

The views expressed in this paper are the author's own and do not reflect KDI's official position.

The Korean Crisis — Causes and Resolution

July 28, 1998

Inseok Shin · Joon-Ho Hahm

Korea Development Institute

Prepared for the East-West Center/Korea Development Institute Conference on the Korean Crisis, Honolulu, August 8, 1998.

빈 면

CONTENTS

I. Introduction	1
II. Part I. Causes of the Korean Financial Crisis	3
1. Definition, a Sketch of the Korean Crisis and the Frameworks	3
2. Causes of the Korean Crisis	11
3. Were the Fundamentals Weak Enough? – Further Causes of the Crisis	30
III. Part II. Resolution of Financial Crisis in Korea	41
1. Imperatives of the Financial Sector Restructuring	41
2. Overcoming the Foreign Exchange Crisis	43
3. Restructuring of the Financial Sector	46
4. Strengthening the Competitiveness of Financial Industry	60
5. Establishment of Sound Financial System	63
References	73

빈 면

Introduction

The Korean economy is under turmoil. It was hit by the outbreak of a currency crisis and a financial crisis in 1997. Since then, as with other episodes of crises, financial markets have remained vulnerable and activities of the real sector been shrinking sharply. Seen in the light of the past track that the Korean economy had followed, recent developments are, to say the least, quite dramatic and raise two questions immediately: 1) What caused it? 2) How can it be resolved? We are set out to address these two questions in this paper.

As will be further explained in the paper, the Korean crisis is the twin crises of a currency crisis and a financial crisis. Concerned with finding out their causes, this means that it is gravely important to understand the inter-dynamics between the two: namely, which one was the first and what caused the first crisis? To elaborate the questions more specifically and put them in the context of the literature, we briefly survey existing studies on the financial crisis. By the survey, we identify a list of potential causes discussed in the literature, and draw out two competing views on the causes of twin crises, which we term as *weak fundamentals* view versus *panic* view. With the preparation, we examine the potential causes in the list: whether they were present in Korea prior to the crisis. We find evidence that some factors indeed existed in the Korean economy before the crisis. Upon the findings, we discuss whether those factors or fundamentals were *weak* enough to result in a financial and a currency crisis. Our tentative conclusion is that in view of the actual evolution process of the crisis, they were less than sufficient. We emphasize the roles of policy missteps given the external shocks originated in Southeast Asian crises and inherent instability in the international markets as further causes for the Korean crisis.

Next we move to address the second question of the paper: resolution of the crisis. Given that the twin crises occurred, we think that there are three main challenges to the

policy makers. First, stabilizing the foreign exchange market, which is tantamount to stopping capital outflow. Second, restructuring the financial sector where dealing with insolvent institutions and recapitalizing viable institutions are main tasks. Third, reforming the existing regulatory and supervisory framework to eradicate underlying causes that resulted in the crisis and improve competitiveness and soundness of the financial system. We discuss measures to cope with these challenges consecutively.

Other than introduction and conclusion, the paper consists of two parts in accordance to the two major questions above. Part 1, where causes of the Korean crisis are discussed, has three sections. In Section 1, we provide the first look on the Korean crisis and survey of the existing literature on causes of a financial crisis accompanied by a currency crisis. In Section 2, we examine the existence of factors in Korea, which have been discussed as potential causes in the literature. In Section 3, we discuss whether these causes or development in fundamentals were sufficient enough to explain the outburst of the crisis. We also provide two additional factors, not related to fundamentals, as key causes of the Korean crisis. Part 2 is composed of five sections. Section 1 contains basic information on the resolution task. In Section 2, we describe the measures to restore stability in the foreign exchange market. In Section 3, we discuss the restructuring process of the financial sector including recent progress in the banking sector reform. Finally in Sections 4 and 5, we discuss policy directions in reforming regulatory and supervisory settings.

PART I. Causes of the Korean Financial Crisis

1. Definition, a Sketch of the Korean Crisis and the Frameworks

This section defines the term “financial crisis” and presents a brief sketch of turmoil in the Korean financial markets to provide basic information on the Korean crisis as well as to justify the usage of the word in the paper. Some literatures on causes of financial crises are surveyed to serve as background for the following analysis.

1.1 Definition

What is a financial crisis? As the phenomenon referred to by the term has become familiar now across continents and the past decade, there is host of definitions coined for the term. Tradition in the literature has been tailoring the term with specific manifestations of the crisis being studied and, accordingly, various definitions have been provided so far. However, the existence of diverse definitions does not bring up an issue for our purpose because the Korean crisis shares core elements with most of the definitions. Hence, to proceed among many definitions we select the most factually oriented and the most theoretically oriented one arbitrarily as follows:

- *A situation in which a significant group of financial institutions have liabilities exceeding the market value of their assets, leading to runs and other portfolio shifts, collapse of some financial firms, and government intervention. (Sundararajan and Balino 1991)¹*

¹ They also provide a list of various definitions of a financial crisis.

- *A nonlinear disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. (Mishikin 1996)*

1. 2 A First Look on the Korean Financial Crisis

Despite differences between the two, whichever definition is applied we can easily confirm that a crisis took place in Korea as a fact in the fourth quarter of 1997.

The Korean case demonstrates all the aspects of a financial crisis under the first definition. First, there was deterioration in balance sheets of financial institutions. In 1997, non-performing loans of banks have increased rapidly as Table I.1 shows.

Table I. 1. Non-performing Loans of Commercial Banks

	(Ratio to Total Loans, %)				
	1994	1995	1996	1997.9	1997.12
Ratio 1	1.0	0.9	0.8	2.7	2.7
Ratio 2	-	5.2	4.1	6.8	6.0

Source: Banking Management Statistics, BOK, 1998.

Note: Non-performing loans in Ratio 1 = Substandard + Estimated Loss, Non-Performing loans in Ratio 2 = Substandard + Estimated Loss + Doubtful.

Second, a run to financial institutions occurred. Although domestic depositors' run was absent, in November and December Korean banks and merchant banking corporations (MBC) experienced foreign creditors' run in a large scale, which resulted in sharp reduction in short-term external debts of the financial institutions by more than 40% over the two

months. Third and finally, there was collapse of financial institutions and government intervention. Fifteen merchant banking corporations were suspended in December and thirteen of them were closed in the end. Also the government intervened in two insolvent banks (Seoul Bank and The Korea First Bank) in December.

Table I. 2. Short Term External Debts of Financial Institutions (1997)

(In U.S.\$100Millions)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
384.7	82.7	401.7	423.8	432.9	427.2	417.5	406.9	98.7	421.1	358.5	65.5

Also, the Korean case fulfills the criteria posited by the second definition of a financial crisis. Nonlinear disruptions to financial markets occurred in the last quarter of 1997. The pattern of rising interest rates and declining stock prices in the midst of increase in the number of incidences of default had already been in place as early as in September as Table I.3 shows. But nonlinear disruptions became most evident in November and December. Interest rates skyrocketed to an unprecedented level in December, short-term rates being doubled in a month while credit flows to the non-financial sector ceased abruptly. Both of these led to the ratio of dishonored bills reaching record high 2.09% in December, while stock price index plunged to 390.3 down from 494.1 in November, which was already lower by 90 points on a month ago. It is worth emphasizing, in addition, that all of these developments coincided with sharp depreciation of the Korean Won as can be seen in the table.

To sum up, other than confirming the outbreak of a financial crisis in the fourth quarter of 1997, from this brief sketch we note the following key fact about the crisis: the foreign sector played a vital role in breaking out the financial crisis. It were foreign creditors who ran to financial institutions, and the nonlinear disruptions in domestic financial markets

appeared together with turbulence in the international financial market as indicated by the movement of the Won/Dollar exchange rate. That is, the Korean financial crisis took place simultaneously with the currency crisis.

Table I. 3. Financial Market Indicators in 1997

	(% , Trillion Won, Won/\$)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ratio	0.26	0.30	0.30	0.32	0.30	0.29	0.30	0.27	0.40	0.56	0.48	2.09
Call	11.4	11.5	12.9	13.0	12.5	11.2	11.4	12.4	13.2	13.6	14.0	21.1
CB	12.2	12.2	12.7	12.5	12.2	11.7	11.9	12.1	12.4	12.5	14.1	24.3
Loans	180	183	188	191	192	194	199	202	203	207	208	200
Stock	669	698	656	694	713	765	752	740	676	584	494	390
Won	861	863	897	892	891	888	892	902	914	965	1163	1415

Source: Major Indicators of the Korean Economy, KDI.

Note: Ratio = The Ratio of Dishonored Bills to the Total Bills, Call = Call Rate, CB = 3 Year Corporate Bond Yield, Loans = Loans and Discounts of Deposit Money Banks, Stock=Stock Price Index, Won = The Won/Dollar Exchange Rate.

1.3 Two Competing Frameworks (Explanations) for Twin Crises

In explaining how a financial crisis accompanied by a currency crisis arises, literature has been following two lines: 1) A financial crisis is generated by shocks and propagation mechanisms, and a currency crisis follows as a repercussion. 2) A financial crisis is a result of a currency crisis, while the currency crisis is a realization of ‘bad’ equilibrium among multiple equilibria that may be induced by a ‘self-fulfilling’ process. We briefly survey the two lines of studies to form the basis for the later analysis.

1.3.1 Shocks and Propagation Mechanisms: Weak Fundamentals Cause Financial Crises

Existence of shocks and propagation mechanisms preceding financial crises are reported and suggested as causes of the crises in many empirical studies. For shocks, shocks to terms of trade and/or international interest rates are found to be prevalent in many financial crises. Caprio and Klingebiel (1996) report that 75% of countries in their sample which experienced financial crises suffered a terms of trade decline of at least 10% prior to the crisis. Kaminsky and Reinhart (1995) also stress a negative terms of trade shock as one of the stylized facts associated with banking crises in developing countries. As for the international interest rates shock, in discussing debt crises in Latin American countries in 1980s Diaz-Alejandro (1984) argues that financial shocks in the center (capital exporting countries) lead to financial crises in the periphery (capital importing countries). Recently, also Calvo, Leiderman and Reinhart (1993) report that capital flows to Latin American countries in 1990s are much dependent upon external factors such as changes in U.S. interest rates. And Frankel and Rose (1996) find that foreign interest rates play a significant role in predicting currency crashes (and, therefore, maybe banking crises, too).

Regarding propagation mechanisms that transform shocks into crises, two factors have been widely discussed: pre-existed resource misallocation and vulnerability of financial institutions to liquidity shocks. In many empirical studies, surges in credit supply of the financial sector prior to crises are noted and interpreted as signs of accumulation of potentially misallocated resource in the sense that correct assessment of risks were lacking. For example, Kaminsky and Reinhart (1995) report lending booms have predictive, though moderate, power for banking crises. Likewise Demirguc-Kunt and Detragiache (1997) find that credit expansion variables are significant in predicting banking crises in most specification of their models. With respect to vulnerability to liquidity shocks, maturity or/and currency mismatches are argued to be important factors

in transforming a shock into a crisis. In particular, in episodes of twin crises of financial and currency crises, the magnifying effect of currency mismatch on deterioration of balance sheets is reported. Among many, Mishikin (1996) explains associated with the Mexican crisis in 1994 that in the presence of a currency crisis, currency mismatch of borrowers caused an immediate depreciation of their balance sheets and resulted in sharp increase in non-performing loans of the banking sector.

Velasco (1987) provides a framework, which may be viewed to link the listed empirical facts above. He presents a model featuring interactive dynamics between financial and currency crises. In the model causality among events runs as follows. A shock occurs and non-performing loans increase, where their size depends on the degree of prior lending boom; banks and firms respond to the event by playing a Ponzi game under the expectation of the government's bail out, while using foreign borrowings as resources; as banks reach the ceiling of foreign borrowing, banks run out of resource and collapse resulting in a financial crisis; the government intervenes and expected fiscal deficit becomes incompatible with the current exchange rate regime (given insufficient foreign exchange reserves); a currency crisis follows and the banking crisis worsens. Hence, in this framework a financial crisis is an inevitable outcome of unsustainable behavior of banks and firms under the influence of moral hazard. And a currency crisis itself, despite being an important propagation mechanism of a financial crisis, is a result of the financial crisis.²

For the Asian crises including the Korean crisis, a similar view is put forward by Corsetti, Pesenti and Roubini (1998). With respect to the Korean crisis, they stress the

² Velasco (1987) develops the model mainly being reminiscent of the Southern Cone experience in early eighties. However, more evidence supportive of the logic in the model is present: According to Kaminsky and Reinhart (1996), 56 percent of the financial crises in their sample were followed by currency crises. On the other hand, only 12 percent of the currency crises were followed by financial crises.

roles of the terms of trade shock, prior lending boom that supported over-investment and maturity/currency mismatch of financial institutions and the corporate sector. Then, they conclude that the breaking of the financial crisis can be fully explained by these weak fundamentals.

1.3.2 A ‘Bad’ Equilibrium: Panic Causes a Currency and Financial Crisis

Although the logic that shocks with weak fundamentals cause inevitable financial crises and so currency crises is popular, an alternative view exists. This view has two punch lines. First, causality between financial crises and currency crises may run the other way around; that is, currency crises occur and financial crises may follow as an outcome. Second, eruption of currency crises should not be attributed to weak fundamentals but rather to the realization of a bad equilibrium triggered by, say, the panic of international investors.

The view that a currency crisis arises as a ‘bad’ equilibrium has been forcefully put forward into the stage after the ERM crisis and the Mexican 1994 crisis. Several models are already constructed and it is shown in the models that a currency crisis can occur as a result of self-validating shifts in expectations in the presence of multiple equilibria (Obstfeld 1994, Sachs, Velasco and Tornell 1996, Cole and Kehoe 1996). According to this view, in crises generating mechanisms a ‘panic’ ingredient is essential, which might be provoked by policy mistakes, political uncertainties etc. And once a currency crisis explodes, it gives rise to a financial crises as a repercussion.

Regarding the Asian crises, Radelet and Sachs (1998) explain the turmoils in line with this view and suggest intrinsic instability in international markets as a source of panic. They argue, in their own words, that “... the panic itself (is) unnecessary in the sense that the fundamentals could have supported a much more favorable outcome. In short, international financial markets demonstrate a high degree of intrinsic instability, or

to put things another way, the East Asian crisis is as much a crisis of Western capitalism as Asian capitalism”.

1.4. A Question to Be Answered

The Korean financial crisis, as we described, occurred in the last quarter of 1997 and developed together with a currency crisis. Putting the observation in the light of the existing literature leads us to ask the following question: “What caused the financial crisis - weak fundamentals or a panic-driven currency crisis?”

In the overview so far, as a way of comparison, we intentionally focused on contrasting aspects between the two explanations. However, it is fair to say that the two alternative views on the causes of crises are not inconsistent with each other. In fact, the bad equilibrium view of currency crises and financial crises does require fundamentals to be weak and put the economy in an area where multiple equilibria may occur. Therefore, as far as necessary conditions for financial crises are implied, the two views share the same factors listed above as ‘causes’ of crises. What distinguishes one from the other hinges on whether one sees these causes sufficient in triggering and propagating crises. That is, the bad equilibrium view stresses that changes in fundamentals are not enough to explain the severity and abruptness of crises and, hence, ‘*further causes*’ which are not related to fundamentals need to be found.

Based on this understanding, to address the question above we proceed in the following manner. First, we examine existence - prior to the Korean crisis - of weak fundamentals, which have been discussed in the literature. Second, we discuss whether these causes were sufficient in explaining the actual crisis, or further causes should be taken into consideration.

2. Causes of the Korean Crisis

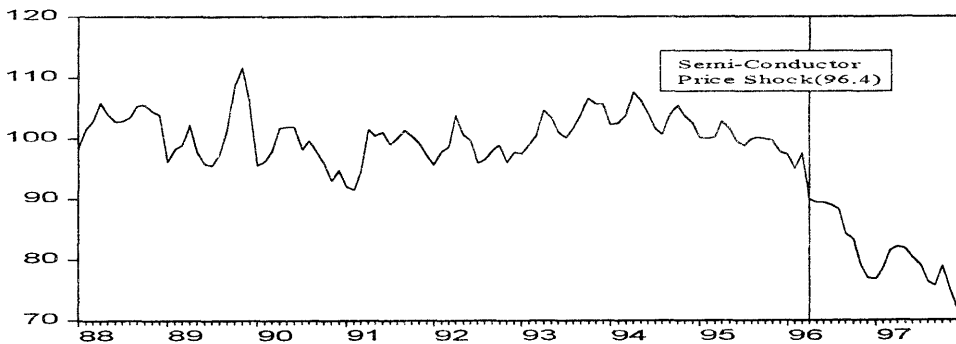
This section addresses the question of what caused the Korean crisis. To do this, first, existence of potential causes listed in the previous section are examined, which include shocks, lending boom, maturity/currency mismatch and capital adequacy of financial institutions. We find evidence for most of the factors. Upon this finding, underlying or institutional causes for the problems are briefly discussed.

2.1 Causes of the Crisis (1): Weak Fundamentals

2.1.1 The Terms of Trade Shock

Did the Korean economy experience shocks which could affect overall performance of the corporate sector and so balance sheets of the financial sector? The answer for the question is positive. Since April of 1996, the terms of trade for the Korean export products had declined sharply as semiconductor prices plunged in the international markets. The deterioration continued by the end of the year when the terms of trade was lower by 20 percent relative to a year ago. And it turned out to be the largest decline in the terms of trade Korea ever experienced in the past ten years. (See Fig. I.1)

FIG I. 1. Terms of Trade



2.1.2 Credit Expansion

Lending Boom?

Was there a lending boom or excessive credit expansion prior to the crisis that might propagate the shock into a crisis? Putting forward a quick answer first, evidence is less than convincing.

Various statistics, employed as possible indicators of a lending boom in the literature, are presented in Fig I.2 ~ Fig I.6. The first set of figures is for the credit expansion of banks, which are summarized in Fig I.2 and Fig I.3. Inspecting the figures, one may get the impression that banks have supplied credits quite vigorously in recent five years since 1993 relative to the earlier years before 1992. M2 has grown steeply so that both of their ratios to nominal GDP increased by more than 20% in the five years. In consequence, domestic credit also jumped to almost 70% in 1997 in terms of ratio to nominal GDP from 57.4% in 1994.

However, when examining credit supply of the banking sector as a whole, whether there existed a lending boom is not so clear. First, it should be kept in mind that banks in Korea have been operating under the two different accounts: the traditional banking account and the trust account that was permitted in 1984.³ Therefore, one may claim that credit supply of both accounts should be taken into account to assess the correct magnitude of intermediary activities of banks. In light of this observation, we provide MCT movements in Fig I.4 as a proxy for the credit supply of banks through both accounts.⁴ As evident in the figure, the amount of credit intermediated through both accounts has increased smoothly for the past ten years. But, also evident is that no peculiar movement of MCT in recent years -

³ In case of regional banks, operation of trust fund was allowed in 1982.

⁴ MCT is defined as a sum of M2 and claims of other agents on the trust account of banks.

either relative to nominal GDP or price - is found. Hence, we observe that the amount of credit supplied by banks may have been increasing merely along the trend.

FIG I. 2. M2 (Relative to GDP Deflator and Nominal GDP)

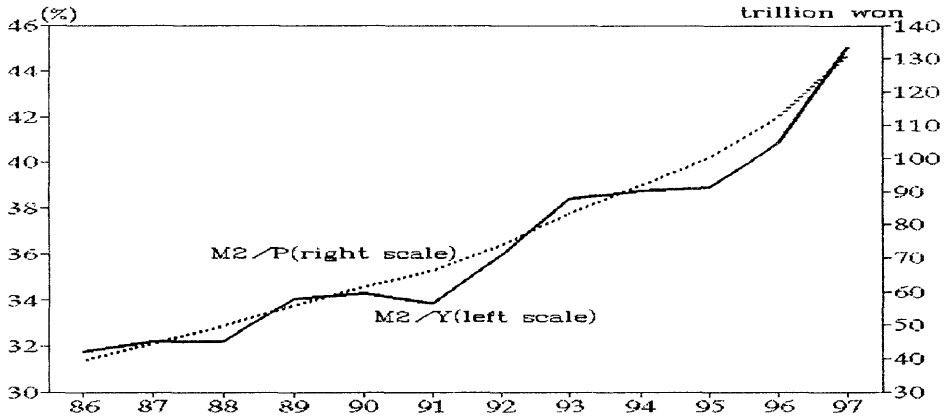


FIG I. 3. Domestic Credit of Banks (Relative to GDP Deflator and Nominal GDP)

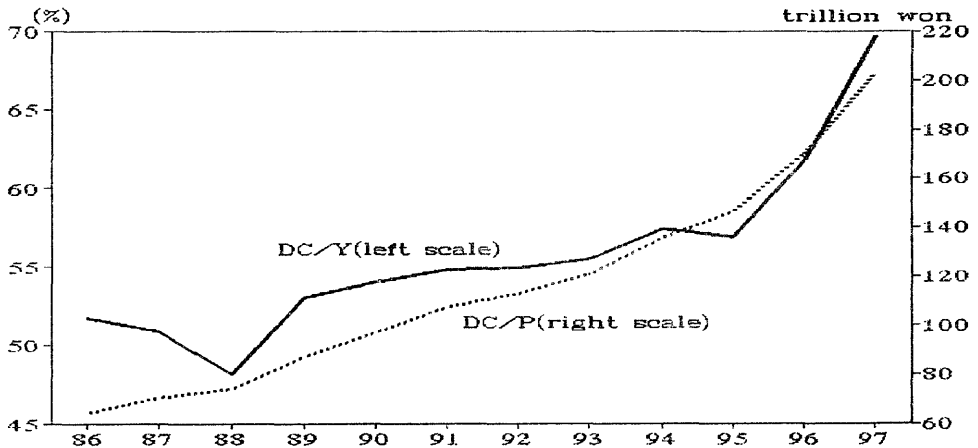


FIG I. 4. MCT (Relative to GDP Deflator and Nominal GDP)

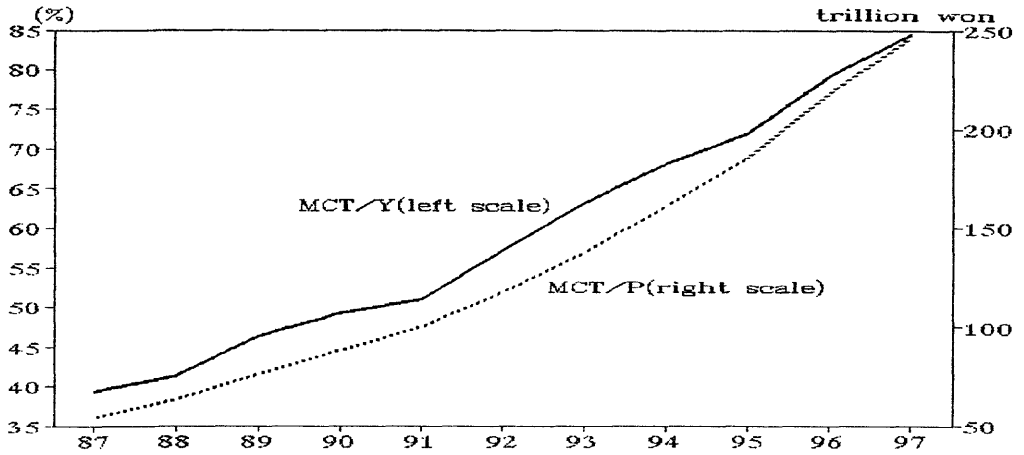


FIG I. 5. M3 (Relative to GDP Deflator and Nominal GDP)

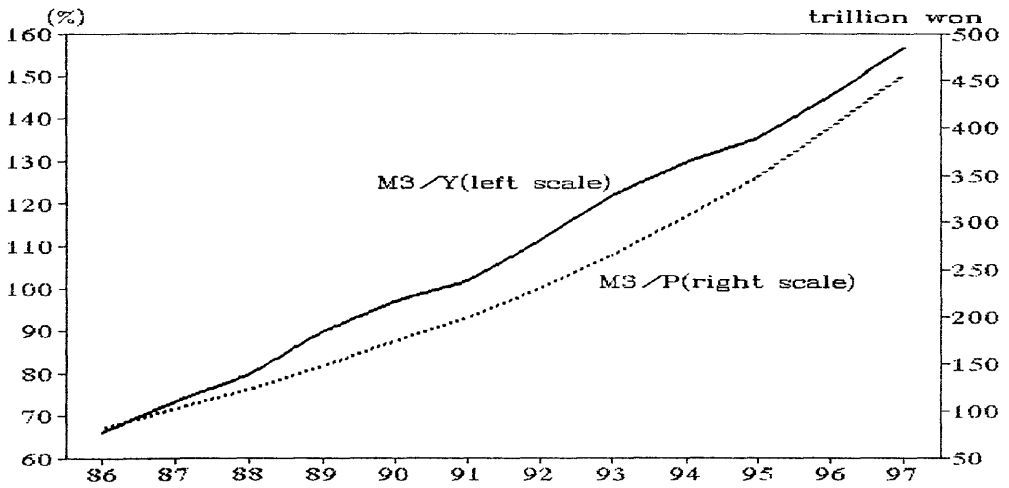
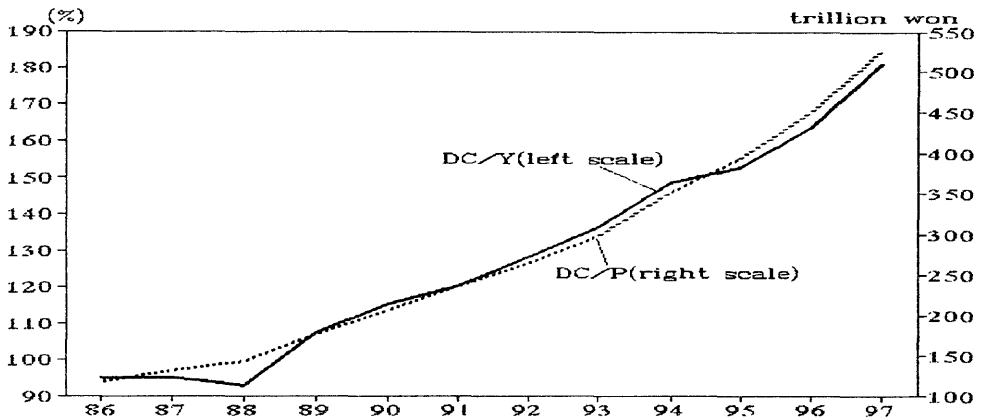


FIG I. 6. Domestic Credit of Financial Institutions (Relative to GDP Deflator and Nominal GDP)



It seems that this observation is applicable to lending activities of the financial sector in general. We present series associated with M3 (claims on the financial sector) and domestic credit of all financial institutions in Fig I.5 and I.6. One can easily see that their movements are similar to that of MCT. Therefore, in the aggregate level data, we do not see convincing evidence for a lending boom. Surely, one still needs to explain surge in bank loans and M2 after 1994, which we believe was a reflection of changes in private agents' holding financial portfolio spurred by liberalization on saving deposit rates in 1994 and 1995.⁵

Reckless Credit Supply of Financial Institutions due to Moral Hazard?

Of course, this does not mean that no misallocated resources were accumulated. It is possible that credit supply has grown as usual while profitability of the real sector was

⁵ In consistent with this, Shin (1997) argues that the M2 demand function became unstable after deregulation.

declining for some reasons such as delayed adjustments of some under-performing companies. And financial institutions kept supplying credit maybe because financial markets refused to evaluate *right* prices for the prospects of those corporations *for some reasons* such as moral hazard as Krugman (1998) posits. In fact, with the benefit of hindsight and considering the series of bankruptcies of large conglomerates in 1997, it is quite possible that some of conglomerates were already under gloomy prospects well before 1997.

Table I.4 provides related information, where performances of thirty largest conglomerates are summarized. The table should be read having the fact in mind that the Korean economy was booming in 1994 and 1995 in terms of macroeconomic indicators. It shows that relatively small sized conglomerates (namely 11-30th ranked ones) were significantly under-performing, and in fact their ROA's were negative despite the boom. Thus, we feel tempted to make a conjecture for the existence of 'false demand for credit' in those years, as Harberger (1985) argues for the Chilean crisis in 80s.⁶ In the end in accordance to the extent of the reality that this conjecture carries, the Korean crisis may turn out to be a "real sector crisis" rather than a financial crisis, which may have been prepared by reckless credit supply of the financial sector.

Table I. 4. Return on Assets (ROA) of Thirty Largest Conglomerates

	(%)		
	1993	1994	1995
1- 5 th	1.86	3.54	4.86
6-10 th	0.87	1.17	1.10
11-30 th	-0.40	-0.06	-0.08
1-30 th	1.11	2.19	3.15

⁶ In Harberger (1985), he insists " (in Chile, there existed) substantial 'false demand'. The false demand for credit consists of the rolling over of what are essentially bad loans."

However, admitting the plausibility of the conjecture, the fact that the effects did not show up in aggregate should not be taken lightly. In not only credit variables but also other monetary variables unusual behavior was difficult to detect. We present interest rates and inflation rates in 1990s in Table I.5, in which any remarkable changes are difficult to identify. Apparently both of inflation rates and real interest rates had been mild, and in fact they seem to have been moving downward being in stark contrast with the Chilean case.⁷ Hence, as far as the magnitude of misallocated resources is concerned, we remain cautious not to exaggerate.

Table I. 5. Real Interest Rates and Inflation Rates (1990-1997)

	1990	1991	1992	1993	1994	1995	1996	1997
CB Rate	16.5	18.9	16.2	12.6	12.9	13.8	11.9	13.4
Inflation	8.5	9.3	6.3	4.8	6.2	4.5	4.9	4.5
Real CB Rate	8.0	9.6	9.9	7.8	6.7	9.3	7.0	8.9

Note: 1) CB rate is 3year corporate bond yield.

2) Inflation is one-year growth rate of CPI.

3) Real CB rate is (CB rate-Inflation).

2.1.3 Growth of External Debts and Currency/Maturity Mismatches

Growth of Foreign Currency-Denominated Assets

Regardless of evaluations on overall changes in its total size, credit supply of the financial sector has displayed one distinguishing feature since 1994: increase in foreign currency-denominated assets and liabilities. Foreign currency-denominated assets of banks

⁷ Prior to the crisis, in Chile, inflation rates were over 30% and real interest rates exceeded an annual average of 76% between 1975 and 1982. (See Velasco 1991)

relative to nominal GDP went up to 28.9% in 1996 from 20.2% in 1992, while the ratio for merchant banking corporations more than doubled to 3.8% over the same period. (See Fig I. 7)

This evolution in the financial sector is also reflected at the macro-level so that external debts of the Korean economy swelled significantly. The ratio of external debts to GNP rose to 21.8% in 1996 from 14.0% in 1992, where major debt holders were financial institutions as shown in Table I. 6.

However, although external debts increased considerably, consistent with the analysis in the previous subsection, we do not believe that there was *excessive* accumulation of external debts in an aggregate level. That is, we subscribe to the view that the Korean economy did not have the problem of sustainability, as argued by Radelet and Sachs (1998).⁸

Currency/Maturity Mismatch

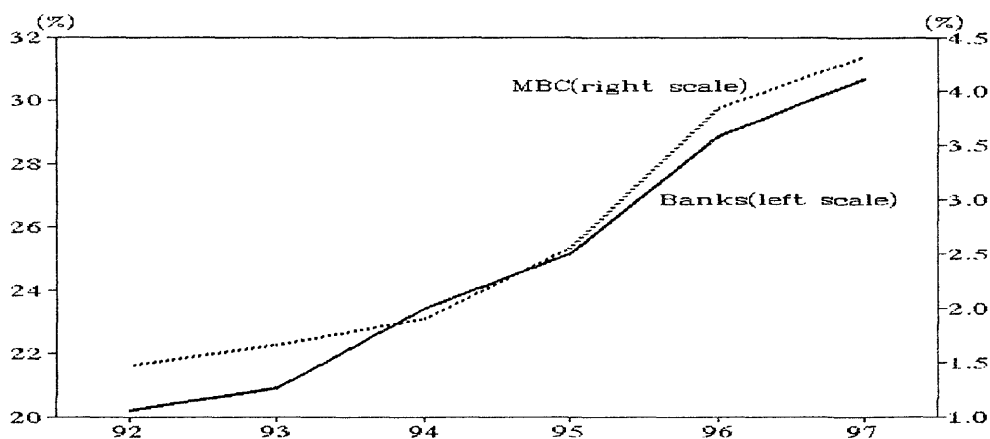
Increase in foreign currency-denominated assets of the financial sector and external debts of the economy was problematic not because of their magnitude but because of enlarged foreign currency liquidity risk associated with it, which in turn was due to serious currency/maturity mismatch problems.

By regulations, assets of financial institutions in foreign currency should be matched by the same amount of liabilities in the same currency, saving financial institution from a direct impact of exchange rate shocks. However, notwithstanding this protection scheme, financial institutions were hardly safe from the depreciation of Won. Since the

⁸ We skip the detailed examination to support the case. Interested readers are referred to Radelet and Sachs (1998). In fact, there are more references written in Korean. For example, see Park and Lee(1998).

corporate sector left most of their debts denominated in foreign currencies unhedged, depreciation of the Won resulted in immediate deterioration of their balance sheets leading to rise in credit risks of assets held by financial institutions. Thus, in the presence of this indirect channel, the financial sector also was vulnerable to exchange rate shocks.⁹

FIG I.7. Foreign Currency-Denominated Assets of Banks and MBCs (Relative to Nominal GDP)



The maturity mismatch problem of assets against liabilities in foreign currencies seems to be more serious. We measure the degree of maturity mismatch of financial institutions by the one-month mismatch gap and the three-month liquidity ratio. The former is a ratio of the gap between liabilities and assets, both of which are due within a month, to the total assets. And the latter is a ratio of liquid assets to liquid liabilities, where the period of three-months is a criterion for being 'liquid'. By construction, a lower mismatch gap and a higher liquidity ratio correspond to less degree of exposure to the mismatch problem.

⁹ This is exactly the same of the Mexican case. See Mishikin (1996).

Table I. 6. External Debts by Sector

(US\$100Million)

	1992	1993	1994	1995	1996	1997
Public Sector	56	38	36	30	24	180
(Long-Term)	(56)	(38)	(36)	(30)	(24)	(180)
(Short-Term)	0	0	0	0	0	0
Corporate Sector	137	156	200	261	356	423
(Long-Term)	(65)	(78)	(90)	(105)	(136)	(176)
(Short-Term)	(72)	(78)	(110)	(156)	(220)	(247)
Financial Sector	235	244	333	493	667	605
(Long-Term)	(122)	(130)	(139)	(196)	(277)	(339)
(Short-Term)	(113)	(114)	(194)	(297)	(390)	(266)
Total (A)	428	439	568	784	1,047	1,208
(Long-Term)	(243)	(247)	(265)	(331)	(437)	(696)
(Short-Term)	(185)	(192)	(304)	(453)	(610)	(512)
A/GNP(%)	14.0	13.3	15.1	17.3	21.8	27.5

Table I. 7. Mismatch Gap Ratios of Seven Largest Banks

(March 1997, %)

A Banks	B Bank	C Bank	D Bank	E Bank	F Bank	G Bank	Average
21.9	27.5	22.4	23.3	20.2	16.8	11.3	20.3

Table I. 8. Liquidity Ratios of Ten Largest Banks: Distribution

(Number of Banks, %)

	1995	1996	1997.3	1997.9
80%-90%	1	3	2	2
70%-80%	2	2	1	1
60%-70%	4	2	4	5
Below 60%	3	3	3	2
Average	59.9	61.7	62.0	63.2

We present mismatch gaps for seven largest banks as of March 1997 in Table I.7 and liquidity ratios for ten largest banks for three years since 1995 in Table I.8.¹⁰ Examining Table I.7 reveals that all of the seven banks recorded more than 10% and five of them exceeded 20% mismatch gap ratios. Comparing these numbers with 10% which is recently announced as a future standard by the Korean supervisory authority, we conclude that the banks were under grave maturity mismatch problems. Table I.8 suggests basically the same picture. As of March or September 1997, most banks scored less than 80% liquidity ratio which is far lower than the future standard of 100% announced this year by the authority.

Another notable feature indicated by Table I.8 is that the problem of maturity mismatch between foreign currency assets and liabilities was not a new advent of 1997. As clear from the table, it had been a chronic problem at least since 1995, which needs to be kept in mind for later analysis.

2.1.4 Capital Adequacy

Strictly speaking, whether a financial institution is vulnerable to balance sheet-deteriorating shocks is a matter of degree. Taking various risks on behalf of depositors is a **raison-d'être** of the financial industry and, thus, in principle financial institutions are constantly exposed (or vulnerable) to unexpected changes in factors affecting asset qualities. For this reason, having sufficient amount of capital as a bumper for the inherent risks is always a most critical issue in the industry. With respect to assessing fragility of the Korean financial institutions before the crisis, this implies that to complete the analysis we should investigate their capital adequacy relative to asset qualities or the extent of risks .

¹⁰ In case of mismatch gaps, presented data are only available ones.

For that purpose, we exhibit the BIS standard capital adequacy ratios for banks in Table I.9.¹¹ The table suggests that all of the banks apparently have been satisfying the regulatory standard of 8% until 1996. However, one should be careful in taking the numbers as they are, because there were at least two factors that disguised the *true* ratios. One is insufficient loan loss provisions together with the practice of counting part of loan loss provisions as capital. And the other is the practice of partial recognition of stock revaluation losses.

Under regulations issued by the Office of Bank Supervision of the Bank of Korea in 1994, each bank must set up provisions for loan losses at the end of fiscal year, consisting of 0.5% of normal credits, 1% of precautionary credits, 20% of substandard credits, 75% of doubtful credits, and 100% of estimated loss credits, in line with the five-folded classification on the status of loan qualities. Strict as the regulations are even in terms of the international standard, the Office of Bank Supervision allowed two ways for banks to avoid negative effects of the regulations on capital ratios. First, those banks with an overhang of previous bad loans have been permitted a grace period of up to five years (1994-1998) to comply with the ratio. Second, banks were allowed to count loan loss provisions as tier-2 capital up to 1.25% of their weighted risk assets.

Also banks have been able to boost up their capital ratios by recognizing only portion of stock revaluation losses. As large revaluation losses were expected in 1995 when the Korean stock market went bearish, the Office of Bank Supervision allowed banks to recognize the losses only up to 30%. The discrepancy between full and partial recognition was huge, amounting to 35.8% of total operating income in 1995 and 79.0% in 1996.

¹¹ The BIS standard capital ratio was introduced in 1992 and applied to all commercial banks. The Office of Supervision issued a guideline by which banks were required to maintain the ratio of at least of 7.25% at the end of '93 and to meet the full 8% standard by the end of '95.

Table I. 9. The BIS Capital Adequacy Ratios of Deposit Money Banks

	(End of Year, %)				
	1993	1994	1995	1996	1997
Cho Heung	9.79	10.07	9.01	8.48	9.02 (6.50)
KCB	9.84	10.56	9.64	9.25	9.54 (7.62)
KFB	10.19	10.04	8.71	9.14	0.98 (-2.70)
Han Il	11.09	11.04	9.72	8.86	8.94 (6.90)
Seoul	9.71	10.62	8.97	8.56	6.39 (0.97)
KEB	9.23	9.06	8.66	9.16	8.63 (6.79)
Kook Min	3.28	5.03	6.06	8.46	10.77 (9.78)
KHRB	NA	4.56	6.79	8.27	10.29 (10.29)
Shin Han	13.26	11.68	11.77	10.03	10.80 (10.29)
Koram	8.56	8.50	8.57	8.80	9.16 (8.57)
Dong Hwa	15.98	12.39	10.64	9.48	9.62 (5.52)
Dong Nam	9.78	9.53	8.61	8.76	8.06 (4.54)
Dae Dong	11.85	9.20	8.39	9.07	7.43 (2.98)
Hana	7.62	8.12	8.35	8.71	9.29 (9.29)
Boram	9.69	8.92	8.68	8.70	10.81 (9.32)
PyeongHwa	26.12	12.10	9.49	8.92	8.59 (5.45)
City Banks Avg.	9.71	9.42	8.85	8.93	8.67 (6.67)
Taeku	12.87	11.77	11.12	9.93	11.76 (11.25)
Pusan	10.28	10.27	8.61	8.58	10.08 (9.66)
Chungche- ong	14.81	14.46	11.55	9.81	8.51 (7.20)
Gwangju	18.75	14.05	12.96	11.27	11.64 (10.65)
Jeju	29.44	32.16	24.32	14.95	14.97 (12.13)
Kyeongki	15.32	12.52	10.89	8.96	8.43 (6.69)
Jubuk	22.71	19.13	16.43	15.13	13.37 (13.27)
Kangwon	17.36	16.42	14.54	12.03	8.11 (5.37)
Kyeongnam	14.83	11.62	10.03	9.41	13.30 (12.27)
Chungbuk	14.39	12.21	10.97	10.02	6.83 (5.80)
Regional Banks Avg.	14.86	13.11	11.44	10.15	10.60 (9.60)
Total Avg.	10.34	9.89	9.20	9.10	8.92 (7.04)

Note: 1) Numbers in parenthesis are after accommodating complete stock revaluation loss and loan loss provisions.

Thus, to get the realistic ratios, one needs to discount the announced numbers by taking these disguising factors into account. However, gauging necessary discount rates is not an easy task, since the flexibility allowed to banks in boosting their ratios had been exploited in various ways across banks depending on their *needs*. Due to the difficulty, we can estimate only the range where the actual ratios are likely to belong by computing the upper and the lower bound for discounting rates. A piece of information implying the upper bound was given early this year. In late January the Office of Supervision announced two different ratios for 1997 upon the request of the IMF; one with cosmetic adjustments and the other with full loan loss provisions and full recognition of stock revaluation losses. As shown in Table 8, the difference between the two ratios is around 2% on average. Since non-performing loans have increased sharply in 1997, we take this number as the upper bound for the gaps between the announced capital ratios and the true ratios before 1997.¹² For the lower bound of discount rates, Song (1998) provides an estimate. He suggests that the partial recognition of stock revaluation losses boosted the ratios by 0.84% on average. As the adjustments of loan loss provisions are ignored, we consider it a lower bound for the gaps.

Along this line of reasoning, we conclude that the capital adequacy ratios displayed in Table I.9 need to be discounted by 1~2% and so the true capital ratios were likely to be less than 8% on average as early as 1995. In other words, banks had a serious under-capitalization problem and the problem had prevailed for at least two years before the crisis.

¹² We have to admit that it is a 'soft' upper bound, since counting part of loan loss provisions as capital is still allowed. In addition, we cannot rule out the possibility that the capital adequacy ratios announced in early 1998 might be still over-estimation of actual numbers. Later in June 1998, the Financial Supervisory Commission announced BIS ratios for 12 banks that failed to satisfy 8% standard as of the end of 1997 and it turned out that their BIS ratios went down yet significantly. See Part II of the present paper for details.

(Merchant Banking Corporations)

For merchant-banking corporations, no data, directly related to capital adequacy, is available because regulations on the capital adequacy of MBC have been absent. Hence, we can only make a conjecture for the state relying on circumstantial evidence, for which we will use the ratio of non-performing loans to equity capital. As we see in Table I.10, the ratios for MBC's have been much higher than those for banks for the two years before the crisis. Based on this and the fact that no capital adequacy regulations existed, we deduce that MBCs' under-capitalization problem was probably more serious than banks'.

Table I. 10. Ratio of Non-performing Loans to Capital

(100 Million Won, %)

	Banks			Merchant Banking Corporations		
	Non-Performing Loans(A)	Capital(B)	A/B	Non-Performing Loans(A)	Capital(B)	A/B
1995	22,944	189,147	12.1	9,475	38,767	24.4
1996	24,439	201,060	12.2	12,699	39,812	31.9

Source: KDI

Note: Non-performing loans are under the narrow standard.

2.1.5 Summary

We conclude the analysis in this section by summarizing major points.

- The Korean economy was hit by a large magnitude of negative terms of trade shock in the second quarter of 1996.
- Evidence for a lending boom or excessive credit expansion in the financial sector is fragile.

- However, one indisputable problem with the credit growth has been absence of corresponding capital growth in the financial sector, which resulted in a severe under-capitalization problem.
- Another notable feature with credit supply of the financial sector was the steady and strong growth of foreign currency-denominated assets. Again consistent with lack of a lending boom, the problem associated with it was not an excessive growth, but, the serious currency/maturity mismatch problem.

Therefore, the terms of trade shock, the financial sector's weak capital positions and vulnerability of the financial sector to foreign currency liquidity shocks were tangible factors that can be observed prior to the crisis. It is worth highlighting that the terms of trade shock being aside, the other two factors have much to do with regulatory systems and practices. It strongly suggests that lack of prudential regulation and supervision should be underlying causes for the problems as in Mexico and Argentina in early 1990s and Chile in early 1980s. Thus, before analyzing whether these weak fundamentals were serious enough to yield the crisis, we turn to a brief investigation of institutional factors deemed responsible for the above problems.

2.2 Causes of the Crisis (2): Underlying Institutional Factors

2.2.1 Financial Liberalization without Adequate Supervision

The first environmental factor that nourished the financially vulnerable state of the financial sector was financial market liberalization without adequate supervision.

Korea had pursued financial-market liberalization since early 1990s. The liberalization efforts consisted of two strands: 1) deregulating various restrictions on asset and liability management of financial institutions and 2) encouraging transformation of existing institutions in order to enhance the long-term soundness of the financial sector. As a

general matter a liberalization process could bring numerous impacts to the market, some of which are unexpected and undesirable. The Korean case was no exception. In particular, we note the following two environmental changes which were important in increasing short-term foreign currency debts of financial institutions.

First, there was asymmetry in the deregulation schedules between foreign currency-denominated lending and borrowing of financial institutions. In 1993, the Korean government expanded the positive list of usage for which financial institutions may provide foreign currency-denominated loans. However, regarding foreign borrowing of financial institutions, although short-term borrowing of banks has been freely allowed all the time, the government maintained quantity restriction on long-term borrowing as a means of capital flow management. The result was a dramatic increase in short-term foreign debts of financial institutions to finance strong investment demands of the corporate sector as the economy entered a boom in 1994. Micro-economic imbalance of maturity mismatch of financial institutions as well as macro-economic imbalance of high ratio of short-term foreign debts to either long-term debts or foreign exchange reserves could grow serious under this environment.

Second, the number of financial institutions dealing in foreign currency - denominated activities jumped in a short period of time. Total of 24 finance companies were transformed into merchant banking corporations in 1994 and 1996, while banks opened 28 foreign branches for three years from 1994 to 1996. Transformation of finance companies into merchant banking corporations in a large scale meant corresponding increase in the number of participants in the international financial markets, since finance companies were not allowed to deal in foreign exchange transactions.

These two changes in the institutional framework contributed to the strong growth in foreign currency-denominated assets of the financial sector since 1994 and the maturity mismatch problem. Of course, the adverse effects of these changes could not have been materialized if appropriate strengthening of supervision had been accompanied. But,

supervisory reforms were gradual, if any, or simply absent. As banks and MBC's were increasingly accumulating long-term assets in foreign currencies financed by short-term liabilities, an establishment of supervisory rules to contain the resulting vulnerability under a manageable level was being much required. The OBS (Office of Bank Supervision), however, introduced a belated guide line for the liquidity ratio only in June of 1997 and the MOFE (Ministry of Finance and Economy), a supervisory authority for MBC's until the eruption of the crisis, had not established any single measure to deal with the problem. In particular, the lack of prudential regulations on MBC's operations was not confined to supervision of foreign currency-liquidity conditions. Basic regulations such as capital adequacy ratios had not existed for MBC's, although the necessity being widely discussed in academics. Moreover, the monitoring function and efforts of MOFE were also extremely poor. Indeed, after the crisis some MBC's are found to have committed even fraud operations.

Hence, we conclude that the maturity mismatch problem was the result of absence of prudential regulation commensurate to the liberalization. Also, we believe that, the under-capitalization problem was being left for years without correction because this lax supervision atmosphere lasted.

2.2.2 Financial Liberalization with Implicit Government Insurance: Moral Hazard

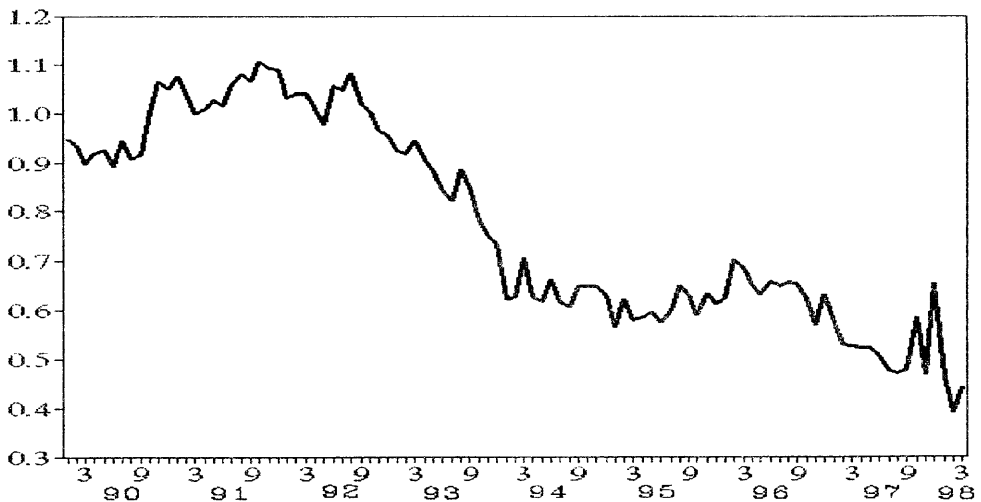
Another important institutional factor behind the problems of the financial sector was implicit government insurance of financial institutions and consequent moral hazard.

While regulations on market participants were being lifted, implicit insurance of the government for financial institutions had yet to be removed. The absence of the explicit insurance scheme combined with the tradition of routine governmental intervention in financial markets continued. Under the circumstance the belief of implicit insurance by all the participants was altered at all.

Notably, it were not just domestic parties who had moral hazard but also foreign creditors. In fact, we think that all the large banks were able to increase foreign liabilities because of the moral hazard from foreign creditors. As we described, financial conditions of all the large banks were already in bad shape since 1994. And it appears that the stock market correctly assessed the state of the nature. Fig I.8 shows that the stock price of the banking industry sharply dropped in late 1994 relative to the stock market index, implying that the market did not appraise the prospect of the industry highly. But precisely around that time foreign creditors were increasing their exposure to the Korean banks. We find it hard to explain without resorting to moral hazard.

That is, the moral hazard of depositors, shareholders and foreign creditors, which came to existence thanks to implicit government insurance given to financial institutions, altogether indulged financial institutions to develop the risky asset-liability structure described above.

**FIG I. 8. Stock Price of the Banking Industry
(Deflated by the Stock Market Index)**



3. Were the Fundamentals Weak Enough? - Further Causes of the Crisis

Now we discuss whether the weak fundamentals warranted the crisis. Our basic thesis is that a financial distress was inevitable given the weak fundamentals, but in generating nonlinear disruption to the markets and the crisis in the last quarter of 1997 two additional factors were crucial. Namely, wrong policy responses to contagious effects from South East Asian crises and instability in the international financial markets.

3.1 Were the Fundamentals Weak Enough?

3.1.1 The Onset of a Financial Distress - Roles of Weak Fundamentals

The Terms of Trade Shock and a Recession

The terms of trade shock took an immediate effect on the economy. Export growth slowed down abruptly to 13% in 1996 from 24% of 1995, leading to a record high current account deficit of US\$ 24 billion. And with sluggish external demands, the Korean economy slipped into a recession, in which GDP growth rate fell to 7.1% in 1996 from 8.9 % in 1995. (See Table I.11)

Financial Distress of the Corporate Sector

For the corporate sector, the recession meant sharp drop in profitability. As Table I.12 shows, profitability of manufacturing firms decreased steeply in 1996: operational profits to net sales reduced to ?% in 1996 from ?% in 1995 and ROA decreased sharply to 2.0% in 1996 from 11.0% in 1995.

Table I. 11. Macroeconomic Indicators of the Korean Economy (1990 - 1997)

(Growth Rate on a year ago, US\$ billions)

	90	91	92	93	94	95	96					97				
							1	2	3	4	Year	1	2	3	4	Year
							GDP	9.5	9.1	5.1	5.8	8.6	8.9	7.6	6.7	6.6
Total Consumption	10.1	9.3	6.8	5.3	7.0	7.2	7.4	7.2	6.2	7.0	6.9	4.4	5.1	5.1	-0.2	3.5
Private	10.7	9.5	6.6	5.7	7.6	8.3	7.4	7.2	6.0	6.6	6.8	4.2	4.8	4.8	-1.0	3.1
Total Fixed Investment	25.9	12.6	-0.8	5.2	11.8	11.7	7.5	5.2	7.8	7.8	7.1	0.3	0.2	-3.7	-9.8	-3.5
Mach.&Equip.	18.8	12.1	-1.1	-0.1	23.6	15.8	4.3	5.0	9.8	13.7	8.3	-0.2	-1.8	-12.7	-28.2	-11.3
Total Exports	4.2	11.8	11.0	11.3	16.5	24.0	21.2	8.4	5.2	18.0	13.0	13.5	27.2	33.2	20.8	23.6
Merchandise	3.5	12.2	10.9	9.7	14.6	25.3	23.7	7.9	2.9	18.9	13.0	13.7	36.9	36.8	19.9	24.7
Total Imports	14.3	19.2	5.1	6.7	21.7	22.0	16.4	12.9	12.8	17.0	14.8	8.1	7.3	4.7	-4.0	3.8
Merchandise	14.0	19.4	4.0	5.6	21.8	21.3	16.4	11.5	12.3	16.2	14.1	7.7	6.9	3.7	-4.5	3.2
Current Account Balance	-2.0	-8.3	-3.9	1.0	-3.9	-8.5	-4.4	-5.1	-7.3	-6.3	-23.0	-7.3	-2.6	-2.0	3.3	-8.6
Trade Balance	-2.5	-6.8	-1.8	2.3	-2.9	-4.4	-2.4	-3.1	-5.5	-3.9	-15.0	-5.5	-0.9	-0.1	2.7	-3.9
Exports	63.7	70.5	76.2	82.1	95.0	124.6	32.0	32.9	30.1	35.0	123.0	31.1	36.0	34.9	36.7	138.6
(%)	3.0	10.8	8.0	7.7	15.7	31.2	20.7	3.8	-6.3	1.9	4.3	-2.8	9.2	15.8	5.0	6.6
Imports	66.1	77.3	78.0	79.8	97.8	129.1	34.3	36.0	35.6	38.9	144.9	36.6	36.9	35.0	34.0	142.5
(%)	15.0	17.0	0.8	2.3	23.9	30.6	18.1	8.0	8.7	14.9	12.3	6.6	2.2	-1.8	-12.5	-1.7
Consumer Price Index	8.5	9.3	6.3	4.8	6.2	4.5	4.7	4.9	5.1	5.1	4.9	4.7	4.0	4.0	5.1	4.5
GDP Deflator	9.9	10.1	6.1	5.1	5.5	5.6	4.9	3.7	2.9	2.7	3.4	1.7	1.5	1.7	4.3	2.3

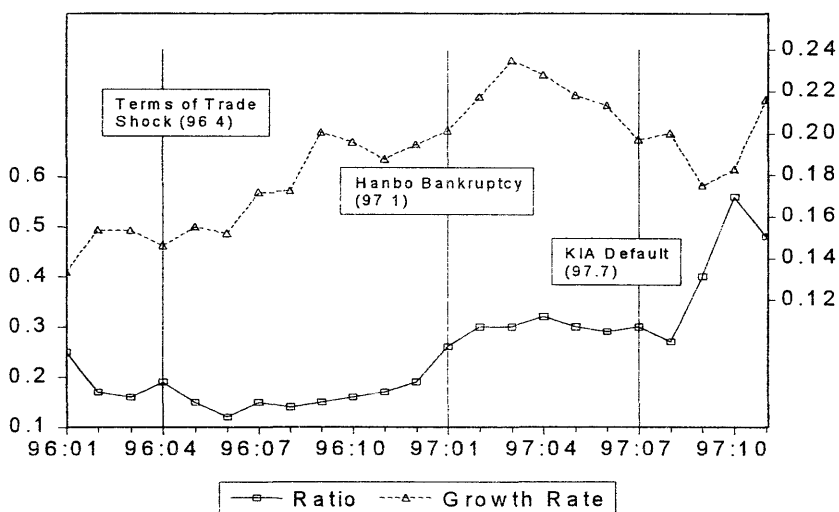
Table I. 12. Profitability of Manufacturing Companies

	(%)			
	1994	1995	1996	1997
OPN	7.7	8.3	6.5	8.3
NPN	2.7	3.6	1.0	-0.3
ROE	7.6	11.0	2.0	-4.2
ROA	1.9	2.8	0.5	-0.9

Source: Corporate Management Analysis, BOK.

Note: OPN = Operating Profit to Net Sales, NPN = Normal Profit to Net Sales.

FIG I. 9. The Ratio of Dishonored Bills and Domestic Credit Growth Rate



Reduction in profitability gradually eroded financial soundness of many companies and as a result, their default risk rose. When the terms of trade collapsed in April 1996, domestic credit of banks began expanding visibly as shown in Fig I.9, indicating that

many firms increased bank borrowings as their liquidity conditions deteriorated. Apparently the corporate sector endured financial difficulty until the end of the third quarter as suggested by the relatively stable movement of ratio of dishonored bills. However, since the fourth quarter of 1996 financial distress of the corporate sector apparently aggravated and number of defaults increased significantly as Fig I.9 shows.

Bankruptcies of Large Conglomerates and Financial Distress of the Financial Sector

Critical moment with respect to further development of the recession arrived in January of 1997 when Hanbo, one of the largest conglomerates in Korea went bankrupt. Failure of Hanbo signaled that the recession triggered by the terms of trade shock might require large-scale adjustment of the real sector, in particular highly leveraged conglomerates. Indeed, it turned out that Hanbo was just a starter and the year of 1997 witnessed bankruptcies of five more conglomerates among the thirty largest in Korea as summarized in Table I.13. As large conglomerates went bankrupt, the recession began taking a devastating impact on the financial sector.

Table I. 13. Eight Conglomerates Bankrupt in 1997

	Hanbo	Sammi	Jinro	KIA	Haitai	New-Core
Default Date	Jan 23	Mar 19	Apr 21	July 15	Nov 1	Nov 4
Ranking	14 th	25 th	19 th	8 th	24 th	28 th

Among large banks, two banks (Seoul Bank and the Korea First Bank) which had relatively large exposure to bankrupt conglomerates took the hardest hit. Non-performing loans of the two banks almost doubled in the first nine months of 1997 as displayed in Table I.14. Given their weak capital positions as we described in Section 2, it was clear that these two banks could not survive the recession on their own.

Table I. 14. Non-performing Loan of Six Largest Banks (1995-1997)

	(Ratio to the Total Loan, %)			
	1995	1996	1997.9	1997.12
Choheung Bank	6.6(0.9)	4.6(0.6)	6.3(1.7)	7.0(2.4)
The Korea Commercial Bank	9.9(0.8)	4.4(0.4)	5.3(1.6)	4.8(1.4)
The Korea First Bank	6.3(1.1)	6.7(1.2)	16.7(7.9)	11.4(5.5)
Hanil Bank	4.9(0.9)	2.4(0.7)	2.8(1.1)	3.6(1.7)
Seoul Bank	8.4(2.6)	9.3(2.4)	15.1(5.2)	10.4(6.1)
The Korea Foreign Exchange Bank	6.4(0.7)	4.0(0.7)	5.7(1.5)	5.7(1.4)

Source: Banking Management Statistics, OBS

Note: The sum of Sub-standard, Estimated losses and Doubtful. () is the sum of Sub-standard and estimated losses.

Hence, we think, it is legitimate to say that the Korean financial industry was in a serious financial distress already prior to the eruption of the currency crisis. Also, therefore, restructuring of many MBC's and some banks seem to be unavoidable and bound to occur in due course.

3.1.2 Was a Financial Crisis Warranted?

Does this mean that a financial crisis was inevitable given the weak fundamentals? In other words, were the collapse of financial institutions and bank runs waiting to unfold, which would provoke non-linear disruptions to financial markets? We are skeptical.

The financial distress we just described had unfolded during the first half of 1997 until KIA defaulted at 15th of July. However, it should be noted, as we pointed out in the first section, that disruptions to the financial markets were not clearly visible yet in terms of main indicators such as interest rates and stock prices until October. That is, the financial crisis itself did not occur until the outburst of the currency crisis even though news of *weak*

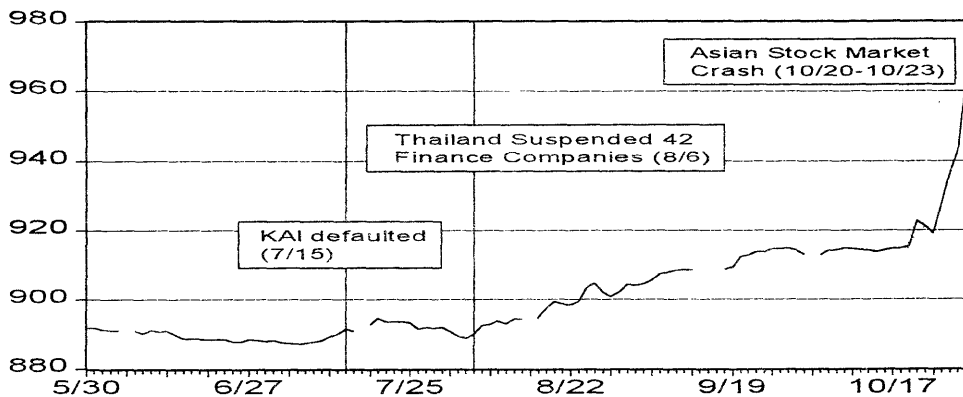
fundamentals had been delivered to the market already. This should make one wonder, if indeed fundamentals were weak enough to generate financial crisis, why it took so long to break out. Therefore, we suspect that some additional factors might have been required for the outbreak of the crisis. And to verify it, will analyze further details on how the currency crisis took place.

3. 2 How Did the Currency Crisis Erupt? - Further Causes of the Korean Crisis

3.2.1 Contagious Effects of South-East Asian Crisis

In our view, it is impossible to explain the evolution of the currency crisis without invoking contagious effects from Southeast Asian (SEA) crises. Symptoms of financial market turbulence in Thailand and Indonesia were perceived as early as in 1996. But the situation aggravated precipitously in the first half of 1997, which culminated as full-fledged currency crises in July as both countries abandoned the long-cherished fixed exchange regime.¹³

FIG I. 10. The Won/Dollar Exchange Rate (97/5/30-97/10/30)



¹³ For a detailed description on turmoils in the two countries, see Corsetti et al (1998) or Radelet and Sachs (1998).

Once crises set in, developments in the region continued to act as a major source of turbulence in the Korean foreign exchange market until the end of October as Fig I.10 shows. The first major impact on the market of the SEA crises showed up in early August, when the Thailand government announced suspension of 42 finance companies. And the second wave came in late October as Asian stock markets crashed. Both events shook the Korean foreign exchange market with a great magnitude as shown by Fig I.10 and characterized the critical moments regarding the Won/Dollar exchange rate movement. Obviously the SEA crises were imposing considerable pressures on the Korean financial markets.

3.2.2 Policy Missteps and Outbreak of the Currency Crisis

It seems that the SEA crises affected the Korean foreign exchange market through two channels. First, there was an indirect channel based on the close relationship between the Korean Won and the Japanese Yen. Namely, events in the region took a direct effect on Japanese Yen and changes in the demand for Yen affected Korean Won, in turn¹⁴. In fact, in the two major events described above, this channel seemed to be working because co-movements of the two currencies were evident¹⁵. Second, the Korean Won depreciated at adverse developments in the region because many merchant-banking corporations experienced downgrading in their credit ratings in the international financial markets. The mechanism behind this channel was as follows: many MBC's increased their exposures in the South East Asian countries, in particular Thailand during 1995 and 1996. Hence, financial difficulties of the region implied deterioration of assets held by the Korean financial institutions, which in turn decreased credit rates of the Korean financial institutions

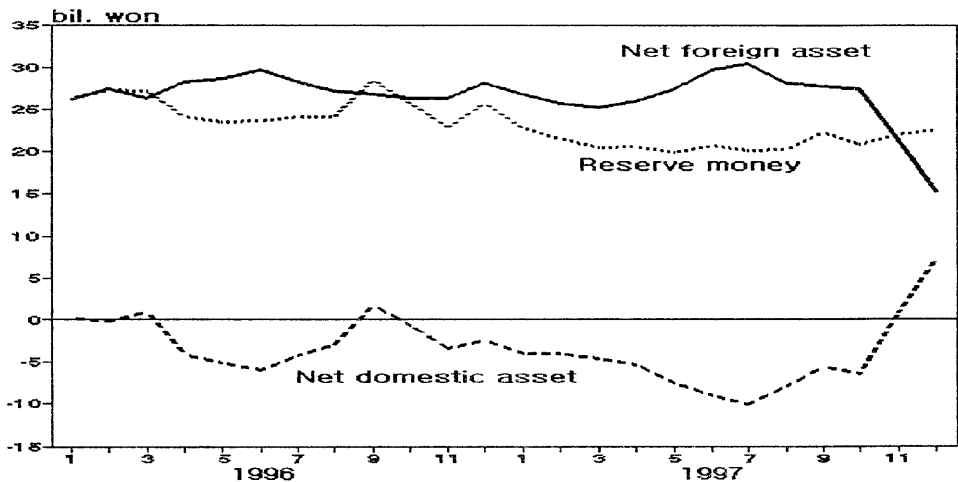
¹⁴ That Korean Won and Japanese Yen are highly correlated is a well-established empirical fact. Hence, movement of Yen almost always induces change in Won to the same direction.

¹⁵ Also some commentators interpreted the depreciation of the Won in August as a repercussion to

as debtors in the international financial markets. As a result, MBC's had difficulty in rolling-over their foreign liabilities and so were forced to buy foreign currencies in the domestic foreign exchange market with Won.

Given the mechanics of the turbulence in the foreign exchange market and shallow foreign exchange reserves of the Bank of Korea, a feasible as well as necessary policy mix to address the growing instability in the market was clear: 1) allow Won to depreciate reflecting market forces 2) deal with ailing MBC's with decisive measures such as suspension of operation and closure in order to prevent the problems from being propagated to the rest of the economy.

FIG I. 11. Monetary Policy Response to South East Asian Shocks



However, the policy actually implemented was quite the opposite. The government massively and continuously intervened in the foreign exchange market. And at the same time the government provided liquidity to problem MBCs directly through BOK and indirectly

lower Yen.(see *Asian Wall Street Journal*, 6th Aug.)

through banks. On the one hand, these operations meant that the loss in foreign exchange reserves was substituted by increase in net domestic credits of the BOK as shown in Fig I.11, which was criticized as a formula to yield the Mexican currency crisis in 1994 by many researchers¹⁶. On the other hand, apparent bailing out MBCs without presenting blueprints to remedy fragility of the whole financial sector significantly eroded the government's credibility as a crisis manager.

After the external environment and the pattern of policy responses to it had lasted for about two months, towards the end of October the situation reached a critical moment. By then the Korean government lost its credibility to the point that the credit agencies downgraded the sovereign credit rating of Korea.¹⁷ About the same time the Asian Stock market crashed all around. Foreign creditors became anxious about the prospect of their assets in even major Korean banks, as they were becoming suspicious of the government's capability to deal with structural problems in the financial sector and aware that the BOK was likely to be in shortage of foreign exchange reserves due to the market intervention. Given the conditions, foreign creditors rushed to the Korean financial institutions in November triggering a currency and financial crisis.

3.2.3 Instability in the International Financial Markets and Amplification of the Crisis

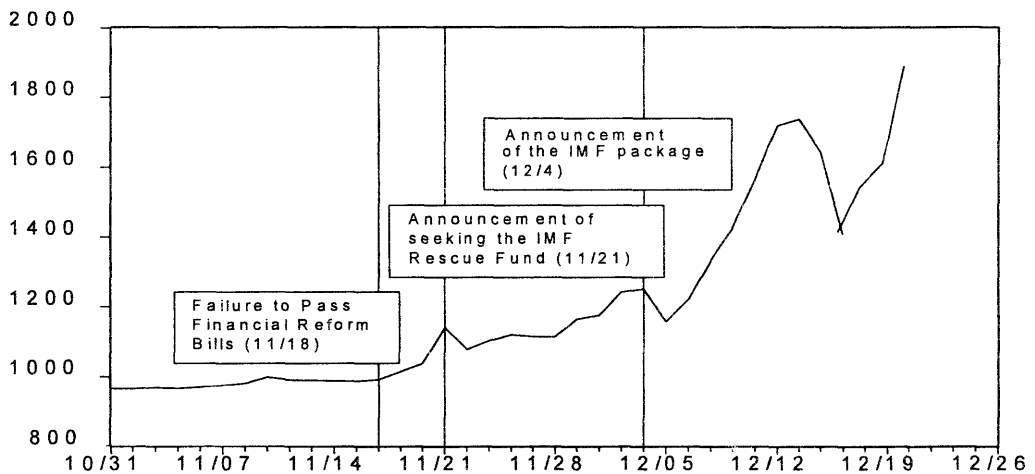
As foreign creditors' run continued throughout November, the BOK's foreign exchange reserves were quickly exhausted, as indicated by Fig I.11. In the end, the Korean government did not have an alternative but resorting to the IMF's rescue fund and announced its submission for the rescue fund on 21st of November. The IMF rescue

¹⁶ For example, see Sachs, Tornell and Velasco (1996)

¹⁷ Standard&Poor's adjusted downward Korea's sovereign rating on 24th and Moody's made the same revision on 26th.

package entailed with reform measures was signed and announced on 4th of December. However, despite the emergency loans and plans to address the structural problems in the economy, stability was not restored in the market. On the contrary, depreciation continued with an accelerating speed while foreign creditors kept demanding the repayment of outstanding loans. In fact, magnitude of depreciation of the Korean Won and changes in other financial market indicators became larger and more devastating as FIG I.12 shows and discussed in Section 2. Obviously, the crisis was amplifying to enlarge its real effects.

**FIG. I. 12. The Won/Dollar Exchange Rate
(1997/11/1 – 12/26)**



What was going on? In finding an answer, we think that the following two existing studies are suggestive. Earlier with the 1994 Mexican crisis, Calvo and Mendoza (1996) observes a similar phenomenon. They point out that since Mexico left the fixed exchange regime upon the speculative attack on the Peso in December 1994, Mexican markets became extremely vulnerable to the arrival of news that might not be related to the fundamentals, resulting in extreme volatility of the Peso. They attribute this problem

in the markets to “herding” by the global investors and highlight it as a new characteristic inherent in the international financial markets in the ‘global-markets era’. Then, with respect to the Korean crisis, Radelet and Sachs (1998) underscore ‘a problem of collective action’ as a source of displayed instability in the Korean markets. They identify the Korean crisis as a liquidity crisis in contrast to an insolvency crisis and articulate that the liquidity crisis resulted because “no individual creditor is willing to make a loan if the other creditors do not lend as well”. And they call it “intrinsic instability” in the international financial market.

We second the views of the two studies: it seems clear to us that without invoking instability in the international financial market, explaining the developments since last December is difficult. And in this sense, the Korean crisis is a good example which demonstrates a caveat in the international financial market, more specifically the lack of institutions such as a lender of last resort and orderly work-out procedures as Radelet and Sachs (1998) emphasize.

PART II. Resolution of Financial Crisis in Korea

1. Imperatives of the Financial Sector Restructuring

As we repeatedly emphasized in part I, while foreign exchange liquidity problems coupled with major terms of trade shock in 1996 apparently caused Korea's financial crisis, the present crisis is deeply rooted in the nation's inefficient and distorted financial system. Extensive credit restrictions, used as a primary tool of development in the past, have produced distorted financial system in Korea. A prolonged period of interest rate controls and selective credit allocations have resulted in inefficient distribution of funds. Extensive government influence over financial institutions has undermined the autonomy and accountability of the management. High entrance barriers and strict segmentation within financial industry have throttled the initiative and ability of financial institutions.

In recognition of those structural problems, there have been intermittent efforts to overhaul the outmoded financial system. However, those government-led reforms were often faced with political barriers, and the scope was too limited to eradicate the distortions deeply rooted in the financial sector.¹⁸

Due to the IMF program and the government's aggressive efforts to facilitate external financing, initial difficulties of foreign exchange shortage have been ameliorated to

¹⁸ In January 1997, recognizing the urgency of the financial reform, the Presidential Commission for Financial Reform (PCFR) was established. The Presidential Commission with 31 members from the business and financial communities as well as academia has prepared a comprehensive set of reform measures to overhaul and reshape the nation's financial system. While the recommendations were mostly accepted and being implemented by the government, it was too late to prevent the sweeping financial crisis. For details of the recommended package, refer to the financial Reform in Korea – the 1, 2 and 3rd reports by the PCFR.

some extent. However, the economy currently suffers from the most painful economic contraction since the Korean War. Due to the high level of interest rates, nearly 3,000 firms were filing for bankruptcy every month in the first half of 1998, and as a result, the capital base in the banking sector has been significantly eroded.

Although there has been some recent progress in the financial sector restructuring, to ultimately break off the vicious cycle, the restructuring needs to be further accelerated. Without prompt resolution of insolvent financial institutions, credit crunch in the financial market cannot be ameliorated. Further delays in the financial sector restructuring would undermine the soundness of the whole banking system and the fundamental economic base of the nation could be seriously damaged.

In this part, we critically overview the recent financial sector reform effort in Korea. In addition to the description of government policy directions and progresses up to date, we discuss relevant principles and strategies of the financial sector restructuring. Part II is structured as follows. Section 2 briefly describes recent progresses in Korea's external financing – an attempt to cope with the immediate foreign exchange crisis. Section 3 discusses the basic framework, strategies and associated costs of the financial sector restructuring. In this section we also discuss recent progresses of the banking sector restructuring. Finally, sections 4 and 5 discuss more forward-looking financial reform measures to ultimately reshape Korea's financial system into a globally competitive and sound one.

2. Overcoming the Foreign Exchange Crisis

2.1. Facilitation of the External Financing

According to the Letters of Intent submitted to the IMF so far, the government and the IMF's strategy for overcoming the financial crisis has been threefold. It has centered on first, facilitating external financing, second, capital market and trade liberalization, and third, an extensive restructuring of both the financial and corporate sectors. Tangent to these goals is reform of the labor market and the pursuit of a sound macroeconomic policy.

External financing has been one of the most pressing issues for Korea. A primary goal therefore of the government has been to encourage the flow of foreign capital into Korea. To this end, as of early July 1998, Korea has received a combined total of financial assistance around US\$ 25 billion from the IMF, IBRD, and ADB out of total US\$ 58.4 billion package. The on-going improvement in the roll-over situation and the opening of new lines of credit by some commercial bank creditors has also been effective in halting outflows of foreign exchange, thus allowing for a stabilization of exchange rates.

Korea's short-term debt difficulties have been further ameliorated by the New York agreement in January 1998, where a total of US\$ 21.8 billion short-term debts owed by Korean banks was refinanced.¹⁹ In addition, in the first week of April 1998, the Korean government successfully returned to the international capital markets by issuing sovereign global bonds of US\$ 4 billion.²⁰

¹⁹ The ratio of short-term debts rolled over as a result of the New York negotiation was 96.4% of the total bank short-term debts. The debts rolled over into 1 year maturity debt accounts for 17.2%, 2 year 45.0% and 3 year 37.9%, respectively.

²⁰ Two types of sovereign bonds were issued according to their maturity – total US\$ 1 billion worth for 5 year and US\$ 3 billion for 10 year bonds. The initial spread of the 5 year bond over U.S. Treasury Note was 345 basis points and that of 10 year bond was 355

The current account balance has also improved substantially although the huge surplus is largely an outcome of drastically reduced import demands. As of early July 1998, the accumulated current account surplus recorded a level over US\$ 20 billion. The net portfolio investment into Korea also recorded US\$ 3.4 billion during the first 6 months this year. The current account surplus, coupled with portfolio capital inflows and improved roll-over situation, substantially improved the usable foreign exchange reserve position, which is summarized in table II.1.

It is noteworthy that recent improvement of external financing situation and resulting stabilization of the foreign exchange market has created an environment which facilitates economic restructuring in Korea. This point is in sharp contrast with Thailand. In Thailand, where considerable risks remain in external financing, the scope of flexible monetary policy and thus lower interest rates is much limited. As a result, corporate bankruptcies have continued and the non-performing loans are being accumulated in the banking sector. Note that the vicious cycle is considerably weakening the effectiveness of recent recapitalization attempts of the banking sector in Thailand.²¹

Table II. 1. Official Foreign Exchange Reserves

(in U.S\$ billions)

	'96.12.31	'97.12.31	98.1.31	2.28	3.31	4.30	5.31	6.30
Official Foreign Reserves (A)	33.2	20.4	23.5	26.7	29.7	35.5	38.8	40.9
Overseas branch deposits (B)	3.8	11.3	10.9	8.0	5.4	4.6	4.2	3.7
Others (C)	—	0.2	0.2	0.2	0.2	0.2	0.2	0.2
A-(B+C)	29.4	8.9	12.4	18.5	24.2	30.8	34.4	37.0

Source: Bank of Korea

basis points.

²¹ For details on Thailand's financial sector restructuring, see Hahm and Shin (1998).

2.2. Liberalization of the Capital Markets

With regard to capital market liberalization, previous government schedule has been drastically accelerated. This acceleration of the market opening is based on the view that the traditional policy of channeling foreign capital through financial sector to corporate sector has served to make the financial system considerably vulnerable to external shocks. While we have to study further on the empirical evidence of the argument, based on the hypothesis, both direct borrowings of the corporate sector and foreign equity participation have been substantially deregulated.

The newly introduced market-opening measures include a complete removal of investment ceilings and restrictions on foreign investment in the bond and equity markets. The short-term money markets such as CD, RP, and covered bills were also opened to foreign investment and the money market will be fully liberalized by December 31, 1998. In addition, measures were installed to create effective M&A markets including the allowance of hostile takeovers by foreigners. To facilitate the FDI and to accelerate liberalization of foreign exchange transactions, the Korean government also announced draft-bills to repeal the previous 'Foreign Exchange Control Act' and 'Foreign Investment and Foreign Capital Inducement Act'. In addition, existing regulations on land and facilities acquisition by foreigners were almost entirely repealed. The previous restrictive positive list system for businesses open to foreign entry was also changed to the negative list system in May 1998.

The deregulation measures undertaken so far are quite drastic and Korea has become a considerably open economy. The amount of foreign direct investment into Korea recorded only US\$ 1.8 billion in the first half of 1998, and portfolio investment has been limited due to the uncertainty arising from on-going economic restructuring. Note however that the foreign investment into Korea could become potentially larger given the scale and scope of the capital market liberalization. As we surveyed in the first part, as an important cause of the Asian financial crisis, a group of researchers have repeatedly emphasized the

panic and herd behavior of the international financial market.²² Indeed the role of limited information, moral hazard and panic behaviors inherent in the international financial market in bringing about Korea's crisis needs to be studied further. However, given the scale of capital market liberalization in Korea, it would be necessary to examine the possibility of introducing policy measures such as Tobin tax or Chilean VDR system to cope with the increasingly violent short-term capital flows.²³

3. Restructuring of the Financial Sector

3.1. Basic Framework of Financial Sector Restructuring

Note that the ultimate objective of the financial sector restructuring is to rebuild a competitive and sound financial system. Bearing this objective in mind, a clear framework of the financial sector restructuring should be established to carry out the necessary reform in a more efficient way. As described in Table II.2, as principles of financial sector restructuring, following issues need to be addressed.

²² For example, Radelet and Sachs (1998) observed that the net private inflows for the 5 East Asian countries (Indonesia, Korea, Malaysia, Philippines, and Thailand) dropped from US\$ 93 billion to US\$ -12.1 billion during 1997. The swing of US\$ 105 billion accounts for approximately 11% of combined GDP in the area. Based on the observations and that there had not been convincing evidence of poor fundamentals or critical policy misalignment, Radelet and Sachs argued that the Asian crises reveal the possibility of panic behavior and presence of multiple equilibria in the international financial market.

²³ For example, Wyposz (1998) cautiously argues that while financial and capital market liberalization is a desirable policy option in the long-run, it also makes self-fulfilling attacks possible and a country with fundamental weaknesses should therefore move cautiously in the direction. For the debate on the desirability of introducing Tobin tax and similar measures, see the interesting articles contained in the volume *The Tobin Tax* (1996).

Table II. 2. Basic Framework of Financial Sector Restructuring

Principles	Actions
<ul style="list-style-type: none"> • Stabilize financial markets through swift and extensive reform 	<ul style="list-style-type: none"> - Sort out insolvent from viable financial institutions - Initiate recapitalization of viable banks
<ul style="list-style-type: none"> • Conform to internationally practiced standards 	<ul style="list-style-type: none"> - Strictly apply the prompt corrective action scheme - Enhance information transparency and strengthen disclosure standards
<ul style="list-style-type: none"> • Set transparent principles of accountability among the concerned parties 	<ul style="list-style-type: none"> - Clarify burden sharing rules among shareholders, management and depositors - Write off equity capital and reinforce management accountability
<ul style="list-style-type: none"> • Prevent collapse of financial system through timely fiscal support 	<ul style="list-style-type: none"> - Increase deposit insurance fund - Minimize public burden by linking fiscal support to self-rehabilitation efforts

First, it is necessary to normalize the financial system as early as possible through a swift and extensive reform. Numerous countries' experiences indicate that delayed actions tend to fail and increase ultimate costs of financial restructuring. This is based on the observation that with gradual actions it becomes increasingly difficult to restore market confidence, and hence difficult to induce market-driven restructuring.

Second, the strategies and tools of the restructuring must conform to internationally best practiced standards and market principles. This is crucial to an economy such as Korea that is pursuing a considerably open and globally integrated financial system where foreign participation and access to international financial community is a crucial factor.

Third, in the resolution of financially non-viable institutions, a transparent loss-sharing rule needs to be established and strictly applied. In our view, the essence of the financial sector restructuring is the mechanism of loss-sharing among concerned parties. A transparent loss-sharing rule is also important in preventing moral hazard problems and hence, avoiding another financial crisis in the future.

Finally, the stability of the financial system must be maintained through timely and adequate fiscal support. This is especially so given the scale of problems in Korea. Once the basic framework is established, it is also important to devise effective action strategies which can minimize public burden while maintaining the comprehensiveness and timeliness of the action.

Now let us turn to the actual strategies currently being implemented in Korea. On April 14, 1998, the Korean government announced a basic plan for the financial sector restructuring. According to the announcement, basic directions of the financial sector restructuring could be summarized as follows:

The financial sector restructuring will be pursued in two phases: first, the banking sector and second, non-bank financial institutions as summarized in table II.3. The first round of banking sector restructuring will be completed by the end of August 1998. The non-bank financial institutions will be restructured based upon the majority shareholders initiative, and the first round of restructuring will be completed by the end of September 1998.

According to the government plan, the government will categorize all existing financial institutions into appropriate supervisory categories depending on their financial status, and apply appropriate prompt corrective actions to prevent further deterioration of the financial system. In the process, non-viable financial institutions will be closed. The government will also provide incentives such as allowing broader business scope and support of the recapitalization to encourage mergers among viable financial institutions.

To increase the capital base of viable financial institutions, foreign investment into the financial sector will be encouraged. Government support will be prioritized so that those institutions that carry out extensive restructuring program receive the most support.

Table II. 3. Government Strategies of Financial Sector Restructuring

<p>Phase 1: Early Stabilization of The Banking Sector</p>	<ul style="list-style-type: none"> - Facilitate disposal of non-performing assets and support bank recapitalization - Establish leading banks through M&As - Sell Seoul Bank and Korea First Bank ahead of the announced schedule
<p>Phase 2: Restructuring of Non-bank Financial Institutions</p>	<ul style="list-style-type: none"> - Induce self-rehabilitation efforts of major shareholders and management by strictly applying prompt corrective action - Minimize costs of closure through Purchase & Assumption and/or Bridge Financial Institution methods

To facilitate the disposal of non-performing assets, the size of fund at Korea Asset Management Corporation (KAMCO) will be increased further from current 20 trillion won by issuing bonds and asset-backed securities, and sale of real estate. The amount of non-performing assets to be purchased by the fund at KAMCO will be proportional to the degree of restructuring that each institution actually carries out.

Detailed strategies and progresses to date of the banking sector restructuring deserve more attention and we provide detailed discussion in the next section. As for the Korea First and Seoul Banks, the government plans to auction these banks in advance of the November 15th deadline agreed upon with the IMF. The selling-off of equities of these banks will be made available to both domestic and foreign investors.

The restructuring of the securities houses and insurance companies will be carried out in principle under the responsibility of the majority shareholders. If the institution's liability exceeds its assets, the institution will be ordered to restore its financial positions through measures such as recapitalization or mergers. If it fails to restore its capital adequacy, a decision will be made by the end of August 1998 to suspend its operation and transfer assets and liabilities.

Table II. 4. Resolution of Insolvent Financial Institutions (as of June 30, 1998)

	Equity Write-Offs	License Revoked	Suspension of Operation	Total
Banks	Write-offs : 2 (Seoul, Korea First) P & A : 5 (Donghwa, DaeDong, Kyungki, ChungChung, DongNam)	-	-	7
Merchant Banks	-	14 (Kyungil, Koryo, Kyungnam, Samsam, Shisekye, Ssangyong, Shinhan, Hanwha, Hangdo, Cheongsol, Hansol, Taeku, Samyang, Jaeil)	1 (Saehan)	15
Securities Companies	-	2 (Koryo, Dongseo)	-	2
Investment Trust Companies	-	1 (Sinseki)	-	1
Total	7	17	1	25

As can be seen in Table II.4, for the merchant banking corporations, 14 out of 30 merchant banks have already been closed. The Financial Supervisory Commission (FSC) will further review the performance of remaining merchant banks and issue any necessary measures such as suspension of operations based on their BIS ratio targets, 6% and 8% by the end of June of 1998 and 1999, respectively. The progresses up to now of the financial sector restructuring are summarized in table II.4.

3.2. Progresses in the Banking Sector Restructuring

Within the basic framework above, an important measure has been undertaken for the banking sector restructuring. On June 29th, the FSC ordered 5 non-viable banks to be closed permanently²⁴ and to have their assets and liabilities transferred to stronger and relatively sound banks. This is quite an important signal to the financial community, in that from now on just like corporations financial institutions will be subject to fierce competition and market discipline.

The banking sector restructuring has been pursued in accordance to the following strategies. First, the 12 commercial banks that failed to meet the BIS 8% capital adequacy ratio submitted restructuring plans by April 1998. Upon receiving the plans, 6 internationally recognized accounting firms conducted an assessment of their assets. The process was intended to provide a realistic assessment of the size of non-performing loans (NPLs) applying international loan classification criteria and thereby making the involved banks' balance sheets more transparent. Table II.5 summarizes assessment results of the 12 commercial banks.

²⁴ The pairs of five suspended banks and their acquiring banks to assume the assets and liabilities are Daedong-Kookmin, Dongnam-Housing & Commercial, Donghwa-Shinhan, Kyungki-KorAm, and Chungchong-Hana Banks, respectively.

Second, the Bank Appraisal Committee evaluated recapitalization plans after a comprehensive review of adequacy in capitalization, asset soundness, profitability, liquidity, management expertise and the prospects of future achievement of the target BIS ratios. With the input from appraisal results, the FSC closely examined the feasibility and arrived at either an approval, conditional approval or disapproval classification for respective bank.

Table II. 5. Assessment Results of the 12 Commercial Banks

(billion won, %)

	Adjusted Assets	Liabilities	Net Asset Values	BIS Ratio (%)	Precautionary Or lower	% out of Total Loans	Result
Cho Heung	44,280.4	43,282.7	997.7	1.49	6,925.6	19.2	C
CBK	38,003.9	37,094.2	909.7	1.81	7,248.6	24.3	C
Hanil	43,508.0	42,337.4	1,170.6	4.53	6,771.8	20.2	C
KEB	47,174.1	45,597.3	1,576.8	2.13	10,792.3	28.6	C
Chungchong	3,770.1	3,941.0	-170.9	-5.97	1,619.6	36.3	D
Kyungki	7,239.5	7,362.6	-123.1	-9.61	2,862.1	49.0	D
Donghwa	9,556.3	9,769.9	-213.6	-3.72	2,254.6	28.5	D
Dongnam	7,115.2	7,233.7	-118.5	-5.81	1,118.4	20.9	D
Daedong	5,563.6	5,857.8	-294.2	-6.75	1,735.2	34.1	D
Peace	6,517.0	6,504.7	12.3	-1.57	601.5	12.9	C
Kangwon	2,969.4	3,168.5	-199.1	-16.0	1,034.3	45.8	C
Chungbuk	2,487.1	2,499.2	-12.1	-5.52	800.7	28.5	C

Source: Press Release, Financial Supervisory Commission, 1998. 6. 29

Note: (A) - approval, (C) - conditional approval, (D) - disapproval

As indicated in Table II.5, the domestic banks' financial condition turned out to be far worse than expected. All of the five closed banks posted negative BIS capital adequacy ratios with NPL proportions ranging from 20.9% to 49%, and the total non-performing assets including the precautionary asset held by the 12 ailing banks totaled 43.7 trillion won (US\$ 31.2 billion).²⁵

For those 5 banks with disapproval classification, transfer of businesses under a purchase & assumption (P&A) arrangement was ordered. Remaining 7 Banks with conditional approval status were required to submit implementation plans by the end of July. In the event of disapproval of the implementation plans a mandatory merger order or transfer of business order will be imposed. The remaining 12 commercial banks with a higher-than-8% BIS ratio at the end of last year will be placed under a strict diagnostic review by the FSC.

Although the bank closure is quite an important advancement in Korea, where no single commercial bank had ever been closed in the past, the market responses to the long-awaited decision have been rather mixed. This is due to the concern that the asset quality of the acquiring bank could be deteriorated after purchasing the assets and assuming the liabilities of the failed bank. The government has provided various measures to protect acquiring banks. Under the P&A arrangements, troubled bank transfers only performing performing assets to the acquiring bank, and the NPLs will be purchased by KAMCO. If the failing bank's total liabilities exceed total performing assets, the Korea Deposit Insurance Corporation (KDIC) will pay out the differences. In addition, the acquiring bank will be given a put-back option which permits reselling to the KAMCO of the NPLs that occur within 6 months after the P&A transaction. In addition the disposal of its own NPLs

²⁵ Apparently Kangwon bank suffers from the lowest BIS capital adequacy ratio. The FSC announced that the reason for excluding Kangwon bank from the P&A target is the Kangwon bank's already announced plan of merger with Hyundai Merchant Bank and

and recapitalization of the acquiring bank will be supported by the government.

Despite those various measures to protect the acquiring banks, it has been criticized that the P&A procedure could have been more prudent. In particular, the shareholders of acquiring banks seem to be particularly concerned about following issues:

First, the acquired banks tended to offer higher deposit rates to minimize deposit withdrawal during the banking crisis episode. It means that acquiring banks may have to incur higher funding costs if the previous deposit rates are to be maintained. Second, the loss-sharing rule on the performance-based trust accounts transferred is not clear. In principle, the loss incurred on the trust account is depositor's responsibility and it would not make sense to offer government guarantee on the deposits. However, due to the possible depositor runs, the government seems to be considering a partial guarantee on those accounts in return for the transfer of those accounts to acquiring banks. Third, although the acquiring banks are not obliged to take over the employees of acquired banks, if the government encourages strongly to re-hire previous employees, it could become an additional burden in improving the efficiency of acquiring bank.

3.3. Cost of the Financial Sector Restructuring

In this section we discuss the cost of financial sector restructuring. While the ultimate costs tend to increase as the restructuring process goes on as suggested from various countries' experiences, it is important to equip with relevant estimation to come up with effective restructuring strategies.

subsequent recapitalization by Hyundai group.

3.3.1. Non-Performing Assets in the Financial Sector

As of March 1998, the total amount of non-performing loans (sum of estimated loss, doubtful and substandard loans) in the financial sector is approximately 68 trillion won. For banking sector alone, the size of non-performing loans is 40 trillion won, and if precautionary loans are included, the total size becomes 86 trillion won (Table II.6).

Note that as of March 1998 the size of equity capital base in the whole banking sector is only approximately 25 trillion won. This indicates that realizations of loan losses and 100% accumulation of the loan-loss provision will substantially undermine the loan extension capacity of banks considering the BIS capital adequacy ratio requirement. This also indicates the urgency of the financial sector restructuring and recapitalization of the banking sector.

Table II. 6. Non-Performing Assets in the Financial Sector (As of March 31, 1998)

(trillion won, %)

	Non-Performing Loans ¹	Precautionary Loans ²	Total	Ratio out of Total Loans (%)
Banks	40	46	86	16.4
Non-Bank Financial Institutions	28	4	32	8.3
	68	50	118	12.9

Source: Press Release, Ministry of Finance and Economy, May 20, 1998.

Note: 1) Sum of estimated loss, doubtful, and substandard loans

2) 3 to 6 month payment in arrears but with collateral, the definition was changed to 1 to 3 months later in June 1998

3.3.2. Cost of the Financial Sector Restructuring

As emphasized above, timely fiscal support is inevitable to effectively restructure the financial system. The government needs to provide fiscal support for (1) the disposal of non-performing loans (NPLs), (2) recapitalization of viable financial institutions, and (3) depositor protection and possible pay-outs in the process of non-viable financial institutions' closure, which we discuss one by one.

According to the estimation of KDI (1998), towards the end of 1998, the total amount of non-performing loans (NPL) is expected to increase up to approximately 100 trillion won. On May 20, 1998, the government announced a detailed plan to dispose of the NPLs based on the estimation and to support the bank recapitalization program. According to the plan, in the process of disposing NPLs, approximately 50 trillion won would be realized as loss for financial institutions. Out of the 100 trillion NPLs, financial institutions are expected to dispose approximately 50 trillion on their own accord, and sell 50 trillion to KAMCO. The actual absorbing cost for the KAMCO would be approximately 25 trillion won by applying a 50% discount rate. The KAMCO will resume its purchasing of NPLs from the second half of 1998, and the KAMCO's purchase of non-performing assets will be made only for the financial institutions whose rehabilitation plans are approved by the FSC.

As regards the recapitalization support, the amount of loan loss reserves accumulated so far by financial institutions is approximately 15 trillion won. Since the loss of 50 trillion won from disposing of the NPLs needs to be written off, financial institutions will have to increase their capital base by approximately 35 trillion won to maintain the present level of capital. Currently financial institutions need to increase their capital base by 4 trillion won to satisfy the BIS capital adequacy ratio. Hence, altogether a total of 39 trillion won will be needed to recapitalize the financial sector.

According to the plan, the government will support bank recapitalization by raising 19 trillion won (including the already injected 3 trillion won for Korea First and Seoul banks)

through expansion of deposit insurance fund at KDIC. Remaining 20 trillion won needs to be financed by financial institutions themselves in the private sector by issuing equities and subordinated debt instruments as well as inducing joint ventures with foreign partners. The government support will be strictly confined to viable financial institutions, and will be given in the form of incentives when they engage in voluntary mergers and acquisitions, and/or when insolvent financial institutions' assets and liabilities are transferred through P&A arrangements.

Finally, in the process of closing down insolvent financial institutions, if the market value of assets falls short of liabilities, government needs to pay out the difference as long as deposit guarantee is provided. In addition, the deposit insurance body needs to prepare for the possible depositor run. The cost of deposit guarantee is estimated at approximately 9 trillion won.

Based on the above estimates, the government announced a plan to issue government guaranteed bonds of 50 trillion won to finance the cost of financial sector restructuring. If the already issued bonds are included, the total amount of government guaranteed bonds issued will be 64 trillion won (32.5 trillion issued by Non-performing Asset Disposal Fund at KAMCO and 31.5 trillion issued by Deposit Insurance Fund at KDIC).

Note that the total amount of government bonds issued is different from the final net cost for the government. For example, initial costs of purchasing non-performing assets could be recouped by selling those assets back in the market. The subscription of bank capital by deposit insurance fund could also be recouped later by reselling the government share in the market. However, interest costs associated with the government bond issuance should be added to the net cost.

According to the estimation of Korea Development Institute (1998), which is summarized in Table II.7, the net cost for the government of financial sector restructuring is approximately 67 trillion won during the next 5 years including the interest costs.

The total cost of financial sector restructuring that has to be financed in the public sector is approximately 15% of 1998 GDP, and this amount is rather burdensome compared

to other countries that have experienced similar financial crisis. If the government does not support bank recapitalization, the ratio becomes lower at 11% of GDP as described in Table II.8.

Although the government announcement is an important step in that it recognizes the seriousness of the scale of current financial crisis, there are several concerns that need to be addressed further. First, depending on the economic conditions, particularly on the future course of interest rates and exchange rates, the amount of NPLs could become much larger than initially estimated. In this sense, it is necessary to secure initial fiscal resources as much as possible to effectively restore the market confidence on the willingness and ability of the government to cope with the financial crisis.

Table II. 7. Estimation of Total Fiscal Cost of Financial Sector Restructuring

(100 million won)

		1998	1999	2000	2001	2002	Total
NPL Disposal Fund	Loss from Sales	28,152	28,152	28,152	28,152	28,152	140,760
	Interest	17,595	35,190	35,190	35,190	35,190	158,355
Net Cost of Deposit Guarantee	Payment To Depositors	50,000	50,000	—	—	—	100,000
	Interest	11,250	18,750	22,500	22,500	22,500	97,500
Bank Recapitalization	Capital Injection	70,000	30,000	—	—	—	100,000
	Interest	7,500	15,000	17,250	17,250	17,250	74,250
Total		184,497	177,092	103,092	103,092	103,092	670,865
(Interest Cost)		(36,345)	(68,940)	(74,940)	(74,940)	(74,940)	(330,105)
Excluding Capital Subscription	Total	106,997	132,092	85,842	85,842	85,842	496,615
	Interest	(28,845)	(53,940)	(57,690)	(57,690)	(57,690)	(255,855)

Source: Korea Development Institute (1998)

Table II. 8. Cost of Financial Sector Restructuring (% of GDP)

	U.S	Brazil	Mexico	Spain	Finland	Malaysia	Korea ¹⁾	
Period	1991	1994	1995	1977	1991	1985 ~ 88	1998 ~ 2002	
% of GDP	3 ~ 5	5 ~ 10	12 ~ 15	5.6	8.0	4.7	7.6 ²⁾ (14.9)	5.4 ³⁾ (11.0)

Source: "Bank Insolvencies : Cross-Country Experience", World Bank Working Paper 1620, July 1996.

Note: 1) Figures in the parenthesis denote total costs including interest costs.

2) Including the cost of public support for bank recapitalization

3) Excluding the cost of public support for bank recapitalization

Second, although the government already announced a law to introduce Asset Backed Securities to facilitate the asset recovery processes of KAMCO and commercial banks, policies need to be developed further to help banks and KAMCO dispose of impaired assets. Third, the government plan of banking sector recapitalization is heavily dependent upon the market reaction and participation. Note that the government will support only part of the required recapitalization. Given the domestic capital market condition and the law restricting bank ownership by Chaebols, only feasible alternative would be foreign capital. If the equity participation by foreign investors turns out to be slow and inactive, then the recapitalization of the banking sector will take longer and credit crunch may continue.

Finally, note that the net cost of deposit guarantee does not include possible costs of liquidity support which will be necessary in the case of bank-run. If depositors become much more sensitive in the process of bank closures, the central bank will be necessary to support liquidity as a lender of last resort. As a related measure, we will discuss the improvement of the deposit guarantee system in a later section.

4. Strengthening the Competitiveness of Financial Industry

Up to now we have discussed immediate concerns on the restructuring of the financial sector. Note however that, as emphasized above, the ultimate goal of the financial sector restructuring is to restore the competitiveness and soundness of the financial system. To strengthen the competitiveness of the financial industry, it is important to enhance the autonomy in the management of financial institutions. In this regard, the government efforts have centered on two measures – strengthening of the governance structure and improvement of the ownership structure.

A new governance structure was introduced in January 1997 where the role of non-standing board members was significantly strengthened. In addition, in December 1997, the composition and the designation structure of non-standing board members were improved to strengthen the role of shareholders' representatives. However, it turned out that those measures are not sufficient in restoring management accountability.

In our view, opening of the financial industry to foreign competition and strengthening of the shareholders' right would be effective measures in this regard. The revision of the Bank Act in May 1998 to allow banks to elect foreigners as board directors can be regarded as an advance to strengthen the management accountability. Also as a related measure, the government strengthened the right of minority shareholders by changing the law last May, according to which, the minimum shares to bring derivative actions were lowered from 1% to 0.05% in an attempt to strengthen the management accountability.²⁶

²⁶ Recently an interesting lawsuit was filed by 52 minor shareholders against the executives of the Korea First Bank claiming that they should be held responsible for bringing the bank to the verge of bankruptcy by lending money to financially shaky Hanbo Group in defiance of shareholders opinion. On July 24, the Court ordered former president and three former executives to pay 40 billion won to the bank for their role in causing its huge loss. This

In February, 1998 the Bank Act was amended to introduce a new scheme for bank ownership. According to the revised Bank Act, foreign financial institutions are allowed to own more than 4% of domestic bank shares if they meet certain criteria set by the supervisory authority. If those criteria are satisfied, bank share ownership will be allowed up to 10% by reporting requirement alone. However, if the ownership is more than 10%, it is required to obtain permission through 'fit and proper' test from the supervisory authority whenever the ownership rises in excess of 10%, 25%, and 33%, respectively.

For each bank, domestic residents will be allowed to purchase bank ownership up to the limit allowed to foreigners. However, to prevent possible negative side-effect of allowing bank ownership to non-financial business firms, if a non-financial business group owns more than 4%, a strict limit will be applied to the amount of credits that can be extended from the controlled bank. In addition, each business group will not be permitted to control more than one bank.

It is an open question whether allowing non-financial corporations to own banks will actually improve the bank governance. Given the possible negative side-effect of the connection and current expertise of financial supervisory function, it would be desirable to maintain the current ownership structure partially restricting the bank ownership by Chaebols.

As another measure to improve efficiency of the financial industry, it is quite important to bring competition among the industry participants. Expansion of business boundaries will foster competition among financial institutions, which in turn will enhance the efficiency and competitiveness of the financial industry. For this end, in July 1997, banks, securities companies, and insurance companies were allowed to expand the scope of their traditional businesses except for those defined as core businesses.

event signals that a fundamental change is occurring as to the role of shareholders in monitoring the bank management.

Furthermore, laws and acts related with M&As among financial institutions were streamlined in December 1997 to improve transparency and clarify the permission criteria. In addition, to facilitate financial restructuring through voluntary mergers and to allow financial institutions to take advantage of the synergy effects, the government announced that it would offer various incentives. In the case of bank-to-bank mergers, the merger institution will be allowed to increase its capital and expand its business boundaries to better establish itself as a leading bank. A merger consisting of two different types of financial institutions may engage in the businesses of both. According to the government plan, Korea's future financial industry is likely to evolve into a system which consists of four major sub-industry groups; banking industry, investment banking industry, insurance industry, and miscellaneous financial industry.

5. Establishment of Sound Financial System

5.1. Restructuring of the Central Bank, Financial Supervision and Deposit Insurance System

On December 29, 1997, the long-awaited 13 financial reform bills, including the Bank of Korea Act and a bill establishing consolidated financial supervisory authority, were finally passed at the National Assembly.

As for the central bank system, first, the independence of the Monetary Board, a supreme policy making body of the Bank of Korea, has been significantly reinforced as described in Table II.9. Second, the objective of the central bank was unified as maintaining price stability, changed from the previous dual objectives of maintaining the stability of currency value and strengthening of the soundness of the banking and credit system. This is a significant step toward establishing a more advanced central banking system.

As to the supervisory system, existing supervisory bodies will be merged into a newly established Financial Supervisory Board in January 1999, which will be superintended by the Financial Supervisory Commission (FSC). The FSC, which was already established in April 1998 under the Prime Minister's Office, currently functions as a neutral and independent supervisory policy making body.

Note that under the new system, the central bank relinquished its supervisory function for the banking sector although it will retain joint supervisory responsibility for bank inspection. While the consolidation of supervisory functions under a single agency needs to be further tested for its effectiveness, it is clearly a step forward to reflect the reality that the previous segmentation within the financial industry is increasingly blurred due to financial innovations and deregulation. Figure II.1 compares previous and newly established financial supervisory systems in Korea.

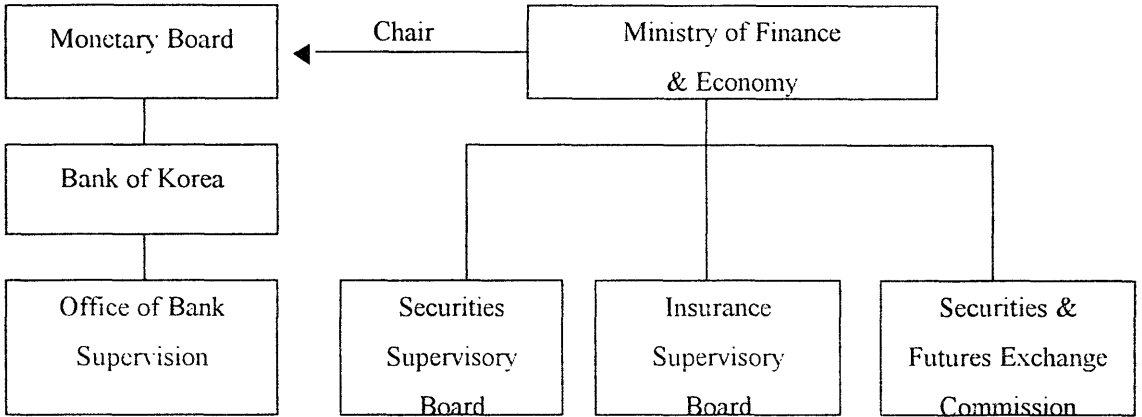
Table II. 9. Composition of the Monetary Board

	Previous Act	Revised Act
Composition	<ul style="list-style-type: none"> - The Minister (the Chairman) - The Governor - One member recommended by the Minister of Finance and Economy - Two members recommended by the Minister of Trade, Industry and Energy - Two members recommended by banking institutions - Two members recommended by the Minister of Agriculture and Forestry <p style="text-align: center;">(9 members)</p>	<ul style="list-style-type: none"> - The Governor (the Chairman) - One member recommended by the Minister of Finance and Economy - One member recommended by the Governor - One member recommended by the Chairman of the Financial Supervisory Commission - One member recommended by the President of the Korea Chamber of Commerce and Industry - One member recommended by the Chairman of Korea Federation of Banks - One member recommended by the Chairman of Korea Securities Dealers Association. <p style="text-align: center;">(7 members)</p>
The appointment Procedure and Term of office of the Members	<p>The Governor is appointed by the President on the recommendation of The Minister of Finance and economy. The term shall be 4 years.</p> <hr/> <p>The remaining members are appointed by the President on the recommendation of each pertinent Institutions. The term shall be 3 years.</p>	<p>The Governor is appointed by the President on the deliberation of the State Council. The term shall be 4 years.</p> <hr/> <p>The remaining members are appointed by the President on the recommendation of each pertinent institutions. The term shall be 4 years.</p>

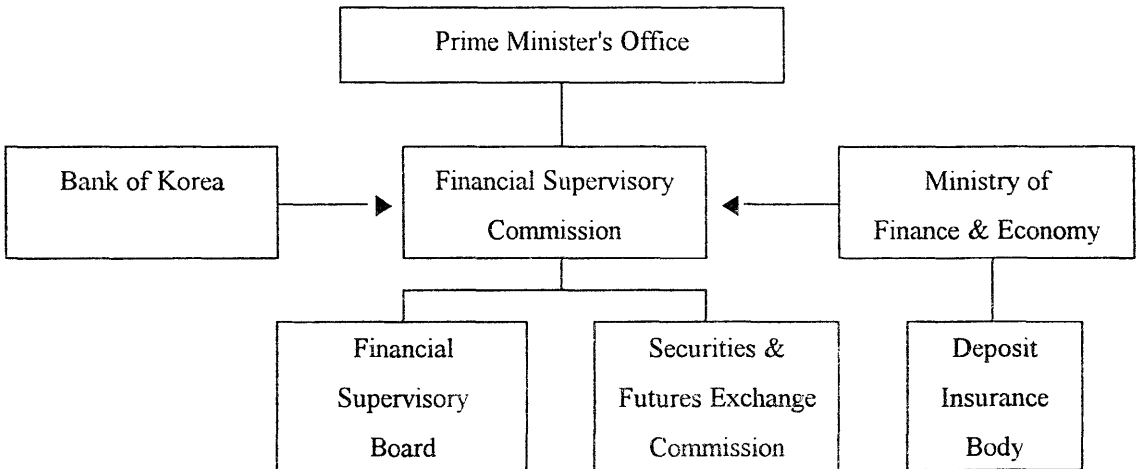
Source: Bank of Korea

Figure II.1 Restructuring of the Financial Supervisory System

Previous System



New System



A closely related measure with the supervisory system is the deposit insurance policy. An important step to improve the deposit guarantee system has been recently announced. The Ministry of Finance and Economy recently announced a plan to scale down government protection of deposits at financial institutions effective from July 25, 1998. The government protection of deposits worth more than 20 million won will be limited to principal in the event that these institutions turn out to be insolvent before the end of 2000. After 2001, a depositor would be guaranteed up to 20 million won including the interest payment.

Note that at the height of the currency crisis late last year, the government had previously announced that it would guarantee repayments of principal and interest fully until the end of 2000. As a result, depositors have not differentiated relatively sound banks from ailing one by shifting deposits. The improvement is a right step in preventing moral hazard problem and ultimately strengthening the depositor's monitoring function over the financial institutions. The measure will also help speed up the market driven restructuring of the financial system.

5.2. Strengthening of Prudential Regulations and Information Transparency

To maintain the soundness of the financial system and hence avoid another financial crisis, strengthening of the prudential regulations cannot be emphasized too much. Clearly, lax supervision has been at the root of the current financial crisis. The soundness of the financial system must be ensured against systemic risk and instability which tends to rise in tandem with financial liberalization and globalization. According to the 5th agreement with the IMF last May, the FSC announced a plan to substantially strengthen prudential regulations and a prompt corrective action scheme which conforms to internationally best practiced one.

Table II.10. Strengthened Loan Classification Criteria (Effective from July 1, 1998)

Classification	Previous	New
Normal	Loans in arrears by less than 3 months	Loans in arrears by less than 1 months
Precautionary	Loans in arrears by 3 months to less than 6 months	Loans in arrears by 1 month to less than 3 months
Substandard and below	Loans in arrears by no less than 6 months	Loans in arrears by no less than 3 months

In an effort to strengthen prudential regulations in the banking sector, the FSC has already introduced some measures. First, the loan classification was significantly upgraded to conform to international standard (see Table II.10). From July 1, all loans more than 90 days past due are classified as substandard or lower, a drastic enhancement of the criteria from previous 180 days past due. The loans 1 to 3 months past due are now classified as precautionary assets. Second, the required loan-loss provision rate for precautionary assets was increased from previous 1% to 2%. In addition, loan loss provisioning is now required for non-tradable securities (privately placed bonds, commercial papers and guaranteed bills) of trust accounts from July 1, 1998.

Some of other major prudential regulations to be strengthened include the following.

- From January 1999, loan loss provisions for non-performing assets will be deducted from Tier 2 capital in computing the BIS capital adequacy ratio, and mark to market accounting will be introduced for all traded securities and derivative positions other than hedging assets.

From August 1998, to limit foreign exchange exposures, commercial banks will be strictly guided to maintain short-term foreign assets (less than 3 month) of at least 70% of short-term foreign borrowings, and to fund at least 50% of long-term assets (more than 3 years) with long-term borrowings.

The FSC will begin supervising and regulating prudential aspects of all specialized and development banks by delegation of the MOFE from June 30, 1998. From January 1999, the FSC will begin consolidated supervision to encompass the full range of banking risks, including foreign exchange risk, whether carried on in the principal bank or its foreign branches and domestic and overseas affiliates and subsidiaries.

It is also important to strengthen the transparency of information to promote efficient resource allocations in the financial sector. In this regard, the accounting and disclosure standards applied to financial institutions and business firms have been and will be further strengthened to conform to internationally best practiced standards. As for the corporate firms, from September 1, 1998, the listed companies will be required to publish half-yearly financial statements prepared and reviewed by external auditors. In addition, large conglomerates are required to submit consolidated financial statements from 1999.

As for the financial institutions, reporting requirements for banks will be improved for supervisory authority to better detect potential problems, and the published financial statements of banks, including off-balance sheet items, will be upgraded to a level fully in line with international standards of disclosure. The strengthening of the accounting standards and prudential regulations would have an immediate negative impact on the financial status of financial institutions. However, it is important to recognize that the availability of transparent and credible information is key to the advancement of commercial based restructuring such as M&As and recapitalization in the market.

On July 25, 1998, the Banking Supervisory Authority released statistics on the business performance of 22 commercial banks (excluding the 5 banks already acquired by the P&A arrangements) for the first half of 1998. It is interesting to note that the bank performance reflects the degree of gap between previous prudential regulation and accounting standard and internationally best practiced ones. According to the changed regulation, commercial banks are required to accumulate 100% of the required provision on loan loss and securities revaluation loss. Hence, the performance in the first half of 1998 reflects this additional accumulation of provisions required by the new regulation.

Table II.11 shows that despite the operating profits, the banks came up with their worst net loss ever as they were required to set aside additional 9.27 trillion won in loss provisions, which is a 328 % increase from 2.16 trillion won a year ago. The combined net loss amounts to 6.7 trillion won, where only 7 out of 22 posted a net profit. This indicates that the actual financial status of the banking sector has been much worse than previously diagnosed, and the bank capital base has continued to be eroded over the first half of this year. This again reveals that the financial sector restructuring needs to be further accelerated and the banking sector recapitalization is urgently required.

Conclusion - Lessons and Future Challenges

In this paper we asked two questions and attempted to provide answers. With respect to the question of causes for the Korean crisis, we reported roles of the terms of trade shock, inadequate capital positions of financial institutions and vulnerability of financial institutions to foreign currency liquidity shocks. Then, although all of these factors were important as necessary conditions for the crisis, we emphasized, in transforming those conditions to be sufficient, the contagious effects from Southeast Asian crises and policy missteps to the effects as well as financial sector problems were crucial. From these findings we draw the following three lessons.

Table II. 12. Profit/Loss of the Korean Banks for the First Half of 1998

(100 million won, %)

	Operating Profit (1 st half '98)	Loss Provisions (1 st half '98)	(Gap in Required Loss Provisions as of end-97)	Net Profits
Choheung	3,335	12,644	(5,826)	-9,320
CBK	1,556	7,121	(3,979)	-5,568
Korea First	-3,353	10,274	(7,038)	-13,637
Hanil	2,225	10,411	(5,078)	-8,204
Seoul	-1,245	12,129	(6,072)	-13,385
KER	4,001	9,453	(4,688)	-5,491
Kukmin	6,227	6,162	(2,078)	65
H&CB	4,613	2,803	(0)	1,335
Shinhan	3,143	2,541	(1,511)	288
Hana	1,439	944	(377)	495
Koram	1,773	790	(0)	827
Boram	1,329	1,195	(887)	134
Peace	-594	942	(969)	-1,536
KLB	1,959	1,304	-	512
Daegu	731	3,613	(448)	-2,882
Pusan	474	2,484	(324)	-2,010
Kwangju	-260	1,669	(630)	-1,929
Cheju	-93	713	(255)	-806
Jeonbuk	167	734	(30)	-567
Kangwon	-591	1,133	(491)	-1,724
Kyungnam	235	2,517	(582)	-2,282
Chungbuk	-385	1,165	(326)	-1,550
Total	26,686	92,741	(41,589)	-67,235

Source: Banking Supervision Authority

First, when a developing economy undergoes financial market liberalization with capital market liberalization, there exists huge risk of becoming a prey to a financial crisis coupled with a currency crisis unless soundness of financial institutions is preserved at a high level. The performance of the Korean economy in the past decade has been a synonym for a 'miracle'. Thus the Korean crisis vividly illustrates that even a miraculous economy is not immune to twin crises without healthy financial institutions. Regarding policy measures, this implies that building a well-working system of prudential regulations and removing moral hazard among financial market participants constitute *essential pre-conditions* for the liberalization.

Second, the Korean crisis suggests that a small open economy should pay due attention to the possibility of contagious effects and, therefore, take more strict policy measures in managing external risks than its fundamentals require. Specifically, a small open economy may want implement higher standards for soundness of banking institutions and rules to correct possible problems more swiftly. Also due policy priority should be given to maintaining the adequate level of foreign exchange reserves.

Third, last point implies that the current international financial order has a serious caveat. A small open economy, being vulnerable to contagious effects or other external shocks in the similar vein, is being forced to pay more costs for being a member of 'the global economy' by either experiencing a crisis or putting more resources to prevent it. Hence inventing measure to correct the problem emerges as an urgent task given to the international society.

For the second question of resolving the crisis, we described the recent financial sector reform in Korea. But we have to admit that it is too early to assess the reform process and predict its outcome with any confidence. Thus, we prefer concluding the paper by indicating future challenges. Our points are two folds.

First, the Korean policy makers are facing a challenge of avoiding ‘Japanese syndrome’, which is characterized by lack of decisive actions of the government, delayed restructuring and a long-lasting recession. To the extent that the Korean financial crisis shares the same institutional causes with the Japanese such as over-presence of the government in the market, the policy makers of both countries may share the same incentives with respect to restructuring the financial sector. Hence, it is possible that the Korean policy makers may lose their decisiveness and enthusiasm toward reforming the financial market just as the Japanese policy makers did. In this sense, maintaining the current policy stance and accelerating the restructuring process will remain a challenge in the future.

Second, although there were various episodes of twin crises, in terms of afterward macro-economic adjustment the Korean crisis may turn out to be unique and, hence, is likely to present a new challenge of gearing the economy with the right policy mix. In the first half of this year, the current account surplus of the Korean economy recorded about US\$20 billions and for the end of the year it is estimated to reach US\$35 billions or about 12% of GDP. Reflecting the huge current account surplus, consumption is shrinking much faster than GDP. As a result of these macro-economic adjustments, as of late July the Won/Dollar exchange rate stands at around 1100-1200, considerably reduced from 1570 in January. Compared to the past experiences of Latin-American countries in 1980s, where reduction in consumption or increase in savings was not easy so that maintaining restrictive macroeconomic policy was required, this suggests that the macroeconomic environment in Korea may be different and, thus, the macro-policy mix may need to be different as well. Hence, while pursuing microeconomic restructuring policies swiftly, prescribing the right macroeconomic policy mix will remain another challenge given to the policy makers.

References

- Calvo, Guillermo, Leonard Leiderman and Carmen Reinhart (1993), "Capital Inflows and Real Exchange Rate Appreciation in Latin America: The Role of External Factors," *IMF Staff Papers*, Vol. 40, No. 1, March, pp. 108-150.
- Calvo, Guillermo and Enique G. Mendoza(1996), "Petty Crime and Cruel Punishment: Lessons from the Mexican Debacle", *American Economic Review*, Vol. 86, No. 2, pp.170-175.
- Caprio, Gerard and Daniela Klingebiel (1996), "Bank Insolvencies: Cross-Country Experience," *mimeo*, World Bank, April.
- Cole, Harold and Timothy Kehoe (1996). "A Self-Fulfilling Model of Mexico's 1994-1995 Debt Crisis," *Journal of International Economics*, 41, pp.309-330.
- Corsetti, Giancarlo, Paolo Pesenti and Nouriel Roubini (1998), "What Caused the Asian Currency and Financial Crisis?," *mimeo*, March.
- Demirguc-Kunt, Asli and Enrica Detragiache (1997), "The Determinants of Banking Crises: Evidence from Developing and Developed Countries," *IMF Working Paper*, 97-106, September.
- Diaz-Alejandro, Carlos (1984), "Latin American Debt: I Don't Think We Are in Kansas Anymore," *Brookings Papers on Economic Activity*, Vol. 2, pp.335-389.
- Diaz-Alejandro, Carlos (1985), "Good-bye Financial Repression, Hello Financial Crash," *Journal of Development Economics*, 19, pp.1-24.
- Financial Supervisory Commission, *The Ailing Bank Resolution* (in Korean), Press Release, June 29, 1998

- Frankel, Jeffrey and Andrew Rose (1996), "Currency Crashes in Emerging Markets: An Empirical Treatment," *Journal of International Economics*, 41.
- Hahm, Joon-Ho and Inseok Shin, "Evaluations and Policy Implications of Financial Sector Restructuring in Thailand", *KDI Series on Policy Studies* (in Korean), Korea Development Institute, 1998
- Haq, Mahbub ul, Inge Kaul and Isabelle Grunberg eds, *The Tobin Tax – Coping with Financial Volatility*, Oxford University Press, New York, 1996
- Harberger, Arnold (1985), "Observations on the Chilean Economy, 1973-1983," *Economic Development and Cultural Change*, April.
- Kaminsky, Graciela and Carmen Reinhart (1996), "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," *International Finance Discussion Papers*, Board of Governors of the Federal Reserve System.
- Korea Development Institute, *Structural Reforms and Economic Prospects* (in Korean), KDI, April, 1998
- Krugman, Paul (1998), "What Happened to Asia," *mimeo*, MIT University.
- Ministry of Finance and Economy, *Comprehensive Restructuring Program of the Korean Economy* (in Korean), Press Release, May 20, 1998
- Mishikin, Frederic (1996), "Understanding Financial Crises: A Developing Country Perspective," *NBER Working Paper 5600*, May.
- Obstfeld, Maurice (1995), "Models of Currency Crises with Self-Fulfilling Features," *NBER Working Paper No.5285*.

- Presidential Commission for Financial Reform. *Financial Reform in Korea*, the First, Second, and Third Reports, PCFR. Korea, 1997
- Radelet, Steven and Jefferey Sachs (1998), "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects," *mimeo*, Harvard Institute for International Development.
- Sachs, Jefferey, Aaron Tornell and Andes Velasco (1996). "The Mexican Peso Crisis: Sudden Death or Death Foretold?," *Journal of International Economics*, 41, pp.265-283.
- Song, Inwon (1998). "Korean Banks' Responses to the Strenthening of Capital Adequacy Requiremntns," *Working Paper PB98-01*, Federal Reserve Bank of San Fransisco.
- Sundararajan, V and Thomas Balino (1991), "Issues in Recent Banking Crises," in *Banking Crises: Cases and Issues*, IMF.
- Velasco, Andres (1987), "Financial Crises and Balance of Payment Crises," *Journal of Development Economics*, 27.
- Velasco, Andres (1991), "Liberalization, Crisis, Intervention: The Chilean Financial System, 1975-85," in *Banking Crises: Cases and Issues*, IMF.
- Wyplosz, Charles, "Globalized Financial Markets and Financial Crises," paper presented at the conference on *Coping with Financial Crises in Developing and Transition Countries: Regulatory and Supervisory Challenges in a New Era of Global Finance*, organized by the Forum on Debt and Development in Amsterdam on March 16-17, 1998