the time required for establishing a first priority right to purchase of newly build apartments was changed from two years after the opening of a housing subscription account to one year, as second priorities were integrated with first priorities.

4) Investment demand has increased driven by that in certain local areas where public institutions are being relocated, industrial complexes are being established and subway and other transportation networks are being expanded in line with the government’s designation of innovation cities.
As a result, banks' group loans related to new housing sales and reconstruction are increasing rapidly. The balance of group loans extended by domestic banks rose from 101.5 trillion won at the end of 2014 to 104.6 trillion won as of the end of September 2015 (an increase of 3.1 trillion won). In line with the supply of Mortgage Refinancing Program in the first half of 2015, some group loans were transferred to individual loans of the Korea Housing Finance Corporation, and given these circumstances the actual increase in group loans during this period is estimated to have exceeded 10 trillion won.

Once group loans are approved, loans for moving costs, intermediate payments and final balance payments gradually occur on a massive scale over the course of the two-year period from the signing of the contract until the tenant moves in. Therefore, given the volume of existing group loans as well as the trend of increase in the amount of new housing for sale, we expect a trend of increase in group loans for a considerable time. Estimates of group loan demand during 2016 and 2017, reflecting the past and scheduled future amounts of new housing for sale, show the amount of increase in home mortgage loans fueled by group loans reaching a monthly average of 3 to 4 trillion won.5)

**(Implications)**

The recent boom in new apartment sales is expected to work as an underlying factor causing the total amount of household debt to expand through a rapid increase in group loans. It may also have negative effects on the qualitative structure of household debt.6)

Meanwhile, in certain regions that have seen overheated competition for purchases of new housing units recently, concentrations of tenants moving in during similar periods of time might work to put downward pressures on home prices. This could lead to escalated conflicts related to apartment sales and worsen the balance sheets of construction firms and developers, put a burden on organizations guaranteeing group loans7), and increase the rate of mortgage loan default.

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5) However, the actual amount of the future increase in group loans may differ from this estimate – owing for example to changes in the actual homeowners following resales of rights to purchase of newly build apartments, to purchasers shifting to individual loans when moving in, and to loan repayments.

6) Since group loans take the form mainly of bullet repayment loans and have variable rates, while borrower screenings take place on a group basis and DTIs cannot be applied, individuals' debt servicing capacities related to group loans are monitored in a relatively looser fashion than those in cases of ordinary home mortgage loans.

7) In the past the method of group loan credit preservation centered on joint and several guarantees of developers, but more recently mortgage credit guarantees make up the lion’s share. The guarantee organizations (Korea Housing Finance Corporation, Korea Housing & Urban Guarantee Corporation) may hence feel more burdened than before.
I. Financial Soundness of Household and Corporate Sectors

1. Households

Korea’s Financial Stability Situations

<table>
<thead>
<tr>
<th>Year</th>
<th>Group Loan Balances</th>
<th>Group Loan Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>+4.5</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>+1.6</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>-3.4</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>+0.9</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>+3.1</td>
<td></td>
</tr>
<tr>
<td>Q3 2015</td>
<td>+8.0*</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) The dotted lines and the shaded parts include group loans that have been transferred to the Korea Housing Finance Corporation (individual loans) in line with the supply of Mortgage Refinancing Program.
2) The Bank of Korea estimates.
Source: Financial Supervisory Service.

Rates of growth in loans for intermediate payments, moving costs and final balance payments

<table>
<thead>
<tr>
<th>Year</th>
<th>Moving Costs</th>
<th>Intermediate Payments</th>
<th>Final Balance Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: 1) Year-on-year.
Source: Financial Supervisory Service.
2. Corporations

Slight decline in corporate financial soundness

Corporations' financial soundness has fallen somewhat overall. Profitability has improved a bit in some industries but growth has deteriorated greatly, with rates of sales growth recording large-scale negative figures for example. Financial structure stability has declined as well, with the proportion of companies recording debt ratios of 200% or higher increasing (Figure I-13).

Greatly worsened growth

The slump in corporate growth has deepened. Companies’ sales growth rate recorded a large-scale minus figure (-7.1%) during the first half of 2015. By corporation size, the rate of sales growth at large enterprises contracted at a greatly accelerated pace in the first half (H1 2014 -1.2% → H1 2015 -7.3%), while among small and medium-sized enterprises (SMEs) it was a mere 1.2% in the first half and had slowed compared to the first half of 2014 (3.8%) (Figure I-14).

Looking at the sales growth rates ranges in the first half of 2015 compared to the first half of 2014, as the extent of increase (+3.5%p) in the share of firms with low sales growth (below 5%) exceeded that (+0.5%p) in the share of those with high sales growth (20% or above), the quality of corporate

11) Listed companies preparing and announcing financial statements in accordance with the Act on External Audit of Stock Companies (H1 2015 basis, 1,552 companies) were analyzed, along with portions of the unlisted enterprises representing the different industries (excluding the financial and insurance industries) (H1 2015 basis, 279 companies).
growth has become worse. During the 2010 to 2015 period, the proportion of firms with low rates of sales growth climbed by 28.6% points (34.8% → 63.4%), while the share of firms with high rates in contrast shrunk by 25.1% points (41.8% → 16.7%) (Figure I-15).

By industry, sales have expanded slightly in some industries such as automobiles and machinery, while on the other hand contracting greatly in most industries including oil refining, chemicals and electronics to lead a worsening of profitability in industry as a whole. The large extents of sales decline seen in the electronics, shipbuilding and steel industries have been due to intensified competition at home and abroad as well to as slumps in demand, and those in petroleum refining to the drastic drop in crude oil prices.\(^2\) (Figure I-16).

The rate of growth in tangible assets, which reflects companies’ investment, meanwhile recorded 3.4% at the end of June 2015, having reversed to a slight increase from its trend of decline seen until that time. By company size, the rate of tangible asset growth at large enterprises had risen by 0.8% point year-on-year (end-June 2014 2.6% → end-June 2015 3.4%), and that of SMEs as well by 0.5% point (1.5% → 2.0%) (Figure I-17).

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\(^2\) The crude oil price (Dubai oil basis) fell from an average of 105.2 dollars per barrel in H1 2014 to an average 56.8 dollars per barrel in H1 2015 – a drop of 46.0%.
Slightly improved profitability

Corporate profitability has improved slightly. This seems to be a result mainly of companies’ management strategies having focused on productivity rather than expansions in size, due to the worsening of external conditions. During the first half of 2015 the operating income-to-sales ratio showed 5.6%, up by 0.9% point compared to the first half of 2014 (4.7%). By company size, the large enterprise operating income-to-sales ratio increased by a comparatively large extent of 1.0% point (4.7% → 5.7%). Among SMEs, its rate of increase on the other hand was a mere 0.2% (3.9% → 4.1%). As a result of this the gap in profitability between large enterprises and SMEs (1.6%p) expanded relative to the first quarter of 2014 (0.8%p) (Figure I-18).

Looking at the different operating income-to-sales ratio ranges in the first half of 2015, the proportion of firms with high ratios (10% or above) rose to 2.5% points higher than in the first half of 2014 (18.1% → 20.6%), to exceed the extent of increase (0.2%p) in firms with low ratios (below 3%, including firms in deficit). During the 2010 to 2015 period the share of firms with low ratios jumped by 10.6% points (36.5% → 47.1%), while that of those having high ratios fell by 3.5% points (24.1% → 20.6%). This shows that the trend of deterioration in corporate structural profitability since the global financial crisis has continued (Figure I-19).
By industry, the oil refining and the transportation industries, which had shown low operating income-to-sales ratios in the first half of 2014, showed year-on-year increases of 6.3% points and 3.7% points respectively, under the influences of the drops in oil prices. The shipbuilding industry’s operating income-to-sales ratio declined to a large extent (H1 2014 -3.8% → H1 2015 -17.7%), however, while those of the machinery and electronics industries fell slightly (Figure I-20).

Slight decline in financial structure stability

The stability of corporate financial structures has deteriorated somewhat, as the proportion of firms with debt ratios exceeding 200% rose by 0.6% point (12.3% at end-2014 → 12.9% at end-June 2015). In the case of large enterprises, their debt ratio increased from 15.0% to 15.5% during this period, while that among SMEs jumped from 8.6% to 9.7% – for rises of 0.5% point and 1.1% points respectively (Figure I-21).
With regard meanwhile to the corporate borrowings-to-total assets ratio, as it fell from 23.7% at the end of 2014 to 23.4% at the end of June 2015 at large enterprises, and from 23.0% to 20.9% over this same time span at SMEs, the overall rate declined by 0.4% point (end-2014 23.7% → end-June 2015 23.3%) (Figure I-22).

Corporate short-term debt repayment capacities have not improved. The proportion of firms with interest coverage ratios below 100%, which are thus unable to cover their interest expenses with operating incomes, rose by 1.8% point from 33.5% in the first half of 2014 to 35.3% in the first half of 2015. While the share of large enterprises fell by 0.1% point, from 27.9% to 27.8% during this time, that of SMEs climbed by 2.6% points from 42.0% to 44.6% (Figure I-23).

The proportion of companies unable to repay their short-term borrowings and cover their interest expenses with cash flows generated through business activities fell by 2.2% points, from 70.6% in the first half of 2014 to 68.4% in the first half of 2015. While this proportion fell to a large extent (-4.2%p) in the case of large enterprises, it decreased by only a small amount (-0.1%p) among SMEs (Figure I-24).

13) This refers to enterprises with cash flow coverage ratios \((\text{Cash flow from business operations} + \text{Interest expenses}) / (\text{Short-term borrowings} + \text{Interest expenses})\) below 100%.
There were meanwhile no big changes in debt ratios in most industries excepting shipbuilding and shipping. The shipping industry’s debt ratio fell by 123.9% points (end-2014 510.5% → end-June 2015 386.6%), owing to improvements in profitability, while that in the shipbuilding industry on the other hand rose by 77.1% points (168.9% → 246.0%). In the shipbuilding industry, notably, the debt ratio surpassed 200% in 2015 as sluggishness in overall business conditions appeared (Figure I-25).

As the slumps in corporate sales since 2013 have gradually worsened worries about weakened corporate growth power have increased, and profitability has also not shown a clear trend of improvement. Although company debt ratios are sustaining trends of decline overall, the proportion of firms with debt ratios of 200% or above has risen and the share of companies with interest coverage ratios below 100% is sustaining a high level even despite the low interest rate conditions. In addition, as the numbers of marginal and chronically marginal firms are continuing to expand, it is judged that not only will corporate default concerns grow, but these firms can be a factor greatly burdening the maintenance of financial system stability in times of occurrence of domestic or external shocks.
Concerns are growing about corporate debt defaults by Korean companies, whose performances have been sluggish recently. Considering that external shocks such as interest rate hikes in the U.S. or the economic slowdown in China could work to burden business going forward, for this article we have compared Korean companies’ debt levels with those of companies in other major countries.

(Debt Level)

Korean companies’ core debt-to-GDP ratio stood at 105.3% as of the end of 2014, thus exceeding the OECD average (97.1%, based on 28 member countries). In comparison with major advanced countries, Korea’s corporate debt level is similar to Japan’s (104.8%), and substantially higher than those of the U.S. (69.2%), the U.K. (75.0%) and Germany (54.5%). This ratio increased by 2.1% points in Korea between 2009 and 2014, showing that the corporate debt which grew greatly before the global financial crisis has not been adjusted smoothly (OECD average: +0.8%p). In contrast, corporate debt deleveraging in the U.K. (-20.1%p), Japan (-5.2%p), Germany (-3.6%p) and the U.S. (-1.1%p) was carried out relatively actively during the same period, under the influence of the global financial crisis.

The core debt-to-funding balance ratio, an indicator of dependency on external borrowings, stood at 37.0% as of the end of 2014, exceeding the OECD average (34.3%) and even higher than those of major advanced countries such as the U.S. (22.0%), the U.K. (29.2%), Germany (29.2%) and Japan (31.9%). In terms of the degree of change as well, the ratio climbed by 0.9% point from 2011 to 2014 at Korean companies, showing that their dependency on foreign borrowings has not weakened.

1) According to the BIS standards, core debt is defined as loans (including government loans) and securities other than shares among non-financial corporations’ financial liabilities in the flow of funds statistics.
2) Korean companies’ core debt-to-GDP ratio increased by 27.2% points (76.0% → 103.2%) between 2005 and 2009.
3) This is the total amount of financial debt in the flow of funds data, which in addition to core debt also includes equity capital, direct investment and trade credit.
4) Analysis is based on figures from 2011, given that the changes in the compilation standards of the flow of funds statistics (1993 SNA → 2008 SNA) have led to big differences between the funding balance time series before and after that year.
unlike in the cases of companies in Japan (-11.0%p), Germany (-3.0%p), the U.S. (-2.8%p) and the U.K. (-2.6%p) (OECD average: -2.1%p).

Comparing Korean companies’ core debt structure with those of companies in major advanced countries, as of the end of 2014 loans accounted for 64.2% of Korean corporate debt and bonds 35.8%, with the share of bonds the second highest following that of U.S. corporations. In terms of maturity, 20.5% of Korea’s corporate debt was short-term and 79.5% of it long-term - the latter a higher figure than those of companies in major advanced nations.

Looking at companies’ capacities for repayment of interest through business activities, Korean companies’ operating surplus to paid interest ratio was 4.3 times as of 2013, higher than that of U.S. companies (3.9 times) but lower than those in Japan (14.3 times), Germany (10.2 times) and the U.K. (6.0 times).\(^5\) In the cases of other major countries, the global financial crisis forced their companies to restructure their debts and improve their interest repayment capacities, while in Korea the trends of improvement in these areas have been slight.

\(^5\) The interest repayment capacities of Japan and Germany turned out to be relatively higher than those of other countries - owing to the effects of low interest rates in the former case and of the low corporate debt ratio (34.4% of GDP) in the latter. The bank lending rate in Japan is 1.6% (2005~2014 monthly average basis), a much lower level than that in Korea (6.0%).
Stress Testing of Firms with Liquidity Risks

Amid the continuing sluggishness since the global financial crisis in not only the construction but also the shipbuilding and shipping industries, there are signs of business conditions worsening for even core growth industries including electronics and automobiles. Concerns are therefore growing about the liquidity risks of the corporate sector. Related to this, for this paper we have examined the statuses of the companies facing liquidity risks (hereafter 'companies at risk') and conducted stress tests to look into the effects of macro-economic shocks on the corporate sector.1)

(Liquidity risk status)

Looking at the statuses of companies at risk2) that can suffer temporary liquidity shortages, their proportion has declined since 2014 while the proportion of their debt at risk has exceeded its global financial crisis level (16.9%) ever since 2012. Despite a slight decline in the proportion of companies at risk in 2015, that of debt at risk climbed. This implies that liquidity risk has been growing, led mainly by companies with relatively large amounts of liabilities.

By industry, the proportion of companies at risk is highest in the shipbuilding industry (62.5%), followed in order by those in construction (28.7%) and steel (24.2%), while the share of debt at risk is highest in shipbuilding (93.7%), transportation (53.9%) and machinery (38.5%). In the shipbuilding, machinery, and transportation industries the liquidity risks are high in large enterprises having large amount of liabilities, and so their proportions of debt at risk greatly exceed those of their companies at risk.

1) We analyzed non-financial corporations (excluding public corporations) subject to outside audits, whose first half financial statements were available.
2) This paper defined companies at risk as ① those that cannot afford to pay their interest expenses with revenues generated (those with interest coverage ratios (EBIT/interest expenses) below 100%), and ② those at risk of temporary liquidity shortages since their short-term liabilities exceed their short-term liquid assets (those with liquidity ratios (short-term liquid assets/short-term debts) below 100%).
Stress tests<sup>3</sup> were carried out to review the effects of a domestic economic slowdown and interest rate hikes on the corporate sector. First, it was estimated that declines of 1.0% point and 1.5% points in domestic GDP growth over the coming year would lead to increases in the proportion of companies at risk (debt at risk) by 2.3% points (1.8%p) and 3.4% points (3.8%p), respectively.

Moreover, 100bp and 150bp increases in interest rates over the coming year were estimated to push the proportion of companies at risk (debt at risk) higher by 2.8% points (2.1%p) and 5.3% points (7.7%p), respectively.

With the proportion of debt at risk exceeding that during the global financial crisis, a 1.5% points decline in GDP growth or a 150bp hike in interest rates would result in the proportion of companies at risk nearing its level (21.2%) seen during the crisis.

Meanwhile, if a combined shock were to occur, in which the GDP growth rate fell by 1.5% points and the market interest rate rose by 150bp, our analysis showed that the proportions of companies and debt at risk would jump by 8.2% points and 11.4% points, respectively. In the cases of individual GDP and interest rate shocks, there were not much differences found between the extents of increase in the proportions of companies and debt at risk. If a combined shock were to occur, however, large corporations having high levels of debt would be affected to the greatest extent, and so the increase in the proportion of debt at risk was found to exceed that in the proportion of companies at risk.

By industry, the transportation, construction, oil refining & chemicals and automobile industries were most vulnerable to a combined shock in terms of the numbers of companies at risk, while the machinery, transportation, oil refining & chemicals and construction industries were weak in terms of their amounts of debt. With regard to shipbuilding, more than one-half of companies are already categorized as at risk, and so the number that would be newly included in the category due to macroeconomic shocks was found to be relatively small.

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<sup>3</sup>In order to assess the impacts of macroeconomic risk factors on corporate insolvencies, the stress test model for the corporate sector was designed so that the relationship between real and financial market variables and corporate financial accounts was first estimated, and the macroeconomic shocks then affected corporate liquidity risks through changes in the interest coverage and liquidity ratios of individual companies.
Liquidity risks in the corporate sector have been worsening somewhat recently, especially among highly indebted large corporations and tendencies in some industries such as shipbuilding and construction are materializing. Further shocks going forward, due for example to a rapid economic slowdown or to increases in interest rates, could cause a spreading of liquidity risk across the corporate sector. A shock from rising interest rates, in particular, could greatly affect corporate financial solvency in the short term, by increasing companies’ principal and interest repayment burdens. Tighter monitoring of liquidity risks in the corporate sector, and regular restructuring of insolvent companies are therefore required.

### Stress test results under combined shock

<table>
<thead>
<tr>
<th>Industry</th>
<th>Proportion of companies at risk</th>
<th>Proportion of debt at risk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H1 2015 After shock</td>
<td>H1 2015 After shock</td>
</tr>
<tr>
<td>Shipbuilding</td>
<td>62.5 +0.0</td>
<td>93.7 +0.0</td>
</tr>
<tr>
<td>Automobiles</td>
<td>10.6 +9.6</td>
<td>4.1 +1.9</td>
</tr>
<tr>
<td>Machinery</td>
<td>16.3 +9.5</td>
<td>38.5 +30.7</td>
</tr>
<tr>
<td>Electronics</td>
<td>22.0 +7.2</td>
<td>5.4 +3.6</td>
</tr>
<tr>
<td>Oil refining &amp; chemicals</td>
<td>10.1 +10.1</td>
<td>8.5 +16.2</td>
</tr>
<tr>
<td>Steel</td>
<td>24.2 +7.7</td>
<td>11.7 +12.5</td>
</tr>
<tr>
<td>Construction</td>
<td>28.7 +12.6</td>
<td>25.3 +15.6</td>
</tr>
<tr>
<td>Wholesale &amp; retail</td>
<td>16.9 +4.9</td>
<td>6.6 +10.1</td>
</tr>
<tr>
<td>Transportation</td>
<td>13.9 +13.9</td>
<td>53.9 +21.0</td>
</tr>
</tbody>
</table>

Note: 1) A 1.5%p decline in GDP growth and a 150bp increase in interest rates happening at the same time

Source: The Bank of Korea
Financial System Stability

1. Banks ......................................................... 59
2. Non-Bank Financial Institutions ........................ 70
3. Financial Markets ........................................... 78
4. Foreign Exchange Soundness ............................. 84
5. Financial Market Infrastructure ......................... 91
1. Banks

Generally satisfactory bank soundness

Commercial bank soundness has shown a picture of improving on the whole. Growth has accelerated and asset soundness has sustained its trend of improvement. Profitability has however not pulled out from its slump, even despite an increase in securities-related profits for example. Liquidity and capital adequacy indicators have declined somewhat but maintained satisfactory levels as before (Figure II-1).

Sustained trend of growth

Commercial banks’ total assets (banking account basis) amounted to 1,390 trillion won as of the end of September 2015, higher by 56 trillion won compared to the end of March 2015 (1,334 trillion won), led by loans, as their trend of increase since the third quarter of 2014 continued (Figure II-2).

On the funding side, the pace of expansion in loans has been sustained, centering around lending to households and small and medium-sized enterprises. Commercial banks’ household loan volume had been maintaining quarterly year-on-year growth of 30 trillion won since the fourth quarter of 2014, and this extent of increase has recently expanded. In particular, if the portion of Mortgage Refinancing Program transferred to the Korea Housing Finance Corporation is included, then the quarterly amount of increase has been exceeding 50
trillion won since the second quarter of 2015. The extent of growth in SME loans also expanded from 22.0 trillion won in the first quarter of 2015 to 31.0 trillion won in the third. Loans to large enterprises have however shown only a small degree of decrease in 2015 (Figure II-3).

In more detail, the growth in lending has been led by home mortgage loans in the case of household loans, and by lending to individual entrepreneurs in the case of SME loans (Figure II-4).1)

Together with the trend of growth in their asset volumes, bank funding amounts have also expanded. The amount2) of won-denominated funds raised by commercial banks totaled 1,025 trillion won at the end of September 2015, with deposits accounting for 87.9% of this, wholesale funding 8.5% and borrowings in won 3.6% (Figure II-5).

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1) Of the total amount of increase in household loan during the Q1~Q3 2015 period, 84.8% was home mortgage loans, and of the total increase in SME loans 64.7% was loans to individual entrepreneurs.

2) Based on banking account won-denominated deposits, CDs (certificates of deposit), RPs (repurchase agreements), promissory notes, bank bonds (financial bonds issued in won), and won-denominated borrowings (including call money in won).
Commercial bank deposits continued on a trend of increase at the 5~6% year-on-year level in 2015, centering around transferable deposits, although time deposits did contract somewhat due for example to the declines in interest rates (Figure II-6).

The trend of contraction in commercial bank wholesale funding persisted until the first quarter of 2015, but entering the second quarter then reversed to an increase centering around bank bonds. In the third quarter the extent of increase then accelerated, as CD issuance also grew (Figure II-7). These increases in issuance of bank bonds and CDs appear to have resulted from banks’ needs to secure financial resources to respond to the rising demand for loans, in addition to their reduced funding expenses.  

3) Including demand deposits, transferable savings deposits, corporate free deposits, etc.
4) This expansion in funding through wholesale finance can, in any time of deterioration in domestic or overseas conditions, become a factor causing banks’ funding stability to worsen.
5) As of end-September 2015 the yield on bank bonds (AAA, one-year maturity), at 1.39%, had fallen by 0.61%p compared to end-December 2014 (2.20%), and the CD (91-day) interest rate had also declined by 0.54%p (2.13% → 1.59%) over this same period.
Continuing trend of asset soundness improvement

Asset soundness continued on its trend of improvement seen since the end of 2013, with the substandard-or-below loan ratio falling to 1.17% in the third quarter of 2015 for example (Figure II-8).

By borrowing sector, the substandard-or-below loan ratios have shown decreases in the large enterprise, SME and household sectors (Figure II-9). Even in the case of lending to enterprises, where the substandard-or-below loan ratio is high compared to those in other sectors, a look at the various individual industries finds the ratios in shipbuilding and construction6) to have fallen by large extents of 2.27% points and 2.07% points respectively compared to the end of 2014, while those in the real estate and shipping sectors fell by 0.53% point and 0.16% point respectively as well (Figure II-10).

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6) Among total commercial bank corporate lending as of end-September 2015, the proportions extended to these industries were 3.9% to shipbuilding, 3.0% to construction, 1.8% to shipping, etc.
Continuing slump in profitability

The structural slump in profitability has continued. Commercial bank net income increased by a small amount (0.4 trillion won) year-on-year in the second quarter of 2015 (1.9 trillion won), thanks to temporary factors such as increases in securities-related income, but then reversed to a 0.5 trillion won decline in the third quarter (Figure II-11).

Return on assets (ROA) rose temporarily from 0.48% in the first quarter of 2015 to 0.52% in the second, but then fell again to 0.44% in the third quarter. Banks’ structural profitability, indicative of their capacities for generating sustainable profits, continued to fall, on the narrowing of the loan-to-deposit interest rate spread, and recorded 0.80% in the third quarter of 2015. This was the lowest level since compilation of these statistics began in 1999 (Figure II-12).

Maintenance of satisfactory liquidity levels

The liquidity coverage ratio (LCR), which indicates a bank’s capacity for responding to a sudden, short-term outflow of liquidity under conditions of stress, recorded 103.8% as of the end of September 2015. This was 3.8% points lower than at the end of March, but higher than the required ratio for 2015 (80%) as well as the threshold level (100%) being applied from 2019 (Figure II-13). The slight drop in the LCR compared to the end of March 2015 was a result of expected net cash outflows having increased much more than highly-liquid

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7) In line with the merger between Korea Exchange Bank and Hana Bank (September 1, 2015) the indicators used in analysis of profitability differ from the data being reported in commercial banks’ business reports, based on going concerns, and so for our estimates we have used separate data (the sums of the business results of Korea Exchange Bank and Hana Bank from January through September 2015).
8) Based on cumulative quarterly results converted to annualized rates.
assets, owing to expanded deposits by financial institutions and corporations—
which have high possibilities of flowing out in conditions of stress.

The loan-to-deposit ratio, applied as a new standard from 2015, stood at 97.3% in the third quarter of 2015, up slightly compared to the first quarter (96.9%) but still running below the regulatory standard (100% or below) (Figure II-14).

Commercial banks’ loss absorption capacities have maintained satisfactory pictures. The provision coverage ratio, which shows banks’ capacities for absorbing expected losses, sustained a trend of increase to stand at 141.5% as of the third quarter of 2015. The ratio of excess loan loss provision accumulation, meanwhile, at 107.9% in the third quarter, was in excess of 100% and had also climbed by 1.0% point compared to the same period the year previous (Figure II-15).

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9) The commercial banks’ balance of deposits by other financial institutions and corporations (operational deposits excluded) expanded steadily from 52.6 trillion won at end-March 2015 to 55.7 trillion won at end-June and 61.2 trillion won as of end-September.
10) From 2015 the standard for calculation of the won-denominated loan-to-deposit ratio was changed from (Loans in won / Deposits in won) to (Loans in won - Onlending loans - Agriculture and forestry policy fund loans - New Hope Spore Loans) / (Deposits in won + Amount issued of won-denominated covered bonds with five-year or longer maturities <up to a maximum of 1% of deposits in won>). Due to the exclusion of policy fund loans under the new standards, it is estimated that the 2015 loan-to-deposit ratio has declined by about 1.4%p compared to that previously.
11) The third quarter 2015 provision coverage ratio is an estimated figure based on banks’ business reports obtained through November, and so can be revised after the Financial Supervisory Service’s announcement of external sector statistics.
12) Expected losses are prepared for by the accumulation of loan loss provisions for the assets concerned, while unexpected losses must be able to be covered by capital.
The Basel III basis total capital ratio, indicative of banks’ absorption capacities related to unexpected losses, was 14.67% as of the third quarter of 2015, having fallen by 0.18% point compared to the second quarter (14.85%) but still well above the regulatory standard (8.0%). Moreover, the Basel III standard common equity capital ratio, implemented since year-end 2013 as banks’ core capital, was also very high compared to the regulatory requirement (4.5%) at 11.45% in the third quarter (Figure II-16).

But as the financial soundness of households and corporations declines, it seems that potential default risks have grown.

Therefore, inasmuch as non-performing loans can increase greatly at times of future domestic or external shock occurrence, shock absorption capacities will have to be raised preemptively, through means such as a strengthening of loan loss provision accumulations.

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13) In Korea the Basel III capital regulations, including the strengthening of capital quality requirements, the new establishment of the common equity capital ratio, etc., were implemented from December 1, 2013. Common equity capital means that which can be used first to preserve banks from losses, and at the time of bank liquidation has the lowest priority for reimbursement and except at times of liquidation is not redeemable. Capital and earned surpluses fall in this category.

14) This is due mainly to the fact that, although capital has expanded, through capital increases and issuance of capital securities, etc. to boost banks’ loss absorption capacities, risk-weighted assets have increased even more owing to expansions in won-denominated loans for example.
This article reviews the unsecured household loan market, in consideration of the upcoming establishment of Internet-only banks1) adopting platforms focused on mid-level interest rate lending to individuals in Korea. Looking at the proportions of financial institutions’ unsecured loans in the different interest rate ranges, as of the end of the third quarter 2015 42.0% (73.9 trillion won, balance basis) had interest rates of less than 5%, while 24.9% (43.8 trillion won) had rates ranging from 5% to 10% and 28.0% (49.3 trillion won) rates of 15% or above. A mere 5.1% (9.1 trillion won) of loans were in the 10~15% mid-level interest rate range.

The average lending rate gap among credit ratings was found to be around 2.5% points. The gap between grades 5 and 6, however, the medium level credit ratings, recorded a substantial 5.9% points (11.9% → 17.8%). This is a result mainly of the fact that the share of borrowers using mutual savings banks and money lenders (financial institutions that usually charge much higher rates on loans) increases greatly beginning from grade 6.2)

### BOX

#### II-1

**Financial Institutions’ Mid-level Interest Rate on Unsecured Household Loans**

This article reviews the unsecured household loan market, in consideration of the upcoming establishment of Internet-only banks1) adopting platforms focused on mid-level interest rate lending to individuals in Korea. Looking at the proportions of financial institutions’ unsecured loans in the different interest rate ranges, as of the end of the third quarter 2015 42.0% (73.9 trillion won, balance basis) had interest rates of less than 5%, while 24.9% (43.8 trillion won) had rates ranging from 5% to 10% and 28.0% (49.3 trillion won) rates of 15% or above. A mere 5.1% (9.1 trillion won) of loans were in the 10~15% mid-level interest rate range.

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### Average unsecured household loan interest rates, by borrower credit rating

<table>
<thead>
<tr>
<th>Credit Rating</th>
<th>Average Interest Rate (%)</th>
<th>Interest Rate Gap (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>12.3</td>
<td>2.5%</td>
</tr>
<tr>
<td>Medium</td>
<td>14.9</td>
<td>5.9%</td>
</tr>
<tr>
<td>Low</td>
<td>17.8</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Note: 1) Considering the range of interest rates on unsecured loans extended by each financial sector, the lowest interest rate was set at grade 1 and the highest at grade 10. The lending interest rates for grades 2 to 9 in each sector were estimated by the linear interpolation method, and the interest rates for all unsecured household loans in each credit rating were then calculated based on the average rates weighted by the numbers of borrowers.

Sources: NICE Credit Information, Federations or associations of the sectors concerned

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1) Two Internet-only banks (Kakao Bank and K-Bank) are scheduled to be launched in Korea in 2016.
2) A look into the shares of borrowers using mutual savings banks and money lenders, by credit rating, shows that as of end-September 2015 24.9% of grade 6 borrowers used mutual savings banks or money lenders, while only 5.0% of borrowers having grade 5 used them.
Mid-rate household unsecured lending in the banking sector is sluggish, a fact that is attributable mainly to banks’ business practices of focusing on secured loans as well as to the difficulties in setting proper interest rates for managing the risks of borrowers with medium or low credit ratings. Moreover, it seems that the possibility of reputation risk, if banks’ publicly announced average lending rates should rise due to increased extensions of mid-interest rate loans, is another factor limiting their handling of such loans.
Introduction of Countercyclical Capital Buffer, and Effects on Financial Stability

The countercyclical capital buffer (CCyB) is a macro-prudential policy instrument that the Basel Committee on Banking Supervision (BCBS, hereafter) decided to introduce following the global financial crisis, which will come into effect from 2016 in Korea. With its introduction, the policy authorities will be able to flexibly adjust the level of capital requirements in the banking sector in response to time-varying systemic risk(s). Introduction of the CCyB is aimed at enhancing banks’ loss absorbency against possible risks of serious loss that could arise after periods of excessive credit expansion.1)

(CCyB operation)

The CCyB is imposed based on a judgment by the policy authorities during times of systemic risk accumulation, and lifted when these risks have either eased or materialized as financial instability. The CCyB is imposed in the range of 0 ~ 2.5% of total risk-weighted assets, and banks must meet this requirement with common equity.

In order for the policy authorities to determine the buffer level appropriate to the degree of accumulated financial imbalances or systemic risk, they need to closely examine and analyze a variety of information including financial and economic indicators. In line with this, the advice from the BCBS is to use the credit-to-nominal GDP gap, i.e. the gap between the credit-to-nominal GDP ratio and its long-term trend, as a common reference index for systemic risk evaluation. In addition to this index, the BCBS advises that policy authorities use diverse other indicators and information (asset prices, household debt, wholesale funding weights, debt repayment capacity, financial market volatility, banking sector soundness, etc.) in determining the level of CCyB imposition.2)

Looking at the trend of the credit-to-nominal GDP ratio in Korea, it had declined from the fourth quarter of 2009, immediately after the financial crisis, then rebounding from the first quarter of 2011. The negative gap subsequently widened somewhat, but has narrowed again as the ratio has returned to an increase since the third quarter of 2014, suggesting a need for stronger systemic risk monitoring.

1) This process is expected to affect banks’ funding costs, and thereby mitigate any sudden changes in their volumes of lending.
2) The Bank of England distinguishes four different stages of systemic risk accumulation and its possibility of materialization, and differentiates the levels of CCyB imposition based on these different stages.
3) The credit-to-nominal GDP ratio can be calculated in various ways, depending upon the coverage of the credit statistics and the detrending method. In this report the ratio is calculated in accordance with the standard recommended by the BCBS, unlike the “private sector credit-to-GDP ratio” mentioned in <Box 1> for which the credit statistics are chosen in consideration of timeliness of statistics. The BCBS’s recommendation is to set the range of credit as wide as possible in calculation of the credit-to-nominal GDP gap for CCyB operation. The aim is to identify crises that may arise in various sectors due for example to financial innovation, and to curb incentives for banks to expand their supplies of credit using the non-banking sector.
If the policy authorities adjust the CCyB requirement upward during times of credit expansion, banks’ capital levels rise and their loss absorbencies increase. In addition, if banks issue new shares, retain earnings or reduce their risk-weighted assets so as to meet the CCyB requirements, this will work as a factor boosting their funding costs and curbing their lending. If the policy authorities on the other hand adjust the CCyB requirement downward in a period of credit contraction, this will lessen banks’ burdens of building up capital reserves and prevent their lending activities from shrinking drastically. By providing information on financial and economic conditions and their evaluations that form the background to CCyB operation, the policy authorities will also be able to influence the behaviors of banks and other market participants in directions that enhance financial stability.

It should meanwhile be noted that the CCyB may affect the target variables of monetary policy such as economic growth and inflation, as the CCyB works through the credit channel, which is of course one of the major channels of monetary policy transmission. This suggests a need for establishing a framework for efficient communication and cooperation among the policy authorities, since the interactions between the CCyB and monetary policy should be considered if seamless CCyB operation is to be achieved. This is because operating the CCyB without such communication and cooperation among the related authorities may cause the policies’ effects to conflict, thus undermining their effectiveness and sometimes even undermining macroeconomic stability.
2. Non-bank Financial Institutions

Generally improved management soundness

Non-bank financial institution soundness has continued on its trend of improvement. Amid sustained paces of growth and improved profitability and asset quality, capital adequacy has maintained satisfactory levels (Figure II-17).

Sustained trends of growth

Non-bank financial institution trends of growth have been sustained. The rate of increase in total assets15) stood at a year-on-year 10.5% as of the end of September 2015, down slightly from the 12.5% figure at the end of March but still showing a high level (Figure II-18).

By individual non-bank financial sector, the rate of total asset growth (year-on-year) at insurance companies fell (end-March 2015 13.7% → end-September 2015 11.4%), in line for example with a slowdown16) in sales of savings insurance products. At mutual credit cooperatives the rate also declined slightly (6.2% → 6.1%), on a decrease in deposits for example. Total asset growth slowed at securities companies as well (22.2% → 18.0%), as issuance of structured notes contracted17) somewhat, but

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15) Looking at the total asset amounts by sector, as of end-September 2015 insurance companies had the largest amount at 927 trillion won (44.9% of total non-bank financial sector assets), followed by mutual credit cooperatives (524 trillion won, 25.4%), securities companies (371 trillion won, 18.0%), credit-specialized financial companies (201 trillion won, 9.7%) and savings banks (41 trillion won, 2.0%).

16) The rate of increase (year-on-year) in security insurance accelerated from 6.0% as of end-March 2015 to 7.9% at end-September, but that of savings insurance fell from 8.6% to 5.4%.

17) The amount of structured note sales (based on securities company financial statements) stood at 88.9 trillion won as of end-September 2015, having fallen by 4.4% since the end of March.
as funding through customer deposits\(^{18}\) and RP sales\(^{19}\) expanded the rate of total asset growth showed the highest level among all non-bank financial institution sectors. The rate of total asset growth at credit-specialized financial companies accelerated greatly (5.0% → 10.2%), on increased credit card use amounts, expansions in loans extended and so on. Savings banks’ total assets sustained their pace of increase, in line with their normalizations of business since undergoing restructuring (Figure II-19).

Looking at non-bank financial institutions’ management of their assets, their proportion of securities investment has decreased slightly and that of loans has increased. This is because of the acceleration (end-March 2015 8.1% → end-September 2015 9.5%) in the rate of growth (year-on-year) in loans on the one hand, centering around savings banks and mutual credit cooperatives, while the rate of growth in securities investment has on the other hand fallen (16.4% → 13.3%). The share of card, installment and lease assets has meanwhile risen slightly (5.7% → 5.8%) (Figure II-20).

Non-bank financial institutions’ leverage ratio rose to a small extent, to 9.3 times as of the end of September 2015 compared to 9.2 times at the end of March, but is at a low level compared to the 12.3 times at banks (Table II-1).

\(^{18}\) The amount of investor fund deposits received by securities companies related to financial investment product sales stood at 35.6 trillion won as of end-September 2015, higher by 25.2% than at end-March.

\(^{19}\) The RP sales amount (balance basis) increased by 2.1% compared to end-March 2015 to stand at 98.6 trillion won as of end-September.
Continued trend of asset quality improvement

Non-bank financial institution asset quality has improved in most sectors, with delinquency rates and substandard-or-below loan ratios falling for example. Insurance companies’ delinquency rate and substandard-or-below loan ratio were 0.6% and 0.3% respectively as of the end of September 2015, having maintained levels similar to those at the end of March (0.6% and 0.4% respectively). At mutual credit cooperatives the delinquency rate (2.8% → 2.1%) and the substandard-or-below loan ratio (2.4% → 2.0%) both fell, owing to federations’ continued strengthening of delinquency rate management at individual cooperatives, to disposals of bad loans and resolutions of troubled cooperatives, etc. At credit-specialized financial companies the delinquency rate (2.4% → 2.2%) and the substandard-or-below loan ratio (2.1% → 1.9%) fell as well, due for example to withdrawals of bad loans. The savings bank delinquency rate (13.5% → 11.2%) and substandard-or-below loan ratio (14.5% → 11.6%) also fell, thanks among other things to the supervisory authorities’ efforts for bad loan disposal20) (Figures II-21, II-22).

20) To improve savings banks’ asset quality, the supervisory authorities decided to lower the non-performing loan ratios for general loans and PF loans to 9.9% and 48.5% respectively by the end of 2016.
Improved profitability

Profitability21) has improved on the whole, thanks to expansions in fee income, to declines in interest and loan loss expenses, and so on. This improvement in non-bank financial institution profitability is however a result of factors such as the fall in market interest rates and contractions in loan loss expenses, and so the volatility of profits can expand in line with any changes in the financial market environment going forward.

At insurance companies, as the extents of their insurance operation deficits narrowed22) their net income increased to a small extent, and at 0.72% at the end of September 2015 their ROA had maintained the same level as at the end of March. At mutual credit cooperatives net income increased slightly, on a reduction in loan loss expenses in line with improvements in asset quality, and ROA rose as well (0.42% → 0.43%). Securities companies’ ROA also increased (0.80% → 1.01%), on an expansion in brokerage commission earnings and a decline in interest expenses. ROA at credit-specialized financial companies meanwhile fell (1.77% → 1.57%), owing to increased card expenses23), to declines in gains on sales of stocks, etc. At savings banks, net income increased (0.3 trillion won → 0.6 trillion won), on expanded interest earnings stemming from growth in lending and on a contraction in loan loss expenses due to a reduction in bad loans24), while ROA also rose (0.83% → 1.66%) (Figures II-23, II-24).

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21) The net income and ROA figures for the October 2014–September 2015 period are compared with those for the period from April 2014 to March 2015.
22) Insurance operating losses (policy reserves deducted) declined from 21.1 trillion won during the April 2014–March 2015 period to 20.7 trillion won between October 2014 and September 2015, while investment operating profits narrowed from 22.1 trillion to 21.8 trillion won over the same time span.
23) Card expenses (credit card member recruitment expenses, etc.) rose by 0.6 trillion won (6.0%), from 10.2 trillion won during the April 2014–March 2015 period to 10.8 trillion won between October 2014 and September 2015.
24) Net interest income expanded from 2.1 trillion won during the April 2014–March 2015 period to 2.3 trillion won in the October 2014–September 2015 period, while loan loss expenses declined from 0.7 trillion to 0.6 trillion won over the same period.
Favorable capital adequacy

Non-bank financial institutions’ capital adequacy maintained favorable levels greatly exceeding the financial regulatory standards in all sectors, although capital adequacy ratios did decline slightly in some sectors. Affected by the supervisory authorities’ measures to strengthen risk management\(^{25}\), insurance companies’ risk-based capital (RBC) ratio\(^{26}\) fell (end-March 2015 302.0% → end-September 2015 284.8%), despite the accumulation of earned surpluses and the occurrence of bond valuation gains due to the declines in market interest rates. Mutual credit cooperatives’ net capital ratio\(^{27}\) rose slightly (8.0% → 8.1%), on improvements in asset quality and in profitability for example. At securities companies the net operating capital ratio (NCR)\(^{28}\) fell (414.2% → 405.4%), in line with the increased total risk amount due to an expansion in guarantee of debt\(^{29}\). Credit-specialized financial companies enlarged their equity\(^{30}\), through capital increases for example, in preparation for the implementation of leverage ratio regulations\(^{31}\), but as their total assets grew rapidly their adjusted capital ratio decreased slightly (21.4% → 21.3%). Savings banks’ risk-weighted assets grew in line with their expansions in lending, but their BIS capital ratio maintained the same level (14.3%) as of the end of March 2015 owing to their accumulations of earned surpluses (Figure II-25).

\(25\) The supervisory authorities on July 2014 raised the statistical confidence level applied when measuring interest risk (95% → 99%), and decided to also raise the confidence level related to credit risk (95% → 99%) by 2016. If confidence levels related to risk are adjusted upward, then since a greater amount of capital related to risk is demanded the RBC ratio declines.

\(26\) RBC: Risk-Based Capital Ratio = Total available capital (Equity) / RBC-required capital (required capital calculated through measurement of the amounts of insurance, interest rate, credit, market and operational risks)

\(27\) To expand capital at large-scale (total assets of 500 billion won or more) mutual credit cooperatives, the government plans to push ahead with introduction into the capital requirement ratio regulation of a capital buffer 1%p higher from 2016.

\(28\) NCR: Net operating Capital Ratio = Net operating capital (Net capital ± Adjustments) / Total Risk (Market risk + Credit risk + Operational risk)

\(29\) The amount of securities companies’ guarantee of debt increased by 21.7% compared to end-March 2015 (19.8 trillion won) to stand at 24.1 trillion won as of end-September 2015, and the majority of this was related to real estate PF transactions (ABCP purchase guarantee contracts, etc.).

\(30\) Through capital increases (Hana Capital 50 billion won), hybrid bond issuance (Lotte Capital 101 billion won, JB Woori Capital 100 billion won), etc.

\(31\) From December 2015 the total assets of credit card companies and other credit-specialized financial companies were limited to within six times and 10 times equity respectively.
OTC derivatives transactions have a positive aspect, in that they can be used as a tool for reducing the risks of financial institutions and corporations. However, they can also give rise to financial system risk in the case where a financial shock occurs due to factors such as leverage and counterparty risks.

The volume of OTC derivatives transactions by securities companies has continued to grow since 2011. Using the business reports of securities companies we take a look here at the present situation of OTC derivatives transactions in Korea, and analyze their potential risks.

(Present Situation of OTC Derivatives Transactions)

The notional amount outstanding of OTC derivatives transactions by securities companies increased from 358.7 trillion won at the end of 2011 to 842.6 trillion won as of the end of June 2015. Their share in the market as a whole meanwhile grew from 5.2% to 10.7% during the same period.

In terms of the underlying assets, interest rate derivative transactions took up the largest portion of this at 590.8 trillion won (70.1%), followed by foreign exchange derivative transactions at 104.4 trillion won (12.4%), equity-linked derivative transactions at 93.0 trillion won (11.0%) and credit derivative transactions at 49.2 trillion won (5.8%).

The increase in OTC derivatives transactions of securities companies has been due mainly to a growing demand for hedging against risk of loss, as dealing in financial investment products (structured notes, RPs, etc.) and the amount of bond investment have increased.

As investor incentives to search for yield have intensified due to continued low interest rates, the amount of structured note issuance by securities companies has expanded...
From 39.2 trillion won as of the end of 2011 to 94.8 trillion won at the end of June 2015 (+55.6 trillion won). The share in total debt of the issuance outstanding of structured notes rose from 21.4% to 29.9% over the same period. The ratio of structured note issuance outstanding to equity capital meanwhile jumped from 1.0 time at the end of 2011 to 2.3 times at the end of June 2015.

This increase in structured note issuance has caused an expansion in securities companies’ demand for hedging against risk of loss. And this has in turn led to increased OTC derivatives transactions, such as swap and option transactions linked to equity, foreign exchange, interest rates and credit.

As funding through the issuance of structured notes and RP sales has increased, the volume of bond investment by securities companies has expanded greatly from 102.2 trillion won at the end of 2011 to 166.6 trillion won as of the end of June 2015. And as demand for hedging against price risks on bond holdings due to interest rate changes has grown, it has worked as a factor causing interest rate swap transactions to increase.

There has been an increase in foreign exchange forward and cross-currency swap transactions, for hedging against the exchange rate risks posed by investment in foreign currency assets (deposits, bonds, etc.) by securities companies and by customers (specific money in trust, individuals, etc.)

(Potential risks)

The potential risks related to OTC derivatives transactions by securities companies appear to be small for now. In terms of Korean won interest rate swap contracts, which make up the largest part of these companies’ OTC derivatives transactions, the related counterparty risk has shrunk as clearing through the CCP has become mandatory (effective June 2014). The notional amount outstanding of securities companies’ Korean won interest rate swap transactions cleared through the CCP stood at 250.4 trillion won at the end of June 2015. This was 43.1% of the notional amount outstanding of all interest rate swap transactions of securities companies.

Considering that securities companies’ OTC derivatives transactions are related mainly to hedging stemming from expansions in dealing financial investment products and bond holdings, the risk of loss from these transactions is judged to be limited. This is because profits and losses from hedging transactions are largely offset by profits and losses from changes in the prices of financial investment products and bond holdings.

However, attention needs to be paid to market risk due to changes in market prices (interest rates, stock prices, etc.), liquidity risk stemming from transfers of collateral and the possibility of a rise in counterparty risk. Amid the expanded market risk due to increased bond holdings and structured note issuance by securities companies, there is a risk of loss being generated in any case.

1) The outstanding issuance of foreign currency deposit ABCP collateralized by a beneficial interest in specific money in trust investing in a foreign currency deposit increased from 3.6 trillion won at end-2013 to 29.9 trillion won at end-June 2015, while the volume of investment in foreign currency bonds by securities companies expanded from 1.6 trillion won at end-2011 to 7.7 trillion won at end-June 2015.
of drastic financial market change. In particular, in cases of securities companies’ autonomous hedging of structured notes, they could experience increased profit and loss volatility as they directly trade stocks, bonds and derivatives in order to redeem their structured notes. The amount of autonomous hedging of structured notes increased from 11.9 trillion won at the end of 2011 to 45.1 trillion won as of the end of June 2015 (+33.2 trillion won).

Securities companies can in addition experience liquidity burdens from collateral transfers in cases of OTC derivatives transactions. The collateral eligible for transfer in these transactions is limited to prime assets such as U.S. Treasuries and Korean government bonds. There are concerns that, when trading with financial institutions overseas, collateral burdens may increase due to needs to provide additional collateral in line with rising exchange rates, and to the setting of Korean won collateral caps.

Moreover, in the case of OTC derivatives transactions not cleared through the CCP, it is necessary to bear in mind the possibility of expanded credit risk due to trading with non-prime customers or to counterparty concentration.

2) When signing the CSA (Credit Support Annex) agreement, established by the International Swaps and Derivatives Association (ISDA) to mitigate counterparty risks in OTC derivatives transactions, the parties concerned set the threshold amount in line with the agreement, and if the market value of the derivatives exceeds that threshold they receive or transfer collateral in the amount of that excess.
3. Financial Markets

Slight decline in stability

Influenced by the global financial markets, stock price and exchange rate volatility in the domestic financial markets have expanded. In the corporate bond market the trend of stability has shown a picture of slight worsening overall, with credit wariness rising due for example to the slumps in business conditions of domestic enterprises and to the highlighting of risks in vulnerable industries (Figure II-26). Going forward there are concerns that market instabilities will grow in line with factors such as the ECB’s reduction of its policy rate and expectations related to policy rate hikes by the U.S. Federal Reserve.

Expansion in stock price and exchange rate volatility

In the global financial markets, as concerns about economic unrest in China and other EMEs spread following the August 2015 devaluation of the Chinese yuan32), investment sentiment related to risky assets and to EMEs shrank precipitously. Entering October it showed a picture of regaining stability, however, in response to the People’s Bank of China’s monetary easing measures33) for example (Figure II-27).

In the domestic financial markets, stock price and exchange rate volatility expanded greatly from June 2015, on the unrest in the Chinese stock market together with concerns about a global economic slowdown. Interest

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32) The People’s Bank of China changed the method for fixing the reference yuan exchange rate, and between August 11 and 13, 2015 devalued the reference rate by a total 4.5% (1.8% on the 11th, 1.6% on the 12th and 1.1% on the 13th), in consequence of which the market exchange rate rose from 6.2 yuan to 6.4 yuan to the U.S. dollar.
33) On October 23 the People’s Bank of China announced monetary easing policies of reducing the benchmark interest rate by 25bp and the reserve requirement ratio by 50bp.
rate volatility meanwhile contracted considerably after the Bank of Korea Base Rate cut in June (1.75% → 1.50%, June 11), but then expanded again after the November FOMC meeting as the likelihood of a policy rate hike by the U.S. Federal Reserve rose (Figure II-28).

The Treasury bond (3-year) yield reversed to a downward trend from July 2015, as economic unrest in China and EMEs spread, and recorded an all-time low of 1.57% on September 30. From October it shifted back to an increase, however, as expectations of a domestic economic recovery and the likelihood of a policy rate hike by the U.S. Federal Reserve within the year rose, and stood at 1.79% as of November 30 (Figure II-29).

Foreigners’ securities investment funds began to contract from June 2015, on the trend of U.S. dollar strengthening due to expectations of a rate hike by the Fed, on the worsening of foreign currency liquidity conditions in EMEs, etc., and between June and September shrunk by 4.1 trillion won. By investor type, funds from banks contracted on a reduction in interest rate arbitrage transaction incentives, and those from global funds under the influence of a decline in funds in trust. Funds from emerging economy central banks decreased in line with their objectives of securing foreign currency liquidity, in distinct contrast to the past. From October, however, as investment sentiment related to EMEs improved somewhat and funds from central banks flowed back again, foreigners’ securities investment reversed to a small increase (October~November +0.2 trillion won) (Figure II-30).

34) As the swap rate [the cost of borrowing Korean won using dollars; (Future exchange rate – Spot exchange rate)/Spot exchange rate] rose between June and September 2015, the arbitrage transaction incentive (Domestic-to-overseas interest rate differential – Swap rate) continually declined.
35) Owing to the trend of U.S. dollar strengthening, to the collapses in international raw material prices, to concerns about the Chinese economic slowdown, etc., capital outflows from some vulnerable EMEs expanded and their foreign exchange reserve holdings decreased.
The Korean won/U.S. dollar exchange rate reversed to a trend of increase, on the effects for example of growing expectations of a policy rate hike by the U.S. Federal Reserve following the favorable U.S. economic indicators from May 2015, and of the Base Rate cut by the Bank of Korea in June. From late June, as factors such as strengthening risk aversion due to difficulties in the Greece debt negotiations and to worries about the economic slowdown in China appeared, as well as outflows of foreigners’ securities funds, the rate climbed and reached 1,203.7 won to the dollar (on September 7). After that it fluctuated, influenced by changes in expectations related to the Fed rate hike, and as of November 30 showed 1,158.1 won. The Korean won/Japanese yen (100 yen) rate meanwhile rose to a considerable extent from late June, as the yen showed a trend of strengthening on rising preferences for safe assets, but its extent of increase then narrowed from October as the won strengthened due to improvements in global risk sentiment. The won/100 yen rate weakened by 5.2% between the end of May and November 30 – rising from 894.6 won to 943.5 won (Figure II-31).

Decline in stock prices

Stock prices (KOSPI) showed a continuing trend of decline from June 2015, on a succession of worsening external conditions such as concerns about a debt default by Greece and expanded uncertainties related to the Chinese economy, as well as the MERS outbreak and concerns about slumps in performances at domestic enterprises due to the trend of Japanese yen weakening, and on August 24 recorded their lowest figure for the year of 1,829.8. From September they then rebounded to a substantial extent, on the U.S. Fed’s continued holding of its policy rate steady, on the upward adjustment of Korea’s sovereign...
credit rating\textsuperscript{36}, on the implementation of additional easing policies in China, and so on. Entering November it fluctuated, however, influenced greatly by global stock price trends in line with issues related to major countries’ monetary policies\textsuperscript{37}, and as of November 30 stood at 1,992. Major country stock prices, meanwhile, in both advanced countries and EMEs, after showing large extents of decline in the June–September period rebounded to considerable extents in October, before then falling again in November (Figure II-32).\textsuperscript{38}

Between June and September 2015 foreign investors recorded net sales of domestic stocks of 9.2 trillion won\textsuperscript{39}, owing to factors such as expanded external risks including the unrest in the Chinese stock market and concerns about foreign exchange losses due to the depreciation of the Korean won. In October foreigners net purchased 0.6 trillion won, on China’s interest rate cuts and expectations of additional easing by the ECB for instance, but in November they reversed back to 1.7 trillion won of net sales, in line for example with the trend of U.S. dollar strengthening and with portfolio adjustments by global funds\textsuperscript{40} (Figure II-33).

36) On September 15, 2015 S&P adjusted Korea’s sovereign credit rating upward from A+ to AA-.
37) In the first half of November forecasts of a December interest rate hike by the U.S. Federal Reserve strengthened, but in the second half, as amid emerging forecasts of gradual Fed rate hikes, expectations of additional easing by the ECB grew.
38) Between June and September 2015 the advanced country MSCI and EME MSCI indexes fell by 11.1% and 21.1% respectively, and after reversing to increases of 7.8% and 7.0% in October they fell again by 0.7% and 3.8% respectively in November.
39) Based on the sum of the KOSPI and the KOSDAQ markets
40) This was a result of Korea’s share in the MSCI emerging markets index falling due to the inclusion of Chinese ADRs (American Depositary Receipts) in the index (from close of business November 30).
Expansion of credit wariness in corporate bond market

The corporate bond market showed a relatively stable picture until August 2015, but as credit wariness expanded from September, in line with the highlighting of risks in vulnerable industries following the event at Daewoo Shipbuilding & Marine Engineering, the continuation of companies’ sluggish business conditions, etc., credit spreads for both prime (AA grade and above) and sub-prime (A grade and below) bonds widened sharply (Figure II-34).

In the primary market, entering the third quarter of 2015 credit concerns showed a picture of spreading to prime corporate bonds. A look at the net issuance amounts, which consider redemptions at maturity, finds that in the case of prime bonds their net issuance amount shrank greatly to 0.8 trillion won in the third quarter, from 3.0 trillion won and 3.6 trillion won respectively in the first and second quarters. With regard to net sub-prime bond issuance, the amount of net redemption declined from 3.6 trillion won in the first quarter of 2015 to 0.7 trillion won in the second quarter and 1.2 trillion won in the third. Meanwhile, the proportion in total corporate bond issuance accounted for by prime bonds fell to a large extent after recording 79.6% in the first quarter of 2015, to maintain levels of around 70% in the second and third quarters (Figure II-35).

In the secondary market, meanwhile, investment demand for sub-prime corporate bonds sustained a trend of decline from the first quarter of 2015. The share of sub-prime bonds in the total transaction amount fell from 25.2% in the first quarter to 22.6% in the second quarter and 19.0% in the third quarter (Figure II-36).

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II. Financial System Stability

3. Financial Markets

Korea’s Financial Stability Situations

Note: 1) Excluding ungraded bonds

Source: KOSCOM

*Figure II-36* Proportions in total corporate bond transactions, by credit rating

Note: 1) Excluding ungraded bonds

Source: KOSCOM
4. Foreign exchange soundness

Satisfactory foreign exchange soundness

Foreign exchange soundness has shown a satisfactory picture overall, with the volatility of the won/dollar exchange rate having risen to a small extent but the current account surplus continuing and the CDS premium recovering a stable trend. The external payment capacity is also solid, with most of the main soundness indicators this sector, including net external assets in debt instruments and the current account-to-nominal GDP ratio, having improved.

Concerns regarding the adverse impacts on Korea’s external soundness are however rising, as international financial market volatility expands in line with the monetary policies of the ECB, the U.S. Federal Reserve, and other central banks (Figure II-37).

Decline in net foreign exchange inflows

Looking at foreign exchange supply and demand conditions, a trend of a declining amount of overall net inflows has been seen as, after showing a trend of net inflows entering 2015, foreign exchange reversed to net outflows from the third quarter. This is because the net outflows in the financial account (excluding reserve assets and financial derivative assets) have increased, owing for example to a reversal to net outflows of foreigners’ securities investment funds even despite the continuing large-scale current account surplus (Figure II-38).

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41) The current account-to-nominal GDP ratio is an indicator showing foreign exchange supply and demand conditions due to the results of external trade, and is also useful for judging a country’s basic economic fundamentals.
Looking at the financial account by individual item, the net inflows of foreigners’ domestic investment (liabilities) increased in the second quarter of 2015, as inflows of foreigners’ securities investment funds grew, but in the third quarter foreigners’ securities investment funds reversed to net outflows and banks’ short-term borrowings also reversed to a large-scale net outflow as banks redeemed them (Figure II-39).

The net outflows of external investment by residents (assets) meanwhile expanded greatly in the second quarter of 2015, on an increase in overseas securities investment by institutional investors for example, but in the third quarter they decreased to a large extent as the amount of investment declined again (Figure II-40).

Korea’s net external assets (external assets in debt instruments - external debts) sustained their trend of increase even after the second quarter of 2015. They grew by 29.4 billion dollars in the second quarter and by 19.6 billion dollars in the third quarter also, and as of the end of September recorded 312.9 billion dollars (Figure II-41).
External assets in debt instruments expanded to a considerable extent (33.8 billion dollars) in the second quarter, and grew by 5.1 billion dollars in the third quarter as well to stand at 722.0 billion dollars as of the end of September. By individual sector, the external assets in debt instruments of the general government declined by 0.7 billion dollars during the second to third quarters period, but the foreign exchange reserves of the central bank increased by 5 billion dollars. External assets in debt instruments of deposit-taking institutions increased by a substantial amount of 22.0 billion dollars, centering around their management of foreign currency loans and foreign currency deposits, while those of the other sectors grew by 12.6 billion dollars during this same period on international debt securities investment by institutional investors (Figures II-42, II-43).

External debt meanwhile increased temporarily in the second quarter of 2015 (+4.4 billion dollars), but entering the third quarter fell substantially again (-14.6 billion dollars) and as of the end of September stood at 409.1 billion dollars. By individual sector, between the second and third quarters external debt of the general government and the central bank contracted by 9.8 billion dol-
lars, owing mainly to a decline in the balance of foreigners’ debt securities investment, while the external debt of deposit-taking institutions also fell by 1.2 billion dollars. External debt of the other sectors in contrast showed an increase of 0.8 billion dollars (Figure II-44).

Satisfactory external payment capacity

The external payment capacity has sustained its favorable level. The short-term external debt-to-foreign exchange reserves ratio and the proportion of short-term in total external debt had increased temporarily at the end of June 2015, but afterwards showed declining trends and sustained good conditions. As of the end of September the short-term external debt-to-foreign exchange reserves ratio stood at 32.5% and the proportion of short-term in total external debt at 29.2% – both satisfactory levels. The ratio of total external debt to nominal GDP as well, at 29.6% as of the end of September, had also continued its trend of decline (Figure II-45).

Favorable domestic bank foreign currency funding conditions

Domestic banks’ foreign currency funding conditions did worsen temporarily in the second half of 2015, as concerns arose about the likelihood of a policy rate hike by the U.S. Federal Reserve and about the economic slowdown in China, but they have shown a generally favorable picture. The spread on long-term foreign currency borrowings showed a somewhat worsening picture, in rising to 79bp in September 2015 for instance, but since October has shown slight fluctuations at around the 60bp level, on favorable foreign currency liquidity conditions due to the continuing current account surplus. The rollover ratio (amount of newly extended loans / amount of loans maturing) has on the other hand shown a stable picture, exceeding 100% on average in the July to November 2015 period (Figure II-46).
Domestic banks’ CDS premium has also shown a satisfactory level. It reversed to an upward trend from June 2015, on the effects of the difficulties in the Greek debt negotiations, the economic unrest in China and other EMEs, etc., and rose to 96bp by the end of September, but then fell from October, all the way to 81bp as of the end of November, on the delay in its policy rate hike by the Fed, the reduction in interest rates in China, etc. The FX swap rate (3-month) showed a declining trend during the first half of 2015, due to a narrowing of the domestic-to-foreign interest rate differential in line with the monetary policy divergences between Korea and the U.S. to the expansion in overseas securities investment by residents, and so on, but in the second half it rebounded, as non-resident net purchases of forward exchange increased on expectations of Korean won weakening due to worries about the economic slowdown in China, and has since then shown small-scale fluctuations (Figure II-47).

<Figure II-46> Domestic banks’ foreign currency borrowing rollover ratio, and spreads on short- and long-term borrowings

<Figure II-47> CDS premium and foreign exchange swap rate

Net outflows of foreigners’ securities investment funds

Since June 2015 global investment funds have shown large-scale changes in their in- and outflows, but a general pattern of inflows to advanced countries and outflows from emerging market economies has appeared. Outflows have been seen as investor risk aversion has intensified - owing to concerns about a Grexit in the May to June 2015 period, to worries about economic unrest in EMEs following the slowdown in economic activities in China from August, and so on. In particular, the amount of global investment funds that flowed out from EMEs in August ($37.2 billion dollars) was the largest since the $32.2 billion dollar out-
flow recorded in June 2013. In October, as expectations of a U.S. interest rate hike within this year weakened temporarily, global investment funds did reverse to inflows, but since November they are showing pictures of turning around to outflows as the likelihood of an interest rate hike by the U.S. Fed has emerged again (Figure II-48).

Foreigners’ securities investment funds in Korea have also been influenced by these changes in global funds flows, and shown a picture of expanding in- and outflow volatility. Foreigners’ securities investment funds notably showed outflows from June 2015, due to the international financial market unrest resulting from factors such as concerns about a Grexit and about a policy rate hike by the U.S. Federal Reserve and economic instabilities in EMEs. In October foreigners’ securities investment funds did show a net inflow as global investment sentiment improved, but in November they reversed again to outflows as the likelihood of a policy rate hike in the U.S. grew (Figure II-49).

Looking at the in- and outflows of foreigners’ securities investment funds across the different investor types, public funds including central banks and sovereign wealth funds have shown trends of stability, while private funds have shown large-scale net outflows since June 2015, centering around hedge funds and securities companies. Since October small-scale net inflows and net outflows have appeared, depending for example on expectations related to the policy rate hike by the Fed (Figure II-50). Meanwhile, investors from oil-producing countries have since August 2015 shown trends of withdrawing their investment funds, especially stock funds, in line with their deteriorating government finances due to the on-going low oil prices. As suggested by the recent tendencies of the major investors who have withdrawn their domestic securities investments, foreigners’ securities investment funds are expected to be influenced greatly for the time being by changes in external conditions. Especially, short-term investors like...
hedge funds can respond sensitively to major economies’ monetary policy stances, and there is a large possibility of raw material-exporting countries withdrawing for now their funds invested in domestic securities, owing to deteriorations in their fiscal soundness stemming from the international raw material price declines.

**Figure II-50: Foreign investor securities fund flows**

Source: The Bank of Korea
5. Financial Market Infrastructure

Satisfactory payment and settlement system stability

The settlement risks of BOK-Wire+ and other major payment and settlement systems have been managed stably. The over-the-counter and exchange-traded markets of the large-value payment system and the securities settlement system have been operated smoothly, with indicators of risk improving for example. The foreign exchange and retail payment systems have also shown generally stable pictures (Figure II-51).

Favorable large-value settlement system stability

In line with increases in securities transactions, for example in institutional RPs, the average daily amount of settlement over BOK-Wire+, which provides final settlement services for settlement of call, retail, securities and foreign exchange transactions between financial institutions, increased by 9.5% – from 256.0 trillion won in the first quarter of 2015 to 280.2 trillion won in the third quarter.

Among settlements made through BOK-Wire+, the proportion (value basis) carried out near the closing time (16:00~17:30) fell slightly, in line for example with a change in the CLS (continuous linked settlement) settlement hours (4~6 p.m. → 3~5 p.m.) during the summertime period (end-March to end-October). The maximum intraday overdraft cap exhaustion rate and the proportion of payment orders in queue for settlement, which reveal the levels of secured settlement liquidity of BOK-Wire+ participant institutions, have shown generally favorable pictures (Figure II-52). Since the second quarter of 2015 there have been zero cases of BOK-Wire+ operating hours extension for reasons such as computer system failures at participant institutions (Figure II-53).
Generally stable retail settlement system operation

The average daily amount of settlement in the retail payment systems operated by the Korea Financial Telecommunications & Clearings Institute increased by 7.7%, from 57.3 trillion won in the first quarter of 2015 to 61.7 trillion won in the third, owing to a steady expansion in electronic funds transfers through Internet and firm banking for example.

The number of cases of net settlement participants’ net debit cap utilization rates exceeding the warning level (70%) rose from the second quarter of 2015, in line with factors such as temporary large-scale fund transfers due to some companies’ subscriptions to public offerings and the related refunds. The average maximum net debit cap utilization rate showed a similar trend as well (Figure II-54).

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Firm banking is a financial transaction system for corporate use provided through their computer systems by financial institutions, in which they supply firms services such as settlement of the prices of goods and management of funds.

In the case of the retail payment systems, including the ATM network system, the interbank remittance system and the electronic banking system, the payees are paid immediately but the subsequent credits and debits across financial institutions are netted and settled on the following business days at the designated time (11:00) through BOK-Wire+, with the result that credit is provided between financial institutions. To control net settlement-related risks in the retail payment systems, the Bank of Korea requires participants to independently establish ceilings (net debit caps) on their unsettled net debit positions, and provide collateral securities worth at least 30% of these ceilings.
The amount of collateral securities provided by participant institutions to guarantee fulfillment of net settlement is exceeding the level required\(^\text{44}\) by the 5Core Principles for Systemically Important Payment Systems,\(^\text{ii}\) (Figure II-55),\(^\text{45}\)

<Figure II-55> Adequacy of collateral securities

![Graph showing adequacy of collateral securities](image)

Notes: 1) Total settlement obligation of two participants with largest individual net payments on day of largest net payment during the quarter  
2) Total assessed value of collateral on day of largest net payment during the quarter  
Source: The Bank of Korea

Smooth securities settlement system management

The daily average amount of settlement in the securities settlement systems operated by the Korea Exchange and the Korea Securities Depository increased by 19.2% between the first and the third quarters of 2015 – from 76.8 trillion to 91.5 trillion won, centering around institutional RPs. The proportions of payments for settlement of exchange-traded and over-the-counter stock and government bond transactions made after the settlement deadlines have declined since the second quarter of 2015 (Table II-2).

<Table II-2> Proportions of payments made after settlement delay penalty deadlines

<table>
<thead>
<tr>
<th></th>
<th>Payment deadline(^1)</th>
<th>Penalty deadline(^2)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>Exchange-traded stocks</td>
<td>16.00</td>
<td>16.00</td>
</tr>
<tr>
<td>Exchange-traded government bonds</td>
<td>16.00</td>
<td>17.00</td>
</tr>
<tr>
<td>OTC stocks(^3)</td>
<td>16.50</td>
<td>16.50</td>
</tr>
</tbody>
</table>

Notes: 1) Settlement deadline under system operating rules  
2) Deadline after which settlement delay penalty assessed  
3) Stock-trading institutional investors  
Source: The Bank of Korea

The proportions of free-of-payment (FOP) settlement of over-the-counter bonds and institutional RPs have maintained stable trends since 2014 (Figure II-56).

<Figure II-56> Shares\(^4\) of FOP settlement

![Graph showing shares of FOP settlement](image)

Note: 1) Proportion in total settlement value (OTC bonds and institutional RPs) of settlements not processed through DvP system  
Source: The Bank of Korea, Korea Securities Depository

\(^4\) Principle V of the 5Core Principles for Systemically Important Payment Systems,\(^\text{ii}\) announced by the Committee on Payments and Market Infrastructures (CPMI) in January 2001, recommends that a system in which multilateral netting takes place be capable of ensuring the timely completion of daily settlements even in the event of inability to settle by the two participants with the largest individual settlement obligations.

\(^5\) In the 5Principles for Financial Market Infrastructure (PFMI), newly established in 2012, it is required that a DvP payment system that explicidy guarantees settlement, whether that guarantee is from the FMI itself or from its participants, should maintain sufficient financial resources to fully cover current and potential future exposures using collateral and other equivalent financial resources. The Bank of Korea is thus now undertaking an initiative to overhaul the collateral arrangements in order to satisfy these new requirements.
Maintenance of stable foreign exchange settlement risk

Foreign exchange settlement is carried out through the interbank foreign exchange transaction network, the CLS payment-versus-payment (PVP) system\(^{46}\), and the domestic foreign currency funds transfer system\(^{47}\). Among this, the daily average amount of foreign exchange settlement through the CLS PVP system rose by 0.6% between the first and the third quarters of 2015, from 56.7 billion to 57.0 billion dollars.

The proportion of foreign currency settlements carried out through PVP system has fallen since the first quarter of 2015, owing for example to an increase in transactions involving the Chinese yuan, a non-CLS settlement currency, but has still maintained a high level in the 70% range (Figure II-57). In the case of the domestic foreign currency funds transfer system, the amount of foreign currency overdraft use\(^{48}\) relative to the total foreign currency funds transfer value showed a stable picture as well during that same period (Figure II-58).

\(^{46}\) To address time differences between countries, which are a fundamental cause of foreign exchange settlement risk, CLS (Continuous Linked Settlement) Bank settles most transactions during a designated settlement period (07:00~12:00 CET). CLS means that the actual funds transfers are continuously linked and processed within this settlement period between the accounts of settlement member banks and CLS Bank held with the central banks handling the currencies concerned. At present the CLS PVP system is connected to the large-value payment systems (including BOK-Wire+) run by the central banks issuing the 17 CLS settlement currencies.

\(^{47}\) This is a system by which many domestic banks handle their foreign currency funds transfers through foreign currency deposit accounts in the U.S. dollar, the euro and the Japanese yen opened at domestic operating institutions (KEB Hana Bank, Kookmin Bank, Shinhan Bank and Woori Bank), making possible the simultaneous transfer of funds. Regarding the system for foreign currency funds transfers related to the Chinese yuan, the Seoul branch of China’s Bank of Communications has been designated by the People’s Bank of China as the yuan currency clearing bank in Korea, and began the related operations from November 2014.

\(^{48}\) These overdrafts are temporary funds provided without any interest charges by the institutions operating the foreign currency funds transfer system, for example for corporations’ large-value foreign currency deposit withdrawals and in-/exports companies’ urgent foreign exchange settlement. From the time it provides an overdraft up until the time when it is notified of the completion of final settlement by the overseas foreign exchange bank concerned, the operating institution providing this temporary settlement liquidity is exposed to foreign exchange risk stemming from domestic-overseas time differences.
In the retail payment systems operated by the Korea Financial Telecommunications and Clearings Institute (KFTC), including for example the Electronic Banking System and the Interbank Remittance System, a transfer from a payer is immediately deposited into the beneficiary’s account for withdrawal. The subsequent interbank settlement is however only completed at a designated time (11:00) on the following business day, based on the Deferred Net Settlement (DNS) arrangements employed by these systems.

This fast payment scheme is very convenient from the customers’ perspective, in that it allows a beneficiary to withdraw funds immediately. The beneficiary’s bank is however exposed to credit risk due to its inability to recover from the payer’s bank the funds paid out until net settlement has been completed. The Bank of Korea has since 1997 therefore been operating a risk management arrangement involving the establishment of net funds transfer limits (net sender caps) for individual banks, a requirement that they provide collateral sufficient to cover these caps, and the sharing of losses among banks in events of collateral deficiency. In consideration however of the recommendation in the 2001 CPMI standards, that a payment system maintain collateral sufficient to cover the default of the one participant that would cause the largest aggregate credit exposure to the system, as well as the collateral burdens on banks, the Bank of Korea obliges banks to post collateral equivalent to 30 percent of their net sender caps.2) However, it has been noted that not only the current retail payment systems have a fundamental limit in that it provides only incomplete coverage of credit risk, but it has also worked as a factor discouraging active risk management by system participants through means such as reducing their net sender caps. That is, when participants need to process large-value payments they prefer using the Electronic Banking System rather than BOK-Wire+, which entails no settlement risk stemming from time differences between payment and settlement, since the collateral burden of the Electronic Banking System is not so high and there are minimal immediate funding liquidity burdens. Consequently, the relevant risk is embedded in

1) The Core Principles for Systemically Important Payment Systems (Committee on Payment and Settlement Systems BIS, 2001). These standards have since been replaced by the Principles for Financial Market Infrastructures (CPMI-IOSCO, 2012), the new international standards.
2) The ratio was originally set at 10% in 1997, and subsequently raised to 20% in 2001 and 30% in 2002.
the current system. With regard to the net settlement systems, however, the PFMIs published in April 2012 have significantly raised the credit and liquidity risk management requirements, obliging FMIs to cover their current and (where they exist) potential future exposures to each participant fully with a high degree of confidence using collateral and other equivalent financial resources.

For implementation of the increasingly stringent international standards related to payment and settlement systems, the Bank of Korea is pursuing reforms of the relevant arrangements to encourage more active risk management by participants and to enhance their credit and liquidity risk management. First, the Bank plans to revise upward the ratio of collateral to the net sender cap, from the current 30% to 50% in 2016, and to gradually increase the ratio up to 100% in consideration of financial market conditions each year.

Given the possibility of increased collateral demands on financial institutions due to the global financial reform initiatives, raising the collateral-to-net sender cap ratio while keeping the current settlement arrangements in place would put banks under considerable pressures. The Bank of Korea is thus pursuing a measure to reduce participants’ credit risk by linking the Electronic Banking System to BOK-Wire+.

After establishment of the new system directly linking these two systems, batch processing of large-value funds transfers exceeding one billion won, requested by customers via Internet banking for example, will be automatically carried out through the linked system.

Use of this new system will reduce financial institutions’ exposures to credit risks stemming from net settlement of funds transfers made via the Electronic Banking System, and thus further reduce the collateral requirements stemming from such exposures. The system will in addition allow customers to make large-value funds transfers exceeding one billion won at one time via Internet banking, thus greatly improving their convenience.3)

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3) In view of financial institutions’ credit risks arising from net settlements, the Electronic Banking System currently places a limit of one billion won for each fund transfer processed through it, large value funds transfers are accordingly divided up into one billion won units, and transferred as such through the system.
Analysis of Financial Stability Issues

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I. Effects of Population Aging on Household Debt, and Potential Risks

1. Background

Population aging is progressing rapidly in Korea1), as the productive population (ages 15 to 64) declines and the elderly population aged 65 and above expands greatly due to factors such as the continuing low birthrate and increasing longevity.2) In line with this, the asset accumulating age cohort (ages 35 to 59), the core group with high demand for debt, is also expected to shift to a decline from 2018. It is predicted that population aging will not only cause a drop in vitality in the economy as a whole, but have a considerable effect on household debt as well through diverse channels such as a contraction in the core group of household loan borrowers and reductions in debt by the retired elderly group. Asset market shocks can occur in the process of the retired elderly responding to their declines in income by deleveraging their debts, and risks can arise such as an increasing number of elderly vulnerable households that are unable to repay their debts smoothly. In particular, since the Korean Baby Boomer generation (born between 1955 and 1963) is approaching large-scale retirements within the next 10 years, substantial changes in the overall household financial structure are expected. Against this background, for this article we have examined the effects of population aging on household debt as well as the potential risks in the process of debt deleveraging, through comparison with cases in major countries and analysis of fluctuations in the debts, incomes and assets of households in the various different age groups, utilizing micro data3), and then presented some policy implications.

1) According to the U.N., countries’ stages of population aging are classified depending upon the proportions of their populations aged 65 years and above, into “aging societies” (7% to less than 14% of population aged 65 or above), “aged societies” (14% to less than 20%), and “hyper-aged societies” (20% and more). Korea, after having become an aging society in 2000, is expected to become an aged society in 2018 (14.5%) and a hyper-aged society in 2026 (20.8%).

2) For the micro data on liabilities, assets and incomes of individual households the Survey of Household Finances and Living Conditions (2010 to 2014), the Korean Labor & Income Panel Study (KLIPS) (1999 to 2012) and data from credit rating agencies could all be used, but because the KLIPS sample size is small and its data extends only until 2012 so that it is not reflecting recent conditions, and in the credit rating agencies’ data the statistics on household assets and incomes are insufficient, the data used was that from the Survey of Household Finances and Living Conditions, whose sample size is relatively large and which provides the recent statistics on household liabilities, assets and incomes.
2. Effects of Population Aging on Household Debt

Financial liability holding behaviors, by age group

According to the Life-Cycle Model (Franco Modigliani, 1954), in evening out their consumptions over their entire lives households manage consumption by accumulating assets until their middle ages when their incomes are increasing, and then using the assets that they have accumulated in their elderly years. In line with the heightened access to finance with the development of the financial industry since the 1990s, the household behavior of expanding debt greatly until before retirement, for consumption and asset accumulation, and after that then redeeming debt through disposing of assets following retirement, has intensified. Noting this point, the results of dynamic analysis of changes in the financial debts, assets and incomes of Korean households, by age, showed that households expand their financial debts (excluding rental guarantee deposits, the same hereafter) until the age of 57, after which they are reducing them from age 58, just after their first round of retirement. In particular, compared to the time between the ages of 58 and 64, just after their first rounds of retirement, households were found to be reducing their financial liabilities most greatly during the period of their second rounds of retirement between the ages of 65 and 70, just after their children are leaving home (Figure I-2).

Note: 1) Due to data limitations the same households’ entire lifetimes cannot be studied when analyzing the dynamic changes in household financial liabilities, assets and incomes, and so we must rely on the average household data for the different age groups. There is thus a limitation in that the amounts of dynamic changes in financial liabilities, assets and incomes of individual households can differ across generations, but from the aspect of the trend flows this is judged to be no big problem.

5) Household debt in the household credit statistics and the flow of funds statistics, which are macroeconomic indicators, is based on financial debt, while in the Survey of Household Finances and Living Conditions it is divided into financial debt and total debt with rental deposit funds included in financial debt. In consideration of the point that rental deposit funds, being mutual transactions among households, are not included in the financial debt in the macroeconomic indicators, they are also excluded here.
When the changes in households’ debts due to aging were compared with those in their incomes and assets, financial debts appeared to be moving in the same direction as incomes and real assets. Until retirement the extent of increase in financial liabilities exceeded that in income, and after retirement the extent of decline in financial liabilities exceeded that in income (Figure I-3). This suggests that households are expanding their financial debts more than the increases in their incomes until before retirement, and using them for consumption or asset accumulation. In the case of real assets, they increase to a greater extent than financial liabilities until retirement, then decline to a larger extent than financial liabilities after retirement — a phenomenon judged to be because real assets are being disposed of after retirement and used for the repayment of financial debts. Notably, between 65 and 70 the scales of reduction in financial liabilities and real assets are large, which appears to be because, after second round retirements and children’s moving out, there are many cases of large-scale housing disposal and repayment of financial liabilities followed by moving into smaller housing. Financial assets increase even after retirement, albeit to a small extent — due apparently to the residuals after repayment of financial debts through real asset disposals being held in financial assets, as well as to increasing receipts of severance payments and public pensions (Figure I-4).

6) This is also supported by the results of the Korea Housing Survey (Ministry of Land, Infrastructure and Transport, 2014), showing that, in the cases of debt holding families with plans to move, they are moving to housing of higher prices than that they are moving from until their 50s, while in their 60s and above they are moving from higher to lower priced housing.

<table>
<thead>
<tr>
<th>30s</th>
<th>40s</th>
<th>50s</th>
<th>60s</th>
<th>70s and above</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current residential housing price</td>
<td>19,627</td>
<td>24,193</td>
<td>25,508</td>
<td>33,264</td>
</tr>
<tr>
<td>Planned price of housing moved to</td>
<td>25,492</td>
<td>28,275</td>
<td>30,123</td>
<td>19,508</td>
</tr>
</tbody>
</table>

Note: | Based on average yearly changes in households’ debts and incomes by age group, between 2010 and 2014
Sources: The Bank of Korea, Statistics Korea (Survey of Household Finances and Living Conditions)
The results of dynamic analysis of changes in households’ financial liabilities, assets and incomes are reflected in the cross-sectional data for the different age groups. A look at the average per-household amounts of financial liabilities held in the different age cohorts, as of the end of March 2014, shows that they increase until the householders are in their 50s then shows a picture of declining when they reach their 60s. The proportions of households holding financial liabilities also fall sharply, from 65.1% of households in their 50s to 48.2% of those in their 60s and 20.8% of those aged 70 and above, which shows that households are repaying their debts as they age (Figure I-5).

From the aspect as well of the financial debt-to-disposable income ratio (the financial debt ratio hereafter) and the financial debt-to-financial assets ratio7), the rapid adjustment of debt by households after they reach their 60s can be confirmed. The financial debt ratio falls sharply from 109.8% for households in their 50s to 107.4% for those in their 60s and 91.7% among those aged 70 and above, and the financial debt-to-financial assets ratio from 46.8% for the 50s age cohort to 43.3% for households in their 60s and 32.5% for those 70 years old or more (Figure I-6). This is because the extent of decline in financial debt after retirement greatly exceeds that in income, while financial assets show a picture of increasing even after retirement.

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7) The household debt ratio (household debt to household disposable income, household credit statistics and national accounts basis) and the financial liabilities-to-financial assets ratio (flow of funds basis), both of which are macroeconomic indicators, stood at 137.6% and 44.9% respectively as of 2014, and there are thus differences with the micro data of the Survey of Household Finances and Living Conditions compiled based on questionnaire-type surveys.
Total household debt amount

Since as aging advances the population age group whose assets and liabilities are increasing declines and that whose liabilities and assets are contracting grows, population aging is expected to work as a factor causing a slowdown in the pace of increase in the overall household debt amount. In particular, those who are currently in their 50s and 60s, who are expected to reduce their financial debts in the future, now hold 44.8% of the total financial debt of Korean households. In addition, as these families reduce their financial liabilities more than the declines in their incomes, it is predicted that the rise in the household financial debt ratio will also be restrained. The relationship between population aging and the total household debt volume analyzed through micro data is showing a similar picture in the macroeconomic indicators as well. The rate of increase in household debt and the debt ratio (household debt to disposable income) are showing movements very close to those of the asset accumulating population. Until the mid-2000s the rate of household debt growth and the debt ratio both rose to large extents, along with the high rate of growth in the asset accumulating population, before their extents of increase then began slowing with the slowdown as well in growth of the asset accumulating population. When this is considered, the decline in the asset accumulating population from 2018 is seen as likely to work as a factor causing the rate of household debt expansion to slow (Figure I-7, I-8).

In the instances of major countries as well, population aging is analyzed as having worked as a factor causing reductions in the rates of household debt increase and in debt ratios. The results of panel model analysis

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8) As of end-March 2014 the proportions in total household financial liabilities accounted for by the different age groups were 18.5% by households in their 30s, 32.9% by those in their 40s, 32.5% by those in their 50s, 12.3% for the population in their 60s, and 3.8% by those in their 70s and above.
carried out on 19 OECD countries including Korea analyzed that both household debt growth rates and debt ratios have positive (+) correlations with the asset accumulating population. This means that, where other macroeconomic conditions such as economic growth and housing prices are the same, a decline in the asset accumulating age group can work as a factor restraining increases in the rate of household debt growth and in the debt ratio. It was found as well that, in major countries such as the U.S. and the U.K., at around the times when their asset accumulating populations peaked the rates of increase in their household debt and their debt ratios either slowed or declined (Figure I-9, I-10).

Household debt distribution

Households do not liquidate all of their financial liabilities at once but are holding them for considerable times, and so as the proportion of the elderly population grows in line with population aging the share in total financial debt taken up by the elderly age cohort is forecast to rise. If we consider only the changes in the population structure and calculate the future changes in the financial debt distribution by age group compared to the end of March 2014, the proportion of debt held by households in

### Table

<table>
<thead>
<tr>
<th>Household debt amount</th>
<th>Household debt ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP</td>
<td>0.86***</td>
</tr>
<tr>
<td>Real house price</td>
<td>0.47***</td>
</tr>
<tr>
<td>Asset accumulating population</td>
<td>1.12***</td>
</tr>
<tr>
<td>Employment rate</td>
<td>0.007*</td>
</tr>
<tr>
<td>Long-term real interest rate</td>
<td>-0.001</td>
</tr>
<tr>
<td>Constant term</td>
<td>-6.74</td>
</tr>
<tr>
<td>R²</td>
<td>0.57</td>
</tr>
</tbody>
</table>

Note: 1) ***, ** and * indicate statistical significances at the levels of 1%, 5% and 10% respectively, while figures in () are estimations using the proportions of the asset accumulating populations rather than their actual numbers.
their 60s and 70s shows a rise from 17.3% to 21.8% after five years and to 26.7% after 10 years (Figure I-11). In the case where the cohort effect on the change in population structure is also considered, however, the proportion of financial liabilities held by the elderly group appears to rise further. The cohort effect appears in the phenomenon, as can be seen in the U.S., of the average amount of debt of elderly families growing in accordance with aging. This is because (in Korea’s case as well), with the aging of the Baby Boomer generation, which holds much debt on average, these families’ financial liabilities are expected to be transferred to the elderly group in their 60s and above (Figure I-12).

Meanwhile, in the cases as well of advanced countries such as the U.S. and Canada, the shares in their total financial liabilities held by elderly households have increased greatly in accord with population aging (Figure I-13).

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10) Individual households are adjusting their financial debts as they move into higher age groups (aging affect), but the amounts of financial debt adjustment can differ across the different generations depending upon their economic environments and systems, and this is what is called the cohort effect.

11) In the 2000s, as the Korean macroeconomic situation worked in a direction leading to greatly increased household debt, the Baby Boomer generation’s average financial debt amount (50s age group: 48.89 million won in 2012, KLIPS) showed an extremely large level compared to the previous generation (50s age group: 20.46 million won in 2002, KLIPS). If this is considered, then when the Baby Boomer generation is in their 60s and 70s in the future, their average financial debt amount is expected to be large compared to that of families in their 60s and 70s at present.
3. Potential Risks

Factors burdening the real estate market

Here are worries that, if together with population aging the Baby Boomer generation engage actively in financial debt deleveraging after their retirements, this could work as a factor burdening the real estate market. Compared to the U.S., the proportion of real assets held by households in Korea is extremely high, and differently from the U.S., where the share of financial assets held relative to real assets rises the higher the age group, the degree of real asset concentration is deepening further. The proportion of real assets of Korean families in the 55~74 age group is not only greatly exceeding that in the U.S. at about 80%, but their financial liabilities-to-financial assets ratio is also at a level of two to three times that of U.S. families (Figure I-14). Notably, in the case of families aged 55~74 who hold financial liabilities, their financial liabilities-to-financial assets ratios range from 85 to 115%, and there can be families which in order to repay their financial debts cannot help but to dispose of their real assets (Figure I-15). Meanwhile, as supply-demand imbalances in the real estate market occur in line with the decline from 2018 in the asset accumulating population, the core group with demand for real estate, downward pressures on real estate prices can grow.
Further, the decrease in the asset accumulating population as well as the speed of aging in Korea are faster than those in advanced countries, and there are fears that households’ financial debt deleveraging will be concentrated over a short period of time. The projected extent of decline in the share of the asset accumulating age group in the 10 years after its peak (40.4%, in 2016), at 3.8% points, is about two times the major country average (2.0% points), and it is expected that the time required for moving from an aged society (2018) to become a hyper-aged society (2026) will be eight years — about four times faster than the major country average (31 years) (Figures I-16, I-17).

Looking at the time periods concerned, as debt deleveraging in line with population aging increases during the 2020~2024 period, when the amount of decline in the asset accumulating population and the amount of increase in the elderly population 60 years old and above are the greatest, the effects stemming from this are also expected to be large (Figure I-18).
Increase in aging families with weak financial soundness

In conditions of increasing debt deleveraging by the retiring age cohort in line with the advance of population aging, the number of elderly families with weak financial soundness can increase greatly in a case where, owing to real estate market shocks due to destabilizing factors domestically or abroad, together with the household income shocks, financial debt deleveraging by the elderly class cannot proceed smoothly.

Among all marginal households\(^\text{12)}\) (those vulnerable to drops in real estate prices and declines in income), 42.1% are in the 50~60 year age group, and it can be seen that the potential risks related to future financial debt deleveraging by these households are not small (Figure I-19).

If financial debt deleveraging after retirement is not accomplished sufficiently, there is a possibility of these elderly families’ financial soundness deteriorating. In the case of the elderly families 60 years old and above holding financial liabilities, as of 2014 their financial debt ratios were exceeding 200% and their debt service ratio was also at a level greatly exceeding 30% (Figure I-20).

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12) Marginal households are those with DSRs above 40% and net financial assets below 0%. For details refer to the June 2015 Financial Stability Report (Box I-2) and Current Status of Marginal Households.
In the case of elderly households, the qualitative structure of their debts as well as their employment conditions are also relatively fragile. From the aspect of qualitative debt structure, the proportions of bullet repayment loans and loans from non-bank financial institutions held by elderly families aged 60 and above are relatively high in comparison with those of families in their 30s and 40s (Figure I-21). From the aspect of employment conditions, meanwhile, as elderly families age the proportion of financially indebted families with regular employment becomes very low, while the proportions of self-employed business operators and the unemployed become high (Figure I-22).

If we look at the composition of incomes of elderly families aged 65 years and above, the proportion accounted for by stable transfer incomes such as pensions is 34.3%, while on the other hand the share of business income, wage income and property income, which are all sensitive to economic fluctuations, is 65.7%, and Korean households’
elderly income foundation is thus in a weak situation compared to foreign countries (Figure I-23).

4. Implications

There is seen to be a high possibility of the effects of population aging on household debt becoming full-scale from 2018, through a decline in the asset accumulating population and an increase in the elderly population aged 60 years and above. It is expected that the pace of increase in household debt will slow due to population aging, but there is a need to bear in mind the point that this is a result of factors such as households’ economic activity declining and financial debt deleveraging by elderly families, more than households’ income growth. Moreover, real estate prices can fall in the process of household repayments of debt after retirement, and if financial debt deleveraging is not smooth then elderly families’ financial soundness can weaken. The potential risk factors stemming from full-scale population aging will thus have to be responded to preemptively.

First, if real estate prices increase excessively and the high pace of expansion in household liabilities continues, then inasmuch as the negative effects of population aging can grow in the future, efforts for real estate market stability and household debt management will have to be sustained. Second, diverse efforts will have to be made to seek measures for minimizing shocks to the real estate market that can occur due to disposals of real assets for purposes of debt repayment. To this end, there is a need first of all to revitalize the system of reverse mortgages, through for example an expansion in the number of institutions dealing with them.13) At present the reverse mortgage system has a structure in which financial institutions’ reverse mortgage loans are being implemented under payment guarantees by the Korea Housing Finance Corporation, and not only will their use be limited by the capacity for payment guarantee of the KHFC, but the access to them is declining somewhat. There is thus a need for example for positively considering the diversification of institutions providing the

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13) With the number of marginal families in the 50–70 age range standing at 750,000, that of those who do not possess real estate except for their own residential housing, and thus have large potential demand for a reverse mortgage system, totals about 300,000. As of year-end 2014, however, the number of households that have used the reverse mortgage system was a mere 20,000.
payment guarantees, as well as measures promoting financial institutions’ independent provision of reverse mortgage loans. There is a need as well for encouraging households to change so as to view their housing not as tools for possession or for inheritance but instead as accumulated assets that can be actively used for consumption through use of the reverse mortgage system for example. Together with revitalization of the reverse mortgage system, a foundation must be built for an industry in which houses are purchased from elderly families and then rented out. For example, measures can be considered to promote the use of real estate investment trusts (REITs), which would purchase housing from elderly families for use in operation of rental businesses, while also establishing a related public real estate investment organization if needed.

Third, the system will have to be improved to ensure that households expand their shares of financial assets relative to their real assets. It is important to improve the taxation system to ensure that the holding of financial assets is more advantageous than that of real assets, and to guarantee a stable residential environment through an increase in the supply of public rental housing. There is a need as well for inducing an expansion in subscriptions to private pensions.\(^\text{14}\)

In addition, finally, in order to preserve elderly families’ incomes, reemployment will have to be induced through for example an expansion in public work and the creation of specially designed jobs for the elderly, while monitoring of the financial soundness of debt holding elderly households will also have to be strengthened.

\(^{14}\) As of the end of 2012 the income replacement rate of Korean private pensions (retirement pension + private pensions) was about 20% (Korea Insurance Research Institute estimate), a level far short of the rate (40%) recommended by international institutions such as the OECD.
II. Status of Chronically Marginal Firms, and Assessment

1. Background

As the slump in Korean companies’ performances since the global financial crisis has continued, concerns about defaults on corporate debt have been rising. In particular, marginal firms have seldom broken free from marginal statuses, especially in the shipbuilding, transportation and steel industries whose business conditions have deteriorated due to factors such as the slowdown in global economic growth and intensified competition with China. Against this background, for this article we have defined firms that was marginal firms each year and had also experienced marginal firm statuses before then as well between 2005 and 2014, as chronically marginal firms, and analyzed their risks of default. First, we have looked at the status of chronically marginal firms, and the background to their increase, and after examining the related potential risks to the real economy and the financial system we have presented some policy tasks for the promotion of effective corporate restructuring.

2. Status of Chronically Marginal Firms

Among companies subject to external audits, the proportion of chronically marginal ones has risen from 8.2% (1,851 firms) in 2009 to 10.6% (2,561 firms) in 2014 – 2.4% points more. As the number of companies newly included among chronically marginal firms exceeds that of those which have been normalized or shut down (an annual average 142), the number of chronically marginal firms has continually increased (Figure II-1).

1) Analysis was done of 27,995 non-financial corporations required to receive external audits under the Act on External Audit of Stock Companies. Marginal firms are firms that have had interest coverage ratios (Operating income / Interest expenses) below 100% for three consecutive years, and normal firms are defined as all those subject to analysis with marginal firms excluded.

2) Between 2009 and 2014 the proportion of marginal firms among all companies subject to external audits rose by 2.0% points (12.4% → 14.4%), and among total marginal firms the share of chronically marginal ones rose by 8.1% points (65.7% → 73.8%).

3) Includes companies from which obtaining financial information is impossible, due to their shutdowns or absorptions or mergers, to auditors’ refusals to disclose their opinions, and so on.
Looking at chronically marginal firms in line with the periods of their remaining in that status, among all such firms the proportions of those whose interest coverage ratios have been below 100% for five straight years and ten straight years are 64.4% (1,650 firms) and 10.0% (257 firms) respectively (Figure II-2).

In terms of the assets and liabilities held by chronically marginal firms, the numbers of their employees, as of the end of 2014 they stood at levels of 7.8% (239 trillion won), 14.1% (borrowings, bonds and trade credit, 228 trillion won) and 5.4% (191,000 persons) respectively of those of all companies subject to external audits. These proportions had all risen compared to the end of 2009, and the extents of increase in their liabilities (4.8% points) in particular were relatively large. This is because some large enterprises having large amounts of debt were newly included among chronically marginal firms (Figure II-3).

<table>
<thead>
<tr>
<th>Marginal Firm Asset and Liability Volumes, and Employee Numbers (trillion won, 10,000 persons, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asset amount</strong></td>
</tr>
<tr>
<td>Firms subject to external audit</td>
</tr>
<tr>
<td>2009</td>
</tr>
<tr>
<td>2014</td>
</tr>
</tbody>
</table>

Note: 1) Figures in ( ) are the proportions in the total figures for all firms subject to external audits.
Source: KIS-Value

Notes: 1) Proportion among all corporations subject to external audits
2) Normalized from marginal firm status
3) Corporations closed and merged, those for which financial information is lacking, etc.
Source: KIS-Value

6) Covering borrowings, corporate bonds, trade accounts payable (accounts payable, bills payable), other liabilities (advances received, accrued charges, liability reserve), etc.
7) Marginal firms' shares in total corporate assets, liabilities and employee numbers stood at 10.1% (312 trillion won), 17.4% (280 trillion won) and 7.5% (265,000 persons) respectively as of year-end 2014.
Looking at the situation based on company size, the proportion of chronically marginal firms among large enterprises is increasing rapidly compared to that among small and medium-size enterprises. While the share of chronically marginal firms among total large enterprises jumped by 4.2% points (6.6% → 10.8%) during the 2009~2014 period, that among SMEs rose by 2.1% points (8.5% → 10.6%) over the same span of time (Figure II-4). By industry, the extent of increase in the share of chronically marginal firms has been somewhat larger in the non-manufacturing sector (2009 10.8% → 2014 13.6%) than in manufacturing (5.2% → 7.2%). In the non-manufacturing sector the proportions of chronically marginal firms have increased most greatly in the transportation and construction industries, while in manufacturing it has been the shares of the shipbuilding and steel industries that have grown the most (Figure II-5).

6) Looking at the shares of chronically marginal firms in the various industries, those in the real estate (21.7%), wholesale & retail (9.1%) and construction (7.5%) industries account for high proportions.

<table>
<thead>
<tr>
<th>Proportions of chronically marginal firms, by industry (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real estate</td>
</tr>
<tr>
<td>21.7</td>
</tr>
</tbody>
</table>

Notes: 1) Based on numbers of companies at the end of 2014
2) Per-industry numbers of chronically marginal firms / Total number of chronically marginal firms
Source: KIS-Value
3. Background to Increase in Chronically Marginal Firms

Continuing slumps in corporate performance

As the sluggishness of growth and profitability since the global financial crisis has persisted, companies' debt repayment capacities have declined overall. After having slowed from 2011, the pace of growth in chronically marginal firms' sales reversed to a decline (-5.4%) in 2014, and their operating income-to-sales ratio has also sustained minus (-) figures as they have continually recorded operating losses. Considering the recent circumstances of an ongoing slump in domestic business activities while corporate performances are not improving7, the trend of growth in numbers of chronically marginal firms seems likely to continue for the time being (Figure II-6).

A look at the different industries finds business performances to have deteriorated greatly centering around the shipbuilding, transportation, steel and construction industries, and due to this the extents of increase in the shares of chronically marginal firms in these industries (based on numbers of companies) have exceeded the average for total industry (Figure II-7).

In particular, from the perspective of profitability chronically marginal firms are very vulnerable. A considerable percentage (71.2%) of chronically marginal firms have shown negative (-) operating income-to-sales ratios (2009~2014 averages), on top of which the proportions of those that have sustained situations of operating deficits or capital impairment for six straight years have also reached 23.7% and 14.6% respect-
Financial institution tendencies toward lending leniency

With the worsening of cash flows at chronically marginal firms due to their slumps in profitability, they are relying for their operating funds\(^8\) mainly on external borrowings. While normal firms’ debt ratios have on the one hand fallen, those of chronically marginal firms have continually risen since 2011. In particular, as some large enterprises with sizeable amounts of debt have been included among chronically marginal firms recently, the chronically marginal firm debt ratio rose to a large extent from 173.4% in 2013 to 260.2% in 2014. Chronically marginal firms’ borrowings-to-total assets ratio (2014 56.3%) has also been at a level more than twice that (24.6%) of normal enterprises (Figure II-9).

The fact that chronically marginal firms have been able to continue their external borrowings in this way appears to be a result mainly of financial institutions’ for-\n
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\(8\) Proportions of chronically marginal firms\(^\circ\) experiencing operating deficits and capital impairment, by frequency\(^7\)

<table>
<thead>
<tr>
<th></th>
<th>0 times</th>
<th>1 time</th>
<th>2 times</th>
<th>3 times</th>
<th>4 times</th>
<th>5 times</th>
<th>6 times</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating deficits</td>
<td>8.2</td>
<td>7.7</td>
<td>9.9</td>
<td>14.0</td>
<td>20.6</td>
<td>15.9</td>
<td>23.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Capital impairment</td>
<td>53.0</td>
<td>8.6</td>
<td>6.9</td>
<td>6.0</td>
<td>6.4</td>
<td>4.5</td>
<td>14.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Notes: 1) End-2014 basis 2) During 2009–2014
Source: KIS-Value

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\(9\) Net working capital ratios\(^8\)

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal firms</td>
<td>6.6</td>
<td>6.2</td>
<td>6.4</td>
<td>7.4</td>
<td>9.1</td>
<td>8.7</td>
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<tr>
<td>Chronically marginal firms</td>
<td>-14.0</td>
<td>-14.0</td>
<td>-15.0</td>
<td>-17.2</td>
<td>-16.7</td>
<td>-20.8</td>
</tr>
</tbody>
</table>

Note: 1) (Liquid assets – Liquid liabilities) / Total assets
Source: KIS-Value
bearance lending. In connection with this, there is a likelihood that financial institutions’ credit appraisals of companies and their management of asset soundness are being carried out leniently. Looking at banks’ credit assessment grades and asset soundness classifications (five domestic bank basis) for firms with very weak financial conditions even compared to other chronically marginal firms (three consecutive years of operating deficits as well as debt ratios above 200%), the proportion of credit classified as B grade and above is 55.6%, while that of credit classified as normal is reaching 63.7% (Figure II-10).

Delays in corporate restructuring

Due to limitations in corporate restructuring in terms of the system and conditions, chronically marginal firms’ management normalizations or market exits cannot be achieved smoothly. The number of firms chosen by their creditor banks for restructuring is steadily increasing, but the actual pushing ahead with restructuring is slow. Among companies that applied for workout programs or rehabilitation proceedings between 2009 and 2013, the proportion of those that had not yet finished the restructuring process by year-end 2014 came to 52%. In particular, the situation of progress in workout programs of large enterprises is very sluggish compared to that seen in rehabilitation proceedings. Moreover, even when companies have been selected for workout programs by their creditor banks, situations are occurring of these companies not applying for and evading these programs (Figure II-11).

Notes:

10) Financial institutions have tendencies of helping to prolong lives of companies through extending their loan maturities even if their capacities for principal repayment are insufficient (as long as they are not delinquent on their interest payments). This is because, if companies are unable to repay the principal at the time of loan recovery then non-performing loans occur, and financial institution profitability deteriorates due to burdens of loan loss reserve accumulation.

11) Banks set up and operate their own credit appraisal models for assessing companies’ debt repayment capacities, and these models have to be properly linked with asset soundness classifications (Banking Supervision Regulations, Article 27).

12) Workout programs have the advantage that supporting firms with new capital is easy, but in the cases of large enterprises instances of restructuring being delayed frequently occur due to conflicts of interest among the bond holding institutions in line with the complex relationships between claims and obligations.

13) Among firms selected for workout programs resulting from their creditor institutions’ credit risk evaluations of large enterprises, the actual rate of application for workout programs (2010 88.1% → 2012 54.6% → 2014 33.3%) has continually declined (Goo Jeong Han, Kim Dong Hwan and Kim Seok Gi, “Plan for Regular Legislation of the Corporate Restructuring Promotion Act”, Korea Institute of Finance, November 2014). This is judged to be a result in part of the decline in applications for workout programs by firms reluctant to replace their management, as the agents applying for workout programs have been changed from the creditor institutions to the firms themselves with the revision in 2011 of the Corporate Restructuring Promotion Act.
Until now restructuring through the capital markets, involving private equity funds (PEFs) for example or the non-performing loan market, has not been active. Inflows of funds to PEFs are continuing, but the amount (new contract basis) of corporate financial stabilization PEF contracts for management normalization of restructured enterprises is at a level below one trillion won. Due to a shortage of large-scale PEFs and professional operating personnel, moreover, rather than strategic investment for the purposes of corporate buyouts most PEF investment is financial investment, where after the acquisition of equity the buyers just monitor the existing management group.14) In the case of the non-performing loan market as well, the quantity of supply is limited, while transactions are also being carried out with a priority put on small-scale real estate collateralized bonds, and transactions in large-scale bad loans of restructuring firms are at a minimal level.15) The amount of domestic banks’ sales of bad loans has been sustaining a trend of decline since 2012 (Figure II-12).

There is a likelihood that the expanded government policy support since the global financial crisis may have caused delays in corporate restructuring. The provision of credit to chronically marginal firms by specialized banks and policy finance-related institutions16) has increased greatly, from 22.8

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14) During the 2005~2014 period the proportion of PEF investment made for purposes of corporate takeovers was 25.7% (177 out of 690 cases of investment) (Financial Supervisory Service, March 2015).

15) Bad loans are sold mainly as NPL ABSs, and the majority of the assets underlying the ABSs comprise real estate-collateralized loans (2014 96.0%). During 2014 the bond value per bad loan (per borrower) sold through NPL ABSs was an average 240 million won (1.13 billion won).

16) Specialized banks include Korean Development Bank, Korea Eximbank, Industrial Bank of Korea, the National Agricultural Cooperative Federation and the National Federation of Fisheries Cooperatives, while policy finance-related institutions include Korea Credit Guarantee Fund, Korea Technology Finance Corporation, Korea Trade Insurance Corporation, Korea Finance Corporation, Small and medium Business Corporation, the Korea Federation of SMEs, etc.
trillion won in 2011 to 43.7 trillion won as of the end of June 2015. The majority of this is concentrated on large enterprises, while the amount supplied to SMEs has declined somewhat even despite an increase in the number of firms receiving policy funds (Figure II-13).

4. Related Potential Risks to the Real Economy and Financial System

Constraints on real economic growth

Compared to the case with normal firms the rates of growth in tangible assets and numbers of employees at chronically marginal firms are relatively low, and as the number of these firms increases they can have negative impacts on facilities investment and employment in the economy as a whole. The rate of tangible asset growth at chronically marginal firms has, with the exception of 2011, been sustaining a lower level than at normal companies, and in 2014 reversed to a minus figure (-4.3%). Employee numbers also, while increasing at normal companies, have sustained trends of decline at chronically marginal firms (Figure II-14).17)

17) The higher an industry’s share of chronically marginal firms, the more it has seen limitations in investment and in its creation of jobs. By industry (based on eight manufacturing industries), the coefficients of correlation between the proportions of chronically marginal firms (end-2014 basis) and the rates of increase in tangible assets and in employee numbers (2010~2014 averages) are -0.73 and -0.84 respectively.
Chronically marginal firms’ productivity is low, and they are causing an inefficient distribution of resources and can work as a factor limiting economic growth. Chronically marginal firms’ labor productivity (value added per person) is at a level just 60% that of normal enterprises, and the pace of its improvement is also relatively inadequate. These companies’ ratio of gross value added to total assets is also running at a level less than one-half that at normal firms. Chronically marginal firms’ capacity for creation of value added is low, but as their number increases like this the share of the resources of the economy as a whole that they take up is also rising (Figure II-15).

Decline in financial institution management soundness

At any time of occurrence of domestic or external shocks, defaults on loans to chronically marginal firms can spread and lead to financial system instability as financial institutions’ asset soundness worsens. As of the end of June 2015 the amount of credit supplied to chronically marginal firms (total financial institution basis) stood at 101.5 trillion won, to account for 11.8% of credit supplied to all companies subject to external audits. Of this, the amount supplied to large enterprises was 69.3 trillion won, more than twice that to SMEs (32.2 trillion won), and the proportion of credit supplied to the transportation, shipbuilding, real estate and construction industries, where the shares of chronically marginal firms are high, was 64.0% (Figure II-16).

18) The proportions (among those of all companies subject to external audits) of tangible assets and employee numbers of chronically marginal firms increased from 6.4% and 4.2% respectively in 2009 to 9.4% and 5.4% respectively in 2014.
19) The amount of credit supplied to chronically marginal firms belonging to large corporate groups was 37.4 trillion won. By financial institution type, specialized banks (63.2%) accounted for a high proportion of this, and by form of credit provision loans (61.3%) and payment guarantees (30.7%) comprised the majority.

Proportions of credit supply to large corporate group-affiliated chronically marginal firms, by financial institution type and form of credit

<table>
<thead>
<tr>
<th>By financial institution type</th>
<th>By form of credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial banks</td>
<td>Loans</td>
</tr>
<tr>
<td>Specialized banks</td>
<td>Payment guarantees</td>
</tr>
<tr>
<td>Non-banks</td>
<td>Securities</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
</tr>
<tr>
<td>26.2</td>
<td>61.3</td>
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<tr>
<td>63.2</td>
<td>30.7</td>
</tr>
<tr>
<td>9.9</td>
<td>4.5</td>
</tr>
<tr>
<td>0.7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Note: 1) End-June 2015 basis
Sources: Korea Federation of Banks, KIS-Value
The forms of the credit supplied and the proportions of the types of financial institutions supplying it differ depending upon the sizes of the chronically marginal firms concerned.

Looking first at the proportions of credit supplied by financial institution type\(^20\), in the case of large enterprises, specialized banks (49.7%) are accounting for a level of one-half of the credit supplied, while for SMEs it is non-bank financial institutions making up the highest share (39.3%). By the form of credit supply, for SMEs the majority is loans (88.2%), while among large enterprises the proportion of payment guarantees (22.1%) has also been relatively high (Figure II-17).

Chronically marginal firms’ default risks are showing higher levels than the average for corporations overall. At the end of June 2015 the chronically marginal firm delinquency rate (domestic bank basis) and substandard-or-below loan ratio (five domestic bank basis) were 1.8% and 16.3% respectively, greatly exceeding the overall corporate sector averages (0.8% and 1.9%). Since the global financial crisis the delinquency rate has been showing a general trend of decline, while the substandard-or-below loan ratio has been sustaining a high level since 2013 as defaults by large enterprises in vulnerable industries have increased (Figure II-18).\(^{21,22}\)

\(^{20}\) Financial institutions were broken down into commercial banks, specialized banks, non-bank financial institutions and other institutions, etc. and analyzed. Here specialized banks include Korean Development Bank, Korea Eximbank, Industrial Bank of Korea, the National Agricultural Cooperative Federation, the National Federation of Fisheries Cooperatives, etc., while non-bank financial institutions comprise credit-specialized financial institutions, securities companies, savings banks, mutual credit cooperatives and insurance companies, and other institutions Korea Credit Guarantee Fund, Korea Technology Finance Corporation, Korea Trade Insurance Corporation, Korea Finance Corporation, Small and medium Business Corporation, the Korea Federation of SMEs, etc.

\(^{21}\) During 2013 there was a great expansion in defaults on credit to large enterprises in the shipbuilding and construction industries (including STX and Tongyang Group affiliates, Sungdong Shipbuilding & Marine Engineering, Saenggyong Engineering & Construction, etc.)

\(^{22}\) It is judged that the substandard-or-below loan ratio having remained at a high level even despite the decline in the delinquency rate is due to an increase in credit classified as substandard-or-below for reasons other than delinquency. Of the amount of increase in domestic banks’ substandard-or-below loans, the proportion of delinquent loans has fallen (2012 32.2% → 1H 2015 23.6%) while the shares of credit to insolvent firms (13.4% → 21.1%) and loans for which repayment capacities have weakened (16.0% → 24.3%) have both risen.
Going forward there is expected to be a high possibility of firms with weak profitabilities and high reliance on external borrowings becoming insolvent first at any time of occurrence of shocks from U.S. interest rate hikes or the slowdown in economic activities in China. In line with this we postulated a case of chronically marginal firms in situations of deficit and with debt ratios exceeding 200% (including those with impaired capital) being unable to service their debts due to deteriorations in business conditions stemming from an external shock, and then calculated the resulting changes that would appear in soundness indicators at domestic banks.

First, in the case of defaults by chronically marginal firms that have experienced three consecutive years (2012~2014) of operating deficits and debt ratios above 200% (18.9% of all chronically marginal firms; scenario (1)), effects appeared of domestic banks’ corporate loan delinquency rate rising by 0.9% point (0.8% → 1.7%) compared to the figure in the end of June 2015 on the one hand, and their total capital ratio falling by 0.9% point (14.1% → 13.2%). Next, in the case of defaults by firms with operating deficits and debt ratios above 200% in 2014 (41.7% of all chronically marginal firms; scenario (2)), the corporate loan delinquency rate (4.4%) recorded its highest level since 2008 while the total capital ratio (11.2%) approached its lowest level since then (Figure II-19).

5. Implications

Considering recent economic conditions domestically and overseas, it is expected that the number of chronically marginal firms will increase for some time to come. As chronically marginal firms increase, the negative impacts that they have on investment and employment expand, the efficiency of resource distribution falls, and there is a possibility of economic growth being constrained. Moreover, as chronically marginal firms’ financial conditions are weak they can work as factors destabilizing the financial system at any time of domestic or external shock occurrence, as this leads to their large-scale defaults. There is thus a need for efforts, through the promotion of efficient corporate restructuring, to ensure that firms for which there are con-
cerns about defaults, including chronically marginal firms, can either swiftly normalize their managements or exit the market.

First, to encourage an expansion in corporate restructuring by creditor financial institutions, a plan for improvement of the related systems will have to be sought. Inasmuch as financial institutions have not moved ahead positively with restructuring, due to burdens of bad loan occurrence and declines in profitability stemming from the corporate restructuring carried out to this time, there is a need for provision of suitable incentive measures. For example, a plan can be considered for granting financial institutions specified additional points for results in restructuring, during their management evaluations. Financial institutions can on their own as well work to strengthen their corporate assessments, and to raise the effectiveness of their credit rating and asset soundness classifications, and through differentiation in lending interest rates on this basis resolve and move on from their practices of allowing chronically marginal companies to survive through collateral, guaranteed loans and low interest rates.

Efficient operation of the current corporate restructuring framework, which is dichotomized into workout programs centering around the creditor institutions and court-ordered rehabilitation proceedings, will have to be promoted. In the case of workout programs, differently from their original intention of swift implementation of restructuring, efficiency is instead declining, with restructuring being delayed due among other factors to conflicts between the parties concerned and to diversities in relationships between claims and obligations. Considering these changes in circumstances, there is a need to implement workout programs on a limited basis, at firms for which the proportions of bank holdings of their bonds are high, and for which the debt relationships are simple. In the case meanwhile of rehabilitation proceedings, the role of the creditor institutions, which is currently limited to their suggesting of opinions, needs to be strengthened, and in bankruptcy proceedings rights to preferential payment should also be granted to credit newly supplied by the creditor institutions, so as to ensure that fund support for firms undergoing rehabilitation proceedings can be achieved smoothly.

In the medium to long term, it will be important to foster the private sector restructuring market and create conditions under which regular restructuring in accordance with market principles can be carried out. There is a need to encourage expansions in size of PEFs, through the cultivation of professional investors, and to revitalize investment in restructuring-related bad loans and in corporate buyouts. It is expected that bad loan disposals can be achieved swiftly as a result of these measures, and that this can also help to boost financial institutions’ management soundness.

23) While the proportion of chronically marginal firms’ collateralized and guaranteed loans increased by 11.9% points between year-end 2010 and the end of June 2015, from 37.0% to 48.9%, the average interest rates that they paid on their loans fell by 2.3% points (6.4% → 4.1%) over the same period (five domestic bank basis).

24) In court-initiated rehabilitation proceedings all claim-obligation relationships are adjusted according to law, and compared to workout programs they have the merit that fairness can be heightened although there are also problems such as moral hazard among management and limitations on new fund support. The right to preferential payment related to new supply of credit is applied only in rehabilitation proceedings, and financial institutions not granted this right in the bankruptcy process worry about losses occurring at the time of bankruptcy, and so show tendencies of avoiding fund support.

III. Effects of Economic Unrest in EMEs on Korean External Soundness

1. Background

Recently, as concerns grow related to the prolonged slowdown in Chinese economic growth, there has been persistent financial unrest in emerging market economies, with their currency values falling and capital flowing continually from them. Concerns are as a result also rising about the resulting negative impacts on the Korean economy. This is because of the possibility of Korea being adversely affected even despite its favorable fundamentals, as in every past period of international financial market unrest a pattern of withdrawals of global investment funds from EMEs, due to safe asset preference, has been repeated. In particular, with the real and financial sector linkages between EMEs having deepened since the global financial crisis, the possibility of financial unrest in EMEs spreading to Korea through these channels has increased even more.

In line with this, we examine in this article the potential risks in major emerging market economies\(^1\) due to factors such as concerns about China’s slowdown in economic activities and financial unrest and the policy rate hikes by the U.S. Federal Reserve, and then look at the effects on the Korean economy due to any occurrence of instability in EMEs.

2. Potential risks in EMEs

China’s structural slowdown in economic activities

As the Chinese economy has driven global economic growth based on its own high rate of growth to this time, its share in the world economy has expanded. The interconnectedness among emerging market countries and the Chinese economy has in addition soared greatly compared to the past. Since the global financial crisis the shares of major EMEs’ exports to China have risen greatly, and the coefficient of correlation in rates of economic growth between China and EMEs has risen further— from 0.878 in the 2000 to 2008 period, to 0.992 between 2010 and 2015 (Figures III-1, III-2).

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\(^1\) In this article we have chosen as our subjects of analysis EMEs whose economic sizes are relatively large: China, India, Indonesia, Malaysia, Thailand, Brazil, Turkey, Russia, the Republic of South Africa and the Middle East area countries.
In line with this, in cases when concerns about the slowdown in the Chinese economy have emerged, financial unrest has even shown signs of spreading, with EMEs’ currency values depreciating to large extents and their stock prices falling. Notably, since June 2015 when Chinese stock prices plunged, propagations of financial unrest have appeared, with stock prices and currency values in major EMEs also falling together for example (Figures III-3, III-4).

2) Since China’s launch of reform and opening there have been four episodes of GDP growth running below 8% (in the 1979~81, 1989~90 and 1998~99 periods, as well as since 2012), and while the three episodes in the past were slowdowns in economic activities due to cyclical factors, the episode this time is judged to be a period of structural transition due for example to a decline in the potential growth rate (“New Thinking About the Chinese Economy in the Era of a New Normal”, The Bank of Korea Beijing Representative Office, August 2014).
The slowdown in Chinese economic growth has caused a weakening of global demand for international raw materials, and can lead to contractions in exports and deteriorations in current and fiscal accounts in the economies of emerging market countries that rely greatly on raw material exports. Especially, for raw material exporters such as Russia, Brazil and Malaysia, as their paces of export growth have slowed greatly since the second half of 2014, and their current and fiscal accounts have worsened, their international credit standings\(^3\) have fallen greatly.

Moreover, as the sizes of crude oil exporting countries’ sovereign wealth funds\(^4\) decrease, due to contractions in these countries’ crude oil sales revenues and the resultant worsening of their finances, there is a possibility as well of this working as a factor causing EME financial market volatilities to expand (Figures III-5, III-6).

External debt redemption burdens due to U.S. interest rate hikes

Against the backdrop of the abundant liquidity due to the large-scale quantitative easing by the U.S. Federal Reserve, EMEs’ dollar-denominated borrowings have expanded greatly since the global financial crisis, through the channels of borrowings in their non-bank sectors and international bond issuance by their corporations (Figures III-7, III-8).

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4) Since 2006 crude oil exporting countries have been managing close to 350 billion dollars in overseas investments (securities - direct - other investment) each year (Korea Center for International Finance, December 2014).
Therefore, when the U.S. Federal Reserve’s policy rate is raised in the future, while economic growth in China is also slowing, EMEs’ external debt repayment burdens could become very heavy. This is because the increase in U.S. interest rates could lead to a decline\(^5\) in dollar liquidity globally, and firms in EMEs including China and Brazil could face substantial difficulties in raising funds in the global capital markets. In addition, owing to the trend of U.S. dollar strengthening these companies’ debts in terms of their home country currencies will grow, and there are concerns that, as their external debt repayment burdens as a result worsen, liquidity conditions will deteriorate sharply, centering around firms experiencing slumping business performances.\(^6\)

Expansion in capital flow volatility due to global risk

Capital flow volatility has expanded greatly since the financial crisis, as inflows of global investment funds to EMEs have increased steadily while withdrawals of investment funds have become easier due to the progress of capital account liberalization in EMEs. In line with this, during times of continuing international financial market unease stemming from global risk factors, such as the recent Taper Tantrum and the collapse in oil prices, large-scale capital outflows from EMEs have appeared, centering around

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\(^5\) During the period of U.S. policy rate hikes between 2004 and 2006 the extent of increase in long-term market interest rates was very limited, due to the expansions in securities investment in the U.S. by trade surplus countries including EMEs (Greenspan’s Conundrum). However, in conditions where factors causing instability in EMEs remain, differently from in the past, the future U.S. policy rate hikes could greatly affect U.S. market interest rates, which have a large influence on capital outflows from EMEs.

\(^6\) Since the global financial crisis companies in EMEs have deposited their funds raised through borrowings overseas in their respective countries’ banks, and it is analyzed that, with banks having used these funds as resources for lending, their supplying of credit has expanded greatly (Ivan Shvets, Solrun and Philip Turner, “Bond markets and monetary policy dilemmas for the emerging markets”, BIS Working Paper No. 508, BIS, August 2013).
securities investment funds (Figure III-9). This suggests that, amid ongoing slowdowns in economic activities in EMEs including China, should negative shocks also occur due for example to a contraction in global liquidity following the policy rate hikes by the U.S. Fed, there is then a possibility7) of drastic outflows of investment funds from emerging markets (Figure III-10). There are also concerns that, as such capital outflows from EMEs cause their interest rates to rise and their stock prices to fall, this could limit the effects of any macroeconomic expansionary policies they attempt in response to slumping economic activities domestically.

3. Effects of economic unrest in EMEs on the Korean economy

Direct effects due to expansions in mutual exposure

It is assessed that, as the amounts of trade and capital transactions between Korea and EMEs have steadily expanded, the degrees of these countries’ interconnectedness in the real and financial sectors have risen greatly. Looking at the amounts of their trade, during 2014 the volume of Korea’s exports to major EMEs stood at 211.8 billion dollars, to account for 37.6% of its total export volume, while the volume of these countries’ exports to Korea, of 152.7 billion dollars, comprised 8% of their total export volume (Figure III-11).

7) The IIF (October 2015) has forecast that, as a result of risk factors in EMEs themselves, such as slowdowns in growth and the increased uncertainties concerning the Chinese economy, capital will in 2015 show a net outflow from EMEs (of 540 billion dollars) for the first time since 1988.
In the case of capital transactions, as of the end of 2014 Korea’s investment in EMEs stood at 307.9 billion dollars, to account for 43.0% of its total external investment, while the amount of these countries’ investment in Korea, of 291.3 billion dollars, made up 29.2% of all investment in Korea by foreign-erse. By investment type, in the case of Korean investment in EMEs the share of direct investment was the highest, and in the case of EMEs’ investment in Korea portfolio investment led the way (Figure III-12). In line with this, at times of crisis such as economic unease in EMEs Korea’s withdrawal of capital from EMEs will be relatively difficult, while EMEs’ withdrawal of portfolio investment from Korea will on the other hand be easy, and it is assessed that the risk of outflows of foreign capital domestically is high. This is because, although EMEs’ domestic portfolio investment to Korea comprises mainly public funds financed by the foreign exchange reserves of central banks, sovereign wealth funds, etc., and by nature the risk of sudden capital outflows is thus relatively lower than in the case with private funds, the likelihood does still also remain of investment fund withdrawals depending upon economic conditions in the individual countries concerned.

Indirect effects from synchronization with EMEs

Meanwhile, even besides the direct effects stemming from these expansions in mutual exposures, Korea’s main financial price variables, such as its CDS premiums, stock prices and exchange rates, are also influenced by synchronization with China and other EMEs. In particular, during times when global investors’ tendency toward safe asset preference intensifies, owing to global financial market instabilities for example, the extent of synchronization has appeared to
increase greatly.

If we evaluate the degrees of synchronization of Korea’s CDS premium with those of China and other EMEs, using time-varying coefficients of correlation\(^8\), they show very high levels, with the coefficient of correlation with China ranging from 0.8~0.9 and those with other EMEs from 0.6~0.8. Notably, the coefficient of correlation with EMEs did show a temporary divergence, falling to 0.4 during the period of the Taper Tantrum (May~November 2013) for example, but has risen back to its previous level of around 0.7 (Figures III-13, III-14). This weakened differentiation from other EMEs, even despite Korea’s favorable external conditions including its persistent current account surplus, is because concerns about a materialization of policy rate hikes by the U.S. Federal Reserve, the slowdown in economic growth in China, etc., can work as factors causing international financial market instability to increase greatly. In the past as well, in cases where international financial market unrest expanded to the global level and investor risk aversion grew, the differentiation between Korea and EMEs showed a tendency to weaken.

\(^8\) In our time-varying correlation coefficient estimation for this article we use Dynamic Conditional Correlation (DCC) Models, which have the flexibility of univariate GARCH without the complexity of conventional multivariate GARCH. These models, which parameterize the conditional correlations directly, are naturally estimated in two steps — the first a series of univariate GARCH estimates and the second the correlation estimate. These methods have clear computational advantages over multivariate GARCH models, in that the number of parameters to be estimated in the correlation process is independent of the number of series to be correlated (Engle, 2002).
Meanwhile, the time-varying coefficients of correlation between Korean and EME stock prices, at 0.6~0.8 since the 2000s, have shown higher levels than the correlations with China (0.2~0.4) and the U.S. (0.1~0.3). Moreover, the time-varying coefficient of correlation between Korean and EME exchange rates has also risen since 2006, and been maintaining high levels ranging from 0.5 to 0.7 (Figures III-15, III-16).

In line with this trend of synchronization of major financial price variables in Korea with those in EMEs, it is judged that, in any case of intensified economic unrest in China or other EMEs, there would be a substantial possibility of negative effects on Korea’s external soundness despite its sound economic fundamentals, with external borrowing conditions worsening for example and external debt repayment burdens growing due to an increase in the won/dollar exchange rate. In particular, the fact that the CDS premium has not fallen greatly, even despite the recent upward adjustments of Korea’s credit rating by international credit rating agencies, is appraised as supporting this judgement.
Effects of EME financial unrest on Korea’s foreign currency funding conditions

To examine the effects on Korea’s foreign currency funding conditions (CDS premium) stemming from China’s economic slowdown and the financial instabilities in EMEs for example, we set up a logit probability model9 and the results of empirical analysis showed that international financial market instability (e.g. a rise in won/dollar exchange rate volatility), an increase in international interest rates, unrest in EMEs, and the Chinese economic slowdown all have significant effects in causing the probability of Korean foreign currency funding conditions worsening10 greatly to rise. The expansion in Korea’s current account surplus-to-nominal GDP ratio was on the other hand found to cause that probability to lessen, while EME stock prices and the VIX11 were analyzed as not having significant effects.

Meanwhile, calculation of the probability of Korea’s foreign currency funding conditions worsening greatly in the future, using these results of estimation, found that rate of probability standing at just 23.2% as of September 2015. But in the case where economic instabilities in EMEs are increasing12, on top of a trend of economic slowdown in China as at present, the probability of Korea’s foreign currency funding conditions deteriorating greatly was estimated to rise to 48%. Especially, in the case where upward pressures13 on international interest rates following the rate hikes by the U.S. Fed occur, in addition to the Chinese economic slowdown and to instabilities in EMEs, then the probability of foreign currency borrowing conditions worsening was found to expand greatly to 75% (Figure III-17).

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Model explanatory variables</th>
<th>Estimated coefficients (Z-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World/dollar exchange rate volatility</td>
<td>Won/Dollar inherent volatility (3-month)</td>
<td>1.10***</td>
</tr>
<tr>
<td>Degree of risk financial market unrest</td>
<td>VIX</td>
<td>0.95</td>
</tr>
<tr>
<td>YF interest rates</td>
<td>U.S. interest (3-month)</td>
<td>16.25**</td>
</tr>
<tr>
<td>EME stock price volatility</td>
<td>MSCI emerging markets index</td>
<td>0.03</td>
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<tr>
<td>EME economic unrest</td>
<td>1 in periods when EME CDS premium standard deviation rose by 1.5 times standard deviation higher than its average</td>
<td>6.00***</td>
</tr>
<tr>
<td>Chinese economic slowdown</td>
<td>Industrial output growth rate (year-on-year)</td>
<td>0.84***</td>
</tr>
<tr>
<td>Korean current account</td>
<td>Current account / Nominal GDP</td>
<td>-4.75***</td>
</tr>
<tr>
<td>R-squared 2 1</td>
<td></td>
<td>0.75</td>
</tr>
</tbody>
</table>

Notes: 1) Estimates based on monthly data from January 2003 to August 2015, using maximum likely estimation (MLE) method
2) ***, ** and * indicate statistical significances of 1%, 5% and 10% respectively

Sources: Bloomberg, IMF

9) The logit probability model was set up and analyzed as follows:
   - **Dependent variable**: Periods when the Korean CDS premium was 1.5 or more times its standard deviation (60bp) higher than the average Korean premium January 2003–August 2015, excluding the financial crisis period, were defined as periods of unrest and given coefficients of 1, with other periods assigned coefficients of 0
   - **Explanatory variables and results of estimation**: Model explanatory variables

10) The case of the CDS premium exceeding 190bp was chosen to indicate such a worsening

11) The fact that the influence of the VIX is not statistically significant is judged to have resulted from its high correlation with won/dollar exchange rate volatility.

12) The rate of increase in China’s industrial output has fallen recently from the 6% (August 2015 6.1%) to the 5% range, while EMEs’ average CDS premium was assumed to be exceeding 383bp January 2003–August 2015 average CDS premium (171bp) + 1.5 × standard deviation (141).

13) A case of international interest rates increasing by 50bp due to U.S. interest rate hikes was assumed, on top of the previously mentioned decline in the rate of Chinese production growth and increase in EME CDS premiums.
4. Implications

Given the Korean economy’s steadily improved external soundness thanks to its sound fundamentals since the global financial crisis, it is assessed that until now the possibility is not large of negative shocks due to potential risks from EMEs including China leading to any deterioration in its external soundness (Figures III-18, III-19). The fact that international credit rating agencies have adjusted Korea’s sovereign credit rating\(^\text{14}\) upward recently is evaluated to have reflected Korea’s satisfactory external soundness.

However, in circumstances where the possibility is large of the hikes in U.S. interest rates causing international financial market volatility to expand, on top of the increased direct interconnectedness of the Korean real economy with China since the global finan-

\(^{14}\) In September 2015 S&P adjusted Korea’s sovereign credit rating upward from A+ (positive) to AA− (stable).
cial crisis, it is judged difficult, even despite the Korean economy’s favorable fundamentals, to rule out the risk of instabilities in EMEs spreading domestically, due to deepening risk aversion in the international financial markets for example. In the results of empirical analysis as well, Korea’s price variables, such as its CDS premium, stock prices and exchange rates, are analyzed as having high degrees of synchronization with those of EMEs, which on top of this have been strengthening recently.

In consequence, in the case where not only the economic slowdown in China and interest rate hikes in the U.S., but also unrest in EMEs coincide, there is a possibility of risk aversion in the international financial markets expanding, which could cause negative shocks to the domestic financial markets. There is thus a need to closely examine response plans, and to devise countermeasures.
[Annex 1]
Monetary and Macroprudential Policy Operational Framework

Mutual effects between monetary and macroprudential policies

Monetary policy uses methods such as policy rate adjustment to promote the stability of prices and employment as well as economic growth. Macroprudential policy on the other hand works to achieve financial stability through policy measures such as LTV and DTI regulations, by restraining growth in systemic risks stemming for example from excessive credit expansion. The two types of policies differ in terms of their policy targets and instruments, but they have mutual impacts on each other in the processes of transmission of their respective policy implementation effects through the credit markets for instance. Monetary policy can cause either an expansion or a decline in financial imbalances, through changes in the risk attitudes of economic actors including households and corporations, in the asset markets, and in the operating environments of financial institutions. Macroprudential policy can also show effects on the monetary policy target variables of economic growth and prices.

The real and financial cycles, and policy conduct

In the process of policy implementation, the monetary policy stance is decided based on a judgement related to the real economic cycle, and the macroprudential policy stance based on one related to the financial cycle. Compared to the real cycle, the financial cycle has the traits of involving a longer span of time and a greater amplitude. Due to this, cases can occur of the real and the economic cycles either moving in the same direction, or of their upward and downward phases being estranged from each other. In particular, in cases of increasing credit driven by mutual self-reinforcement between credit and asset prices, situations do also occur of the financial cycle expanding when financial imbalances intensify, without any connection to the real economy.


2) Refers to the phenomenon of a repeating process of: Asset price rise → Increase in asset demand → Creation of credit for asset purchases → Further asset price rise.

3) There is no clear-cut definition of financial imbalances, but the term is generally used to designate a situation in which an excessive expansion in credit and sharp rises in asset prices occur in the financial market, triggered by excessive risk-seeking behavior of economic agents.
Because monetary and macroprudential policies can exert mutual effects on each other’s target variables as explained above, depending upon which phases – of expansion or of contraction – the real economic and financial cycles are in, complementary or conflicting, or even independent relationships between the two policies can arise. Especially, in a situation in which the phases of the two cycles differ, a conflicting relationship between the policies occurs.

For example, in circumstances where business activities are sluggish (with inflation running below the target level) and financial imbalances have intensified, if expansionary economic policies are adopted then financial unease can deepen, while if in contrast macroprudential regulations are tightened a situation of real economic activities contracting even further can appear. Recent research is analyzing that inflation is low in many nations, and situations of deepening financial imbalances are often occurring⁴, while in Korea as well estrangements between the two cycles have been appearing since the global financial crisis.

### Discussions of policy mixes, and cases of their operation

Due to the continuing low growth and low interest rate stances in many nations since the global financial crisis, the imbalances in their financial sectors have widened. In line with this the amount of consideration given to financial stability in the process of monetary policy conduct has grown, while discussions of frameworks for operating suitable mixes of macroprudential and monetary policies have been progressing briskly.

One view in this regard is based on the separation principle, claiming that monetary policy should focus on the stability of prices and real economic activities while macroprudential policy should concentrate on financial stability.⁵ Monetary policy is a blunt tool, with wide-ranging effects on the economy as a whole, and so when it is used for the purpose of financial stability this can give rise to considerable side effects.

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⁴ Kim and Mehrotra (2015, “Managing Price and Financial Stability Objectives: What Can We Learn from the Asia-Pacific Region?”) analyzed six nations in the Asia-Pacific region including Korea and Australia, and reported that, in conditions where inflation was running below the target figures, cases had been observed 19 times since the 2000s of credit/nominal GDP gaps being positive (+, financial booms).
⁵ This view is advocated mainly by the U.S. Federal Reserve and the IMF, as well as by Keynesian scholars.
Therefore, while monetary policy responses are not ruled out, it is insisted that excessive expansions in credit causing amplified system risks should be responded to through macroprudential policies.

The second opinion is that monetary policy should respond more actively to financial imbalances. Advocates of this view insist that monetary policy’s effects on the financial sector are expanding, and that a monetary policy response is effective in restraining economic agents’ risk-seeking behavior.

When signs of financial instability occur, such as credit bubbles for example, then operation of an excessively accommodative monetary policy is thus undesirable even in conditions of real cycle recession, and it is warned that prolongation of such a stance can bring about a new financial crisis.

Looking at the policy responses of major countries that have experienced gaps between their financial and real cycles since the global financial crisis, Canada, Switzerland and the United Kingdom, among others, have operated accommodative monetary policies to boost their real economic activities since the crises, and with regard to rises in asset prices and increases in private debt they have strengthened their macroprudential regulations responding with monetary policy. In contrast, Sweden, Norway and others have responded actively to financial unrest through monetary policy. In the case of Sweden, notably, it has explicitly included risks related to financial imbalances in the considerations of monetary policy, and in the past set its base rate at a level higher than that corresponding to real economic conditions.

Comparative analysis of the economic results of these countries’ policy operations finds that, in the cases of countries that have responded to financial instability through monetary policy, the adjustments of their financial imbalances have generally been temporary and limited, while the negative side effects on their real economies have been considerable. In the cases of countries that have responded separately with macroprudential rather than monetary policies, they appear to have been able to mitigate their financial imbalances effectively. Until now however the cases of such policy operations have been few, and considering that a substantial number of countries are in the early stages of macroprudential policy introduction it is difficult to conclude which opinion is superior.

Considerations in designing an optimal operational framework

There are close interconnections between monetary and macroprudential policies, in terms of their transmission channels and their policy target variables. And with concerns rising recently about both slumps in economic activities and financial imbalances in major countries including Korea, the designing of operational frameworks for macroprudential policies and the role of the central bank in this process are emerging as very important issues.

In relation to this, in the building of policy...
operation frameworks going forward the following points will have to be considered.
First, to effectively resolve the problem of conflicts among policy goals stemming from
the gaps between the real and the financial cycles, diverse macroprudential policy instru-
ments will have to be secured and put into active use. Second, while macroprudential
policy can also have effects on the real economy, it has a more direct effect on credit
expansions for example, and in view of this should be implemented with a priority put
on the financial stability objective. Third, given monetary policy’s effects on the finan-
cial sector through the risk-seeking channel, for example to the credit and asset markets,
it is necessary to consider monetary policy from the aspect of financial stability as well,
and meticulous consideration as to how the existing monetary policy framework must be
changed is thus needed. It is important finally to promote harmonious conduct of these
two types of policies, when adjusting their levels of intensity for example, through the
sharing of understandings of economic and financial conditions between the monetary
and the macroprudential policy authorities, and close consultation between them.
Explanation of Terms

(Households)

Mortgage Refinance Program – Conversion loan products introduced to ensure that borrowers of home mortgage loans having variable interest rates or requiring payment of interest only can change them to fixed interest rate, amortizing loans

Right of preferential payment – A creditor’s right to receive repayment on bonds prior to other creditors

Disposable income – Income that can be used for private consumption or savings

Marginal households – Households with DSRs in excess of 40% and negative (-) net financial assets (Financial assets – Financial liabilities)

(Corporations)

Interest coverage ratio – The ratio of operating income divided by interest expenses, used as an indicator measuring capacity for creation of the income necessary for payment of interest

Companies at-risk – Companies with interest coverage ratios and liquidity ratios (Short-term liquid assets / Short-term liabilities) below 100% simultaneously

Borrowings-to-total assets ratio – Indicator showing the proportion in total asset of funding through external borrowings (corporate bonds included)

Cash flow coverage ratio – Ratio of the sum of cash flows created through business activities and interest expenses divided by the sum of short-term borrowings plus interest expenses

(Banks)

Structural profitability – The ratio of the sum of interest income, fee income and trust account income minus operating expenses, divided by real total assets (average balance basis), used as an indicator showing banks’ capacities for sustainable profit creation

Common equity capital – Capital that is not redeemed except at times of bank liquidation (capital, earned surplus, etc.)

Liquidity coverage ratio (LCR) - The ratio of highly-liquid assets relative to the amount of net cash outflows possible during 30 days, indicating a bank’s capacity for autonomous response to a sudden outflow of liquidity over such a time frame

(Non-bank financial institutions)

Central counterparty (CCP) – An institution promoting the alleviation of transaction counterparty credit risk, through netting the volumes of settlement between parties conducting over-the-counter derivative transactions, guaranteeing settlement execution, etc.

Structured notes – Financial investment products issued by securities companies, which are linked to the price volatilities of
their underlying assets and on which the investment gains are decided in accordance with methods determined in advance (Financial markets)

Global fund – A fund investing 25% or more of its portfolio composition in securities overseas

Credit spread – Indicator showing differences in yields between Treasury bonds and corporate bonds, in 0.01% units (bp), through which the risk premiums recognized by investors can be grasped arithmetically

Prime bonds – Corporate bonds appraised at credit grades AA- or higher by credit rating agencies

(Foreign exchange soundness)

CDS (credit default swap) – A credit derivative product for which the buyer pay the seller a premium, but instead in the case of occurrence of default on the underlying assets or another credit event the buyer receives from the seller the either amount of the loss or a set amount of money

CDS premium – Commission paid on the purchase of a CDS

(Effects of Population Aging on Household Debt, and Potential Risks)

Cohort effect – Phenomenon in which changes in amounts of financial debt are similar within generations having similar socio-economic environments, while showing differences compared to generations whose economic conditions and environments are different

Deleveraging – Contractions in leverage through reductions in their debts by households that had previously increased their leverage (financial liabilities / net assets or financial liabilities / income) through expansions in their debts

system that typically handles a large volume of relatively low-value payments in such forms as cheques, credit transfers, direct debits, and card payment transactions

Real-time gross settlement – The real-time settlement of payments, transfer instructions, or other obligations individually on a transaction-by-transaction basis.

Deferred net settlement – A net settlement mechanism which settles on a net basis at the end of a predefined settlement cycle

Continuous linked settlement (CLS) – Settlement system carrying out simultaneous settlement, through CLS Bank, of two different international currencies exchanged in a transaction, established to reduce foreign exchange settlement risk in foreign exchange transactions that can occur due to time differences between countries
Aging effect – Effect in which the volume of financial assets held by the same household changes in accordance with changes in his/her age.

Asset accumulating age population – The population age bracket (35~59 years of age) that is accumulating many assets while participating actively in economic activities such as production and consumption, whose liabilities also expand in the process of this asset accumulation.

(STATUS OF CHRONICALLY MARGINAL FIRMS, AND ASSESSMENT)

Private equity fund – A private collective investment scheme investing in and managing firms’ stocks, bonds, etc. for purposes of participation in management rights, business restructuring or improvement of management structure, etc.

Chronically marginal firms – Firms that were marginal firms each year and had also experienced marginal firm statuses before then as well since 2005.

Supply of credit – Financial institutions’ direct and indirect transactions accompanying the credit risks on loans, payment guarantees and purchases of securities, and other financial transactions.

Marginal firms – Firms that have had interest coverage ratios (Operating income / Interest expenses) below 100% for three consecutive years.

Forbearance lending – Financial institutions’ lending even to companies without loan repayment capacities, achieved by deferring debt repayment through changes in contract conditions, extensions of new loans, etc.

(EFFECTS OF ECONOMIC UNREST IN EMEs ON KOREAN EXTERNAL SOUNDNESS)

Time-varying coefficient of correlation – Coefficient of correlation between variables that changes depending upon the point in time considered.

Taper tantrum - The sharp jumps in interest rates, declines in stock prices and other shocks that occurred in the international financial markets following the suggestion in May 2013, by U.S. Federal Reserve Chairman Ben Bernanke, of a possibility of the Fed’s tapering off its quantitative easing.
## Contributing Departments & Authors by Section

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[Annex 1] Monetary and Macroprudential Policy Operational Framework Explanation of Terms

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