



ADB Working Paper Series

**TWENTY YEARS AFTER
THE FINANCIAL CRISIS
IN THE REPUBLIC OF KOREA**

Jong-Wha Lee

No. 790
November 2017

Asian Development Bank Institute

Jong-Wha Lee is a professor of economics and director of the Asiatic Research Institute at Korea University.

The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADBI, ADB, its Board of Directors, or the governments they represent. ADBI does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

Working papers are subject to formal revision and correction before they are finalized and considered published.

The Working Paper series is a continuation of the formerly named Discussion Paper series; the numbering of the papers continued without interruption or change. ADBI's working papers reflect initial ideas on a topic and are posted online for discussion. Some working papers may develop into other forms of publication.

ADB recognizes "Korea" as the Republic of Korea.

In this publication, "\$" refers to US dollars.

Suggested citation:

Lee, J-W. 2017. Twenty Years after the Financial Crisis in the Republic of Korea. ADBI Working Paper 790. Tokyo: Asian Development Bank Institute. Available: <https://www.adb.org/publications/twenty-years-after-financial-crisis-korea>

Please contact the authors for information about this paper.

Email: jongwha@korea.ac.kr

The author thanks Takatoshi Ito, Peter Morgan, and Cyn-Young Park for their helpful comments. He is also grateful to Euri Lee and Eunbi Song for research assistance. This paper was prepared for the book project *20 Years after the Asian Financial Crisis: Lessons, Challenges, and the Way Forward* of the Asian Development Bank (ADB) and Asian Development Bank Institute (ADBI). The work was supported by ADBI. The views expressed in this paper are those of the author and do not necessarily reflect the views or policies of ADBI, ADB, their Boards of Directors, or the governments that they represent.

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500

Fax: +81-3-3593-5571

URL: www.adbi.org

E-mail: info@adbi.org

© 2017 Asian Development Bank Institute

Abstract

This study reviews the evolution of financial markets, institutions, and policy frameworks in the economy of the Republic of Korea over the two decades since the 1997 Asian financial crisis and assesses their effectiveness in reducing the likelihood and adverse effects of future financial crises. The experience of the Republic of Korea in the 1997 Asian financial crisis and the 2008 global financial crisis showed that the downside costs of financial globalization were magnified in the areas of the economy in which the external positions and financial system had weaknesses. The Republic of Korea has continued to amend the structural weaknesses in its financial sector and strengthen its policy frameworks. Its financial stability will be greatly influenced by changes in household and corporate financial soundness as well as external risks due to volatile capital flows amid tightening global monetary conditions. Although the economy of the Republic of Korea remains susceptible to external shocks, an improved financial system and policy framework is likely to help mitigate the likelihood and impact of future financial turmoil. The experiences of the Republic of Korea suggest that, amid rapid financial globalization and innovation, emerging economies must support financial stability by improving prudential financial regulation and supervision and building up more effective macroeconomic and financial policy frameworks to deal with volatile capital flows and asset price bubbles while supporting financial innovation and its regulation in a balanced manner.

Keywords: financial market, financial policy, capital flow, Asian financial crisis, Republic of Korea

JEL Classification: E44, E58, F32, F65, G20, G28

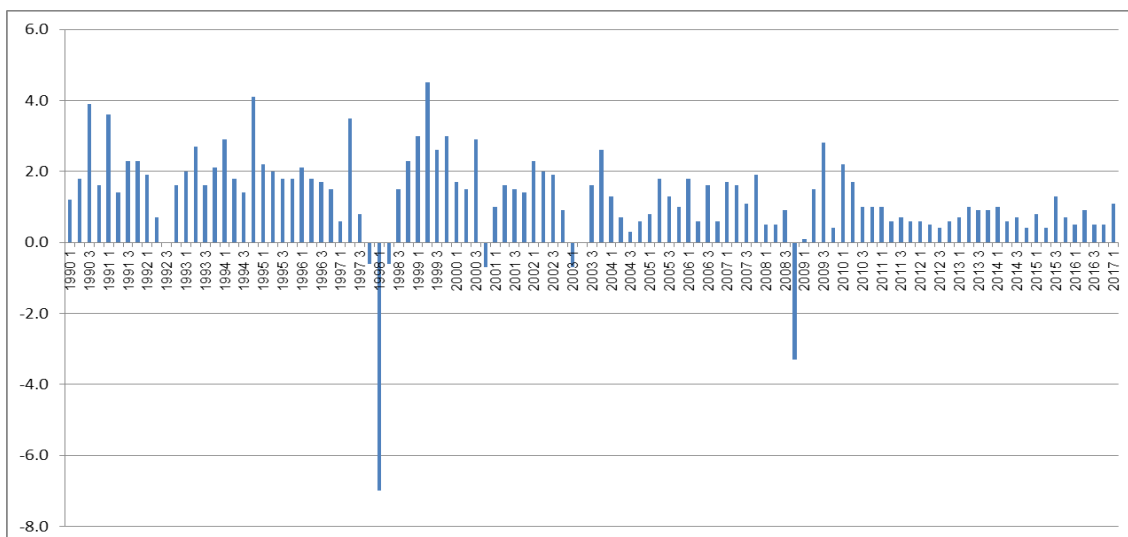
Contents

1.	INTRODUCTION	1
2.	EXPERIENCE OF TWO FINANCIAL CRISES	2
3.	DEVELOPMENT OF FINANCIAL MARKETS, INSTITUTIONS, AND POLICY FRAMEWORKS AFTER THE FINANCIAL CRISIS.....	7
3.1	Development of the Financial Market and Institutions	7
3.2	Strengthening of the Financial Infrastructure and Policy Framework.....	12
4.	CHALLENGES TO FINANCIAL STABILITY AND RESILIENCE IN KOREA	16
4.1	Household and Corporate Debt Management.....	16
4.2	How to Cope with Volatile Capital Flows	18
5.	POLICY IMPLICATIONS FOR EMERGING ECONOMIES	20
	REFERENCES	23

1. INTRODUCTION

The major financial crises of 1997 and 2008 hit the financial markets in the Republic of Korea (henceforth “Korea”) hard and had devastating effects on the Korean economy. When the Asian financial crisis spread to Korea in 1997, the government, under an agreement with the International Monetary Fund (IMF), implemented various financial restructuring measures to tackle Korea’s structural weaknesses and restore foreign investors’ confidence. It closed a great number of financial institutions or merged them with others. It injected a massive amount of public funds for bank recapitalization and the purchase of non-performing loans (NPLs) to normalize troubled financial institutions. Despite a sudden fall in the real GDP growth rate, which reached -7.0% in the fourth quarter of 1998, the economy achieved an impressive recovery (see Figure 1). This rapid recovery was largely attributable to the quick restoration of foreign investors’ confidence and financial stability with the support of rapid government-led financial sector restructuring.

Figure 1: Korea’s GDP Growth Rates, 1990–2017
 (Change over the Previous Quarter)
 (%)



Source: Bank of Korea (n.d.).

The global financial turmoil originating from the US subprime mortgage market badly affected the Korean financial markets again in 2008. The conditions in the global financial markets were distressed, despite sizable liquidity injections and other emergency measures of the major central banks of industrialized economies, and led to negative spillovers into the Korean financial markets. Compared with the situation during the 1997 crisis, however, the Korean banks remained largely unhurt, and the financial markets recovered their stability more rapidly. The government responded to the liquidity crisis quickly by providing financial institutions with foreign exchange and domestic liquidity. In addition, sound external positions and improvements to the financial system, along with relatively healthy growth prospects, helped to restore foreign investors’ confidence.

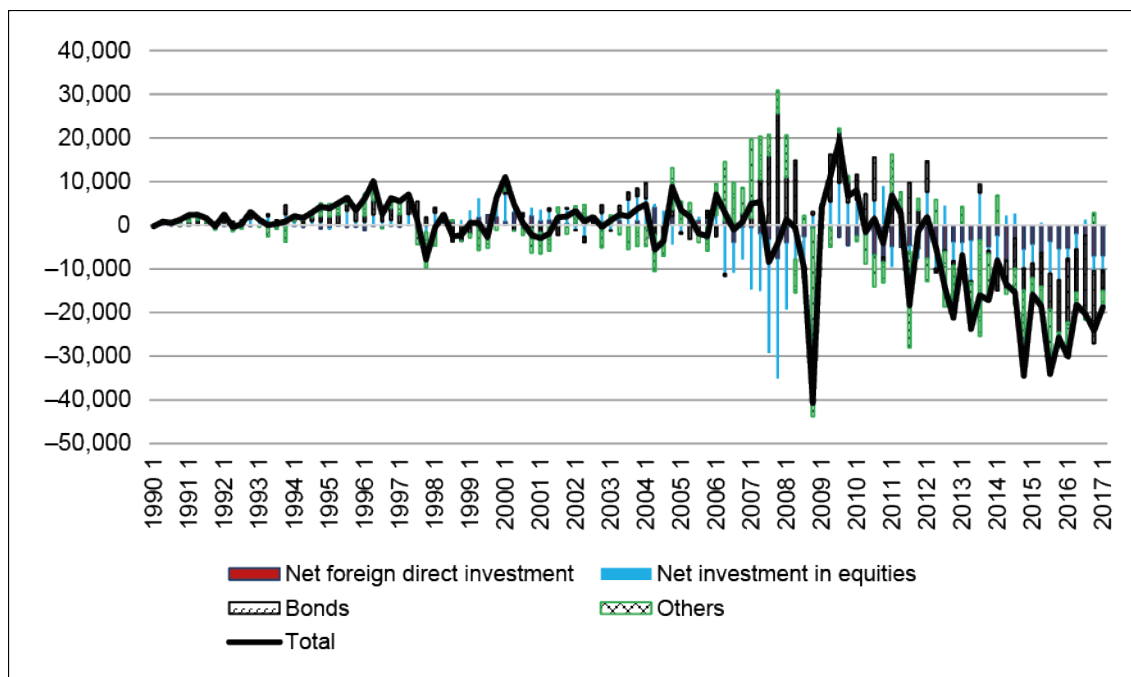
Over the past two decades, while experiencing two major financial crises, Korea has continued to amend the structural weaknesses in its financial sector and strengthen its macroeconomic and financial policy frameworks. Nevertheless, given the openness of its economy to global markets, these improvements do not guarantee the complete insulation of its financial markets from global financial turbulence. Hence, it is important to identify the areas in which the Korean economy has lingering financial vulnerabilities and to determine whether the improved financial system and policy frameworks are sound and effective enough to reduce the likelihood and potential adverse effects of future financial crises.

This study reviews the evolution of financial markets, institutions, and policy frameworks in the Korean economy over the two decades since 1997 and assesses their effectiveness in reducing the likelihood and potential adverse effects of future financial crises. Based on this discussion of the Korean experience, it then suggests policy recommendations for emerging Asian economies.

2. EXPERIENCE OF TWO FINANCIAL CRISES

The 1997 financial crisis in Korea was triggered by a huge and sudden reversal of capital flows by panicked foreign creditors holding short-term claims. The size of the net private capital outflows in the fourth quarter of 1997 amounted to \$26.1 billion, equivalent to about 6% of the annual GDP in the same year (see Figure 2). Prior to the crisis, foreign capital inflows had increased sharply, reaching \$52.3 billion from 1994 to 1996, which was three times the figure in the period from 1990 to 1993. This was largely due to the government’s pursuit of financial liberalization and deregulation in the 1990s to meet the requirements for OECD membership.

Figure 2: Korea’s Capital Account, 1990–2017 (Quarterly)
(USD billions)



Source: Bank of Korea (n.d.)

The differentials between Korean and global interest rates and between short- and long-term borrowing rates caused a surge in dollar-denominated short-term liabilities, especially among non-bank institutions. The amount of official foreign exchange reserves was insufficient to cover the short-term external liabilities (see Figure 3), leaving the economy vulnerable to a liquidity shortage in the event of a sudden reversal of foreign capital flows. These large short-term external liabilities were utilized by financial institutions to finance long-term domestic projects in Korea's corporate sector, especially large conglomerates (*chaebols*). Then the sudden withdrawal of foreign credit caused double mismatch problems, currency and maturity mismatches, on the balance sheets of financial institutions. The Korean currency values and asset prices dropped significantly (see Figure 4).

Besides the shortage of foreign exchange reserves, the Korean economy itself had severe underlying structural weaknesses, such as under-supervised financial systems and an over-leveraged corporate sector, which contributed to the economy's vulnerabilities to the liquidity crisis.¹ Due to the once-common belief that chaebols were "too big to fail," financial institutions allowed chaebols to finance risky and unprofitable projects without conducting a scrutinizing credit analysis. This resulted in over-leveraged expansion in the corporate sector, especially among the chaebols. The financial market liberalization into which the government had rushed without providing accounting transparency or adequate prudential regulation deepened the structural weaknesses by increasing the growth of domestic credit and exposure to foreign exchange risk.²

After the 1997 crisis, the government implemented various restructuring measures in the financial sector to remove the structural weaknesses and restore foreign investors' confidence. The initial financial restructuring was based on an agreement with the IMF and the Korean Government signed on 3 December 1997.³ As an immediate response to the onset of the crisis, the financial restructuring aimed to shut down troubled financial institutions and dispose of their non-performing loans (NPLs).⁴ The newly established Financial Supervisory Commission (FSC), together with the Ministry of Finance and Economy (MOFE), established principles by which to distinguish unviable financial institutions from viable ones and developed plans for the resolution of insolvent financial institutions following international standards and procedures.

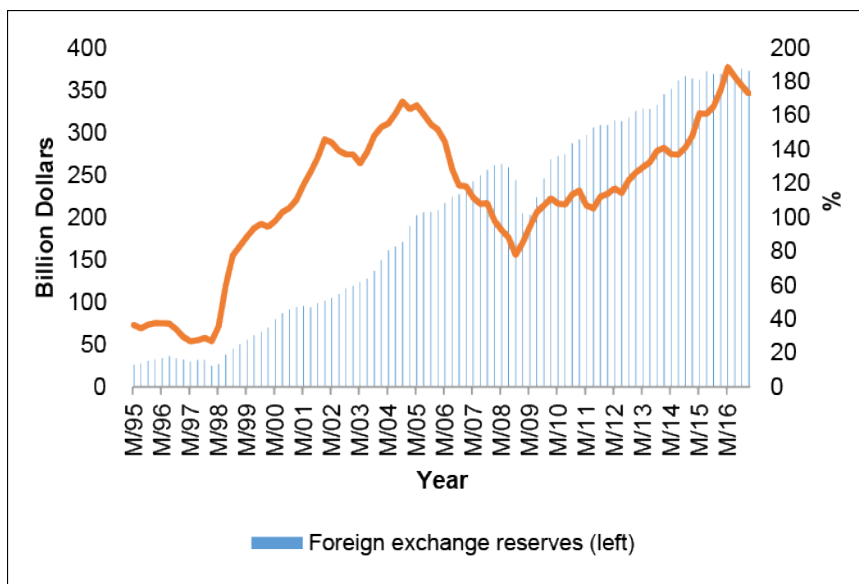
¹ Kim and Lee (2002) provide a theoretical model in which a rapidly growing economy with a high investment-to-GDP ratio is subject to a financial crisis due to corporate and financial structural weaknesses and capital market liberalization increases the likelihood and the scale of the crisis.

² Borensztein and Lee (2005) find no evidence that credit flows were directed to the sectors that had been more profitable since the 1980s, when financial reforms were initiated, and conclude that financial support did not contribute to improving the performance of the favored industries over time in the Korean economy.

³ The IMF imposed tough conditions on its loan, including fiscal austerity, monetary tightening, and structural reform. Some of the IMF's conditionalities were too harsh and unnecessary, bringing about massive bankruptcies of companies and job losses and huge social costs. Nevertheless, government-led reforms under the agreement with the IMF helped to tackle structural weaknesses and make the economy of the Republic of Korea become more resilient. Ito (2007) evaluated the role of the IMF in the Asian financial crisis.

⁴ See Lee and Rhee (2007) for details.

Figure 3: Foreign Exchange Reserves and Short-Term External Solvency, 1995 Q1–2016 Q4



Note: Short-term external solvency refers to the ratio of foreign exchange reserves to the sum of short-term external debt and the three-month import amount.

Source: Bank of Korea (2017a).

Figure 4: Korean Daily Exchange Rates, 1995–2017 (Won per Dollar)



Source: Bank of Korea (n.d.).

Once the FSC had identified troubled but viable financial institutions, it designed their rehabilitation plans, specifying detailed measures, such as recapitalization and NPL disposal, to achieve minimum capital adequacy. For nonviable institutions the FSC developed exit strategies, including the transfer of business units, purchase and assumption (P&A), mergers between nonviable banks, and mergers between sound and nonviable banks (Lee and Rhee 2007). By the end of 2004, five weak banks had closed through P&A and nine banks had merged with others (see Table 1).

Table 1. Changes in Numbers of Financial Institutions^a (as of Period-Ends)

	1997	1998~2004			2005~2010			2010	2016
		Newly Established	Merger ^b	Exit ^c	Newly Established	Merger ^b	Exit ^c		
Financial Holding Companies	-	3	-	-	6	-	-	9	9
Banks	33	-	9	5	-	1	-	18	17
Mutual Savings Banks	231	13	28	103	7	1	14	105	79
Credit Unions	1,666	9	107	502	5	39	70	962	904
Merchant Banks	30	1	7	22	-	1	-	1	1
Securities Companies ^d	36	19	4	8	11	4	-	50	44
Collective Investment Business Entities ^d	31	24	2	6	39	6	-	80	165
Life Insurance Companies ^e	31	4	5	9	1	-	-	22	25
Non-life Insurance Companies	14	4	1	2	2	1	-	16	18
Total	2,072	77	163	657	71	53	84	1,263	1,262

Notes:

^a Excludes branches of foreign financial institutions.

^b Numbers of financial institutions ceasing to exist following mergers.

^c Includes revocations (and applications for revocations) of licenses, bankruptcies, and liquidations.

^d Financial investment business entities under the Capital Markets Act.

^e Excludes postal insurance.

Source: The Bank of Korea website (<http://www.bok.or.kr/broadcast.action?menuNavId=2371>) and the Financial Supervisory Service's Annual Report.

This financial restructuring process received a massive public fund of 160.5 trillion won. About 50% of this made up for insured deposits and the recapitalization of troubled financial institutions through the Korea Deposit Insurance Corporation (KDIC). The Korea Asset Management Corporation (KAMCO) received another 25% to purchase NPLs.

The rapid recovery of the Korean economy was clearly attributable to the quick resolution of creditors' panic due to the timely closure of nonviable financial institutions and the quick resolution of NPLs. In addition, the swift adjustment of fiscal and monetary policies contributed to the speedy post-crisis adjustment to the financial crisis (Park and Lee 2002). The large depreciation of real exchange rates, combined with the Korean economy's export-oriented structure, also contributed to the sharp turnaround in GDP growth.

After the Korean economy had recovered and the financial sector had settled down, the government pursued the gradual privatization of banks and the redemption of public funds. It privatized financial institutions by selling its shares to the private sector, including foreign investors. It also carried out reforms to foster financial supervisory and regulatory frameworks and thus improve the transparency of financial sector information.

Despite significant progress in strengthening financial resilience and soundness, the Korean economy encountered further significant financial distress during the global financial crisis in 2008. Short-term external debt had increased rapidly prior to 2008, thanks to the banking sector's large amount of borrowing. Short-term external solvency, defined as the ratio of foreign exchange reserves to the sum of the short-term external debt and the three-month import amount, had declined continuously from 168% in September 2004 to 78% in September 2008 (see Figure 3).

The global financial crisis originating from the US subprime mortgage crisis in mid-2007 had detrimental effects on the Korean economy through financial channels. During the fourth quarter of 2008, after the demise of Lehman Brothers, cross-border liquidity dried up, provoking a large capital outflow from emerging markets. Korea was no exception; it suffered again from the sudden reversal of short-term foreign currency borrowing. Korea's capital account recorded a deficit of \$42.6 billion, or 20% of its annual GDP, in the fourth quarter of 2008 (see Figure 2). The short-term liabilities of the banking sector fell by over \$50 billion.

The relatively high volatility of external borrowing was partially attributable to the activities of foreign bank branches in Korea, which constituted about 40% of the banking sector's foreign debt in 2008, of which relatively little was balanced by foreign assets (Tsutsumi, Jones, and Cargill 2010). The Korean regulators believed that they would not need to monitor the short-term liabilities of foreign bank branches, since they thought they had access to sufficient liquidity from their headquarters (Lee and Rhee 2012). During the global crisis, however, the short-term liabilities of the domestic branches of foreign banks fell sharply owing to the financial and economic trouble in their home countries. European banks accounted for about three-quarters of the decline in the claim of foreign banks in Korea that amounted to \$25 billion during the fourth quarter of 2008, and the US banks accounted for most of the rest (Tsutsumi, Jones, and Cargill 2010).

The liquidity shortage in the foreign exchange market led to financial market turmoil in 2008. Short-term credit markets showed signs of stress, as financial institutions stopped lending to each other due to the fear of counterparty risks under uncertain conditions. The Korean Government responded quickly to the liquidity crisis by providing financial institutions with foreign exchange liquidity as well as domestic

liquidity (IMF 2014). The Bank of Korea (BOK), rapidly shifting its policy toward an expansionary stance, cut interest rates six times, from 5.25% in October 2008 to 2% in February 2009, and provided additional liquidity of 28 trillion won, amounting to 2.7% of the GDP, to ease the credit crunch (Tsutsumi, Jones, and Cargill 2010).

As the crisis deepened, the Korean Government decided to safeguard the soundness of the financial institutions by strengthening bank capital (Lee and Rhee 2012) by creating the Bank Recapitalization Fund with an endowment of 20 trillion won. It also created the 10-trillion-won Bond Market Stabilization Fund to provide liquidity in the market. The government also established the 40-trillion-won Corporate Restructuring Fund to address the bad asset problem in financial institutions. In addition, it announced a \$100 billion payment guarantee for banks' short-term liabilities in October 2008. The BOK actively engaged in currency swap agreements with the major central banks. It signed a \$30 billion swap with the US Federal Reserve (Fed) in October 2008 and expanded a bilateral won–yen swap arrangement with the Bank of Japan from the equivalent of \$3 billion to \$20 billion.

The timely and comprehensive responses of the Korean authorities as well as the global liquidity injections and other emergency measures by the world's major central banks helped the Korean financial sector to restore its stability quickly. As can be seen in Figure 2, the net private capital inflows recovered quickly. Nevertheless, the global crisis heavily damaged the Korean economy's real sector through the heavy dependence of Korean exports on the global markets.

3. DEVELOPMENT OF FINANCIAL MARKETS, INSTITUTIONS, AND POLICY FRAMEWORKS AFTER THE FINANCIAL CRISIS

Since the 1997 Asian financial crisis, Korea has carried out a variety of reform measures designed to streamline its financial system by developing financial markets and improving the financial infrastructure and policy frameworks.

3.1 Development of the Financial Market and Institutions

As Korea overcame the 1997 crisis, the situations of many insolvent financial institutions were resolved through procedures such as liquidation and mergers and acquisitions. Korea's number of banks dropped from 33 in 1998 to 19 at the end of 2004 (see Table 1). More than 771 non-bank financial institutions closed, and many others underwent restructuring through closure, business transfers, and sell-offs. The number of merchant banks fell dramatically from 30 to just two. Banks were encouraged to affiliate with non-bank financial institutions to form financial holding companies. Thus, four major banks—Woori, KB Kookmin, Shinhan, and Hana—had begun operating under their respective holding companies by the end of 2008.

By the end of 2015, the banking sector (including trust funds) constituted the largest share, with 56.3% in total financial sector assets, followed by insurance companies (21.9%), credit cooperatives (11.3%), investment traders and brokers (securities companies) (7.9%), postal savings (1.5%), and mutual savings banks (1.0%; see Table 2). After the 1997 financial crisis, the banking sector share declined continuously from 70% in 2000 to 56.3% in 2015, mostly due to strong growth in the non-banking sector, including insurance and security companies. The share of insurance and security companies more than doubled from 2000 to 2015.

Table 2: Total Assets of Major Financial Institutions (as of Period-Ends)
(Units: Billion Won, %)

		2000	%	2005	%
Banks	Sub-Total	982,178	70.0	1,213,462	64.5
	Bank Accounts	887,681	63.2	1,100,954	58.5
	Trust Accounts	94,497	6.7	112,508	6.0
Merchant Banks		21,273	1.5	13,237	0.7
Mutual Savings Banks		24,196	1.7	24,196	1.3
Credit Cooperatives	Sub-Total	145,065	10.3	220,186	11.7
	Credit Unions	20,959	1.5	24,757	1.3
	Community Credit Cooperatives	37,061	2.6	53,913	2.9
	Mutual Banking	41,964	3.0	141,516	7.5
Postal Savings		24,496	1.7	37,774	2.0
Insurance Companies	Sub-Total	163,562	11.7	308,552	16.4
	Life Insurance Companies	120,730	8.6	239,362	12.7
	Non-Life Insurance Companies	28,049	2.0	28,049	1.5
	Postal Insurance	14,783	1.1	20,090	1.1
Securities Companies		42,033	3.0	62,730	3.3
Asset Management Companies		1,011	0.1	1,438.723	0.1
Total		1,403,814	100.0	1,881,576	100.0
		2010	%	2015	%
Banks	Sub-Total	1,884,114	60.5	2,448,578	56.3
	Bank Accounts	1,716,889	55.1	2,156,700	49.6
	Trust Accounts	167,225	5.4	291,878	6.7
Merchant Banks		24,242	0.8	1,189	0.0
Mutual Savings Banks		91,271	2.9	43,861	1.0
Credit Cooperatives	Sub-Total	360,863	11.6	491,631	11.3
	Credit Unions	48,763	1.6	65,693	1.5
	Community Credit Cooperatives	53,913	1.7	51,461	1.2
	Mutual Banking	219,999	7.1	374,477	8.6
Postal Savings		55,392	1.8	65,605	1.5
Insurance Companies	Sub-Total	507,482	16.3	950,963	21.9
	Life Insurance Companies	408,495	13.1	724,901	16.7
	Non-Life Insurance Companies	98,987	3.2	226,061	5.2
	Postal Insurance	28,586	0.9	48,038	1.1
Securities Companies		189,384	6.1	344,472	7.9
Asset Management Companies		3,669.925	0.1	5,207	0.1
Total		3,116,418	100.0	4,351,506	100.0

Source: Bank of Korea and Financial Supervisory Service.

One major outcome of the financial reform was financial consolidation and conglomeration (Hahm 2008), which led to an immediate increase in bank profitability and soundness. The financial indicators, such as the capital adequacy, liquidity, and asset quality of banking institutions, improved (see Table 3). However, it is not clear whether the reforms led to a long-term improvement in banks' profitability. Korea's return on assets (ROA) remains low by international standards (Hong and Lee 2016).

Table 3: Financial Soundness Indicators, 2008–2014

	2008	2009	2010	2011	2012	2013	2014
Deposit Takers							
Regulatory capital to risk-weighted assets	12.3	14.4	14.3	14.0	14.3	14.5	14.0
Regulatory tier 1 capital to risk-weighted assets	8.8	10.9	11.3	10.7	11.1	11.4	11.4
Non-performing loans net of provisions to capital	3.2	3.1	3.4	2.6	3.1	3.6	2.8
Non-performing loans to total gross loans	0.6	0.6	0.6	0.5	0.6	0.6	0.5
Return on assets	0.7	0.6	0.7	1.0	0.7	0.3	0.5
Return on equity	9.9	8.6	9.7	13.2	8.2	4.0	6.0
Interest margin to gross income	66.3	80.9	73.1	73.6	78.3	82.2	62.1
Non-interest expenses to gross income	60.2	57.1	60.6	63.9	71.4	75.3	73.5
Liquid assets to total assets	35.3	37.8	35.2	35.4	36.2	33.8	37.9
Liquid assets to short-term liabilities	101.4	103.9	117.5	109.3	111.3	107.9	122.0
Foreign-currency-denominated loans to total loans	13.3	12.6	13.8	15.0	13.2	12.8	13.4
Foreign-currency-denominated liabilities to total liabilities	14.9	12.7	13.4	14.9	14.4	14.3	14.6
Non-financial Corporations Sector							
Total debt to equity	130.6	122.9	114.8	152.7	147.6	141.0	...
Return on equity	7.7	14.4	16.8	13.1	11.9	9.4	...
Households							
Household debt to GDP	83.9	85.9	85.0	83.0	84.0	85.3	87.2
Market Liquidity							
Average bid–ask spread in the securities market	1.4	1.3	1.1	1.1	0.0	0.0	0.0
Average daily turnover ratio in the securities market	1.8	2.5	4.8	4.3	4.9	4.4	4.3
Real Estate Markets							
Residential real estate loans to total loans	19.6	20.8	21.1	21.8	22.3	22.2	22.1
Commercial real estate loans to total loans	18.6	19.1	20.3	20.6	21.9	21.9	22.1

Source: IMF, Financial Soundness Indicators (FSI).

Similar to those in other economies, the banking institutions in Korea face fast and unprecedented changes with the emergence of innovative financial services, such as internet-only banking and fintech businesses. Korea's two internet-only banks, "K bank" and "Kakaobank," were officially launched in 2017. They brought about a new wave of competition in the banking sector, as they provide financial consumers with lower banking transaction costs and easier access to banking services than commercial banks. Financial innovations, such as digital payment, transfer services, crowdfunding, and automated wealth management, may point to a drastic transformation of the traditional banking system.

Korea's financial markets have expanded continuously due to various factors, including economic growth, improvements in economic players' capital mobilization and wealth management, the fostering of the capital market, and improvements to the financial infrastructure. In particular, the capital markets have continued to expand due to financial innovation and competition through the rearrangement of regulations on capital markets and the emergence of large-scale investment banks. This expansion of the capital markets since the mid-2000s has contributed to remarkable growth in securities-related institutions, creating 39 collective investment businesses and 11 securities companies between 2005 and 2010. By the end of 2016, the number of collective investment businesses had reached 165 and that of security companies had reached 54 (including 10 foreign branches; see Table 1).

The share of indirect financing markets, in which financial intermediaries broker funds (mainly through deposits and loans), has continued to decline, although it is still an important source of funding for corporations and households. By contrast, the share of financial transactions through direct financial markets, including money markets and capital markets, has continued to expand rapidly, reaching a balance with the existing bank-centered financial system (see Table 4). This pattern supports the view that banks and capital markets serve different roles in the financial market and that the relative importance of banks and capital markets varies with the stage of economic development (Demirgüç-Kunt, Feyen, and Levine 2013). Capital markets are thought to be more effective in financing higher-risk, longer-term projects, while banks have comparative advantages in financing standardized and lower-risk projects. Consequently, the more mature economies are, the greater the role that capital markets can play.

By the end of 2015, the total volume of Korea's indirect financial markets, including money markets and capital markets, amounted to 3,003.6 trillion won, a 23-fold increase from 130.1 trillion won in 1990 (see Table 4). The ratio of the money and capital market value to the nominal GDP rose from 0.88 to 2.17 between 1990 and 2015. Table 4 shows the development of the Korean money markets in detail. The money markets expanded nine times during the same period. The values of commercial papers (CP) and repurchase agreements (RP) showed steady growth, accounting for the largest share in 2015. The Bank of Korea uses RP transactions to adjust temporary surpluses or shortages of funds in financial institutions and steer the overnight call rate around the target policy rate.

Table 4 shows that, in the capital markets, the bond market showed remarkable 31-fold growth and the stock market 18-fold growth between 1990 and 2015. By the end of 2015, the bond market capitalization was 1,559.1 trillion won and the total stock market capitalization was 1,444.5 trillion won. Foreign ownership of stocks and bonds has been stable at around 7% and 32% on average, respectively, since 2010 (Financial Supervisory Service 2015).

Table 4: Financial Market Trend in Korea, Selected Years (as of Period-Ends)
(Unit: Trillion Won)

	1990	2000	2010	2015
Money Markets (A)	44.3	138.8	267.6	398.3
Call	3.4	16.1	22.5	17.9
Repurchase Agreement (RP)	3.4	26.1	76.9	123.2
Commercial Paper (CP)	6.8	44.7	80.9	123.0
Certificate of Deposit (CD)	12.7	14.2	44.5	29.3
Cover Bills	0.3	11.2	1.6	1.3
Monetary Stabilization Bonds (Short-Term)	15.2	26.5	41.1	53.5
Asset-Backed Short-Term Bonds	2.5	0.0	0.0	50.1
Capital Markets (B)	130.1	641.7	2,354.7	3,003.6
Stocks	79.0	217.0	1,239.9	1,444.5
KOSPI	79.0	188.0	1,141.9	1,242.8
KOSDAQ	–	29.0	98.0	201.6
Bonds	51.1	424.7	1,114.8	1,559.1
Financial Markets (A+B)	174.5	780.5	2,622.3	3,401.9
GDP	197.7	635.2	1,265.3	1,564.1
Financial Markets/GDP	0.88	1.23	2.07	2.17

Notes: KOSPI: Korea Composite Stock Price Index; KOSDAQ: Korea Securities Dealers Automated Quotations.

Source: Bank of Korea and Korea Exchange.

The market capitalization of stocks traded in the Korea Composite Stock Price Index (KOSPI) market, Korea's primary market, is used to calculate the representative stock price index. The KOSDAQ (Korea Securities Dealers Automated Quotations) market accounted for about 14% of the total stock market capitalization at the end of 2015. The value of stock market capitalization increased steadily, with its ratio to the GDP increasing from 34% in 2000 to 92% in 2015.

The volume of the bond market has expanded rapidly since the 1997 financial crisis. Before the crisis, the bond markets were underdeveloped and their role in the financial system was limited (Lee and Rhee 2007). Based on a principle of fiscal conservatism, only a limited amount of Korean treasury bonds (KTBs) were issued, so KTBs were not subject to active secondary trading. After the 1997 crisis, however, the government increased the issuances of KTBs to finance financial restructuring, and they increased dramatically from around 7 trillion won at the end of 1997 to 56.0 trillion won at the end of 2004.

The expansion of Korea's bond market occurred together with the rapid increase in government debt. The government expanded its debt to initiate structural reforms during the Asian financial crisis. In subsequent years it increased its debt for other purposes, such as large-scale social overhead capital (SOC) projects, the construction of public rental housing, regional development investment, and the pursuit of an expansionary fiscal policy following the 2008 global crisis⁵ (Hong and Lee 2016). In terms of outstanding stock, the total value of government bonds doubled from 614

⁵ In most years the central government recorded a positive consolidated budget balance while reporting a deficit in the operational balance (defined as the consolidated budget balance minus the social security balance plus the redemption of public funds; this is perceived as an indicator measure of fiscal soundness).

trillion won to 1,202 trillion won between 2005 and 2010, eventually making up 95% of the GDP by the end of 2015.

Despite its large nominal size, the corporate bond market had been inactive prior to the 1997 financial crisis. The role of corporate bonds was essentially that of disguised bank loans rather than capital market instruments, because Korean banks routinely guaranteed corporate bonds and held them to maturity as an alternative method of providing loans to a specific company when banks could not lend due to loan exposure regulations (Lee and Rhee 2007). This pattern is no longer observable, and the corporate bond market has developed into an important financial market. The value of corporate bonds outstanding increased from 107 trillion won to 357 trillion won between 2005 and 2015.

3.2 Strengthening of the Financial Infrastructure and Policy Framework

Since the 1997 financial crisis, the government has vigorously pursued stepwise reform to enhance the financial infrastructure and policy framework, which could further facilitate financial structural adjustment and financial liberalization and openness. The government converted the exchange rate system from a managed-floating into a free-floating one in December 1997 and allowed all forms of cross-border remittances. In line with the previous measures, the limits on foreign investment in stocks were eliminated in May 1998.

The emphasis was on improving competitiveness and expanding the diversity of financial institution services by easing the related regulations and liberalizing the interest rates. Consequently, the government implemented a number of enactments for financial liberalization, such as the Financial Holding Company Act in 2000, “bancassurance” (or the Bank Insurance Model) in 2004, and the Indirect Investment Asset Management Business Act in 2004, which aimed to promote the sales of indirect investment securities and asset management by indirect investment agencies.

At the same time, the government relaxed the requirements for establishing financial institutions, such as insurance companies and securities firms, and the regulations on asset management and branches. Moreover, it merged six laws related to capital markets, including the Securities and Exchange Act, the Indirect Investment Asset Management Business Act, and the Trust Business Act, into the Financial Investment Services and Capital Markets Act.

The government also introduced new laws and revised existing ones to reinforce the bond market’s infrastructure and institutions and raise them to a level comparable to those of other developed countries (BOK 2013). To promote liquidity in the government bond market, Korea introduced KTB primary dealerships, a fungible issue system, and the KTB conversion offer system. To finance fiscal needs and the long-term investment demand, it has issued KTBs with various longer-term maturities (10, 20, 30, and 50 years) one after the other since 2000. In March 2007 it also introduced TIPS (Treasury Inflation Protected Securities), indexed to inflation to ensure the protection of investors against the negative effects of price increases.

The government has also pursued initiatives to develop the corporate bond market. In 1999 mark-to-market pricing was introduced for bonds to enhance the transparency of price information. It issued various bonds with different issuance structures. For instance, it introduced the Asset-Backed Securitization (ABS) market in September 1998 through the ABS Act. In October 2011 it implemented a measure to improve the primary market by requiring arrangers to exercise due diligence and market making.

A revision of the Commercial Act in April 2012 allowed the removal of the limit on corporate bond issuance amounts.

Based on the lessons learnt, the government enforced regulations to ensure sound financial institution management and prevent the reckless lending practices that had occurred during the 1997 crisis (Lee and Rhee 2007). For example, the government established loan classification standards, provision requirements, and prompt corrective action (PCA) procedures. It also continued its efforts to improve lending practices and risk management systems. It reinforced the accounting and disclosure standards for all types of financial institutions. The FSC introduced a model corporate governance code for financial companies in December 2014. In August 2016 it enacted the Law on Corporate Governance aiming to enhance transparency and soundness in corporate governance rules and to strengthen internal control and risk management.

The government has continued its efforts to improve the role of the financial industry in the efficient allocation of financial resources to support new industries as growth engines. It also designated the financial industry itself as a growth industry, with strong potential to create high value-added and high-quality jobs. However, the government intervention has often been excessive, for example causing inefficiency by pressuring banks to support nonviable firms in declining industries.

One significant method that Korea used to streamline the financial system development after the crisis was to establish an integrated financial regulatory framework, the Financial Supervisory Service (FSS), and its decision-making body, the Financial Supervisory Commission (FSC; IMF, 2015a). The FSS merged supervisory agencies. The FSC and the FSS provide an integrated supervisory system encompassing nearly all financial institutions. The FSC addresses matters related to financial supervision, including financial supervisory policies and the licensing of financial institutions, and the FSS carries out the decisions of the FSC as its implementing unit. These Korean supervisory authorities have exercised various micro-prudential regulation measures, including forward-looking criteria, the Basel capital adequacy ratio, and the requirements for the deposit/loan ratio and the liquid asset/liquid debt ratio. In addition, the BOK and the KDIC are partially responsible for supervision with limited functions, such as requesting inspections and conducting joint examinations with the FSS.

The BOK is in charge of accommodating monetary and credit policies as a means of achieving price stability as well as “paying attention to” financial stability. The government revised the Bank of Korea Act on 31 August 2011 in an effort to heighten the bank’s role in financial stability after the 2008 global financial crisis had highlighted the importance of macro-prudential policy. The BOK supports a financial safety net with its comprehensive liquidity facilities, including emergency liquidity assistance.

The KDIC, established in June 1996, provides insurance for parts of the principal and interest of deposits entrusted to financial institutions, after initially covering banks only. In the immediate aftermath of the 1997 crisis, it temporarily adopted blanket guarantees for bankrupt insured financial institutions through late 2000 (BOK 2013). It reinstated limited coverage in 2001. Since then the KDIC has provided deposit insurance that protects depositors in the banking and non-banking sectors at a rate of up to 50 million won per depositor in each covered financial institution.

The global financial crisis in 2008 revealed major weaknesses in Korea’s regulatory and supervisory structure, including its inability to tackle the innate procyclicality of financial systems and the inter-connectedness of financial institutions. The regulatory and supervisory framework, which emphasized micro-prudential supervision over individual institutions or specific financial instruments, failed to identify the buildup of systematic risks and revealed its failure to introduce effective regulations for

increasingly interdependent financial institutions and markets. Many economies hit by the global financial crisis called for the building up of system-wide macro-prudential oversight to prevent systemic failures in the financial system.

Even before the global financial crisis, the Korean Government had imposed stringent regulations on residential mortgage lending, such as conservative loan-to-value (LTV) and debt-to-income (DTI) ratio requirements. It introduced the LTV ratio in 2002 against soaring housing prices and adopted the DTI ratio requirement as a complement in 2005. Since then the government has adjusted the intensity of its regulations in accordance with the economic circumstances.

After the 2008 global financial crisis, the Korean Government introduced a number of macroprudential policies to reduce the procyclical behavior of financial institutions, detect the buildup of systemic risks, and supervise liquidity and foreign exchange vulnerabilities in the Korean banking system (Hong and Lee 2016). The measures in these policy packages included a ceiling on banks' loan-to-deposit ratios in 2009, aiming to shift banks' funding structure away from wholesale funding, a regulation on banks' foreign exchange derivative positions in 2010,⁶ and a Macroprudential Stability Levy (a levy on non-core foreign currency liabilities held by domestic and foreign banks) in 2011.⁷ These measures appear to have made the financial sector more resilient and stable (Bruno and Shin 2014; IMF 2014).

Korea has conducted macroprudential policies mainly at the discretion of the five agencies—the Ministry of Strategy and Finance (MOSF), FSC, FSS, BOK, and KDIC—and coordinated them through a range of intra-agency meetings (IMF 2015a). During the global financial crisis, the agencies gathered in formal and informal meetings to evaluate systemic risk and deliberate policy measures at various levels. The five agencies have cross-representation at key decision-making levels, as shown in Table 5. In July 2012 a Macroeconomic and Finance Meeting at the deputy level involved these five major agencies.

The Korean experience during the 1997 and 2008 financial crises revealed the innate susceptibility of its financial system to external shocks and convinced policy makers of the importance of limiting such susceptibility and mitigating its impacts on the economy. To safeguard financial stability against a future crisis, the Korean authorities tried to set up an improved and effective crisis management and resolution mechanism. Its framework entails a swift and coordinated action plan that clarifies the legal powers, processes, roles, and relationships among all the relevant institutions (IMF 2015a). In line with the relevant laws and enforcement decrees, the government assigned the mandates for overseeing the financial sector to the five authorities: the FSC, the FSS, the BOK, the KDIC, and the MOSF. The general belief is that the Korean economy is now equipped with a better framework with which to monitor and tackle threats to financial stability as well as effective tools that can be activated in the event of a financial crisis (IMF 2015a). Nevertheless, intra-agency cooperation needs to

⁶ This policy measure imposed a leverage cap on the value of the foreign exchange derivative contracts that banks could maintain. The leverage cap was set at 50% of capital for domestic banks and 250% for the branches of foreign banks and was then lowered over time. This policy is used as a capital flow management measure aimed at curbing increases in banks' short-term external borrowing. It can also act as a macroprudential policy tool applied to both residents and non-residents, aiming to reduce currency and maturity mismatches in external liabilities and contain systemic risks in the financial system as a whole (IMF 2013).

⁷ Research has suggested that banks' excessive non-core foreign currency liabilities caused systemic risk. The Korean government applied the levy rates of an annualized 20 basis points on the wholesale foreign exchange-denominated liabilities of the banks for maturities of less than one year, and gradually lower rates on the liabilities of longer maturities of over one year.

continue to improve with more explicit provisions for information sharing and better policy coordination during crises.

Table 5: Cross-Representation in Decision-Making Bodies among the Korean Financial Regulatory and Supervisory Agencies

Name	MOSF	BOK	FSC	FSS	KDIC
Macroeconomic Financial Meeting	Vice Minister (Chair)	Senior Deputy Governor	Vice Chairman	Senior Deputy Governor	Vice President
BOK (Monetary Policy Committee ^a)	Vice Minister (non-voting member)	Governor (Chair), Sr Deputy Governor	Vice Chair (non-voting member)	–	–
Financial Services Commission ^b	Vice Minister	Senior Deputy Governor	FSC Chairman (Chair), FSC Vice Chair	Governor	President
Financial Supervisory Service	–	–	–	Governor (Chair), Senior Deputy Governor	–
Deposit Insurance Committee ^c	Vice Minister	Senior Deputy Governor	Vice Chairman	–	President (Chair)

Notes: MOSF: Ministry of Strategy and Finance; BOK: Bank of Korea; FSC: Financial Services Commission; FSS: Financial Supervisory Service; FSC: Financial Services Commission; KDIC: Korea Deposit Insurance Corporation.

^a The BOK’s monetary policy committee includes five other members (one member each recommended by the BOK, MOSF, FSC, Korea Chamber of Commerce & Industry, and Korea Federation of Banks).

^b The commission has three additional members including two standing members and one non-standing member, who is recommended by the Chamber of Commerce.

^c The committee, the highest decision-making body of the KDIC, is composed of seven individuals, including three external members.

Source: IMF (2015a).

The financial crises in 1997 and 2008 also highlighted Korea’s need for financial safety nets against global liquidity shocks (i.e., a foreign exchange crisis due to a shortage of global liquidity). Since the 1997 Asian financial crisis, Korea has strengthened its capacity to secure liquidity by increasing its holdings of international reserves and pursuing bilateral and regional currency swap arrangements, such as the bilateral currency swap arrangement with the People’s Republic of China (PRC), worth 64 trillion won/360 billion RMB, and the \$240 billion Chiang Mai Initiative Multilateralization (CMIM) regional currency swap arrangement among the ASEAN+3, which involves 10 ASEAN economies, the PRC, Japan, and Korea. However, these measures may not be effective in securing sufficient or urgently required international liquidity in the case of a crisis, especially a large-scale region-wide shock. The BOK concluded a won/dollar swap arrangement of \$30 billion with the US Fed in October 2008. The bilateral swap arrangement with Japan expanded to \$70 billion in October 2011 during the eurozone crisis. However, the swap arrangements with the Fed and the Bank of Japan expired and were not renewed. These arrangements with major international reserve currency countries may need to be reestablished to cope with the negative spillovers from future large-scale shocks.

4. CHALLENGES TO FINANCIAL STABILITY AND RESILIENCE IN KOREA

The future Korean financial stability conditions largely depend on two major issues: changes in household and corporate financial soundness and external risks, including volatile capital flows, amid global monetary tightening.

4.1 Household and Corporate Debt Management

Household debt in Korea has been increasing rapidly. As the household credit statistics show, it amounted to 1,359.7 trillion won at the end of the first quarter of 2017, which is about 153% of household disposable income (BOK 2017b). The expansion of household debt is causing growing concerns about its potential negative effects on the financial sector's stability as well as on domestic consumption (IMF 2016).

Various factors have contributed to the high and increasing level of household borrowing in Korea. The primary reason for debt financing in Korea has been the acquisition of assets, such as houses and other real estate. High and rising housing prices have generated a large demand for mortgage loans. Second, the record low interest rates have expanded the loan demand. In addition, the 2014 relaxation of the ceilings on the loan-to-value (LTV) and debt-to-income (DTI) ratios for mortgage lending aggravated the household debt ratios. Third, the change in the *chonsei* rental system contributed to increasing the aggregate household debt (IMF 2016). In the *chonsei* system, unique to Korea, the tenant pays a large fixed-sum deposit, equivalent to about 50 to 90% of the house sale price, to the owner in lieu of monthly rent. Soaring *chonsei* prices in recent years, combined with low interest rates, have led many tenants to purchase houses and increase their borrowing through financial intermediaries. In addition, both business and consumption financing have increased. For example, many elderly retirees have borrowed to open small businesses to earn supplementary income.

To maintain financial soundness amid rising household debt, the financial supervisory authorities have taken prudential measures, such as LTV and DTI regulations, since 2006, focusing on improving the qualitative structure of household debt. A large share of mortgages used to be variable-interest loans with short-term maturity, repaid by interest only until maturity. With support from the authorities, there was a steady increase in the proportions of banks' home mortgage loans with fixed interest rates from 14.2% to 43% and with amortizing loans from 13.9% to 45.1% between 2012 and 2016 (BOK 2017b). The number of loans with remaining maturities of 10 years and longer has also increased, making the structure of home mortgage loans more stable, with the average remaining maturity lengthened from 11.6 years at the end of 2010 to 17.5 years as of September 2015 (IMF 2016).

Considering the characteristics of household debt in Korea, mass bankruptcy in the household sector appears to be unlikely (Hong and Lee 2016). A household survey shows that most household debt has offsetting assets. The household leverage ratio (measured as the debt to net worth ratio) is around 15%, comparable to that of other OECD countries (IMF 2016). On the liability side of the household balance sheet, mortgage debt accounts for 41% of Korea's total household liabilities, while, on the asset side, nonfinancial assets account for 74% of the total household assets. These ratios are also comparable to those of other OECD countries. The ratio of financial liabilities to financial assets for Korean households stood at about 46% on average

between 2010 and 2017 (BOK 2017b). Household groups with high net worth, high incomes, and high credit ratings hold a large portion of household debt.

The delinquency rate of bank loans has been consistently low since the 2000s and further declined to 0.5% in March 2016 from 1.1% at the end of 2005. Most stress tests on household debt have proven the whole financial system to be sound; even in pessimistic scenarios, there will be a marginal increase in the overall debt delinquency ratio and a limited impact on the balance sheet of first-tier financial institutions.

However, there are many low-income, less-creditworthy households that have borrowed multiple loans from banks and non-banks. The delinquency rate of non-bank loans was much higher, about 2%, in March 2016 (BOK 2017b). The subset of households that have borrowed from the second-tier financial market is more likely to have higher DTI and LTV ratios and is thus more exposed to shocks, such as an increase in the interest rate and falling property prices. A stress test shows that more than 1.26 million households, amounting to 11.6% of all households with financial liabilities, are subject to default risks as of March 2016 (BOK 2017b). Against this backdrop, the Korean Government tightened the DTI and LTV limits in June 2017 and considered advising banks to monitor a comprehensive debt–service ratio (DSR) for borrowers.

In the corporate sector, profitability has improved through better financial structures, but concerns are growing over vulnerabilities in weak industries. In the decades since the Asian financial crisis, corporate leverage among Korean firms has on average decreased continuously. This rapid deleveraging, initially enforced by the government for the sake of corporate restructuring, accelerated when attitudes toward risk shifted among corporate and financial institutions. Corporations' tendency to make investment decisions only after appreciating the risks involved reduced their investment rates and their dependency on external debt financing. The corporate debt–equity ratio remained low, 141%, in 2013 (see Table 3). Given the low interest rate, this contributed to promoting the financial health of corporations. The interest coverage ratio (operating income–interest expenses) was 353% in 2015, increasing from 241% in 2009 (BOK n.d.).

Troubled firms in weak industries, including steel, shipbuilding, and shipping, which have not yet recovered from the global economic crisis, are posing systematic risk in the financial market. Although the aggregate corporate leverage is adequate, with nearly 90% of companies at a debt–equity ratio of less than 200%, the financial structures of the abovementioned industries (as well as the construction industry) have deteriorated through a slump in sales. The share of vulnerable firms—those with an interest–coverage ratio below 1.5—has been high since the global financial crisis and rose beyond 35% last year (IMF 2016). There are concerns that a relatively large portion of corporate debt is concentrated in firms with high leverage and low profitability. The IMF (2015b) points out that almost 20% of corporate debt is owed by firms with negative profits and 20% is owed by firms with an interest rate–coverage ratio below one.

As the performance of firms in some export-oriented industries, such as shipbuilding and shipping, have worsened, the NPL ratios of specialized policy banks, including the Korea Development Bank and the Korea EXIM Bank, which have supported these industries, have increased significantly. These features suggest that there is still room to improve the credit allocation practices of financial institutions in Korea, especially those run by the state.

4.2 How to Cope with Volatile Capital Flows

The Korean economy is closely linked to advanced economies through the financial channel. Greater financial integration can bring substantial benefits, including risk diversification and the development of local financial industries, but also increases the risk of financial contagion across borders. As the empirical evidence shows, Korea has made significant progress in financial market integration over the decades since the 1997 crisis through financial liberalization and opening.

Figure 5 shows the results of the variance composition of Korea’s equity returns, summarized over three sub-periods: pre-Asian financial crisis (AFC; June 1989–June 1997), post-global financial crisis (GFC; January 2010–Sept 2016), and between the two crises (June 1999–September 2007). It shows that the Korean financial markets (i.e., equity markets) have increased their integration with both the region and the world since the Asian financial crisis and that this tighter integration has translated into increased spillovers from global and regional shocks.⁸

Global shocks explain most of the variance in Korean equity returns for both the pre- and post-AFC periods. After the 1997 Asian financial crisis, the Korean stock market’s sensitivity to global shocks increased, leading to the significant spillover during the global financial crisis of 2008. The share of global variance has remained high, accounting for about 28% of the total equity return variance, since the 2008 global financial crisis.

The Korean stock market has also made steady progress in regional integration since the 2000s, as can be seen in Figure 5. The share of the regional shock in the local equity return variance increased from 11% to 15% between the pre- and post-GFC periods. This increased sensitivity of the Korean stock market to a regional shock may suggest the increasing importance of regional financial markets, such as the PRC’s for the Korean market, as well as an increase in international investors’ risk sensitivity to a regional shock. The increasing financial linkage across the economies in the region may also reflect an expansion of regional production networks.

⁸ This methodology is based on Park and Lee (2011) and Park (2017). The regional and global variance ratios were derived as follows:

$$VR_{c,t}^{EA} = \frac{(\beta_{c,t}^{EA})^2 \sigma_{EA,t}^2}{\sigma_{c,t}^2}$$

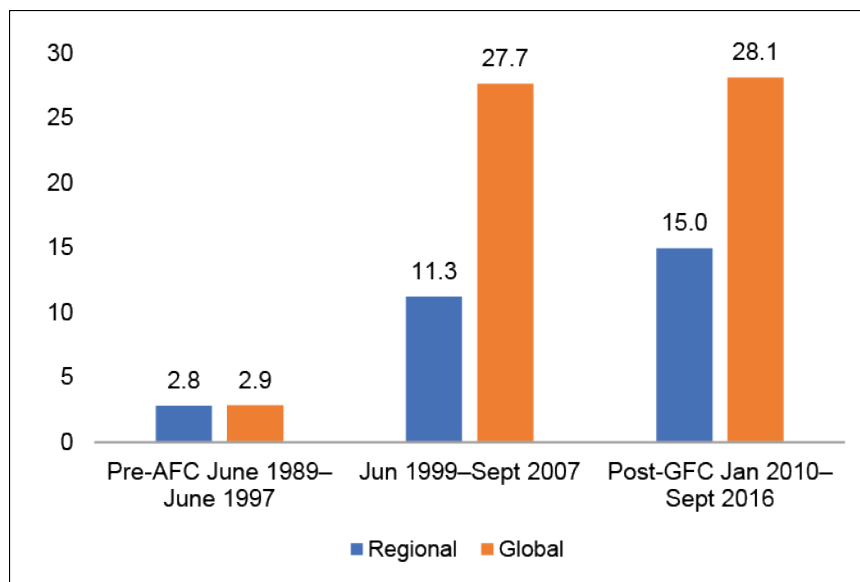
$$VR_{c,t}^G = \frac{(\beta_{c,t}^G)^2 \sigma_{G,t}^2}{\sigma_{c,t}^2}$$

where $\sigma_{EA,t}^2$, $\sigma_{G,t}^2$ and $\sigma_{c,t}^2$ are the regional, global, and individual market volatilities, respectively. These were obtained by estimating the following equation, in which the unexpected component of the Korean asset return, $\varepsilon_{c,t}$, is then decomposed into a purely local shock (an intercept term or $\alpha_{c,t}$), a reaction to regional news ($\beta_{c,t}^{EA} \varepsilon_{EA,t}$), and a reaction to global news ($\beta_{c,t}^G \varepsilon_{G,t}$):

$$\varepsilon_{c,t} = \alpha_{c,t} + \beta_{c,t}^{EA} \varepsilon_{EA,t} + \beta_{c,t}^G \varepsilon_{G,t},$$

where $\beta_{c,t}^{EA}$ and $\beta_{c,t}^G$ represent the country-specific sensitivity to a regional and global market shock, respectively. $\varepsilon_{c,t}$ is measured by the error terms obtained from the regression equation relating individual market returns to a constant term and to the returns in the previous period. Similarly, $\varepsilon_{EA,t}$ and $\varepsilon_{G,t}$ are estimated as the unexpected components of the regional and the global market returns, respectively. The MSCI All Country (AC) World Index was used as a proxy for the global stock market. Regional returns were computed as the weighted sum of nine emerging Asian economies’ returns, using the GDP in US dollars as weights.

Figure 5: Share of the Variance in Korean Equity Returns Explained by Global and Regional Shocks



AFC = Asian financial crisis, GFC = global financial crisis.

Source: Authors' calculations.

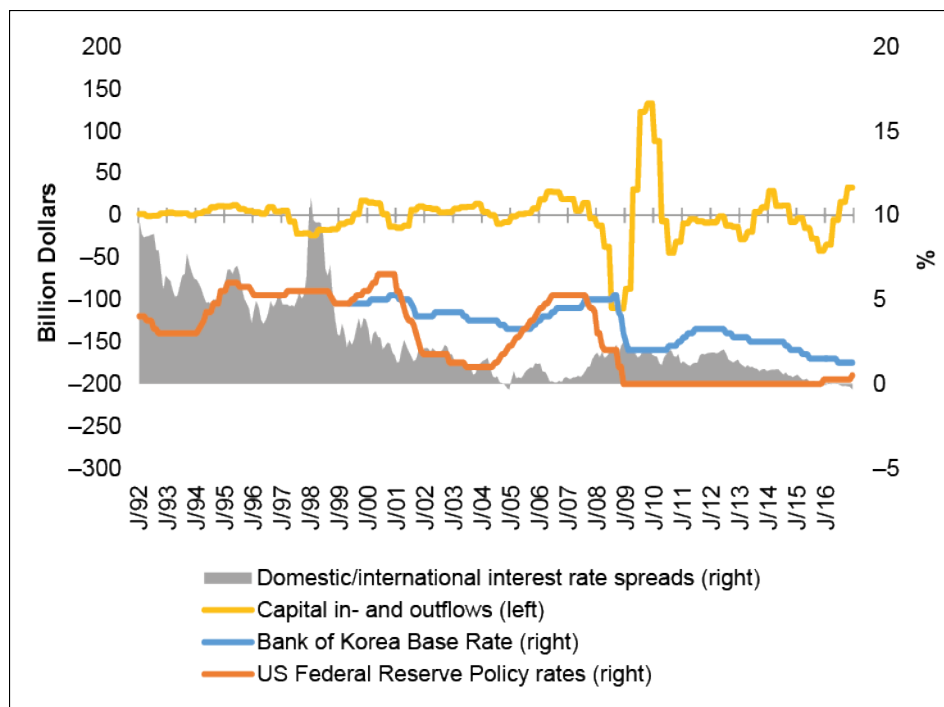
Volatile foreign capital flows have frequently destabilized the Korean financial markets, especially during the two major financial crises in 1997 and 2008. Due to the government's efforts to enhance its financial system, the Korean financial sector has been less affected by financial turmoil than other emerging markets over the recent years (IMF 2015b). However, as Korea is an open economy with an open capital account and a non-reserve currency, it is still subject to global financial turbulence. The Korean authorities should remain vigilant.

Considering that capital volatility in the Korean financial markets has often resulted from global shocks, the Korean authorities must be aware of the major central banks' monetary tightening. Following the global financial meltdown in 2008, the US Fed cut the policy rate to almost 0% and adopted "quantitative easing" (QE) by purchasing bonds from the public and private sectors. The central banks of the European Union, the UK, and Japan launched similar unconventional monetary policies. The economic environment has changed since 2015. The Fed ended its QE and raised its policy rate in 2015. The unwinding of unconventional QE programs undertaken by major central banks with the continuous tightening of the Fed's monetary policy could lead to the sudden withdrawal of short-term capital, posing the risk of financial disruption.

In responding to volatile capital flows due to monetary policy tightening, the Korean monetary authority would consider using all the available instruments, including interest rates, exchange rates, prudential regulation, and possibly capital controls. However, according to an in-depth analysis, one can expect a limited possibility of large capital outflows during the monetary policy normalization of the US Fed. Korea experienced three major capital outflows during the 1997–1999, 2008–2009, and 2015–2016 periods (see Figure 6). The Bank of Korea (2017a) showed that the above capital outflows can be attributed to volatility in the international financial market and vulnerabilities in the domestic economy rather than to the domestic–international interest rate spread. In particular, the impact of changes in the domestic–international

interest rate spread on capital outflows is ambiguous, and the capital outflows mentioned above were all initiated by financial turmoil in the international market.

Figure 6: Interest Rates and Foreigners' Investment Fund Flows, January 1992–December 2016



Source: Bank of Korea (2017a).

Although foreigners' bond investment fund flows are more sensitive to the domestic–international interest rate spread, its stability has improved. There has been a significant increase in the share of public funds with longer maturities than private funds, and they are less volatile to changes in the interest rate spread.

Hence, as long as Korea continues to strengthen the transparency and soundness of its financial institutions and improve the prudential regulation and supervision of its financial sector, it will be able to manage the impacts of external shocks, such as global monetary policy shocks.

5. POLICY IMPLICATIONS FOR EMERGING ECONOMIES

The Korean experience of the 1997 and 2008 financial crises revealed how heavily an economy with underlying financial system weaknesses was affected by financial globalization. In response to the crises, Korea attempted to amend its structural weaknesses and streamline its macroeconomic and financial policy frameworks. During the 1997 Asian financial crisis, an agreement with the IMF addressed an over-leveraged corporate sector and an under-developed financial market without an appropriate supervisory system through restructuring measures. Korea adopted policies to develop both direct and indirect financial markets and establish an integrated supervisory framework. During the 2008 global financial crisis, after a

global liquidity shortage heavily affected the financial markets, the government quickly implemented measures such as an injection of capital to banks and currency swaps. Consequently, it rapidly restored the stability of the Korean financial markets, contributing to the economy's speedy recovery from the crisis.

Over the past two decades, Korea's authorities have made great improvements to the soundness and resilience of its financial markets and system. Although the Korean economy is susceptible to external shocks, given its nature as an open economy, its improved financial system and policy framework have reduced the likelihood and potential impacts of future crises.

Nevertheless, there remains considerable room for Korea to improve further its financial markets and institutions, the efficiency and soundness of which are still less developed than those of advanced economies. According to the World Economic Forum's latest global competitiveness report, Korea ranked only seventy-fourth in financial market efficiency, due to poor performance in the availability of financial services, ease of access to loans, and support for venture start-ups (World Economic Forum 2017). Hence, Korea should continue its efforts to promote market-based credit allocation and develop a venture capital market. In addition, the reforms must aim at improving the transparency of financial institutions and building an effective supervisory and regulation system over volatile capital flows as well as rapidly rising household debt and over-indebted firms.

The Korean experience has useful policy implications for emerging Asian economies, which are also susceptible to external financial shocks and thereby require improved and more effective financial policy frameworks and institutions amid the changing global financial landscape. Despite the global financial crisis, financial globalization and innovation are likely to continue to evolve and exert a profound impact on the global financial landscape.

Hence, emerging Asian economies should continue to improve their financial system and policy framework. First, emerging Asian economies must strengthen their financial regulatory reform and development. One of the main causes of financial crises in emerging economies is inappropriate financial regulation and supervision. Thus, the reforms must promote effective incentives, improve the transparency and soundness of the financial institutions, and boost the prudential regulation and supervision of the financial sector.

Second, emerging Asian countries must build up a broad and consistent monetary and financial policy framework that takes into account asset prices and financial market stability. This would allow them to respond effectively to challenges such as volatile capital flows and asset price bubbles. In addition, there is a need for more effective macro-prudential tools to mitigate the negative impacts of volatile surges in capital flows.

Third, emerging Asian economies should support financial market development and innovation and its regulation in a balanced manner. Financial innovation brings benefits such as an improvement in the efficiency of financial resource allocation and risk alleviation, thereby enhancing economic growth and welfare. However, not all financial innovations are beneficial. The global financial crisis highlighted the dangers of unrestrained, complex, and obscure modern finance. The government must stimulate and effectively manage innovation without stifling it by improving transparency and providing the right incentives. Emerging Asian economies must thus develop an effective financial regulatory system.

Emerging Asian economies also need to promote regional and global financial cooperation. The necessity of dealing with crises resulting from systematic failure and cross-border financial panic calls for cooperation among emerging economies. Emerging economies must, as a group, take on greater responsibility for developing appropriate global supervisory and regulatory structures by actively engaging in discussions at global meetings, such as the Group of Twenty (G20), the Financial Stability Board, and the IMF. Given their high vulnerability to cross-border capital flows, neighboring economies in the region (such as the ASEAN+3) must strengthen their cooperation in financial supervision, surveillance, and regulatory issues to manage and prevent future crises.

There is no room for complacency for emerging Asian economies. A new crisis will occur, but no one knows *ex ante* what type of crisis it will be or when it will arrive. Hence, emerging Asian economies should pursue the right policies to build a more effective and more resilient financial system to minimize the likelihood and adverse effects of a future crisis.

REFERENCES

- Bank of Korea (BOK). n.d. "Economic Statistics System." Online database. http://ecos.bok.or.kr/EIndex_en.jsp.
- . Various years. *Financial Market Trends*.
- . 2013. *Financial Markets in Korea*. Seoul: Bank of Korea.
- . 2017a. *Monetary Policy Report*. April 2017. Seoul: Bank of Korea.
- . 2017b. *Financial Stability Report*. June 2017. Seoul: Bank of Korea.
- Borensztein, E., and J.-W. Lee. 2005. "Financial Reform and the Efficiency of Credit Allocation in Korea." *Journal of Policy Reform* 8 (1): 55–68.
- Bruno, V., and H. S. Shin. 2014. "Assessing Macroprudential Policies: Case of South Korea." *Scandinavian Journal of Economics* 116 (1): 128–57.
- Demirgüç-Kunt, A., E. Feyen, and R. Levine. 2013. "The Evolving Importance of Banks and Securities Markets." *World Bank Economic Review* 27 (3): 476–90.
- Financial Supervisory Service. 2015. *Annual Report*.
- . Various years. *Securities Investment by Foreign Investors (in Korean)*.
- Hahm, J. 2008. "Ten Years after the Crisis: Financial System Transition in Korea." In *Ten Years after the Korean Crisis: Crisis, Adjustment and Long-Run Economic Growth*, edited by M. Karasulu and D. Yang. Seoul, Korea: Korea Institute for International Economic Policy.
- Hong, K., and J.-W. Lee. 2016. Banking and Finance in Republic of Korea. Working paper.
- International Monetary Fund (IMF). 2013. Key Aspects of Macroprudential Policy. IMF Policy Paper. <http://www.imf.org/external/np/pp/eng/2013/061013b.pdf>
- . 2014. *Republic of Korea Financial System Stability Assessment*. Washington, DC: International Monetary Fund.
- . 2015a. *Republic of Korea Financial Sector Assessment Program—Crisis Preparedness and Crisis Management Framework—Technical Note*. IMF Country Report No. 15/5, Washington, DC: International Monetary Fund.
- . 2015b. Republic of Korea 2015 Article IV Consultation—Staff Report. IMF Country Report No. 15/130. Washington, DC: International Monetary Fund.
- . 2016. Republic of Korea 2016 Article IV Consultation—Staff Report. IMF Country Report No. 15/130. Washington, DC: International Monetary Fund.
- Ito, T. 2007. "Asian Currency Crisis and the International Monetary Fund, 10 Years Later: Overview." *Asian Economic Policy Review*, 2: 16–49.
- Kim, Y. J., and J.-W. Lee. 2002. "Overinvestment, Collateral Lending and Economic Crisis." *Japan and World Economy* 14 (2): 181–201.
- Lee, H., and C. Rhee 2012. "Lessons from the 1997 and the 2008 Crises in Korea." *Asian Economic Policy Review* 7 (1): 47–64.
- Lee, J.-W., and C. Rhee. 2007. "Crisis and Recovery: What We Have Learned from the South Korean Experience?" *Asian Economic Policy Review* 2 (1): 146–64.

- Park, C. Y. 2017. Decoupling Asia Revisited. Asian Development Bank Economics Working Paper Series No. 506.
- Park, Y. C., and J.-W. Lee. 2002. Recovery and Sustainability in East Asia. In *Managing Currency Crises in Emerging Markets*, edited by M. Dooley and J. Frankel. The University of Chicago Press.
- . 2011. "Financial Integration in Emerging Asia: Challenges and Prospects." *Asian Economic Policy Review* 5 (2):176–98.
- Tsutsumi, M., R. S. Jones, and T. F. Cargill. 2010. The Korean Financial System: Overcoming the Global Financial Crisis and Addressing Remaining Problems. OECD Economics Department Working Paper No. 796. France, Paris: OECD Publishing.
- World Economic Forum. 2017. *Global Competitiveness Report 2017–2018*. Switzerland, Geneva: World Economic Forum.