

Policy responses to strengthen liquidity risk management in Korea

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Introduction

Korea's currency crisis at the end of 1997 was caused by structural weaknesses in the Korean economy. These vulnerabilities were brought suddenly into the open by changes in both the domestic and international economic environments.

The direct trigger for the crisis, however, may be traced to problems in maturity mismatches between foreign currency assets and liabilities, which were further exacerbated when domestic financial institutions borrowed excessively in the short term and invested long term in high-risk assets. This implied major shortcomings in Korea's management of liquidity risk, including external debt, at a national level.

Following the currency crisis, Korea lifted most regulations it had placed on capital account transactions, while cross-border capital movements became more active and fast-paced internationally. As this exposes Korea very acutely to changes in the international, as well as domestic, financial market environment, the possibility of a sudden and rapid flow of short-term foreign capital is higher than ever before.

This being the case, the need to manage liquidity risk effectively at an integrated, national level, whereby public, financial and private sector levels of foreign debt and liquidity are fully grasped and their monitoring strengthened, has increased.

Foreign exchange liberalisation since the currency crisis

Since the 1980s, Korea has steadily eased regulations on capital account transactions. However, it was not until the 1990s that full-blown capital account liberalisation was pursued. Since then, with the currency crisis of late 1997 serving as the turning point, the scope of liberalisation has been widely expanded.

It all started with Korea's shift to a freely floating exchange rate system in December 1997. Through the abolition of all restrictions on foreign investments in domestic equities, short-term money market instruments (May 1998) and domestic bonds (July 1998), the capital markets were, in effect, fully opened.

The range of industries opened to foreign direct investment (FDI) has also been continuously expanded, so that FDI is now allowed in almost all industries except certain portions of the public sector. In May 1998, foreigners were even allowed to engage in hostile takeovers of domestic firms, and later, in November 1998, the *Act on Foreign Direct Investment and Foreign Capital Inducement* was replaced by the *Foreign Investment Promotion Act*. Furthermore, in June 1998 all qualifications for overseas issuance of foreign currency securities and restrictions on the use of their proceeds were eliminated. In July 1998, domestic corporations' medium- to long-term foreign currency borrowings, as well as overseas issuance of foreign currency securities, both of which had previously been allowed only for maturities of three years or more, became permissible for maturities of one year or more.

Meanwhile, realising that, in order for the Korean economy to make another leap forward, the establishment of a new foreign exchange system championing the principles of an open market economy was necessary, the Korean government worked out, in June 1998, a plan for a sweeping, two-stage liberalisation of all foreign exchange transactions. With the implementation of the new *Foreign Exchange Transactions Act* on 1 April 1999, the first stage of liberalisation took effect.

In this first phase, most foreign exchange transactions related to the foreign operations of domestic corporations and financial institutions were liberalised, marking the transition of the regulatory framework on capital account transactions from the previous "positive list system" to the current "negative list system" where the permission of the authorities is only required for a few categories of transactions. For example, domestic firms' short-term overseas borrowing and issues of foreign currency securities,¹ as well as non-residents' issuance (domestic and overseas) of won-denominated securities and the opening of

¹ Short-term foreign currency borrowing and overseas issues of foreign currency securities are allowed only for firms whose financial position is judged to be sound, and whose credit ratings from qualified credit ratings agencies are above investment grade.

Korean won deposit and trust accounts – all with maturities of one year or more – were liberalised. In addition, the bona-fide demand principle, which had been in place for derivatives transactions, was abolished, and the derivatives transactions of foreign exchange business institutions were fully liberalised.² However, in order to block possible attacks on the Korean won by speculative funds, some capital transactions, including non-residents' deposits of Korean won for less than a year, and derivatives transactions bypassing *foreign exchange business institutions*, were not liberalised.

On the other hand, as a result of such extensive liberalisation of foreign exchange transactions, the possibility of disruptions in domestic financial and foreign exchange markets triggered by sudden and rapid flows of capital has become increasingly high. This being the case, a legal framework, with safeguards which may be implemented in times of need within the boundaries set by international norms, has been prepared.

For example, it is stipulated in the *Foreign Exchange Transactions Act* that where there is concern over either (i) the balance of payments and international financing becoming severely strained, or (ii) cross-border capital movements hampering the conduct of macroeconomic policies, certain measures may be taken. These include requiring permission for foreign exchange transactions, a variable deposit requirement (which can require a proportion of non-FDI capital inflows to be placed in a zero-interest account) and marginal reserve requirements. In principle, however, safeguards are to be implemented on a selective basis, only when deemed inevitable. Such measures may last for only up to six months, and must be lifted as soon as their cause is no longer a threat.

Finally, in the second stage of liberalisation, scheduled to take effect from early 2001, almost all foreign exchange transactions, excluding only those transactions interrupting the maintenance of world peace and social order, will be liberalised.

²As a result of this measure, transactions in the domestic currency swap market and won/dollar non-deliverable forward market have been promoted. However, the range and depth of these markets are still quite insufficient, in comparison with those in developed economies.

Policy responses to strengthen liquidity risk management

Enhancing the transparency of external debt statistics and improving external debt management

Following domestic financial institutions' poor management of their external debt and liquidity towards the end of 1997, Korea has, since the currency crisis, started not only to monitor the external debt of the public sector and financial institutions, but also comprehensively monitor the foreign debt of the private sector.

First, in order to dispel the scepticism in international financial circles at the time of the currency crisis as to the amount of Korea's external debt, and as a means of enhancing the transparency of its external debt statistics, from December 1997, Korea started to compile and disseminate its external debt statistics on a monthly basis, following a definition of "total external liabilities"³ agreed between the Korean government and the IMF.

Then, in 1998, to enhance the accuracy and credibility of its external debt statistics, the government and the Bank of Korea revised the manual for compiling such statistics. Furthermore, since the collection of information on the foreign currency liquidity status of the overall economy is instrumental for the efficient management of national liquidity, the Bank of Korea conducted an extensive survey to gauge the actual external debt of the public, financial and private sectors. Based on this survey, a complete time series on total external assets and liabilities was compiled.

Finally, in 1999, the Bank of Korea constructed a database containing loan-by-loan information on long-term external debt, which it uses to analyse repayment schedules and debt profiles. In addition, through semi-annual surveys of the 150 or so domestic corporations which account for 80% of total domestic corporate foreign currency liabilities and assets, the Bank of Korea monitors the foreign currency liquidity status of domestic corporations.

³ *Total external liabilities* is the sum of external debt, as defined by the World Bank, and domestic financial institutions' offshore borrowing, as well as borrowing by domestic financial institutions' overseas branches and subsidiaries. This definition essentially covers all liabilities ultimately repayable by Korea.

By the end of 2000, in order to compile the statistics on external assets and liabilities in a more timely and accurate manner, the Bank of Korea plans to establish a computerised system, whereby data will be collected through the “Foreign Exchange Information Network” – launched in April 1999 to link the computer networks of financial institutions.

In addition, the Korean government is currently developing a sovereign debt risk management system, with technical assistance from the World Bank, to expand its sovereign debt management capacity. Before the crisis, government debt did not exceed 10% of GDP. Thereafter, however, following a significant increase in government borrowing from multilateral institutions, such as the IBRD and the ADB, as well as issues of government bonds to finance structural reform programmes, government debt, is estimated to have increased to around 22% of GDP by end-1999. This, however, is a far cry from the OECD average of about 70%. Moreover, the government is on course to reduce its debt and restore fiscal balance in 2004.

Table 1
Trends in government debt
At end-year

	1996	1997	1998	1999
Government debt (\$ bn)	43.6	46.8	76.0	84.4
Percentage to GDP	8.4	9.8	23.7	20.8

Note: Government debt is the sum of central government debt and IMF credit.

On the international scene, Korea’s ongoing efforts to improve its debt management practices have led to the strengthening of its cooperation with multilateral institutions. Starting in 1998, Korea resumed its Debtor Reporting System reports (of external public debt and private debt publicly guaranteed) to the World Bank. Korea is also actively following developments with regard to the introduction of an external debt category in the IMF’s SDDS (Special Data Dissemination Standard).

As a result of all its endeavours, Korea was able to reduce its total external liabilities to US\$ 136 billion at end-1999, a decrease of

\$24 billion compared to the time of the crisis at end-1997. Total external assets, on the other hand, reached \$146 billion, an increase of \$41 billion over the same period. As a result, for the first time ever, Korea became a net creditor (by \$9 billion). The reasons behind such a decrease in total external debt, accompanied by an increase in total external claims at the other end, may be summarised as: continued current account surpluses in 1998 and 1999; consistent inflows of foreign investments; and prepayment of the IMF’s Supplementary Reserve Facility loans and financial institutions’ external debt.

A look at the debt profile also shows significant improvements, particularly in the maturity structure. The percentage of short-term external debt dropped from 40% (or US\$ 64 billion) at end-1997 to 28% (or US\$ 38 billion⁴) at end-1999. Moreover, scheduled amortisation payments on long-term external debt are now appropriately dispersed. Before the crisis, the short-term component of total external debt was excessively high, as domestic financial institutions depended heavily on short-term borrowing to secure necessary foreign currency funds.

Table 2
Trends in total external assets and liabilities
In billions of US dollars (percentage of total)

	Dec 1997	Dec 1998	Dec 1999
Total external liabilities	159 (100)	149 (100)	136 (100)
Long-term	96 (60)	118 (79)	98 (72)
Short-term	64 (40)	30 (21)	38 (28)
Total external assets	105 (100)	129 (100)	144 (100)
Long-term	32 (31)	30 (24)	25 (17)
Short-term	73 (69)	98 (76)	119 (83)
Net external liabilities	54	20	-9

However, in April 1998, the Korean government took measures to reschedule the short-term foreign currency liabilities of domestic financial institutions into medium- to long-term liabilities of one, two- and three-year maturities. As a result, the ratio of short-term external debt was significantly reduced.

⁴ Short-term external debt on a residual maturity basis is estimated as US\$ 55 billion.

Strengthening prudential regulations and supervision of financial institutions' foreign currency operations

From the 1990s, Korean financial institutions hastily expanded their operations related to foreign exchange and international finance during the full-scale liberalisation and opening of Korea's financial markets. However, prudential regulatory schemes to keep up with such abrupt developments were inadequate.

The criteria for classifying asset soundness, such as the BIS capital adequacy ratio and loan classification criteria, were applied in quite a lax manner in Korea, compared to the standards recognised in international financial circles. Various prudential supervisory measures, such as a liquidity ratio, risk management standards, restrictions on investments in high-risk assets, etc, were not sufficient. In particular, with regard to financial institutions' foreign currency borrowing, regulations on the inflows of short-term and long-term capital were asymmetrical. That is, while long-term borrowing was regulated,⁵ no restrictions were placed on short-term borrowing.

Under such circumstances, a considerable number of Korea's financial institutions exhibited business patterns centred around high-risk, high-return assets, securing foreign currency funds through short-term borrowing, while utilizing those same funds long-term. And when currency crises struck the east Asian economies and domestic corporations became insolvent, Korean financial institutions were confronted with severe liquidity crises, witnessing a precipitous drop in their short-term rollover ratios.

Accordingly, the Korean government has, since the currency crisis, taken several measures to strengthen prudential supervision, including measures to tighten financial institutions' asset classification criteria. Regulations on liquidity risk management, relating to the funding and employment of foreign currency funds, have also been strengthened.

Maturity mismatches of foreign currency assets and liabilities are now regulated by the Financial Supervisory Service (FSS) as follows:

- The ratio of foreign currency assets falling due within three months to foreign currency liabilities maturing within three months must be maintained at 80% or higher.

⁵ Domestic financial institutions had to report to the government their long-term foreign currency borrowings exceeding US\$ 10 million.

- The maturity mismatch of foreign currency assets and liabilities is further regulated through maturity gap ratios. For all foreign currency assets and liabilities maturing within seven days, the sum of assets must exceed that of liabilities. For those maturing within one month, the amount by which the sum of liabilities exceeds assets must be kept within 10% of total foreign currency assets.
- In addition, over 50% of the funding on foreign currency loans with maturities of three years or more is to be made with foreign currency borrowings with redemption periods of three years or more.
- The FSS also requires domestic financial institutions to establish and apply in-house risk management guidelines. These categorise risks associated with foreign exchange transactions by type, eg country risk, large credit exposure risk, derivatives transactions risk, market risk, etc. Their asset classification was modified so that future cash flows are reflected (the so-called "forward looking criteria"). The guidelines for accumulating loan loss provisions were also tightened from the end of fiscal year 1999.
- The limits on domestic financial institutions' foreign exchange positions, relative to equity capital as of the end of the preceding month, was raised from 15% to 20% in January 1999. The methodology for computing positions was changed from *net-aggregate position* to the standard recommended by the Basel Committee, *shorthand position*. As a result, risks stemming from exchange rate fluctuations are now more accurately reflected.

Building up foreign exchange reserves

Just before the outbreak of the currency crisis, at end-October 1997, Korea's usable foreign exchange reserves amounted to a modest US\$ 22 billion. However, since November 1997, when the first symptoms of an impending crisis began to emerge, Korea's reserves had been rapidly depleted to as low as \$4 billion on 18 December 1997.

This was because the Bank of Korea provided from its reserves the external settlement funds badly needed by domestic financial institutions, which at the time were faced with insolvency following the withdrawal of short-term foreign currency loans by foreign banks. Furthermore, in order to offset the lack of liquidity in the foreign exchange markets, the

Table 3
Disbursement and redemption of funds from multilateral institutions
 Flows, in billions of US dollars

	1997		1998			1999			Total
	Year	Year	First half	Second half	Year	First half	Second half	Year	
IMF	11.1	7.9	5.9	2.0	7.9	0.5	-	0.5	19.5
ADB	-	-2.9	-	-2.9	-2.9	-5.8	-5.0	-10.8	-13.7
IBRD	2.0	1.7	1.0	0.7	1.7	-	-	-	3.7
	2.9	2.9	2.0	1.0	2.9	1.0	-	1.0	6.9
Total	16.1	12.5	8.9	3.7	12.5	1.5	-	1.5	30.1
	-	-2.9	-	-2.9	-2.9	-5.8	-5.0	-10.8	-13.7

Bank of Korea had to inject foreign currency into the markets, further depleting its foreign reserves.

Consequently, as the build-up of external liquidity became pressing, the Korean government turned first to the IMF for financial support, and then borrowed further from the World Bank, the ADB and others. By end-1999, a total of US\$ 30 billion had been borrowed, of which \$14 billion (IMF Supplementary Reserve Facility loans) had already been repaid.

Korea's foreign exchange reserves were further built up with issues of Foreign Exchange Stabilisation Fund Bonds totalling \$4 billion on 8 April 1998.

Furthermore, as the current account continued to run a large surplus, and foreign direct and portfolio investments had been flowing in consistently since 1998, the Bank of Korea was able to call in its foreign currency deposits at domestic financial institutions and appropriate them to build up more reserves. As a result, usable foreign exchange reserves increased dramatically, reaching US\$ 74 billion⁶ at end-1999. This amount is well above the traditional yardstick for determining the optimal level of foreign exchange reserves – an amount large enough to cover current account payments for three consecutive months. The current level of reserves also exceeds short-term external debt, in terms of both original (US\$ 38 billion at end-1999) and residual (approximately \$55 billion) maturities.

Table 4
Trends in the current account and foreign investments
 In billions of US dollars

	1997	1998	1999				Year
			Q1	Q2	Q3	Q4	
Current account surplus	-8.2	40.6	6.2	6.4	6.7	5.7	25.0
Net FDI inflow	1.3	4.0	0.8	1.9	2.5	2.6	7.9
Net inflow of foreign portfolio investments ¹	1.9	5.2	2.9	4.5	-0.2	5.1	12.4

¹ Funds invested in domestic equities, bonds, stock price index futures and options or short-term money market instruments. Proceeds from the issues of overseas securities are also included.

⁶ Of this amount, funds raised by borrowing from multilateral institutions or issuing Foreign Exchange Stabilisation Fund Bonds total US\$ 21 billion.

Table 5
Trends in usable foreign exchange reserves

In billions of US dollars

	Dec 97	Mar 98	Jun 98	Sep 98	Dec 98	Mar 99	Jun 99	Sep 99	Nov 99
Foreign exchange reserves (A)	8.9	24.2	37.0	43.4	48.5	54.5	60.4	65.5	74.1
Short-term external debt ¹ (B)	63.6	53.5	33.8	30.7	30.7	31.8	31.8	35.0	38.0
A/B (in percentages)	14	45	109	141	158	171	190	187	194

¹ Based on original maturity.

Since the level of its foreign exchange reserves topped US\$ 74 billion at end-1999, the optimal level of reserves has been a matter of public debate in Korea. The Bank of Korea has been experimenting with various methods for calculating the optimal level of foreign exchange reserves. One of these is an expanded definition of the Guidotti Rule.

It is important that adequate foreign exchange reserves are maintained, large enough to make provision against payments on possible withdrawals of external liabilities and foreign investments in the short-term, and to defend domestic foreign exchange market stability. Reserve accumulation obviously incurs opportunity costs. However, the cost of holding reserves should not be overstated. For it entails benefits that are largely unquantifiable – reserves not only lower borrowing costs through upgrading of the sovereign ratings but also help avoid potential crises.

In addition to the expansion of reserves, repo agreements were signed with seven central banks, including those of China, Japan, Australia and Singapore, as possible supplements to liquidity in times of crisis.

On the operational side, the Bank of Korea has established benchmarks for reserve management, paying due regard to details including the currency composition and maturity profile of total external debt. By doing so, the Bank of Korea is minimising risks associated with exchange rate fluctuations, while at the same time preparing against possible deterioration of the foreign exchange liquidity position of the overall economy.

Strengthening the monitoring of cross-border capital movements

Having experienced the currency crisis, Korea recognised the urgency of establishing a system that would enable authorities to assess readily day-to-day capital flows and follow international financial market developments, as well as maintain and use relevant data in an efficient manner.

Moreover, as a result of government measures to expand capital account liberalisation following the currency crisis, the Korean economy has become ever more exposed to changes in international financial markets. Measures to expand capital account liberalisation have also increased the possibility of domestic financial and foreign exchange markets being disrupted by abrupt, cross-border movements of short-term speculative funds. Hence, the need to strengthen the monitoring of cross-border capital movements has become even greater.

In this context, together with the implementation of the first stage of foreign exchange liberalisation in April 1999, the government and the Bank of Korea set up the Foreign Exchange Information Network to monitor constantly foreign exchange transactions. The government and the Bank of Korea also founded the Korea Centre for International Finance (KCIF), bringing together a group of specialists capable of reading international financial markets and devising swift countermeasures.

Centred around the Bank of Korea, which serves as a foreign exchange information concentration centre, the Foreign Exchange Information Network links the computer systems of all foreign exchange business institutions and users. It is a computerised network, capable of timely collection and dissemination of information on foreign exchange transactions to users. Through the use of this network, systematic analysis of the trends in various foreign exchange transactions, including short-term foreign funds and derivatives, as well as movements of principal market indices, is made possible. In particular, monitoring is centred on the trends in the flow of foreign portfolio investments, investments in domestic securities, residents' foreign currency deposits, etc. The collected data are also shared with the Ministry of Finance and Economy, the FSS, the KCIF and others.

The KCIF, on the other hand, has the function of collecting and analysing information on international financial market developments and reporting its findings to the government, the Bank of Korea and other institutions on a regular and occasional basis. The KCIF is also developing an early warning system with technical assistance from the World Bank. This uses a statistical forecasting model to detect early signs of a currency crisis.

Furthermore, the Bank of Korea has also established, within its International Department, a specialised monitoring team exclusively responsible for keeping a constant watch over the day-to-day situation in the international and domestic financial markets.

Enhancing corporations' capacity to manage foreign exchange risks

Following the currency crisis, transactions aimed at hedging against exchange rate and interest rate risks through derivatives increased. This was due to the increase in domestic corporations' holdings of foreign currency assets, including foreign currency deposits, for the purpose of

securing foreign exchange liquidity, and their heightened interest in risk management.

At the other end, domestic financial institutions are developing various schemes that would induce domestic firms to step up their management of foreign exchange risks. One example is the recent move by banks and merchant banking corporations to include domestic firms' foreign currency risk management status as one of the items to be evaluated during the loan screening process. Another is the inclusion of clauses in domestic firms' loan agreements that would bind them to report periodically any derivatives transactions exceeding a specified amount to creditor banks.