

Global Financial Crisis and the Korean Economy

In June Kim and Yeongseop Rhee *

This paper examines why the Korean economy is most suffering from the current U.S. born financial crisis and suggests policies to overcome it with discerning the features of the current crisis from the past one. A notable feature of the current crisis is that excessive securitization by financial institutions and reliance on financial derivatives widens and deepens the crisis much further and makes it difficult to assess the damages from the crisis. Policy suggestions include: The government provide enough liquidity; the government first restructure financial institutions and lead corporate restructuring together with them; macro financial regulation and supervision as well as micro one be emphasized; and a drastic stimulus package be introduced not only to stimulate the economy in recession but also to enlarge the long term growth potential.

Keywords: Financial crisis, Subprime mortgage, Derivatives transaction, Macro financial regulation and supervision

JEL Classification: F34, G1, G21

I. Introduction

Over the past few months, we have watched the biggest crisis since the Great Depression unfold first in the U.S. and spill over to EU, Asia and the world. The housing melted down, the stock market tumbled, and a swath of banks went bankrupt and were merged into others. As a liquidity crisis threatens to turn into a whole systemic crisis, the

* Professor, Department of Economics, Seoul National University, Seoul 151-746, Korea, (Tel) +82-2-880-6389, (Fax) +82-2-886-4231, (E-mail) kimij@snu.ac.kr; Professor, Department of Economics, Sookmyung University, Hyochangwongil 52, Yongsan-ku, Seoul 140-742, Korea, (Tel) +82-2-710-9530, (Fax) +82-2-2077-7328, (E-mail) ysree@sookmyung.ac.kr, respectively.

governments have heavily intervened to prevent the crisis from further spreading. Even the U.S. government has used direct involvement in financial markets at the most extraordinary level since the Great Depression. But the sub-prime mortgage market crisis has evolved into a financial crisis, a credit crisis, and a confidence crisis, and also affected the real sector.

Korea is no exception to the global financial crisis. At the beginning, only the foreign exchange market was fluctuated due to temporary lack of the U.S. dollar. But within a few weeks the whole financial system was frozen, and within a few months the whole economy fell into a big trouble. At the end of 2007 the Korea Composite Stock Price Index (KOSPI) was around 1900 and the won-dollar exchange rate was around 930. However, at the end of 2008 after one year, the KOSPI plunged to the level of 1100s while the exchange rate was over 1300, surpassing the KOSPI. What's worse is that the volatility in the foreign exchange market and the stock market during the crisis unfolding was the highest in the world. Korea became one of the most suffering countries from the U.S. born financial crisis.

Before the crisis, overall macroeconomic trend had been stable, government or external deficit was not the case, financial soundness of firms and financial institutions had improved, and foreign reserve was well over \$200 billion. This raises a question why Korea is suffering the most in spite that its economy was in relatively good shape compared not only to other countries but also to the past stricken by the Asian crisis in 1997. In the paper, we assess what has been wrong in the Korean economy to provide reasonable answers to the above question.

We also try to discern features of the current crisis from the past one. This crisis may look familiar and call to mind the unhappy precedent that took place in Asia in 1997. Underlying causes of the crisis such as housing bubble, greedy bankers, a flood of liquidity, excess leverage, lax regulation, moral hazard, and a toxic relationship between government and business are very similar to "Asian sins" that were decried a decade ago. But these similarities may hide important differences. For example, most countries consider the current one different from the past one, and emphasize that the role of the state in the financial sector should increase, which is quite opposite to the long trend of liberalization. This suggests that without clear understanding features of the current crisis, we may be led to undesirable remedies. Thus, we aim to identify main features of the current global crisis and

suggest necessary policies using the analysis of the current features and past remedies.

The remaining of the paper is composed as follows. Section II presents how the global financial crisis started in the U.S. and how the U.S. government has responded to mitigate the crisis. Section III examines the causes and the effects of the crisis on the Korean economy, focusing on six most imminent issues. Section IV analyzes past remedies and suggest policies needed to cope with the ongoing crisis and to prepare a new revival after the crisis. Finally, Section V concludes with a brief summary.

II. Global Financial Crisis

A. How the Crisis Started in the U.S.

The global financial crisis started in the U.S. due to many complex causes. One of underlying causes is the low interest rate policy by the Federal Reserve Bank (FRB) after the Dotcom Bubble to bolster the economy. This expansionary policy encouraged U.S. households to purchase homes with excessive loans without saving and played a critical role in creating bubbles in the real estate market and the stock market.

Meanwhile the U.S. accumulated foreign debt because of a tremendous current account deficit caused by binge of households and the government sector. The current account deficit was offset by the inflow of foreign capital, *i.e.*, the surplus of the capital account. In this process, the foreign demand for U.S. securities provided money for U.S. consumption beyond its capacity.

The bubble in the real estate market whose growth rate exceeded that of income growth rate persisted along with self-fulfilling expectation that the prices would continue to rise.¹ Mortgage lending institutions deducted down-payments and offered low floating interest rates for the first 2 to 3 years in order to increase loans.

Before 2000 sub-prime mortgage loans rarely took place. But with continuous increase of house prices, the loans had expanded to those with sub-prime credit rating, accelerating the creation of bubble in the housing market.

¹ Shibata (2004) points out that the bubble in the asset market preceded the U.S. Great Depression in the 1930s and the Japan's Lost Decade in the 1990s.

Sub-prime mortgage loans substantially increased as new financial products through securitization² of mortgages sprang up. The first securitization of mortgages was done by Fannie Mae and Freddie Mac after the 1970s. In order to increase marketability, these institutions provided payment protection for mortgage-backed securities (MBS). They first guaranteed only prime mortgage loans but gradually expanded the guarantee to lower grade loans including sub-prime mortgage loans.

The securitization of loans became popular as sub-prime mortgage loans were packaged as collateralized debt obligation (CDO). Investment banks were the forerunners of this process. During the process, credit rating agencies' assessment or mono-line insurers' guarantees were used to increase credit rating and consequently bonds were issued at a relatively low interest rate. Credit rating agencies assessed credit of bond issuers after receiving fees from them. The mono-line insurers received premiums and in return promised payment protection.

Moreover, insurance companies and investment banks sold credit default swap (CDS)³ similar to guarantees by mono-line insurers. Yet those institutions could not compensate losses in case of a crisis because thousands of billion dollars were traded in the CDS market whereas those institutions lacked such amount of capital.

As institutional investors' money flowed in to the MBS and CDO markets, those who had not been able to acquire loans due to low credit were able to borrow money. This easier access to loans resulted in increased demand for housing and dramatic increase in house prices.

The financial derivatives spread further because of low interest monetary policy and lack of financial oversight. Financial institutions borrowed money at a low interest rate and increased their purchase of MBS or CDO related to mortgages. They especially established a structured investment vehicle (SIV) and recorded those transactions as off-balance sheet transactions which are not under restriction or oversight by financial authorities. Some financial institutions too much relied on short-term collateralized borrowing and had to pay more than a quarter

²The securitization of mortgage loans means creating securities guaranteed by a package containing mortgage loans. In this case the investors may be compensated with the principal and interest rates paid by mortgage borrowers.

³An off-board financial derivative which trades the default risk. A company promises to compensate for the losses if the bond holder fails to receive the principal and the interests from the bond issuer.

of their liabilities every day.

Such rollovers of short-term borrowing did not pose any problems when house prices were rising and capital at low interest-rate was abundant. However, as the bubble burst in the real estate market and the interest rate rose due to the restrictionary monetary policy, lenders started to refuse rollovers for those institutions. Thus, financial institutions with high leverage quickly sold their assets, which led to plunging asset prices and exacerbated insolvency.

A question is how securitization of loans was possible without accurate assessment of risk, ultimately resulting in a financial crisis. In other words, how could the first mortgage loan companies, MBS issuers, CDO issuers, mono-line insurers, credit rating agencies, and CDS sellers believe the results of computer risk model without due diligence and finally cause the financial crisis?

Some people assert that the securitization process itself precludes due diligence: that since companies believe the asset risks can be transferred to others by securitization, they lack the incentive to accurately assess the risks. However, this assertion is not persuasive, because even if a structured investment vehicle is established to record the transactions as off-balance sheet transactions during securitization, relevant institutions would know that in case of insolvency those transactions must be recorded in the balance sheet.

A more reasonable answer is the greed of the Wall Street and the lack of due regulation and supervision.⁴ The Wall Street was enticed by high rate of return of mortgage related assets and used derivatives to excessively expand mortgage related transactions. However, the then-FRB chairman Alan Greenspan opposed measures against the Wall Street, asserting that derivatives disperse risk according to risk-managing capacity.

They did not sense the underlying risk of securitization. As the systemic risk of the financial market was underestimated, the leverage of financial institutions rose excessively.⁵ This excessive reliance on liabilities ignited the global financial crisis when the FRB turned to restrictionary policy and liquidity dried up after the bubble burst in the real estate market. Also, excessive securitization by financial institutions and reliance on financial derivatives made it difficult to assess the

⁴ Among others, visit homepages of Krugman and Stiglitz.

⁵ Shiller (2005) explains why excessive behavior often arises in the assets market such as the stock market and the real estate market.

damages from the sub-prime mortgage crisis. They contributed to spreading the sub-prime mortgage crisis to the whole financial industry.

The American financial crisis has evolved into a liquidity crisis, a credit crisis, and a confidence crisis and also infected the real sector. Because of credit crunch, firms are reluctant to carry out investment. This lack of investment along with the falls in stock and house prices have led to a decrease in consumption and a recession. Unemployment has reached the highest rate and the manufacturing index has fallen by the greatest range since the Great Depression.

The financial crisis of the U.S. has also affected Europe and emerging economies and instability of the financial markets and recession is worsening. Due to the global nature of financial transactions a financial crisis is looming in Europe where financial products linked to the U.S. subprime mortgage were widely traded. The bubble burst in the real estate market rapidly spread and the fall of stock prices matches that of the U.S.

American financial crisis has had a great impact on emerging economies as well. The decrease in exports due to a global recession and the outflow of capital from small emerging markets have hit those countries hard. Countries exporting natural resources are suffering because of the fall in raw material prices.

B. U.S. Policies in Response⁶

Professor Blinder of the Princeton University believes that the financial crisis would not have spread widely if the following six policy failures had been properly addressed. First, he believes that regulation and supervision of financial derivatives were absent despite the warning of Chairman Born of Commodity Futures Trading Commission. Second, Blinder believes that letting investment banks' leverages exceed 30 was a mistake. Before 2004, the leverage of those institutions did not exceed 12. Third, he criticizes leaving intact the huge growth of sub-prime mortgage loans despite its danger. Fourth, the government did not respond timely to the fall of house prices and the increase in foreclosures when the bubble burst in the real estate market. Fifth, the government left Lehman Brothers to go bankrupt. Although such a policy helps prevent moral hazard of financial institutions, saving Bear

⁶ For various responses of the U.S. government, see Acharya and Richardson (2009).

Sterns which ranked 5th in terms of asset value through an M&A while leaving Lehman Brothers to fail, whose effect on the economy is greater, was an inconsistent policy response. The government failed to properly assess the impact of the policy. Last but not least, the Troubled Asset Relief Program (TARP) was used for recapitalization rather than disposal of troubled assets. Blinder believes that the government should have purchased troubled assets to decrease foreclosures.

As the crisis spreads, the U.S. is responding to the crisis by providing liquidity and enforcing financial restructuring to recover confidence at the same time. The financial restructuring is being done through the government's credit guarantee and loans. The government is aiding the M&A of insolvent financial institutions.

The Treasury and the FRB have led the M&A of financial institutions. They have also initiated recapitalization and disposal of non-performing assets through bailout. However, the authorities are neither injecting money to purchase common stocks nor establishing bad banks. Nationalization of banks through government investment, which is disputable, has not taken place.

On December 16, 2008, the FRB cut the federal funds rate to 0.25% and is extending loans to firms and households. This policy may reflect the FRB's intent that it may increase money supply indefinitely if necessary. However, the monetary policy through interest rate changes has become futile. The FRB also cut the discount rates several times to 0.5% and opened the rediscount market to investments suffering from a credit crunch. In addition, it has purchased CP or bank bonds to provide liquidity directly to those financial institutions or firms and remove credit crunch.

The present financial crisis can be solved only if the credit crunch and the confidence crisis are solved together. The government must purchase non-performing loans and inject money to increase capital. It should consider all the possible policies including nationalization. In case of nationalization, if a financial institution's value increases through restructuring, the government may collect more money than what it initially invested. For example, in the 1990s, the Swedish government nationalized, restructured and resold shares to earn more than it invested.

During the financial crisis in 1997, unlike the U.S., the Korean government led the restructuring of financial and corporate sectors at the same time according to the IMF's prescription. The Korea Asset

Management Corporation (KAMCO) served as the bad bank and disposed of non-performing assets. Some insolvent banks merged with healthy banks, and some were nationalized. Disposal of non-performing assets was financed by the KAMCO's bonds guaranteed by the government. Recapitalization, contribution, and deposit payoff were financed by Korea Deposit Insurance Corporation (KDIC)'s bonds.

The Obama Administration plans to strengthen federal regulations overseeing the financial markets and financial products, especially hedge funds, credit rating agencies, and mortgage brokers. The administration intends to comprehensively regulate financial institutions and products by a more integrated regulatory institution. It is particularly concerned about preventing the conflict of interests formed between credit rating agencies and financial institutions when the former receives fees for evaluating products of the latter.

To prevent the greed of insolvent institutions' CEOs and moral hazard, new examination of executive compensation is necessary. Excessive executive compensation for the management with improper incentives to raise the short-term earnings has played a critical role in aggravating the financial crisis. Accurate assessment of the management's performance and restriction on compensation will be important, especially for the management of financial institutions which have applied for bailout.

Also important is the role of the central bank. To prevent the insolvency of some institutions from degenerating into a system-wide crisis, the regulatory function of the central bank must be strengthened.

In addition, the Obama administration submitted a stimulus package of 825 billion dollars to the Congress. Since the economy is already in the liquidity trap, there is a limit to stimulating the economy by the monetary policy, a dramatic fiscal policy was called for. This economic stimulus package exceeds 5% of the U.S. GDP of 14 trillion dollars.

The stimulus package is largely composed of increased government spending and tax reduction. However, when the real sector is fast going downhill, increased government spending is more effective in stimulating the economy than tax reduction. For despite tax reduction consumers may favor saving over consumption because of future uncertainty. Obama plans to spend 1/3 of the package on tax reduction and 2/3 on increased government spending. The administration intends to increase spending on education, health care, developing alternative energies, computerization, and building SOC such as roads

and harbors.

Of course, the short-term goal of financial and fiscal policies is to boost the economy and consumer confidence. However, one of America's long-term policy goals is to reduce balance of payments deficit and resolve global imbalances. This long-term goal is incompatible with the short-term goal of stimulating the economy. The U.S. has a new agenda to reconcile those two goals.

III. The Shaking Korean Economy

In this part we plan to assess the causes and the effects of the crisis on the Korean economy, focusing on six most imminent issues: whether Korean financial institutions are healthy, why short-term foreign bonds increased, why the balance of payment has gotten worse and the exchange rate soared, how the falling stock prices in Korea and U.S. stock markets are synchronized, what are problems in the real estate market and finally how the global recession affects Korean exports.

A. Health of Korean Financial Institutions

Many financial institutions have had internal problems. Unless those problems are solved, it will be difficult to overcome the current crisis. The most serious internal problems is vulnerability of financing and investment structure to market fluctuation.

According to the Bank of Korea's statistics, the growth rate of loans substantially exceeded that of deposits. As the result, the loan-deposit ratio which had been under 100% rose to 135% in 2007.

The data provided by the Financial Supervisory Service (FSS) reveals that at the end of November 2008, the total financing of financial institutions was 1,131 trillion won, of which 718 trillion won was deposits and 413 trillion won was marketable receivables such as negotiable certificates of deposit and bank bonds. This shows 36.5% of financing depends on instruments which are sensitive to financial market conditions. On the asset side of 1,170 trillion won, loans accounted for 929 trillion won, of which 424 trillion won went to small and medium enterprises, and securities amounted to 250 trillion won. Thus, a large part of the asset (424 trillion won plus 250 trillion) is also very vulnerable to market fluctuation.

Moreover, in the last three years, financial institutions' foreign debt

increased rapidly. This increase of the debt and the escalation of the exchange rate will hamper the soundness of banks. Also, the foreign currency financing cost expressed in won rose and rolling over of short-term foreign debt became difficult as the exchange rate as well as the interest rate increased.

Those internal problems and the spread of global financial crisis to the real sector would result in minus economic growth in Korea. When insolvency is exacerbated because of recession, some of financial institutions will end up with non-performing assets. At the same time, exports have decreased since the 4th quarter of 2008, already calling for restructuring of the construction, ship building, and the automobile industries. If this phenomenon spreads to other sectors, it could lead to banks' insolvency.

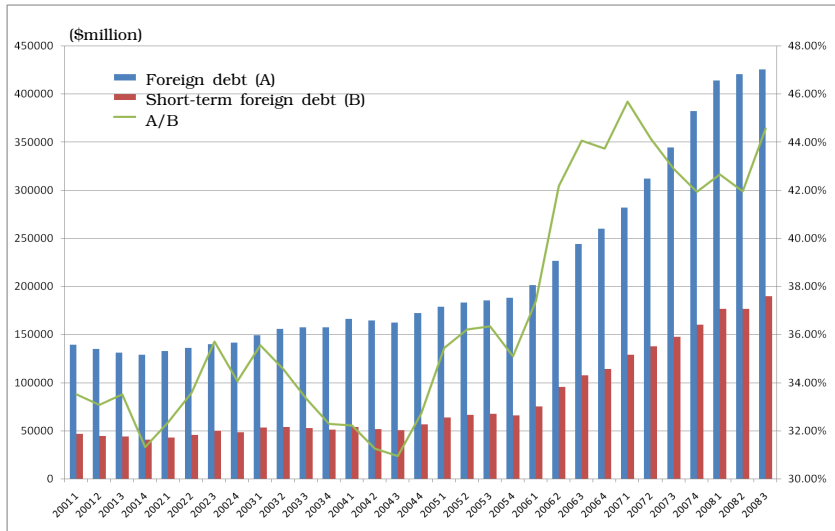
Reflecting recession, 18 Korean banks' net profit decreased by 47.4% in 2008 compared to that of 2007. The loan loss reserve was 9.9 trillion won, which is more than twice the amount of the previous year, 4.5 trillion won. In the 4th quarter of 2008, banks recorded net loss of 0.3 trillion won. As the economy's downward spiral is fast and wide, the loan loss reserve may not be able to compensate for future insolvency.

Also worrying is the possibility of financial institutions' insolvency when the bubble in the real estate market bursts. In that case, the insolvency will be accelerated, driving the economy into a deeper recession. As the real estate market crashes, the consequent reduction in consumption would also worsen the domestic economy.

The degree of financial institutions' insolvency depends on the speed of the recession and that of the real estate market's downward spiral. The government's and the banks' preemptive measures will be necessary to recapitalize banks' assets and to dispose of non-performing assets.

B. Increase of Short-Term Foreign Debt

One of the reasons why the exchange rate soared and periodic rumors of another foreign exchange crisis spread is the sharp increase in foreign debt. Other capital account, which shows the amount of banks' loans, increased from 6.8 billion dollars in 2005 to 48.3 billion dollars in 2006 and to 43.9 billion dollars in 2007. When a global crisis hit the markets in 2008, there was deficit of 10.6 billion dollar in other capital account. Acquiring foreign exchange was so hard, and the



Source: Bank of Korea

FIGURE 1
TOTAL AND SHORT TERM FOREIGN DEBT

exchange rate soared accordingly. As capital also flew out in the stock market, the amount of foreign capital changing direction from inflow to outflow amounted to 54.5 billion dollars.

This sequence of events also happened during the 1997 foreign exchange crisis.⁷ 11 billion dollar of surplus in other capital account in 1996 changed to 10.7 billion dollar of deficit in 1997. The size of the foreign reserve was not enough to cope with the foreign capital flight of over 20 billion dollars, and the exchange rate skyrocketed.

Figure 1 shows the changes in total and short-term foreign debt. Their growth rates were minimal until the end of 2005. However, during 2006 and 2007, the total foreign debt rose sharply by approximately 195 billion dollars from 187.8 billion dollars to 382.1 billion dollars. Short-term foreign debt also increased by 95 billion dollars from 65.9 billion dollars to 160.2 billion dollars.

Behind those sharp increases is the underestimation of the cost of financing foreign capital. Banks believed that the won would appreciate further given the higher domestic interest rate compared to foreign interest rates. However, this ignored the possibility that the exchange

⁷ For more detailed explanation, refer to Kim and Rhee (1998).

TABLE 1
WON-DOLLAR EXCHANGE RATE FLUCTUATIONS

Unit: %

Year	Yen	Euro	Pound	Yuan	Korean Won	
					Average Basis	End Basis
2002	10.6	17.9	10.8	0.0	3.0	10.7
2003	11.0	19.9	10.8	0.0	4.7	-0.5
2004	4.6	7.7	7.5	0.0	3.9	15.2
2005	-13.0	-12.7	-10.3	2.6	10.5	2.3
2006	-0.8	11.5	13.9	3.3	6.7	8.8
2007	5.3	10.2	1.7	6.4	2.7	-0.9
2008	19.4	-3.5	-27.6	6.4	-18.6	-34.0
2002-2008	31.5	59.7	-0.3	17.4	11.8	4.3

Note: Calculated based on end basis

Source: Bank of Korea

rate as well as the actual cost of financing foreign capital may soar in case foreign capital escapes during the boom-bust cycle. Table 1 shows how the won appreciated until 2007 but depreciated sharply in 2008.

The sudden surge in the size of the foreign debt is also similar to what happened in the 1997 foreign exchange crisis. Korea seems to have forgotten what we experienced back then: When the size of short-term foreign debt increases sharply, even a small external shock can cause short-term capital flight and huge exchange rate fluctuation.

The financial authorities as well as the banks are responsible for the sharp increase in foreign debt. Until the end of 2007, Korea had been a net creditor and was believed to be immune from foreign exchange crises or exchange rate fluctuations due to substantial foreign exchange reserve. However, the authorities neglected one thing. Even at the end of 2007, the amount of foreigners' net domestic investment was greater than Korean's overseas investment by 229.5 billion dollars. Foreigners' investment in the stock market is not recorded as Korea's foreign debt. However, as in this global financial crisis, when capital rapidly flows away from the Korean market to overseas, the stock market and the foreign exchange market become volatile. Stock prices will plunge and the exchange rate will skyrocket.

In short, neglecting to oversee the flow of foreign capital and to meet

TABLE 2
SUMMARY OF BALANCE OF PAYMENTS

Unit: million dollars

Year	Current Account	Capital Account					Changes in Reserve Assets	Foreign Exchange Reserve
			Direct Investment	Portfolio Investment	Other Investments	Financial Derivatives		
1995	-8,665	16,785	-1,776	11,712	7,458	-121	-7,044	32,712
1996	-23,120	23,326	-2,344	15,101	11,084	82	-1,388	33,236
1997	-8,287	1,314	-1,605	14,384	-10,768	-88	11,921	20,405
1998	40,371	-3,196	672	-1,224	-2,162	-654	-30,975	52,040
1999	24,521	2,040	5,135	9,189	-11,382	-513	-22,982	74,054
2000	12,250	12,110	4,284	12,176	-3,556	-179	-23,771	96,198
2001	8,032	-3,390	1,107	6,706	-10,350	-122	-7,575	102,821
2002	5,393	6,251	-224	346	6,853	362	-11,799	121,412
2003	11,949	13,909	100	17,287	-2,698	619	-25,849	155,352
2004	28,173	7,598	4,588	6,599	-3,856	2,020	-38,710	199,066
2005	14,980	4,756	2,010	-3,518	6,814	1,789	-19,805	210,390
2006	5,385	17,972	-4,540	-23,230	48,384	484	-22,112	238,956
2007	5,876	7,128	-13,836	-26,058	43,965	5,445	-15,218	262,224
2008	-6,406	-50,933	-10,595	-15,368	-10,600	-14,333	56,446	201,223

Source: Bank of Korea

maturity structures is a key reason behind the current crisis.

C. Exchange Rate Soaring

The worsening balance of payments additionally contributed to the depreciation of the Korean won. In 2007 both current account and capital account were in surplus of 5.94 billion dollar and 6.23 billion dollar respectively. However, in 2008 both were in deficit of 6.41 billion dollar and 5.65 billion dollar respectively, pressuring the currency to depreciate. In case of current account, the services account and the transfer account's deficit decreased and the surplus in income account increased. However, as the goods account decreased drastically, the current account was in deficit.

The capital account is the sum of investment account and other capital account. Table 2 shows the movement of investment account since 1995. The investment account is composed of direct investment account, portfolio investment account, financial derivatives account and

other investments account. Other investment account shows the movement of capital through financial institutions, which is mostly traded in dollars and the interest rate is calculated by adding spread to LIBOR or U.S. treasury bonds' yield. Financial derivative account usually records any losses occurred during financial derivatives transactions.

Table 3 and Table 4 show that in 2006 Koreans' stock investment and debt investment in overseas markets increased by 15.2 and 16.0 billion dollars respectively. On the other hand, foreigners brought 16.4 billion dollars into the Korean bond market whereas they pulled out 8.3 billion dollars from the stock market. As a result, net capital investment by foreigners was 8.1 billion dollars and portfolio investment account was in deficit of 23.2 billion dollars. However, other capital investment recorded a surplus of 48.3 billion dollars, resulting in a surplus of 17.9 dollars in capital account and contributing to the appreciation of won.

The capital account also recorded a surplus of 7.1 billion dollars in 2007. However, net foreign investment by Koreans amounted to 56.4 billion dollars. Meanwhile foreigners sold shares in the Korean stock market and transferred 28.7 billion dollars overseas yet invested 59.1 billion dollars in the Korean bond market. Thus, net capital inflow by foreigners reached 30.3 billion dollars and reduced the portfolio investment account deficit to 26.1 billion dollars. In 2007, other investment account was in surplus of 43.9 billion dollars and the capital account recorded 7.1 billion dollar surplus.

In 2008 foreigners transferred 41.2 billion dollars from the Korean stock market, and the portfolio investment account deficit was 15.3 billion dollars despite Koreans' collection of overseas funds. Also, the other investments account surplus of more than 40 billion dollars in 2006 and 2007 switched to deficit of 10.6 billion dollar, resulting in capital account deficit of 50.9 billion dollars.

A notable feature of the capital account in 2008 is that foreigners' investment in Korean bonds disappeared and they extracted even more money from the stock market. This reflects a low possibility of positive returns on bond investments due to exchange rate fluctuations and the need to recall funds due to global financial instability.

Another interesting feature is that the financial derivative account, which began to be recorded separately in 2008, shows huge deficit of 14.3 billion dollars. This deficit means losses from financial derivative transactions. If the exchange rate at maturity is much higher than what was expected at the time of forward trading, one incurs losses

TABLE 3
CAPITAL ACCOUNT BY SUBJECT

Unit: million dollars

Period	Capital Account	Investment Account	Domestic Residents' Investment				Foreigners' Investment				Total	
			Direct Investment	Portfolio Investment	Financial Derivatives	Other Investments	Total	Direct Investment	Portfolio Investment	Financial Derivatives		Other Investments
1995	16,785	17,273	-3,552	-2,907	623	-13,991	-19,827	1,776	14,619	-744	21,450	37,101
1996	23,326	23,924	-4,670	-6,413	414	-13,487	-24,155	2,325	21,514	-331	24,571	48,080
1997	1,314	1,922	-4,449	1,076	932	-13,568	-16,009	2,844	13,308	-1,021	2,800	17,931
1998	-3,196	-3,368	-4,740	-1,999	412	6,693	367	5,412	775	-1,066	-8,855	34
1999	2,040	2,430	-4,198	1,282	401	-2,606	-5,120	9,333	7,908	-915	-8,777	50
2000	12,110	12,725	-4,999	-520	532	-2,400	-7,387	9,283	12,697	-711	-1,157	0,112
2001	-3,391	-2,660	-2,420	-5,521	463	6,791	-687	3,528	12,227	-586	-17,142	1,973
2002	6,252	7,338	-2,617	-5,032	1,288	1,410	-4,950	2,392	5,378	-926	5,444	289
2003	13,909	15,308	-3,426	-5,403	1,813	-5,132	-12,148	3,526	22,690	-1,194	2,434	27,456
2004	7,599	9,352	-4,658	-11,776	4,380	-8,138	-20,192	9,246	18,375	-2,360	4,282	29,543
2005	4,757	7,097	-4,298	-17,632	6,957	-2,658	-17,631	6,309	14,114	-5,167	9,473	24,728
2006	17,972	21,098	-8,127	-31,286	8,933	-7,945	-38,425	3,586	8,056	-8,449	56,330	59,523
2007	7,128	9,516	-15,620	-56,436	12,109	-16,763	-76,710	1,784	30,378	-6,665	60,727	86,226
2008	-50,933	-50,895	-12,795	23,089	54,750	-13,312	51,732	2,200	-38,456	-69,083	2,713	-102,626

Source: Bank of Korea

TABLE 4
PORTFOLIO INVESTMENT

Unit: million dollars

Period	Portfolio Investment	Domestic Residents' Investment (Assets)			Foreigners' Investment (Liabilities)		
		Equity Securities	Debt Securities	Equity Securities	Debt Securities		
1995	11,712	-2,907	-238	-2,669	14,619	4,219	10,400
1996	15,102	-6,413	-653	-5,760	21,514	5,954	15,561
1997	14,384	1,076	-320	1,395	13,308	2,525	10,783
1998	-1,224	-1,999	42	-2,041	775	3,856	-3,081
1999	9,190	1,282	-271	1,553	7,908	12,072	-4,164
2000	12,177	-520	-480	-40	12,697	13,094	-397
2001	6,706	-5,521	-492	-5,029	12,227	10,266	1,962
2002	346	-5,032	-1,460	-3,571	5,378	395	4,983
2003	17,287	-5,403	-1,993	-3,410	22,690	14,419	8,272
2004	6,599	-11,776	-3,622	-8,154	18,375	9,469	8,906
2005	-3,518	-17,632	-3,686	-13,946	14,114	3,282	10,831
2006	-23,230	-31,286	-15,262	-16,024	8,056	-8,391	16,447
2007	-26,058	-56,436	-52,550	-3,886	30,378	-28,728	59,106
2008	-15,368	23,089	6,356	16,733	-38,456	-41,247	2,791

Source: Bank of Korea

when selling forward. In the latter half of 2008, the exchange rate increased far greater than expected, resulting in such losses. After the global financial crisis, the won depreciated substantially unlike the yen or the yuan.

Also, losses from financial derivative contracts such as KIKO (Knock-In Knock-Out) contributed to the financial derivative account deficit in 2008.⁸ Financial institutions sold KIKO to firms which want to hedge the exchange rate risk, but such hedging is possible only if the exchange rate at a relatively stable level. When the rate deviates from a certain level, firms which purchased KIKO could incur huge losses. The KIKO structure shows firms are not purchasing insurance derivatives but selling them to financial institutions.

A moral hazard problem may arise if financial institutions devising KIKO calculated the option price, the exercise price, the ceiling and the floor based on past data, while they believe that there is a high

⁸ Suh and Khil (2009) shows in detail the structure of KIKO and analyzes the risk incurred to the KIKO holders.

likelihood of the exchange rate rising. If they expect capital to flow overseas from the Korean capital market and other investment account surplus to substantially decrease, it is easily expected the exchange rate in 2008 to rise compared to the previous year.

In addition, the structure of KIKO which effectively makes exporting firms instead of financial institutions to be the sellers of risk is problematic. In other words, the structure that KIKO buyers should be responsible for big changes in the exchange rate, which is tantamount to selling insurance, is problematic. The financial authorities should have recognized this problem.

There was foreign capital drain and current account deficit in 2008 and short-term foreign debt amounted to 190 billion dollars at the end of 3rd quarter the same year. Thus keeping the exchange rate stable and securing an adequate amount of foreign exchange was an imminent policy issue in spite that Korea's foreign exchange reserve was well over 200 billion dollars.

The won had gained against the dollar from 2002 to 2007. However, the trend was reversed in 2008 and the won depreciated substantially against the dollar. In 2008, the exchange rate rose until the end of August yet remained relatively stable. But, as the U.S. financial crisis worsened in September, the exchange rate rose sharply to 1500s. The volatility was also aggravated. The exchange rate remained ever unstable due to the government's inconsistent intervention in the foreign exchange market.

Fortunately, as 30 billion dollars was secured by the Korea-U.S. currency swap, the international concerns of another foreign exchange crisis in Korea were dispelled. As a result, the spread of 5 year foreign exchange stabilization bond and the CDS premium dropped sharply.

In October and November, the current account recorded surplus, which was expected to stabilize the exchange rate. However, during those two months, the exchange rate fluctuated as the capital flowed overseas. The government intentionally held the exchange rate at 1,259 won per dollar through foreign exchange market intervention, since all foreign exchange-related assets are evaluated on the basis of December 30th's market average exchange rate. When the offshore NDF market closed, the exchange rate was 1,338 won per dollar, suggesting that government intervention was so heavy.

There has been debate over the adequate amount of foreign exchange reserve,⁹ but there is no right answer to that question. The IMF views that the foreign exchange reserve should be enough to offset the

current account deficit and short-term foreign debt. Some scholars assert that the foreign exchange reserve should additionally cover about a quarter of foreign capital in the Korean stock market. They believe that such capital will be drained in case of a financial crisis but the amount will not exceed a quarter because of losses from falling stock prices and rising exchange rate associated with withdrawing capital. In this global financial crisis, 41.2 billion dollars of foreign capital, which is almost a quarter of total investment funds, evacuated the Korean stock market. When discussing the adequate amount of foreign exchange reserve, it is important to consider maturity and the amounts of Korea's net overseas investment and net foreign credit.

D. Synchronization of Korea and U.S. Stock Prices

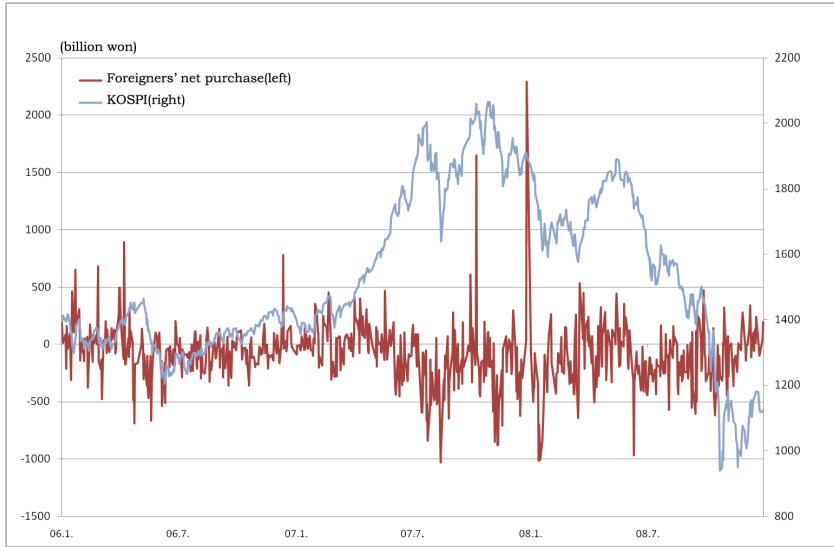
Figure 2 shows the trend of the KOSPI related to foreign investors' stock trading. Foreign investors' net sales started in 2007 but did not lead to the fall of KOSPI until the latter half of 2007. However, when the net sales of foreign investors became widespread in the 2nd quarter of 2008, it contributed to the fall in stock prices.

Figure 3 shows foreign investors' share in the stock market. In October 2007, the size of market capitalization was 1,029 trillion won, of which 333 trillion won or 32.4% belonged to foreign investors. However, as stock prices plummeted, the total size fell to 576 trillion won by the end of 2008 and so did that owned by foreigners to 167 trillion won. Also, because of net sales by foreign investors, the foreigners' share decreased to 28.9%.

The global financial crisis crashed down the stock markets not only in developed countries but also in Korea. Table 5 shows how stock prices changed in Korea, Japan and the U.S. between 2007 and 2008. During one year the KOSPI fell by 40.7% to 1,124, and the Dow Jones Industrial Average (DJIA) and the Nikkei Index fell by 35.1% and 42.1%, respectively: the DJIA fell by the lowest rate, and the KOSPI and the Nikkei fell by comparable rates. However, the drop rates calculated in dollar terms differ. The KOSPI, the DJIA, and the Nikkei fell by 56.5%, 35.1%, and 27.4%, respectively with Japan and U.S. showing much smaller drop rates. Korea's drop rate was the greatest due to the depreciation of won.

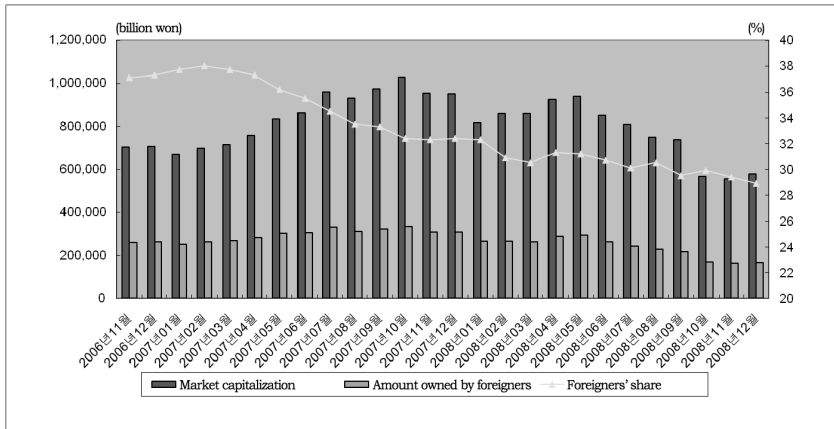
The common factor effect of the crisis may refute the argument of

⁹ See Aizenman *et al.* (2004) and Rhee and Yoon (2005) among others.



Source: Bank of Korea

FIGURE 2
DAILY TREND OF KOSPI AND FOREIGNERS' NET PURCHASE



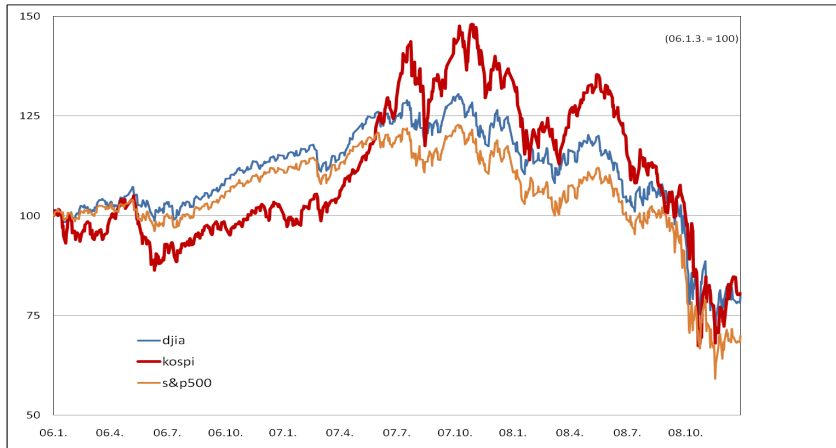
Source: Financial Supervisory Service

FIGURE 3
FOREIGNERS' SHARE IN THE STOCK MARKET

TABLE 5
INDEX DROP RATES IN KOREA, JAPAN, AND THE U.S.

	DJIA	KOSPI		NIKKEI	
		Local	\$ terms	Local	\$ terms
2007-12-28	13366	1897	2.0206	15308	134.5148
2008-12-30	8668	1124	0.8772	8859	97.642
Change (%)	-35.15	-40.75	-56.59	-42.13	-27.41

Source: Yahoo Finance



Source: Yahoo Finance

FIGURE 4
STOCK INDEX TRENDS: KOREA AND THE U.S.

decoupling between the U.S. economy and the Asian economy. For example, Figure 4 shows the trend of Korea and U.S. stock indices. Stock indices are known to usually follow a random walk, but the figure shows that the two indices are increasingly being synchronized, in particular during the current crisis.¹⁰

A more thorough analysis using econometric techniques also proves that after the global financial crisis occurred, the stock markets in Korea and the U.S. manifested a stronger coupling of the indices and

¹⁰ Chai and Rhee (2006) also show that U.S. and Asian stock market indices were more synchronized during the crisis period than the non-crisis period.

that the U.S. market affected the Korean market, but not vice versa. This coupling since the global financial crisis, with the U.S. stock price affecting that of Korea, implies that without the resolution of the global crisis, it may not be easy to recover stock prices only through internal measures.

E. Problems in the Real Estate Market

Japan experienced “The Lost Decade” after the bubble burst in the real estate market. The U.S. born financial crisis also started because the bubble burst in the real estate market. In the past several years, the bubble in the real estate market was common all over the world. In many countries, the house prices has fallen by two digits after the crisis.

This bubble in the real estate market was also formed in Korea in the last few years because of monetary expansion. If real estate prices plunged, household consumption would also plummet by the same rate and such a hard landing due to the bubble’s burst would have a tremendous impact on the Korean economy.

Korea’s financial institutions contended that no sub-prime mortgage crisis would occur in Korea because compared to foreign counterparts, they had less real estate loans and lower loan to value (LTV) ratio and debt service ratio (DSR).¹¹

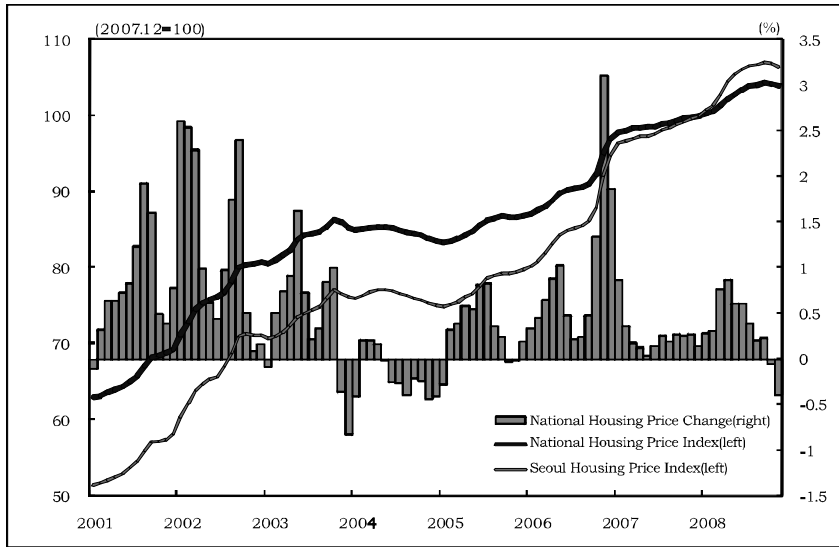
As they argued, the banks’ LTV decreased from 57.8% in 2004 to around 40% in 2008. It may suggest that the banks’ losses due to plunge of house prices may be limited. But if other financial institutions’ secondary collateral mortgages are included, the figure will rise substantially.

Also, the DSR of households’ residential loans increased from 15.3% in December 2005 to 20.2% in December 2007 because of the increase in lending rate linked to the market rate. Therefore, households with low income levels and excessive loans may experience difficulties. What’s more, since the majority of banks’ loans depend on the value of real estate collateral, the plunge in real estate prices is likely to lead to the financial institutions’ insolvency.

Figure 5 shows that the real estate prices in Korea rose alarmingly since 2001, suggesting a bubble in the market. The price of apartments in the “Bubble 7”¹² area rose by 30-40% in 2006 alone.

¹¹ For example, see FSC (2009).

¹² Bubble 7 areas includes Gangnam, Seocho, Songpa, Mokdong, Bundang,



Source: Kookmin Bank

FIGURE 5
TREND OF MONTHLY HOUSING PRICES

With the global financial crisis and the recession deepening, the surge in house prices may switch to a crash. This is already taking place in some areas including the “Bubble 7” area. The rise in unsold apartment number is also threatening the real estate market. The number of unsold apartments rose from 25,000 in 2002 to 160,000 at the end of 2008. Such a rise suggests a possibility of construction companies’ bankruptcies and may cause additional falls in house prices.

Since the stability of the financial system is directly linked to real estate prices, it is imperative that monetary policies reflect real estate price changes. The price level in Korea had been stable due to imports of low-price manufacturing goods from China and India despite the government’s expansionary monetary policies. However, the increased liquidity ultimately created a bubble in the real estate market and, when it burst, impaired the stability of the financial system and brought recession. Thus, the movement of real estate prices must be somehow reflected in conducting monetary policies.

Yongin, and Pyunchon where real estate prices were rising faster than other areas.

This requires that there must be data about the real estate market and trades thereof. The lack of data has discouraged for the monetary authorities to reflect such movements in the monetary policies. The Bank of Korea or the government think-tanks must accumulate relevant databases.

F. Effects of Global Recession on Korean Exports

When exports rapidly decreased in November 2008, the Korean government substantially lowered the forecasted growth rate of 2009. This correction is due to the large role exports play in the Korean economy and to the uncertainty of how much exports will change in light of a global recession.

During the previous crisis, Korea recorded a surplus of more than 40 billion dollars in 1998. The combination of export increase due to the global boom and import decrease due to the recession in Korea contributed to the surplus. But 50% increase in the exchange rate (from 900 won per dollar to 1,350 won per dollar) contributed most to the surplus.

In 2008, despite the increasing exchange rate, the export growth rate was only 4.6%. Particularly worrying was the export growth rate of -11.9% in the 4th quarter, compared to the previous period despite 40% increase in the exchange rate (from 936 won per dollar at the end of 2007 to 1,300 won per dollar). While price competitiveness improved, exports decreased due to the global recession. It may suggest that Korea's income elasticity is far greater than the price elasticity. In the 4th quarter, imports also recorded a growth rate of -13.0% compared to the previous period, reflecting the domestic recession.

The annual real GDP grew 2.5% in 2008. However, the real GDP in the 4th quarter grew by -5.6% compared to the last period; the financial crisis is taking a toll on the real sector. Particularly, the manufacturing sector recorded a growth rate of -12.0% due to decreased production in leading industries such as semiconductors, steel and automobiles. This trend spread to the construction and service sectors: private consumption and equipment investment recorded growth rates of -4.8% and -16.1%, respectively.

The real GDI in the 4th quarter which reflects the changes in terms of trade decreased by 2.9% slightly less than the GDP, due to fall in prices of natural resources. The drop in oil and raw materials prices due to the global recession is offsetting Korea's decreased real purchas-

ing power, keeping the drop rate of GDI less than that of GDP.

In 2008, the average annual oil price was 100 dollars per barrel to the Korean economy's disadvantage. If the oil price stays at about 50 dollars per barrel, the energy costs will decrease by 24 billion dollars, help improve the current account and lessen the impact of the domestic recession.¹³

The fact that the global recession is added to the global imbalance is worrisome to a small open economy like Korea. In general, a country with current account deficit cannot maintain the external imbalance indefinitely. However, the U.S. is an exception because the dollar is the vehicle currency. Even though we accept the U.S. exceptionality, excessive current account deficit of the U.S. compared to its GDP cannot continue forever. Addressing the imbalance is possible by reducing consumption in excess of production in the U.S. This reduction will then dent the U.S. demand for foreign goods. However, U.S. consumption must be revitalized for the world economy to recover from the crisis. It is a big threat that addressing the global imbalance may stifle the global demand and Korean exports.

IV. Policy Responses in Korea

Korea's policy responses can be largely classified as supplying liquidity, mitigating the credit crunch, financial and corporate restructuring and economic stimulus through fiscal policies. Facing the global financial crisis, Korea was first focusing on addressing the credit crunch by supplying foreign exchange and liquidity. The financial and corporate restructuring has been delayed until 2009.

A. Liquidity Supply

The Korean government first focused on policies providing smooth supplies of the dollar and the won to prevent a further credit squeeze. When the exchange rate soared because of the squeeze in the foreign exchange market, the government promised to warrant 100 billion dollars for three years and provided 55 billion dollars of credit, most of which was trade credit. However, this warrant was ineffective as the credit crunch worsened worldwide and a specter of a foreign exchange

¹³ It cost 86 billion dollars to import petroleum, and 38 billion dollars of petroleum products were exported last year. Therefore, a 50% price fall will reduce 24 billion dollars of petroleum-related expenditures.

crisis in Korea rose. The exchange rate continued to rise, eventually surpassing 1,500 won per dollar.

However, this upward pressure on the exchange rate was relieved by the 30 billion dollar currency swap with the U.S. The U.S. has provided dollars to developed countries such as Japan and European countries in the past to address temporary liquidity drain in international financial markets. This currency swap was extended to Korea, Brazil, Mexico, and Singapore. Korea also established 30 billion dollar currency swaps respectively with Japan and China, helping stabilize the exchange rate. Without those swaps, the rumor that another foreign exchange crisis was coming in last September may have come true. In February 2009, the U.S. announced that it will extend the currency swap with Korea by additional 6 months, and this extension further helped stabilize the exchange rate.

Long-term foreign financing is still hard and the short-term foreign debt is still around 150 billion dollars, having trouble with roll-overs. Thus huge inflow of capital into the bond market is unlikely for the time being. Thus, extending the currency swaps with Japan and China and increasing the amount of the swaps would be necessary.

The movement of the exchange rate this year depends on the resolution of the global financial crunch, the movements of Korea's current account, the trend of Korea's economic growth and the amount of short-term capital drain from the market. If the current account records surplus and the Korean economy does not make a hard landing, the short-term capital drain will ease and it is not likely for the exchange rate to skyrocket again. When the global financial crunch lessens and long-term foreign exchange financing are easily available, the exchange rate will finally stabilize.

To resolve domestic credit crunch, the Bank of Korea drastically lowered the interest rate from 5.25% to 2.5% in last September and increased the money supply. It also expanded purchase of government bonds and Currency Stabilization Bonds to supply liquidity. Since more than 57.3 billion dollars flew out due to balance of payments deficit, the central bank had to supply more credit. In addition, the Bank of Korea planned to provide money to Bond Market Stabilization Fund and lend 10 trillion won to Bank Recapitalization Fund in order to stabilize the bond market. However, it is neither participating in the financial market nor directly purchasing CDs or bank bonds yet.

The CD rate, which was around 6% due to the financial crunch, fell below 4% thanks to the central bank's increased money supply.

However, corporate and private lending rates which are linked to the CD rate fell relatively less. Since banks are reluctant to lend in fear of insolvencies, money supply is far from smooth in the market.

The government established the Bond Market Stabilization Fund of 10 trillion won to support small and medium enterprises and construction companies with liquidity problems due to the credit crunch. 5 trillion won has already been raised. The investors include the Korea Development Bank (KDI), banks, insurance companies and securities companies. If necessary, the government will expand the funds with public money.

The global crisis is moving from a liquidity crisis to a credit crisis then to a default crisis. The liquidity crisis can be resolved by the central bank's lowering the interest rate and supplying money. However, in case of a credit crisis, without the resolution of credit crunch the economy will fall into a liquidity trap in which the central bank's money will come back to the origin without circulating in the market.

If the central bank's money is not circulated because of the default risk of financial institutions or firms, the risk must be tackled first. The short-term floating money in the market was reported to be 500 trillion won in February 2009. This shows that money are invested in short-term stable assets but not in long term markets despite the central bank's interest rate cut to 2.5%.

The prospect of the Korean economy is far from bright as the global financial crisis is spreading to the real sector. The risk of bankruptcies in the financial and industrial sectors is growing. In 2008 the annual economic growth rate was 2.5%, but the IMF expects Korea's growth rate in 2009 to be -4%. If the recession continues, bankruptcies will increase. Only through preemptive measures to reduce the fear of bankruptcies will the money circulate in the market.

If the real sector's downward spiral leads to firms' insolvencies, the unrealized losses of banks will surface, possibly culminating in another crisis. The U.S. government is purchasing mortgage-backed securities and loan-backed securities (*e.g.*, automobiles and credit cards) to ease the credit crunch while keeping the federal funds rate at almost 0%. In case the credit squeeze continues, the Bank of Korea should also directly purchase CDs or bank bonds to ease the credit crunch.

Also, as the government increases its expenditure, the central bank may have to purchase the government bonds. This is tantamount to financing government expenditures by printing money, and the boundary between the monetary and fiscal policies will be blurred.

B. Financial Restructuring

During the crisis in 1997, the Korean government led the financial restructuring and then the corporate restructuring with the financial institutions. At that time the insolvencies of financial institutions were apparent, so recapitalization and the purchase of non-performing assets were used together. The funds needed for restructuring was financed by KAMCO's and KDIC's bonds. Some of the funds were supplied by public money.

The funds from KAMCO were mostly used to purchase non-performing assets whereas the funds from KDIC were used for recapitalization and deposit payoffs. However, in the current global financial crisis, the insolvencies of financial institutions have not surfaced yet. Thus, the government is planning to first increase lending capacity and to recapitalize for banks to prevent insolvencies.

As a part of the plan, the government purchased some of non-performing assets of construction and housing finance companies *via* KAMCO and Korea National Housing Corporation (KNHC). Now, insolvencies are spreading from housing to ships and automobiles. The possibility of small and medium enterprises' large-scale insolvencies is especially worrisome.

Disposal of non-performing assets and recapitalization are the two sides of the same coin. Disposal of non-performing assets without recapitalization will bring out the downfall of financial institutions. Thus, the government is demanding banks to recapitalize themselves. If necessary, it will supply the needed capital through the Bank Recapitalization Fund. The banks are planning to increase BIS capital adequacy ratio over 12% and core capital tier 1 ratio over 9%.

The Korean government is planning to inject government budget to special policy banks to increase the BIS capital adequacy ratio and increase lending capacity. Specifically, the government will invest 1.4 trillion won in the KDB, 1 trillion won in the Industrial Bank of Korea and 950 billion won in the Korean Exim Bank to increase lending capacity by 40 trillion won. However, this new expanded investment is primarily intended to prevent possible losses of those banks.

In addition to the banks' efforts, the government established the Bank Recapitalization Fund of 20 trillion won to help banks recapitalize at a low financing cost. The purpose of this fund is to accumulate capital to prepare for a coming recession and a possible increase in bank losses.

The 20 trillion won will be composed of Bank of Korea's loan (10 trillion won), institutional and private investment (8 trillion won: purchase of ABS guaranteed by Korea Credit Guarantee Fund and Kibo Technology Fund) and the KDB's investment (2 trillion won: purchase of subordinated ABS). This fund will be used to purchase preferred stocks, redeemable preferred stocks, hybrid capital, subordinated bonds and others to help banks recapitalize. Considering that the banks' total capital is 82 trillion won, if the 20 trillion won is injected to the banks, the commercial banks' BIS capital adequacy ratio will increase by 2.6%.

The government is helping the banks recapitalize by a semi-public fund so that money can be created and executed without the national assembly's approval. If public money were created as in the past by KAMCO's or KDIC's bonds, it would require the assembly's approval. However, during the crisis in 1997, the government forced write-downs to banks and injected capital. As a result, the relevant banks were de facto controlled by the government. It is understandable that except for Woori Bank, all banks are wary of increasing capital through the Bank Recapitalization Fund because they fear government intervention. They do not rule out the possibility that the government may still intervene in management even after an MOU.

The authorities are also increasing the KODIT and KIBO's guarantee capacity by 11 trillion won by injecting additional 900 billion won and 200 billion won to those two institutions, respectively. In addition, the government is asking KNHC to purchase mortgage loans of 7 trillion won to provide liquidity and also KAMCO to purchase banks' non-performing loans worth 3 trillion won to improve the banks' soundness.

However, if the firms' and households' insolvencies worsen, so will those of financial institutions. The government will have to assess the size of losses objectively and to recapitalize financial institutions and dispose of their non-performing assets, if necessary by injecting public money. A review of how much public money was created and used during the crisis in 1997 may be worthwhile for the current financial restructuring.

C. Corporate Restructuring

Even though the Bank of Korea increased money supply, banks are reluctant to lend money to firms in fear of insolvencies. To circulate money in the market and provide sufficient amount to good firms, the government must discern bad firms for restructuring. In this crisis, the

government doesn't involve directly but asks financial institutions that creditors should lead the financial aid and restructuring of firms. Financial institutions will identify firms which are not viable and force them to exit the market. Creditors will also strengthen financial support for sound firms facing liquidity crises.

The Creditor Adjustment Committee and the Corporate Credit Support Task Force headed by the governor of the Financial Supervisory Service are jointly responsible for providing capital and restructuring firms. Restructuring has been performed mostly on construction companies and small and medium shipbuilding companies related to project financing. From now on the restructuring in other industries including those in the automobile and petrochemical industries may be discussed.

Although it is easy to restructure bankrupt firms, it is difficult to restructure firms still in business. Nevertheless, since the cost of restructuring increases after bankruptcies, how to conduct restructuring at the right moment could be the government's big task. Since restructuring of firms surfaces previously hidden losses of financial institutions, corporate restructuring led by financial institutions may be ineffective. The government and the financial institutions must initiate the restructuring together, following the precedent of the 1997 crisis.

D. Macro Financial Regulation and Government Restructuring

Financial regulation and supervision has two dimensions: micro and macro dimensions. Micro dimension means regulation and supervision of individual financial institutions and macro one means that of the whole financial system and the relationship between finance and the whole economy.

Before the crisis in 1997, micro regulation and supervision was prevalent and was focused on individual financial institutions (banks, securities companies, insurance companies, and others). After the crisis, the supervision functions were integrated under the Financial Supervisory Commission and the Financial Supervisory Service, but they yet still focused on regulating the institutions on the micro dimension. After the onset of the global financial crisis and the crisis spreading to the whole financial system and the economy, the importance of macro finance looms large.

Two main causes of this global financial crisis are the creation and burst of the real estate market bubble and the collapse of the financial

system after excessive use of derivatives. Thus, monitoring the real estate market and analyzing the introduction of derivatives and its effect on the stability of the whole system must be enacted. This highlights the importance of macro financial regulation and supervision.

We learned that asset securitization *via* SIVs or SPVs without adequate regulation and supervision may hamper the transparency of the whole economy, increase the whole system's leverage and destabilize the whole economy. Therefore, regulating and supervising the establishment of those companies in terms of their potential risk to the whole system is necessary, which is also a part of macro financial regulation and supervision.

Also, since the leverage is pro-cyclical and therefore aggravates business cycle, a guideline for leverages related to the business cycle should be established. This guideline is a problem to be discussed in terms of macro financial supervision and regulation as well.¹⁴

For even more effective macro financial supervision and regulation, the Financial Supervisory Commission and the Financial Supervisory Service's roles must be expanded. The Bank of Korea also needs to assume a more significant role, because not only does it possess objectives such as the stabilization of the price level and the financial system but also the policy instruments to achieve them. The Bank of Korea and the Financial Supervisory Service will have to exchange regulatory information through various avenues such as exchanging personnel.

In the global crisis, many central banks are willingly or reluctantly assuming the role of the lender of the last resort for banks and expanding direct loans to them. At times like this when such a role is expected of the central bank, it must also function as the macro financial regulator and supervisor. Moreover, the central bank has a comparative advantage in monitoring the real estate, stock, and derivatives markets with abundant human resources and a neutral viewpoint. A more active role will be expected of the Bank of Korea to stabilize the financial system and the economy as well as the price levels.

The government also needs to reconsider whether they have the adequate structure to properly respond to economic crises. International and domestic factors are intertwined behind the current financial

¹⁴ For references of the idea of countercyclical regulation, see Adrian and Brunnermeiner (2009), Adrian and Shin (2008) among others.

TABLE 6
INF GDP OUTLOOK

Unit: %

Country	2007	2008	2009 (Prospect)	2010 (Prospect)
Worldwide	5.2	3.4	0.5	3.0
Developed Countries	2.7	1.0	-2.0	1.1
– USA	2.0	1.1	-1.6	1.6
– The Euro Region	2.6	1.0	-2.0	0.2
Germany	2.5	1.3	-2.5	0.1
France	2.2	0.8	-1.9	0.7
– Japan	2.4	-0.3	-2.6	0.6
– England	3.0	0.7	-2.8	0.2
– Other Developed Countries	4.6	1.9	-2.4	2.2
Emerging Asian Countries	5.6	2.1	-3.9	3.1
Developing Countries	8.3	6.3	3.3	5.0
– China	13.0	9.0	6.7	8.0
– India	9.3	7.3	5.1	6.5

Source: IMF World Economic Outlook (January 29, 2009)

crisis. Thus, assigning domestic and international financial affairs to two different offices will bring only confusion and complication in addressing the crisis. Moreover, since securitization and financial derivatives aggravated the financial crisis, the consistency of financial policies and financial regulation and supervision cannot be overrated. The separation of Financial Supervisory Commission from the Financial Supervisory Service, which split the policy decision and its implementation, is problematic as well. But to overcome the economic crisis, confidence in government officials as well as an efficient organization of the government is also required.

E. Economic Stimulus Package and Improving Growth Potential

The IMF lowered the forecasting of the world economic growth rate from 2.2% to 0.5% in January 2009 (Table 6), and expected the world economy to recover gradually from 2010, reaching growth rate of 3%.

The IMF also forecasted all developed countries and the whole Euro area's growth rate to be -2.0%. Korea's growth rate was forecasted to be -4.0% in 2009 and 4.2% in 2010.

But the conventional forecasting model of economic growth cannot properly evaluate the impact of credit crunch and financial insolvencies on the economy. Thus, the IMF is constantly adjusting the forecasted growth rate to reflect the worsening economic conditions.

It is clear that the economy will recover only when the credit squeeze disappears, the insolvencies are addressed and a radical stimulus package is implemented. Korea needs a drastic response because the impact of the global recession is profound on this small open economy.

International organizations such as the IMF concur that stimulus measure of about 2% of the GDP through fiscal expansion is necessary. The U.S. is preparing a two-year economic stimulus package of 825 billion dollars, which exceeds 5% of its GDP.

Korea also needs an economic stimulus through fiscal expansion as consumption, investment, and exports have all decreased. Since the growth prospects are worsening for 2009, an economic stimulus package is all the more needed, even by allocating supplementary budgets.¹⁵

This fiscal expansion must be used to enlarge the Korean economy's long-run growth potential as well as to stimulate domestic demand. For Korea to become a true developed country, the restructuring of small and medium enterprises and increased productivity in the service sector are vital. So far the restructuring of small and medium enterprises have been lagged compared to that of large enterprises, and they are having trouble competing with China. The government must ensure easy entry and exit while actively supporting creative and technology-oriented small and medium enterprises. The productivity of the service sector is far behind that of OECD member countries. Without improving this productivity, promoting growth potential is destined to fail. We need to lift unnecessary barriers and invest a huge amount of capital in finance, medical services and even education to improve international competitiveness in the service sector. The investment in R&D as well as in human capital must also become more efficient.

Furthermore, the investment for alternative energies must be increased so that energy dependence on foreign countries can be

¹⁵ In a similar vein, Park and Lee (2009) also suggest bailouts and countercyclical macroeconomic policies as short terms crisis management strategies.

reduced. The government also needs to abolish unnecessary regulations and enforce economic policies which promote flexibility in the labor market and stimulate incentives.

During the foreign exchange crisis of 1997, Korea had only limited policy choices. This restriction was because of the IMF's enforcement that Korea carry out contractionary monetary and fiscal policies. However, at that time there was a national consensus to overcome the economic crisis quickly and escape the IMF's intervention. Now, we have much more freedom to choose policies, but many people worry about how strong a national consensus to overcome this crisis is. It is worth to note that united we can overcome this economic crisis, divided maybe not.

V. Conclusion

This paper examined what has been wrong in the Korean economy, discerned features of the current crisis from the past one, and derived policy suggestions to overcome the crisis and prepare a new growth path.

The current global financial crisis started in the U.S. due to many complex causes: abundant liquidity caused by the Fed's low interest rate policy; the global imbalances mainly due to binge of American people; the bubble in the real estate market; greedy bankers; excessive leverage and moral hazard due to lax regulation and supervision; and a toxic relationship between the Washington and the Wall Street. Due to the global nature of financial transactions, the financial crisis of the U.S. quickly affected Europe, emerging economies, and the whole world. The U.S. government has responded to the crisis by providing liquidity, restructuring industrial and financial companies, strengthening regulation and supervision, and adding a huge stimulus package. A notable feature of the current crisis is that excessive securitization by financial institutions and reliance on financial derivatives made it difficult to assess the damages from the crisis. Also, the current global crisis suggests that the role of the state in the financial sector should increase, reversing the long trend of liberalization until now.

The Korean economy has been more severely hit by the U.S. born financial crisis, compared to other countries. A main reason is that both the asset and liability sides of financial institutions are composed of those items vulnerable to market fluctuations. Increase of short term

foreign debt aggravated this vulnerability so as the economy to be sensitive to foreign exchange rate fluctuation. A new feature of the current crisis is that in Korea the influence of derivatives transaction has been much larger, as we have witnessed to the role of forward and KIKO in the foreign exchange market. Besides, the chronic problems of the real estate bubble and the dependence on exports of the economy also contributed to the aggravation of the crisis.

To overcome the ongoing crisis and to revive the long term growth path, the paper suggested the followings: The government needs to provide enough liquidity so as credit crunch not to freeze the economy; the government and the Bank of Korea need to swiftly dispose of non-performing assets and recapitalize troubled financial institutions; it would be better for the government and financial institutions together to lead corporate restructuring; macro financial regulation and supervision as well as micro one should be emphasized to reduce the risk of a systemic crisis; the government structure should be reorganized to efficiently respond to the crisis; and a drastic stimulus package needs to be introduced not only to stimulate the economy in recession but also to enlarge the long term economic growth potential.

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