Interdependency in East Asia and the Post-Crisis Macroeconomic Adjustment in Korea

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The purpose of this paper is to reexamine the financial crisis in Korea and its post-crisis macroeconomic adjustment reviewing changing structure of interdependency in East Asia and to make a critical assessment on its post-crisis reform programs. The painful experience of Korea's post-crisis macroeconomic adjustment and structural reforms seem to have received both positive and mixed evaluations. The overall macro economic environment in the post-crisis period has been stabilized. The Korean economy seems to have recovered some of its growth potentials and competitiveness. The movement in the overall productivity indicators such as labor productivity and total factor productivity seem to validate this judgment even though there was a structural break in 1997-8. However, it has long way to go because both financial sector reforms and corporate restructuring are far from being completed.

Keywords: Interdependency, Macroeconomic adjustment, East Asia, Financial crisis

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I. Introduction

Six years have passed since the Korean economy had experienced in December 1997 one of the most serious financial crisis in its modern history. The growth rate of real GDP which had averaged 6.9 percent during the pre-crisis period of 1993-7 declined sharply recording −6.7% in 1998. In retrospect, the financial crisis at the end of 1997 had forced the Korean society and its political economy to change drastically in many respects. Even though the Korean economy seems to have partially recovered by now, it may take many years to fully assess the entire socio-political impacts of its 1997 financial crisis. Most of all, the sharp reduction in real investment during the crisis period of 1997 and 1998 by −2.2 percent and −21.2 percent respectively has not been fully recovered during the post-crisis recovery period (1999-2002) with the annual average growth rate of 4.4 percent. This is a fairly sizable reduction in real investment when we compare it with the average annual growth rate of 9.1 percent during the pre-crisis period of 1993-6. Barro (2002) also points out that rates of economic growth in East Asia have rebounded in 1999-2000, but the permanence of this recovery is uncertain and that the failure of investment ratios to rebound significantly in the crisis countries suggests that the crisis had a long-term adverse effect.

In addition, the value system and the ways of conduct by all economic agents including firms, households, and government seem to have changed drastically since the crisis. Therefore, we may draw some important lessons from the short but painful recovery process of the Korean economy by conducting a critical assessment on its post-crisis macroeconomic adjustments and reform programs.

There have been voluminous discussions on the causes of the Korean crisis and the crisis resolution strategy. Chang and Velasco (1998) and Radelet and Sachs (1998) have argued that the Asian crisis was caused by the instability in international financial markets and the panicked, herd behavior of international investors and creditors with sudden shifts in market expectations and confidence. On the other hand, Corsetti *et al.* (1998), Fischer (1998) and Krugman (1998) have emphasized moral hazard in both corporate and financial sector as the primary cause of the financial crisis in Asia. However, the dominant view is that the interaction of

internal structural weaknesses with the instability of international financial markets was the primary cause of the Asian crisis (see Eichengreen (1999), Haggard (2000), Chopra *et al.* (2002), and IMF (2003)).

In Pyo (2000), I defined the Korean model of economic development before the financial crisis of 1997 as a model of monopolistic competition across industries where government acts as both competition promoter and project monitor. In case of Korea, the government has deliberately introduced limited competition by lowering entry-barriers over time and by monitoring market failures by major conglomerates in order to maximize efficiency of limited resources. In other words, the government has played the role of competition promoter and supervision through government-controlled banks, which are part of quasi-internal organization. In this regard, the system has promoted monopolistic competition across industries. That is the reason why one observes in Korea larger number of automobile manufacturers, shipbuilders, airlines, oil refineries, semiconductor manufacturers, telecommunication equipment producers, and mobile phone companies etc. than those normally observed in many developing countries or smaller advanced countries.

The government policy protected bureaucrats from being blamed to be linked to one or two conglomerates interests but at the same time, provided big conglomerates' with irresistible incentives for horizontal diversification. The phenomenon of 'too-big to be failed' was set in because big conglomerates themselves were stockholders of many financial institutions and the moral hazard in financial institutions started eroding their competitiveness. By 1997, top 30 conglomerates were producing over half of its GNP and top 5 conglomerates' share reached one-third of the country's total production.

However, this regulatory equilibrium of the Korean type was sustainable if and only if several preconditions were met. One such condition was the existence of strong government, which could regulate entry and exit of the firms in strategic industries and direct policy loans to these firms and which could allow almost indefinite access to policy loans to those firms who were allowed to remain in the industry. But the transition from an authoritarian regime to a democratic one in Korea made it difficult for the regime to maintain a strong hold on its industrial policy. Another

precondition was the repressed labor market in favor of the owner-management corporate governance structure. But the increasing demand for higher wages and benefits by organized labor after the democratization movement in late 1980's through at times violent disputes and strikes has produced extra burden on firms' efforts for restructuring and downsizing. But this condition became no longer viable as a result of Korea's accession to WTO and OECD, which required a full opening of Korea's financial market. The last precondition was the favorable international environment and the capacity of an efficient government to maintain stabilization policy under which such a regulatory equilibrium could be sustained. But in the period after the Plaza Accord, the volatility of exchange rates and investments has increased and a small open economy such as Korea has been increasingly vulnerable to real international business cycles. In case of Korea, the slowdown of the US economy and the stagnation in the Japanese economy have squeezed Korean firms' profitability and have increased their debt-equity ratios. In addition, the emergence of China and the resulting change in the interdependency in East Asia have pushed them to the brink of the collapse when the Korean government failed to maintain stabilization policy due to distributive politics after the democratization movement.

The purpose of this paper is to reexamine the financial crisis in Korea and its post-crisis macroeconomic adjustment reviewing changing structure of interdependency in East Asia and to make a critical assessment on its post-crisis reform programs. Section II reviews international environment and the vulnerability of the Korean economy during the period of 1985-97 before the financial crisis of 1997. The section examines the volatility of Koreas investment and net exports and the changing structure of Koreas interdependency with Japan and China. In section III, a retroactive assessment on the 1997 financial crisis is made. Section IV examines macroeconomic adjustment in Korea during the post-crisis period. Section V presents an assessment on post-crisis reform programs. The last section concludes the paper.

II. International Linkage and Interdependency of the Korean Economy

Both the volatility of Koreas investment and net exports to foreign shocks and the changing structure of its interdependency with Japan and China have often been ignored in the assessment on Koreas macroeconomic fundamentals during the pre-crisis period. According to Nam and Pyo (1997), the volatility of major macroeconomic variables such as per-capita GDP measured in logarithm (y), per-capita consumption expenditure in logarithm (c), and per-capita investment in logarithm (i) and the ratio of net exports to GDP (NX/Y) in the Korean economy has declined over the years but it was still relatively higher than those of the United States and Japan at the beginning of 1990's.

I have reexamined the volatility of major macroeconomic variables for the period of 1970I-1997IV and 1998III-2002IV deleting first two quarters of 1998 (1998I and 1998II) immediately after the financial crisis in December 1997. The standard deviation of Korea's GDP (2.0) was higher than those of US (1.09) and Japan (1.43). During the pre-crisis period the standard deviation of Korea's investment (7.18) was also significantly higher than those of US (2.49) and Japan (2.29). Lastly the standard deviation of Korea's ratio of net exports to GDP (1.61) was also much higher than those of US (0.85) and Japan (0.98). The relative volatility of Korea's major macroeconomic indicators continued to exist after the financial crisis even though its absolute volatility has been reduced.

As shown in Table 1, the persistence of major macroeconomic variables measured by the first-order autocorrelation coefficients indicated that the persistence of GDP, consumption and investment in Korea was almost the same as those in the United States and Japan.

Finally, the procyclical nature of consumption and investment was confirmed in all three economies by comparing coefficients of correlation with GDP but the degree of procyclicality of investment was higher in Korea than in US and Japan even after the financial crisis implying that investment in Korea continued to remain procyclical. On the other hand, the counter-cyclical nature of net exports was confirmed in only the US economy implying that export demand had positive impact on GDP in Korea and Japan but

TABLE 1

VOLATILITY, PERSISTENCE AND CYCLICALITY OF MAJOR MACROECONOMIC INDICATORS: KOREA, US, AND JAPAN (1970 I-2002 IV)

Volatility of Real Macroeconomic Indicators

	Pre-crisis period (1970 I-1997 IV)				Post-crisis period (1998 III-2002 IV)			
	$\sigma(y)$	$\sigma(c)$	$\sigma(i)$	$\sigma(NX/Y)$	$\sigma(y)$	$\sigma(c)$	$\sigma(i)$	$\sigma(NX/Y)$
Korea	2.00	1.58	7.18	1.61	1.15	1.03	2.96	1.54
US	1.09	0.87	2.49	0.85	1.03	0.93	1.86	0.64
Japan	1.43	1.68	2.29	0.98	0.91	1.26	1.25	0.47
	$\sigma(c)/\sigma(y)$	$\sigma(i)/\sigma(y)$	$\sigma(NX/Y)/\sigma(y)$		$\sigma(c)/\sigma(y)$	$\sigma(i)/\sigma(y)$	$\sigma(NX/Y)/\sigma(y)$	
Korea	0.78	3.58	0.80		0.89	2.56	1.33	
US	0.80	2.29	0.78		0.90	1.81	0.62	
Japan	1.17	1.60	0.68		1.38	1.37	0.52	

First Order Correlation Coefficients

	Pre-crisis period (1970 I-1997 IV)				Post-crisis period (1998 III-2002 IV)			
	$\rho(y)$	$\rho(c)$	$\rho(i)$	$\rho(NX/Y)$	$\rho(y)$	$\rho(c)$	$\rho(i)$	$\rho(NX/Y)$
Korea	0.973	0.974	0.974	0.868	0.833	0.833	0.832	0.835
US	0.974	0.975	0.970	0.941	0.832	0.833	0.827	0.831
Japan	0.970	0.968	0.971	0.934	0.834	0.838	0.832	0.836

Coefficients of Correlation with GDP (y)

	Pre-crisis period (1970 I-1997 IV)			Post-crisis period (1998 III-2002 IV)		
	$\rho(c,y)$	$\rho(i,y)$	$\rho(NX/Y,y)$	$\rho(c,y)$	$\rho(i,y)$	$\rho(NX/Y,y)$
Korea	0.996	0.989	0.228	0.989	0.916	0.559
US	0.999	0.989	-0.494	0.979	0.209	-0.956
Japan	0.998	0.993	0.203	0.711	0.899	0.623

negative impact on GDP in US.

Nam and Pyo (1997) has applied a three-country international real business cycles model of the Backus, Kehoe, and Kydland (1992) type and presents the following simulation results. Korea has benefited from favorable innovation shocks of the United States and Japan by showing increased GDP and investment. In particular, the positive impact of favorable innovation shock from the US was greater than that of Korea's own innovation shock. Therefore, the slower economic growth during 1991-5 in the United States with average annual growth rate of GDP being 2.4 percent and the rapid contraction in Japan during the same period with average annual growth rate of GDP being only 1.4 percent must have adversely affected on the Korean economy of which corporate sector was already suffering from lower rates of return and high debt-equity ratio.

On the other hand, we can evaluate the changing nature of Korea's industrial interdependency with Japan and China. Lee and Okamoto (2002) reports the structural change in industrial interdependency among Japan, China and Korea using an international input-output framework. They have adopted the Hypothetical Extraction Method (HEM) and Leontief inverse matrix decomposition technique to analyze the structure of industrial interdependency among three East Asian economies of Japan, China and Korea.

Table 2 presents their estimation result of changes in trade linkage effects among the three economies for the years of 1985, 1990 and 1995 when international IO Tables were available. Regarding Japan, for example, as extracted country, Japan has maintained relatively stable trade linkage effects. Its feedback effects remained stable around 60 percent of total trade linkage effect during the period of 1985-95. Its trade linkage effect with China and Korea has remained around 25 percent and 15 percent. China has declined its trade linkage with Japan from 59 percent in 1985 to 36 percent and 39 percent in 1990 and 1995 respectively. On the other hand, Korea's feedback effect has marginally increased from 31 percent in 1985 to 37 percent in 1995 and decreased its trade dependence on Japan from 69 percent in 1985 to 48 percent in 1995. But its dependence on China as trading partner increased sharply from 1 percent in 1985 to 15 percent in 1995.

TABLE 2
CHANGES IN TRADE LINKAGE EFFECTS IN EAST ASIA

		Extracted Country		
		China	Japan	Korea
1985	China	41%	24%	1%
	Japan	59%	63%	69%
	Korea	0%	12%	31%
	Trade Linkage	100%	100%	100%
1990	China	60%	25%	0%
	Japan	36%	56%	66%
	Korea	4%	19%	33%
	Trade Linkage	100%	100%	100%
1995	China	47%	25%	15%
	Japan	39%	60%	48%
	Korea	14%	15%	37%
	Trade Linkage	100%	100%	100%

Source: Lee and Okamoto (2002).

The ratio of Korea's trade dependence from Japan to China has a significant implication for Korea's macroeconomic adjustment. While the Chinese Yuan had been pegged to US dollar and the Japanese Yen had been depreciated against dollar by 22.6 percent between 1995 and 1997, the Korean Won had not been fully depreciated and had been relatively overvalued: In December 1994, the exchange rate was 791.9 Won per dollar but it was appreciated to the level of 757 won by July 1995 and then by December 1996 it depreciated to the level of 839 won per dollar. In other words, the Korean Won was depreciated only by 6.0 percent between December 1994 and December 1996. This lack of correspondence between the shift in trade dependence and the real equilibrium exchange rate in East Asia must have been another cause of the 1997 financial crisis in East Asia.

III. The 1997 Financial Crisis in Korea: A Retroactive Assessment

The financial crisis in Korea, which was developed in November-December of 1997 was truly a shock not only to

domestic residents but also to many international investors and institutions such as International Monetary Fund and World bank because of its sudden nature and the magnitude of the subsequent bail-out program. Chopra *et al.* (2002) admit the fact that market participants including the Fund and other international organizations, credit rating agencies, and investors were unable to predict the crisis in Korea. They conclude that the Korean experience suggests that crisis prediction frameworks should pay greater attention to structural vulnerabilities and microeconomic performance. The recent report by Independent Evaluation office of the IMF (2003) has also concluded that IMF surveillance was less effective in Korea identifying specific weaknesses in the country but underestimating their seriousness and thereby failing to provide sufficient warning. But it will be difficult to identify any quantifiable indicators to account for these factors. I propose in the present paper to include the growth rates of reserve base (bank notes and coins issued and reserve deposits of Deposit Monetary Banks (DMB) in the list of such indicators.

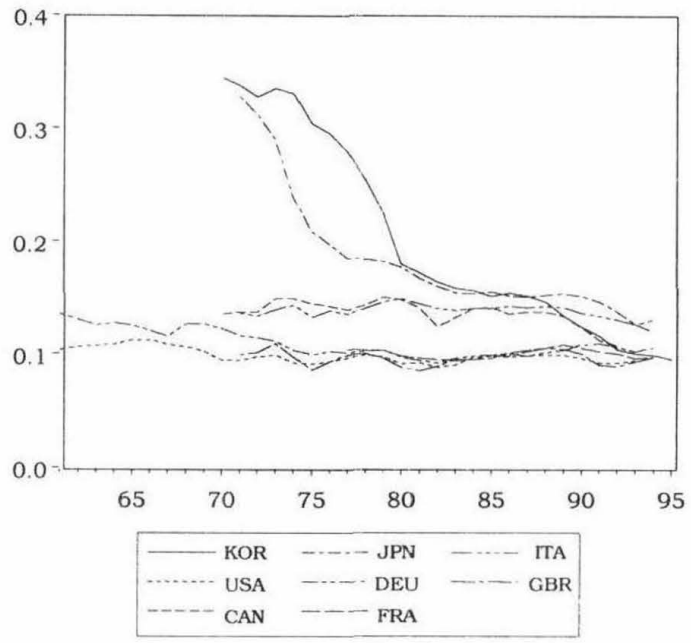
In order to understand why the eleventh largest economy in gross national product was suddenly subject to contagion and national bankruptcy, we need more than a simple model of moral hazard or cronyism. After searching for alternative plausible theoretical models, I have selected in Pyo (2000) the excess competition model developed by the modern theorists of industrial organization such as Scherer (1980), Okuno-Fujiwara *et al.* (1980), Okuno-Fujiwara (1988), Stiglitz (1981), Suzumura and Kiyono (1987), and Itoh *et al.* (1988). They have argued that measures taken to stimulate competition could result in inefficient equilibrium. In particular, Itoh *et al.* (1988) have shown that from the standpoint of national economic welfare, it may be desirable for government to regulate entry to the industry if the industry is characterized by a Cournot-Nash oligopoly. Assuming that each firm in the industry behaves in a Cournot-Nash fashion and the government can regulate the entry to the industry but cannot enforce for each firm marginal-cost pricing, they show that the number of firms established in the long-run Cournot-Nash equilibrium with free entry and exit exceeds the so-called second-best number of firms established as a result of maximizing total social surplus (the sum of consumer's and producer's surplus). They define it as excess competition and distinguish it

from excessive competition, which refers to a competitive (not oligopolistic) industry with free entry, but where exit does not rapidly occur when excess capacity arises and in which labor mobility is low.

The excess competition model implies that when the number of firms in a Cournot-Nash oligopoly increases, the change does not always improve welfare. It also implies that as a result of the autonomous entry and exit of private firms, there is the possibility of excessive entry relative to the second-best number of firms. The model served as a justification for cartels and government regulations on entry to particular industry in Japan since the end of the war. It can be also applied to the industrial development in Korea. But we should note that such a second-best Cournot-Nash equilibrium becomes an optimal one if and only if the government knows when and how to regulate the entry and exit. If for some reasons, there is a policy failure, the second best equilibrium is not necessarily a welfare-maximizing equilibrium even under the oligopoly. Suppose for example that the Japanese model of regulation was more consensus-based among bureaucrats and industrialists than the Korean model. Then it would be more likely for the Korean regulatory system to be managed on an *ad hoc* base rather than on consensus building.

In addition, the excess competition model implicitly assumes a perfect capital market so that once the optimal number of firms is established, each firm has a ready access to capital market or is bailed out if it runs into financial trouble. In other words, in such equilibrium, it will be optimal to bail out such firm because the government is supposed to keep the optimal number of firms in the oligopolistic industry. The other alternative would be to allow an exit of the firm and simultaneously allow an entry of another firm, which will entail transaction costs. Such an implicit assumption of perfect capital market limits the usefulness of the excess competition model. If the financial sector is operating under moral hazard and if the government is lobbied or bribed by interest groups, then the second-best equilibrium cannot be maintained. In this regard, it is not surprising to observe the collapse of such a regulatory equilibrium in a period of transition from an authoritarian regime to a less-authoritarian or democratic one.

When we estimated Harberger's before-tax gross rate of return (gross operating surplus/gross capital stock) in OECD countries in

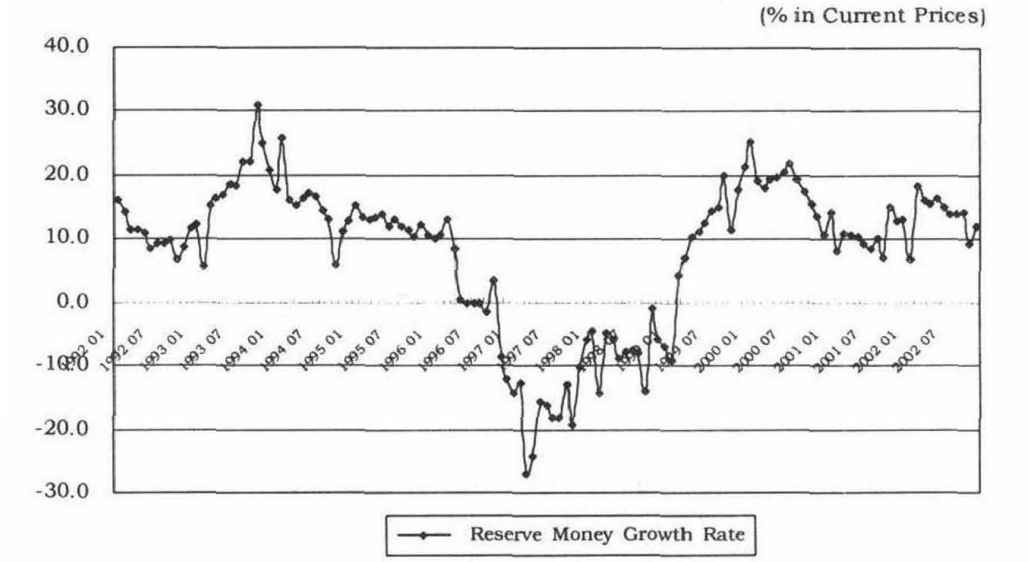


Source: Pyo and Nam (1999).

FIGURE 1
GROSS RATES OF RETURN ON CAPITAL IN G7 COUNTRIES AND KOREA

Pyo and Nam (1999), two outliers had maintained extremely high rates of return: Korea maintaining 33.7% in 1971, as shown in Figure 1, 17.2% in 1981 and Japan maintaining 31.2% in 1971 and 16.7% in 1981 respectively. Japan's rate of return started to fall steadily but remarkably after 1990 ultimately converging to OECD average by 1994. But Koreas rate of return reveals a faster rate of convergence. In particular, it fell very sharply after 1990 and reached 9.9 percent by 1994, which was lower than Japans rate of return (11.9%) and the average of 10 OECD countries of which data were available (10.2%). Therefore, the systemic risk inherent in Korean companies excessive borrowing and low rate of return proceeded well before the 1997 crisis.

The falling rates of return on both assets and equity have been observed by Krueger and Yoo (2002) and Joh (2001). Krueger and Yoo (2002) have shown that return on assets by Big 30 *Chaebols* in all sectors has declined from 3.35 percent in 1995 to −0.87 percent in 1997. Returns on equity by Big 30 *Chaebols* has also



Source: The Bank of Korea. *Monthly Bulletin*. Selected Years.

FIGURE 2
RESERVE MONEY: GROWTH RATE (1992.1-2002.12)

declined sharply from 15.26 percent to −4.83 percent during the same period. Joh (2001) has shown that the average rate of return on equity was often lower than the cost of capital, forcing them to finance interest payments by incurring additional debt. Joh (2002) has also shown that the performance of the Chaebols was lower than that of independent firms.

Then a question remains as to why Korean *Chaebols* have pursued excessive competition and pre-emptive overinvestment around 1995. One plausible explanation is that Korean *Chaebols* have overreacted to accession to WTO and OECD by making overinvestment in non-tradable sectors such as retail and large merchandise network and pre-emptive investment in some tradable sectors such as automobile and steel manufacturing (see Pyo (2000)).

Since the domestic financial industries interest rates (13.8%, corporate bond rate in 1995) were much higher than international prime rates (5.66%, Eurodollar rate in 1995), many *Chaebol* firms went after short-term borrowing from abroad and over-borrowing

from domestic banks and non-bank financial intermediaries by means of cross-guaranties of loans among their subsidiaries. The net consequence of this spree of over-investment under excessive borrowing is the domestic credit crunch and the mismatch between long-term assets and short-term foreign debt.

The sign of domestic credit crunch preceded well before the financial crisis which began from the end of November 1997. A rapid contraction of reserve base started to occur during the first quarter of 1996, eighteen months prior to the December 1997 currency attack as shown in Figure 2. The average balance of reserve base in nominal terms was at peak in 1996 (24.8 trillion won) but declined very rapidly in subsequent years: 1997 (21.1 trillion won), and 1998 (19.6 trillion won). It started to increase only in 1999 (22.0 trillion won) and 2000 (26.4 trillion won) after the injection of massive public funds (117.9 trillion won by the end of 2000) to salvage failing banks and corporate sector. In other words, the domestic credit crunch as a result of large-scale corporate bankruptcies such as Hanbo Steel, Kia Automobile, and Sammi Steel *etc.* started well in advance of the actual currency attack. As the domestic credit crunch spreads out sending the signal to the market that there is no longer too-big to fail phenomena and that the Korean government is not going to bail out big conglomerates, the remaining companies and banks went for short-term foreign loans to solve their liquidity problems worsening the mismatch between short-term liability and long-term assets.

IV. Macroeconomic Adjustment in the Post-Crisis Recovery in Korea

After the financial crisis in December 1997, the Korean economy went through a turbulent period of painful adjustment. But in retrospect, the V-shaped recovery in Korean economy has been faster and broader than those observed in most of crisis-inflicted economies as observed by Chopra *et al.* (2002). Hong, Lee, and Rhee (2002) has also shown that Koreas contraction and recovery were sharper than most of other post-crisis recoveries.

The macroeconomic adjustment during the first half of 1998 immediately following IMF-led bail out of the record amount (US$

57 billion) was rather turbulent and controversial. At the initial stage, IMF mandated the Korean Government to pursue ultra-tight monetary policy and tight fiscal policy which has been a sort of standard prescription for the crisis-inflicted economies.

For this reason, the high interest policy at the initial stage of the Fund program may have contributed to stabilizing the exchange rate but at the same time, may have aggravated the sharp cutback in domestic demand as emphasized in Pyo (2003). For the same reason, the sudden imposition of the BIS standard (minimum 8 percent rule of maintaining banks own capital) was not a realistic goal for the economy which had maintained 33-37.5 percent domestic savings rate, 34-40 percent ratio of gross domestic investment and high debt-to-equity ratio (524 percent for the big-30 conglomerates, 467 percent for the big-5 and 350 percent for Non-chaebol companies as of end of 1997). But as the exchange rate became stabilized by the end of the second quarter of 1998, IMF and the Korean government agreed to lower interest rates and increase government spending.

As summarized in Table 3, major macroeconomic indicators characterize the nature of the post-crisis recovery in Korea. The main engine of growth was the expansionary fiscal policy with massive injection of public funds. From 1998 to 2002, the government expenditure has grown at an average annual rate of 24.8 percent, while it had grown at an average annual rate of 19.6 percent during 1993-7. The ratio of government expenditure to GDP has increased from 18.3 percent in 1993 to 22.9 percent on 2002.

At the same time, we can point out that the post-crisis recovery is also characterized by consumption-led recovery mainly helped by injection of public funds and lower interest rate policy rather than investment-led recovery. As can be seen from Table 3, consumption expenditure has grown steadily (9.4%, 6.7%, 3.7%, and 6.2% during 1999-2002), while gross fixed investment has not grown steadily (3.7%, 11.4%, −1.8%, and 4.8% during 1999-2002).

Another channel of the fast recovery was the depreciation of won during 1998. In terms of period average, won per US dollar has depreciated as much as 47 percent from 1997 to 1998. The nominal effective exchange rate of won per dollar has depreciated by 34 percent during the same period. Even though both exchange rates have been somewhat moderated and appreciated during the period of 1998-2000, the early adjustment of nominal exchange

TABLE 3

SUMMARY MACROECONOMIC INDICATORS, KOREA: 1993-2002

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Real GDP(percent change)	5.5	8.3	8.9	6.8	5.0	-6.7	10.9	9.3	3.1	6.3
Final domestic demand	5.7	8.4	9.5	7.3	1.2	-13.8	7.4	7.7	2.5	5.8
Consumption	5.4	7.1	8.2	7.2	3.2	-10.1	9.4	6.7	3.7	6.2
Gross fixed investment	6.3	10.7	11.9	7.3	-2.2	-21.2	3.7	11.4	-1.8	4.8
Saving and Investment(in percent of GDP)										
Gross national saving	36.2	35.5	35.5	33.8	33.4	33.9	32.9	32.4	29.9	29.2
Gross domestic investment	35.4	36.5	37.3	38.1	34.4	21.3	26.9	28.3	26.8	26.1
Prices(percent change)										
Consumer prices(average)	4.8	6.3	4.5	4.9	4.4	7.5	0.8	2.3	4.1	2.7
Consumer price(end-period)	5.8	5.6	4.8	4.9	6.6	4.0	1.4	2.8	3.2	3.7
GDP deflator	7.0	7.6	7.2	3.9	3.2	5.0	-2.0	-1.1	1.3	1.7
Employment and wages										
Unemployment rate	2.8	2.4	2.0	2.0	2.6	6.8	6.3	4.1	3.7	3.1
Wages, manufacturing (annual percent change)	10.9	15.5	9.9	12.2	5.2	-3.1	14.9	8.6	5.8	12.0
Consolidated central government(in percent of GDP)										
Revenues	18.6	19.1	19.3	20.4	20.6	21.8	22.4	26.0	26.4	26.6
Expenditure	18.3	18.7	19.0	20.2	22.1	26.0	25.1	24.8	25.1	22.9
Balance	0.3	0.4	0.3	0.3	-1.5	-4.2	-2.7	1.3	1.3	3.7
Money and credit(end of period)										
M3	19.0	24.7	19.1	16.7	13.9	12.5	8.0	7.1	11.6	13.6
Yield on corporate bonds	12.6	12.9	13.8	11.9	13.4	15.0	8.9	9.3	7.0	6.56
Trade(percent change)										
Export volume	14.5	13.6	22.3	17.4	14.8	19.2	12.0	20.6	0.7	14.9
Import volume	6.1	22.5	24.1	15.6	2.0	-25.1	29.0	19.0	-2.3	16.4
Terms of trade	-1.6	3.4	1.2	-9.5	-2.6	-4.5	-2.2	-12.4	-4.5	-0.6
Balance of payments(in billions of U.S. dollars)										
Exports, fob	82.1	95.0	124.6	130.0	138.6	132.1	145.2	175.9	151.4	162.5
Imports, fob	79.8	97.8	129.1	144.9	141.8	90.5	116.8	159.1	138.0	152.1
Current account balance	1.0	-3.9	-8.5	-23.0	-8.3	40.4	24.5	12.2	8.2	6.1
Current account balance (in percent of GDP)	0.3	-1.0	-1.7	-4.4	-1.7	12.7	6.0	2.7	2.0	1.3

(Table Continued)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Usable gross reserves										
In billions of U.S. dollars (end of period)	18.3	22.4	29.4	29.4	8.9	48.5	74.1	96.2	102.8	121.4
In months of imports of goods and services	2.7	2.7	2.7	2.3	0.7	6.5	7.6	7.1	8.7	8.2
External debt										
In billions of U.S. dollars	43.9	97.4	127.5	163.5	159.2	148.7	137.1	131.7	118.8	131.0
In percent of GDP	12.7	24.2	26.0	31.4	33.4	46.8	33.8	28.5	27.9	27.5
Exchange rate(period average)										
Won per U.S. dollar	802.7	803.4	771.0	804.8	951.1	1398.9	1189.5	1130.6	1290.8	1251.2
Nominal effective exchange rate (1995=100, W/$)	100.4	100.5	100.0	98.7	108.0	144.7	131.1	123.3	132.6	n.a.
Real effective exchange rate (1995=100, W/$)	102.9	100.9	100.0	97.9	106.8	133.7	122.3	114.6	121.7	n.a.

Notes: 1) Excluding privatization receipts.
2) Prior to 2000, the civil service pension is excluded.
3) Including government guaranteed restructuring bonds issued by KDIC and KAMCO.
4) Excluding deposits at overseas branches and subsidiaries of domestic banks.
5) Including offshore borrowing of domestic financial institutions and debt contracted by overseas branches of domestic financial institutions.

Source: The Bank of Korea. *Principal Economic Indicators and National Accounts*. 2002.

rates in 1998 has helped Korean firms to recover its competitiveness. In particular, the boom in Information, Communication, and Technology (ICT) sector in the United States and other industrial economies and the sustained growth of the Chinese economy has helped Korean manufacturers of semiconductors, steel, automobile, and other ICT-related commodities to improve their export performance.

The export volume has grown at an average annual rate 17.3 percent during the three year period (1998-2000) of recovery. But as the ICT boom calmed down in 2001, its growth rate has been sharply reduced to 0.7 percent and 14.9 percent respectively in 2001 and 2002. Korea's impressive export performance during the

TABLE 4

GROSS OUTPUT GROWTH ACCOUNTING FOR KOREA (1984-2000)

(Growth Rates (%) per Annum)

	Growth output	Capital Input	Labor Input	Energy Input	Material Input	TFP
1. Agriculture	1.66	7.10	-2.43	4.70	2.07	-2.85
2. coal mining	-10.37	-2.46	-11.90	-9.66	-7.81	-0.86
3. Metal non-metal	3.75	-15.95	-5.90	5.11	4.12	10.76
4. Oil and gas	0.00	-0.85	0.00	0.00	0.00	0.02
5. Construction	5.40	13.08	7.01	-3.53	5.18	-1.55
6. Food	3.07	7.73	0.90	3.06	2.75	-0.52
7. Textile	2.30	5.19	-5.08	2.70	1.01	1.52
8. Apparels	3.54	4.10	-6.98	3.45	3.60	1.72
9. lumber and wood	6.70	4.63	-5.22	5.65	5.56	2.62
10. Furniture	9.49	10.28	-2.21	8.02	9.02	2.16
11. paper allied	6.84	13.06	0.50	6.38	6.33	0.19
12. printing, publishing, allied	7.88	8.09	2.22	5.83	8.16	1.32
13. Chemicals	7.94	11.48	-0.01	9.94	7.46	0.25
14. petroleum products	6.04	11.79	-0.01	3.76	6.12	0.31
15. Leather	0.38	0.70	-20.38	1.19	-0.37	4.07
16. stone, clay, glass	6.48	9.14	-2.27	3.59	6.54	1.27
17. primary metal	7.29	9.10	3.33	5.24	6.84	0.51
18. fabricated metal	7.38	11.96	0.09	5.86	6.32	1.36
19. Machinery	10.68	7.58	5.67	8.02	10.59	1.39
20. electrical machinery	14.24	14.40	-1.99	9.66	14.13	2.13
21. Motor	14.39	12.05	5.08	7.16	15.22	1.12
22. transportation equip	3.05	21.29	5.08	-10.88	3.66	-2.66
23. Instrument	10.87	11.01	0.80	7.67	11.05	1.64
24. Rubber	11.39	12.07	-4.76	11.85	11.19	2.89
25. misc.manufacturing	1.53	23.95	-5.59	1.74	1.02	-2.20
26. transportation	6.66	7.12	2.55	4.79	8.59	0.68
27. communication	13.66	12.29	2.54	10.13	17.67	3.41
28. electric utility	6.65	8.28	7.07	2.93	8.53	-0.02
29. gas utility	17.44	17.90	7.06	19.63	10.49	1.22
30. Trade	8.19	12.16	11.37	6.18	10.00	-2.93
31. Finance and real estate	13.54	8.09	9.07	13.74	14.07	3.55
32. other private service	8.85	11.86	9.91	8.73	9.12	-1.17
33. Public service	7.46	11.36	1.81	0.35	2.06	5.41
Total	8.32	9.96	2.49	6.05	8.21	1.04

Source: Pyo, Rhee, and Ha (2003).

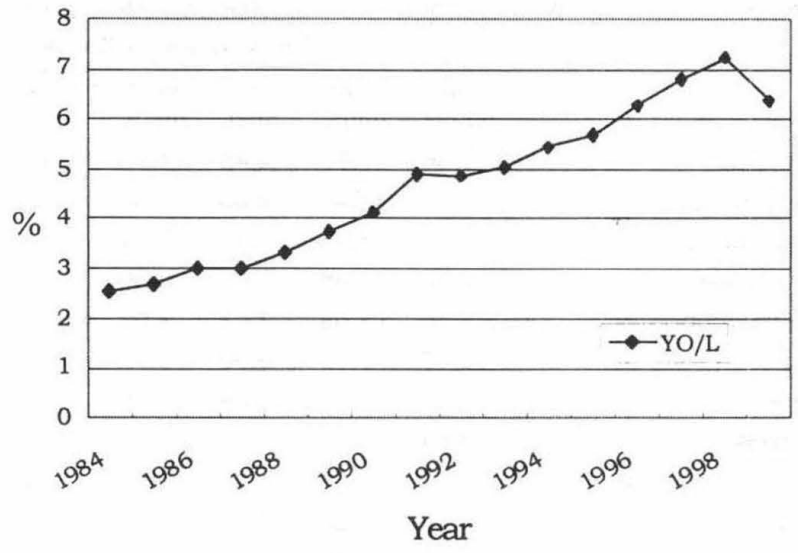


FIGURE 3
LABOR PRODUCTIVITY

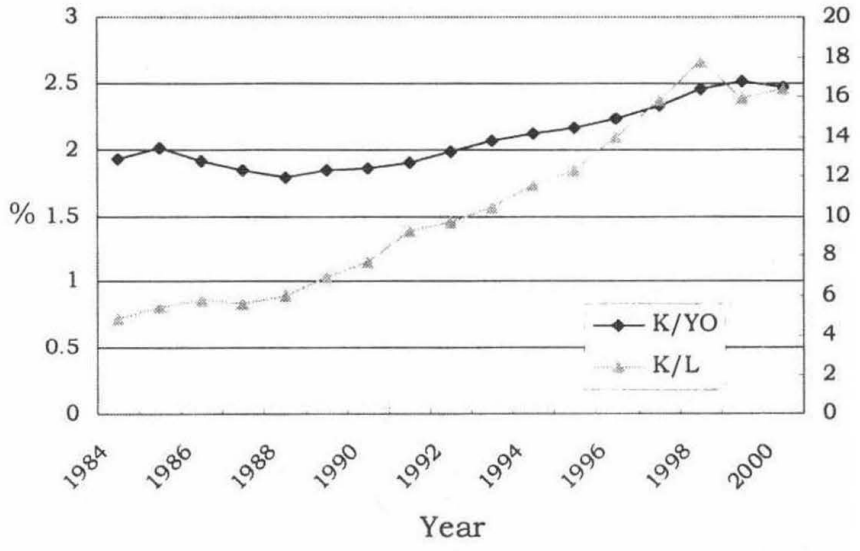


FIGURE 4
CAPITAL-OUTPUT COEFFICIENT/CAPITAL-LABOR RATIO

post-crisis recovery period has helped the economy in improving balance of payments, reducing foreign debt and accumulating usable gross reserves.

In order to identify whether there was a structural break in the Korean economy around 1997, we have conducted a preliminary growth accounting and productivity analysis for Korea (1984-2000) in Pyo, Rhee, and Ha (2003). The gross output (*YO*) of all industries has grown at the average annual rate of 8.32 percent while capital (*K*), labor (*L*), energy (*E*), and material input (*M*) have grown at the rate of 9.96 percent, 2.49 percent, 6.05 percent, and 8.21 percent respectively during the period as summarized in Table 4. The average estimated shares of four inputs were 0.21 (V_K), 0.20 (V_L), 0.08 (V_E) and 0.51 (V_M) respectively. The economy-wide growth rate of total factor productivity (*TFP*) has been estimated to be 1.04 percent. Therefore, the relative contribution of *TFP* to output growth is estimated to be 12.5 percent, which is of rather significant magnitude rejecting the Krugman's (1994) proposition and earlier empirical findings by Young (1994) and Lau and Kim (1994).

We have generated a series of labor productivity; gross output per employee (*YO*/*L*). During the period of 1984-2000, the growth rates of economy-wide output per employee was 5.98 percent. The trends in labor productivity are shown in Figure 3.

We have also generated a series of capital-output coefficients; capital-gross output coefficients (*K*/*YO*) as shown in Figure 4. The economy-wide capital-output coefficient has grown at average annual rate of 1.59 percent. The economy-wide capital-labor ratio has grown at 7.57 percent. Both capital-gross output coefficient and capital-GDP coefficient started to fall after 1998 implying that there was a structural change after the financial crisis in 1997.

V. The Post-Crisis Structural Reforms in Korea

The structural reforms initiated by the Korean government in the post-crisis period can by categorized into financial restructuring reforms, corporate reforms and reforms in industrial relations.

A. Financial Restructuring Reforms

As of end of October 2002, the financial restructuring status reported by the Korean Public Fund Oversight Committee (KPFOC)

TABLE 5

RESTRUCTURING OF FINANCIAL INSTITUTIONS AND USES AND SOURCES OF PUBLIC FUNDS

Classification	No. of Inst. (1997.12)	Restructuring						
		Licenses Revoked	Mergers	Dissolutions	Total (B)	(B/A) (%)	New Entry	No. of Inst
Banks	33	5	9	-	14	42.4	1	20
Non-Banks	2,068	121	150	361	632	30.0	62	1,498
MB	30	18	6	4	28	93.3	1	3
SC	36	5	3	1	9	25.0	17	44
IC	50	7	6	2	15	30.0	11	46
ITC	30	6	1	-	7	23.3	8	31
MS	231	74	27	26	127	55.0	12	116
CU	1,666	2	105	328	435	26.1	9	1,240
LC	25	9	2	-	11	44.0	4	18
Total	2,101	126	159	361	646	30.7	63	1,518

(Unit: trillion won)

Use / Source	Equity Participation	Capital Contribution	Deposit Payoffs	Asset Purchase	NPL Purchase	Total
Bonds	42.7	15.2	20.0	4.2	20.5	102.1
Recovered	3.9	1.2	6.1	4.4	16.6	32.2
Public Money	14.1	-	-	6.3	0.5	20.9
Otherwise	-	0.1	0.7	-	1.1	1.9
Total	60.2	16.5	26.8	14.9	38.7	157.1
Classification						
Banks	33.9	13.6	-	14.0	24.4	85.9
MB	2.7	-	17.2	-	1.6	21.5
SC, ITC	7.7	-	0.01	-	8.3	16.0
IC	15.9	2.8	-	0.3	1.8	20.8
CU	-	-	2.4	-	-	2.4
Savings Bank	-	0.1	7.2	0.6	0.2	8.1
Non-Banks	26.3	2.9	26.8	0.9	11.9	68.8
Foreign Banks	-	-	-	-	2.4	2.4
Total	60.2	16.5	26.8	14.9	38.7	157.1

Note: MB=Merchant Banks, ITC=Investment and Trust Companies, SC=Securities Companies, IC=Insurance Companies, MS=Mutual Saving and Finance Companies, CU=Credit Unions, and LC=Leasing Companies.

Source: The Korean Public Fund Oversight Committee. Internet Homepage, October 2002.

indicates there have been significant restructuring in both banking and non-banking sector. As summarized in Table 5, out of 33 banks as of the end of 1997, 5 banks' licenses were revoked and 9 banks were merged into other banks. With the new entry of one bank, the total number of banks has been reduced to 20 banks. Among non-bank financial institutions, 18 merchant banks' licenses have been revoked and 6 merchant banks have been merged. The total number of non-banks has been reduced from 2,068 institutions to 1,498 institutions during the same period. The policy instrument in financial restructuring reforms has been the injection of public funds in the form of the payment of insured deposits and recapitalization into troubled financial institutions by Korea Deposit Insurance Corporation (KDIC) and in the form of the purchase of their non-performing loans (NPL) by the Korea Asset Management Corporation (KAMC). During the five-year period of November 1997 to October 2002, a total of 157 trillion won has been injected. The two-thirds of the public funds injected were raised by the issuance of bonds by KDIC and KAMC. Only less than 20 percent (32.2 trillion son) has been repaid by October 2002.

Most of banking reforms have been undertaken in the form of purchases and assumption (P&H) rather than liquidation and merger and acquisition (M&A) to shorten the litigation time. The representative case is Korea First Bank which was sold to New Bridge Capital consortiums. But it was a controversial deal because the Korean government made a blanket commitment of assuming responsibility for all current and future NPLs. The financial authorities suspended 14 merchant banks in December 1997. Their assets and liabilities were transferred to a bridge bank. The net consequences of restructuring in the banking sector can be seen by the selected indicators of commercial banks as shown in Table 6. According to Korean Financial Supervisory Service, the total number of employees have been reduced by 40 percent by 2002 and that of branches by 20 percent by 2000. The ratio of non-performing loans (NPL) in total loans has been reduced from the peak of 8.3 percent in 1999 to 1.9 percent in 2002. Both return on asset (ROA) including trust accounts and returns on equity (ROE) have improved from 0.9 percent and 14.2 percent respectively in 1997 to 0.6 percent and 11.7 percent respectively in 2002. The BIS ratio has also improved from 7.0 in 1997 to 10.5 in 2002.

TABLE 6

SELECTED INDICATORS OF COMMERCIAL BANKS

(Unit: 100 Mil., Person, Bill. Won, %)

Year	No. of Employees	No. of Branches	NPLs	NPL Ratio	Delinquency Ratio of credit card	ROA[1)]	ROE	BIS Ratio
1996	103,913	5,105	118,739	4.1	n.a.	0.3	3.8	9.1
1997	113,994	5,987	226,521	6.0	n.a.	-0.9	-14.2	7.0
1998	75,677	5,056	212,160	7.4	n.a.	-3.3	-52.5	8.2
1999	74,744	4,780	273,938	8.3	6.8	-1.3	-23.1	10.8
2000	70,559	4,709	238,912	6.6	7.7	-0.6	-11.9	10.8
2001	68,360	4,776	109,760	2.9	7.5	0.8	15.9	10.8
2002	66,880	5,016	90,407	1.9	11.9	0.6	11.7	10.5

Note: 1) ROA includes trust accounts.

Source: Financial Supervisory Service. *Monthly Financial Statistics Bulletin.* Various Issues.

While financial reforms look impressive in numbers of banking institutions, which were subject to restructuring schemes, there have been several problems in the way the reform programs have been implemented. The most serious problem was lack of transparent criteria by which a certain troubled financial institution was forced to close down or was bailed out by the injection of the public funds. For example, in June 1998 the financial authorities closed down five banks at which BIS capital adequacy ratio did not meet eight percent level at the end of 1997. But seven other banks, which did not meet the required adequacy ratio, were allowed to survive casting doubt on transparency of the decision on the bank closure. In addition, the rapid switch from corporate loans to consumer loans by commercial banks particularly in the form of credit card loans and real estate loans has invited another form of moral hazard on consumer side and the delinquency ratio of credit cards has increased from 6.8 percent in 1999 to 11.9 percent in 2002.

Other problems include high concentration ratio in banking sector and increased bank ownership by the government as the consequence of re-capitalization by the public funds. The ratio of top three banks' assets to the total assets of all banks exhibited a

big jump in 1998 and remained relatively stable thereafter. Two troubled commercial banks, Korea First Bank and Seoul Bank had been nationalized and the shares of government in such commercial banks as Choheung Bank, Woori Bank, and Korea Exchange Bank have increased as the public funds had been injected. Therefore, the room for moral hazard was expanded rather than being reduced.

B. Corporate Reforms

As summarized in Chopra *et al.* (2002), the strategy for corporate restructuring had three main elements: promoting greater competition, improving corporate governance, and improving capital structure and profitability. In order to promote greater competition, steps to liberalize the capital markets and the foreign investment regime were implemented.

The liberalization of capital market contributed to the strong inflows of portfolio and foreign direct investment and to the switch from short-term borrowing by domestic corporations and financial institutions to long-term borrowing in 1998. For improving corporate governance, the Commercial Code and Securities and Exchange Act was reformed in February 1998. In April 2000, the top 30 *Chaebol* were required for the first time to produce combined financial statements that net out intra-group transactions, thereby producing a more complete picture of corporate health (Chopra *et al.* 2002, p. 71).

Finally, to improve capital structure and profitability, Financial Supervisory Commission (FSC) was given full responsibility for overseeing the restructuring of the corporate sector. Fair Trade Commission (FTC) was given more power to enforce rules against illegal intra-*Chaebol* transactions. In October 2000, corporate restructuring vehicle (CRV) system was introduced to facilitate the transfer of distressed assets to inventory. But progress has been slow in resolving firms under count-supervised insolvencies. In 1997, there were thirteen *Chaebols* which went under count-supervised restructuring. Except Kia Motors which was purchased by Hyundai Motors, few have been sold or liquidated yet. Chopra *et al.* (2002) has evaluated the achievements in corporate reforms as mixed: there has been some restructuring, but not enough given the scale of the problem, and there are still significant weaknesses

TABLE 7
PROFITABILITY TRENDS IN MANUFACTURING: 1990-2002

	90-96 Avg.	97	98	99	20	01	02
Debt-equity ratio	301.7	396.3	303.0	214.7	210.6	182.2	135.4
Operating income to sales ratio	7.1	8.3	6.1	6.6	7.4	5.5	6.7
Interest expenses to sales ratio	-5.7	-6.4	-9.0	-6.9	-4.7	-4.2	-2.6
Ordinary income to sales ratio	2.1	-0.3	-1.9	1.7	1.3	0.4	4.7

Source: The Bank of Korea. *Financial Statement Analysis*. Various Years.

in the corporate sector.

Top 30 large *Chaebol*'s debt-equity ratios has fallen from 519.0 percent in 1997 to 171.2 percent in 2001 according to Korea Fair Trade Commission. The overall performance in manufacturing sector shows also signs of improvement. The overall debt-equity ratio has fallen from 396.3 percent in 1997 to 135.4 percent in 2002 as shown in Table 7.

The collapse of Deawoo in 1999 was the largest corporate failure in Korea given its huge liabilities ($74 billion or 18% of GNP) and large scope of its domestic and overseas operation. Even after the 1997 crisis, Daewoo expanded and borrowed aggressively increasing its debt-equity ratio from 474 percent at end-1997 to 527 percent at end-1998.

The slow progress in corporate reforms could have been the product of two factors. The first factor is the nature of banking sector, which is still the largest creditor to troubled companies. Because of higher government shares in many restructured banks, the decision has been slow and less transparent than being desired. The second factor has something to do with the lack of explicit standard for decision on corporate bankruptcy. While Daewoo exited, Hyundai's problem was mitigated by the government. One of the most important lessons is that we can draw from the recent Korean experience of corporate reform is the fact that a clear objective system of corporate bankruptcy must be not only enacted but also be practiced by law so that crowding out capital and labor by the bankrupt companies can be avoided.

C. Reform in Labor Relations

Industrial relations in Korea had been transformed from a repressive regime to a confrontational one after 1987 when the democracy movement was at its peak. Choi and Kim (2002) points out that the unions were concentrated in the Chaebols (business conglomerates) and large companies earning non-competitive rents, and they were mostly buffered from market discipline.

After president Kim Dae Jung was inaugurated in February 1998, his government established Tripartite Commission among labor, business and government benchmarking the 1995 social pact in Mexico. There were two national unions, Federation of Korean Trade Unions (FKTU) and Korea Confederation of Trade Unions (KCTU) and, therefore, both participated in the Commission. The latter (KCTU) was not recognized as legal entity until the establishment of the Tripartite Commission because multiple unions were banned even at the national level. But the severe nature of the financial crisis made the Korean government to recognize it as another counterpart to form a social consensus.

While the Government intended to make the Commission a consultation body, the unions sought to use it to expand its political influence. The existence of two opposing federations of trade unions made the Commission difficult forming any kind of consensus. KCTU ultimately walked out from the Commission in1998 in protest to the opposition by the Ministry of Justice against teacher's right to organize union and the unemployed workers right to join industrial unions. But given that unions represented only 13 percent of all employees, the unions attempts to protect their interests often conflicted with public interests.

Under the crippled Commission, labor market restructuring has been implemented in order to improve flexibility in labor market, to supplement unemployment policy and to promote harmonious workplace partnership. As a policy to promote flexible labor market, a law on layoffs of redundant workers was enacted in early 1998. However, the actual implementation of redundancy layoff encountered significant difficulty because it was always debatable whether a firm had exhausted all other options to avoid a layoff, or whether a firm had acted in good faith. The incident of Hyundai Motor Co. illustrates this difficulty. It announced a layoff of over 8,000 workers in March 1998 when it was operating at a very low 40%

TABLE 8

STATISTICS OF UNION ACTIVITY AND EMPLOYMENT IN SECTORS WITH STRONG UNIONS

(A) Strikes by Issue in the 1990s

	1991	1993	1997	1998	1999	2000	2001	2002
Wage increases	132	66	18	28	40	47	59	44
Unpaid ages/layoffs	12	12	3	26	22	9	6	2
Collective agreements	90	66	51	57	89	167	149	249
(Employment Issues)[1]	34	14	6	10	47	27	21	19

(B) Union Activity, 1995-2000

	1995	1996	1997	1998	1999	2000	2001	2002
Number of Unions	6605	6424	5733	5560	5637	5698	6150	n.a.
Union Membership[2]	1615	1599	1484	1402	1481	1527	1569	n.a.
Strikes	88	85	78	129	198	250	235	321
Strike Participants[2]	50	79	44	146	92	178	89	94
Workdays Lost[3]	393	893	445	1452	1366	1894	1083	1579

(C) Employment in Sectors with Strong Unions (1,000 persons)[4]

	1995	1996	1997	1998	1999	2000
30 Largest *Chaebols*	893	940	937	808	763	741
Public Enterprises	250	255	260	253	237	232
Financial Sector	418	441	450	411	392	388

Notes: 1. Includes issues on work conditions, workloads, redundancy layoffs, layoffs in M&As, contract buyouts, M&As, work assignments, and promotions.
2. Unit is 1,000 persons.
3. Unit is 1,000 man*days.
4. All employment figures are October figures in each year.

Source: The Ministry of Labor and the Korea Labor Institute.

utilization rate. But, in the end, the case was finally closed with the layoff of 277 employees, on only 10 percent of the initial number intended. As a result, "honorary retirement" has become the typical mode of layoffs despite its high costs in the restructuring of financial sector and public enterprises as noted by

Choi and Kim (2002).

The unemployment policy which was formed between the government and unions in the Commission was implemented as a form of emergency social relief. It included wage subsidies for job-sharing and reemployment of laid-off workers. It also included a subsidized loan program for new small business some of which were in the form of venture businesses. In the end, these programs failed to offer a permanent solution and provided only temporary relief. The last element of reforms in labor market was workplace partnership advocated by President Kim. But the lack of market discipline in industrial relations in Korea has weakened the mechanism. Choi and Kim (2002) notes that the governments effort to promote the workplace partnership never went further than a mere political campaign. The performance in labor relations after the financial crisis in 1997 is summarized in Table 8. Strikes demanding wage increases declined sharply in 1997 but steadily increased over time after 1998. Both number of unions and union membership have increased slowly since 1998. But employments in 30 largest *Chaebols*, public enterprises and financial sector have declined steadily since 1997.

D. Rising Inequality

One of the most serious consequences of the financial crisis in Korea has been widening inequality in wages, income, and wealth distribution. Choi and Kim (2002) reports that in 1998 the bottom 20 percent lost in nominal terms while the top 40 percent gained, and those in top decile realized strong gains in 1999, which may have reflected the skill-biased labor demand shift during the ICT boom. The rising wage inequality has been led to rising income inequality. According to Lee (2002), the Gini coefficient of house hold income increased sharply from 0.363 in 1997 to 0.404 in 1998.

As shown in Table 9, the percentage of the middle class has been significantly reduced by all of the four definitions he used. The table also shows that more people slipped into the lower class rather than ascended to the upper class. He also reports the rising inequality of wealth distribution. Gini coefficients of net worth and financial assets including insurance policy holding, and financial assets excluding insurance policy holdings have all increased from

TABLE 9

SIZE OF THE MIDDLE CLASS AND INEQUALITY OF WEALTH DISTRIBUTION (GINI COEFFICIENT)

Year	Definition 1(%)			Definition 1(%)			Definition 1(%)			Definition 1(%)		
	Lower Class	Middle Class	Upper Class	Lower Class	Middle Class	Upper Class	Lower Class	Middle Class	Upper Class	Lower Class	Middle Class	Upper Class
1993	33.5	32.5	34.0	26.0	44.0	30.1	17.4	59.6	23.0	17.4	72.2	10.4
1994	35.7	31.2	33.2	26.6	45.0	21.2	17.8	61.2	28.5	17.8	72.6	9.9
1995	38.2	29.1	30.5	28.6	41.8	26.4	19.3	58.5	20.2	19.3	70.8	9.0
1996	36.0	31.0	33.0	22.8	43.7	28.6	18.1	60.8	21.2	18.1	73.9	8.0
1997	36.8	30.5	32.7	27.5	13.6	29.0	18.7	58.7	22.5	18.7	71.6	9.6
1998	38.8	24.6	36.6	31.8	35.9	32.3	21.0	53.0	26.0	21.0	66.6	13.4

Year	Wealth Including Insurance Policy Holdings				Wealth Excluding Insurance Policy Holdings	
	Net Wealth	Total Wealth	Real Wealth	Financial Wealth	Total Worth	Financial Assets
1993	0.571	0.451	0.689	0.593	0.451	0.578
1994	0.573	0.492	0.675	0.633	0.501	0.667
1995	0.577	0.488	0.657	0.600	0.499	0.634
1996	0.570	0.470	0.633	0.593	0.479	0.624
1997	0.600	0.488	0.652	0.610	0.501	0.648
1998	0.655	0.462	0.602	0.630	0.473	0.678

Notes: The figures are based on equivalent incomes. The middle class is defined differently across the four categories of definitions. In Definition 1, it is defined as households whose incomes range from 80 to 125% of the median income. In Definition 2, households earning 66.7 to 133.3% of the median income are grouped under the middle class. In Definitions 3 and 4, a 5- to 150% range and a 50 to 200% range are used, respectively.

Source: Lee (2002).

1997 to 1998.

In a recent report, Yoo (2003) has estimated change in income inequality in Korea by computing Gini coefficients between 1996 and 2000. Following Luxembroug Income study, he estimated Gini coefficients of both market income and disposable income from *Family Expenditure Survey* by National Statistical Office. As summarized in Table 10, the Gini coefficient of market income has deteriorated from 0.329 in 1996 to 0.404 in 2000. And that of

TABLE 10

INCOME INEQUALITY AND RELATIVE POVERTY RATIO BEFORE AND AFTER 1997 CRISIS

Year		1996	2000
Gini Coefficient	Market Income[1]	0.329	0.404
	Disposable Income[2]	0.326	0.389
Relative Poverty Ratio (%): Proportion of Households with Income less than 50% of Median Income	Market Income	13.26	18.93
	Disposable Income	12.56	16.99

Notes: 1) Market income is defined as the sum of wage income, self-employed income, income from secondary work, property income and private transfer income.

2) Disposable income is defined as market income plus public transfer income net of social security contribution and direct income tax.

Source: Yoo (2003, Table 2, 3, and 6).

disposable income has also deteriorated from 0.326 to 0.389. When both incomes were adjusted by equivalence index by the formula, *Income*/(*Number of household members*),$^{0.5}$ still both Gini coefficient of market income and that of disposable income have deteriorated from 0.302 to 0.374 and from 0.298 to 0.358 respectively during the same period.

VI. Conclusion

Several important lessons can be drawn from the Korean experience of post-crisis macroeconomic adjustment and reform programs. Regarding the IMF-mandated programs, the high interest rate policy and the tight fiscal policy at the initial stage of financial crisis should not be regarded as a ready-made prescription to all crisis-inflicted economies. The Fund programs need to be shaped out more flexibly not only in terms of contents but also in terms of timing.

The heavy reliance of Korea's recovery programs on the injection of public funds seems to have been inevitable. Chopra *et al.* (2002) have argued that the large-scale injection of public funds was necessary in Korea because the institutional investors and small shareholder who held the majority of commercial bank's shares could not be relied on, since the former were themselves in

financial distress while the latter had a collective action problem. However, the use of funds was not fully transparent and, therefore, can be subject to political debate in the next regimes. The impacts of banking reforms, corporate reforms and labor reforms cannot be assessed fully yet. But, many reform programs lost effectiveness due to their political nature rather than their economic efficiency.

The painful experience of Korea's post-crisis macroeconomic adjustment and structural reforms seem to have received both positive and mixed evaluations. The overall macro economic environment in the post-crisis period has been stabilized. The Korean economy seems to have recovered some of its growth potentials and competitiveness. The movement in the overall productivity indicators such as labor productivity and total factor productivity seem to validate this judgment even though there was a structural break in 1997-8. However, it has long way to go because both financial sector reforms and corporate restructuring are far from being completed. Most of all, the sharp reduction in real investment during the crisis period of 1997 and 1998 by −2.2 percent and −21.2 percent has not been fully recovered during the post-crisis recovery period of 1999-2002 with the annual average growth rate of 4.5 percent.

The shift from corporate-loan regime to consumer-loan regime under delayed financial reform program has created another type of moral hazard. As a result of unchecked rapid expansion of consumer credit card companies, it is reported that there are 3.6 million delinquent credit card holders. The delinquency ratio of consumer credit cards increased from 9.8 percent in March 2003 to 11.74 percent in November 2003.

The unemployment rate of young workers of age 15-29 years old has increased from 6.6 percent in September 2003 to 8.0 percent in December 2003. The number of unemployed of age 15-29 years old reached 394,000 persons which is more than half of the total unemployed (792,000 persons). On the ride of industrial structure, the polarization between large survived top 5 *Chaebols* and the rest of firms has been expanded because more than half of the non-top 5 *Chaebols* have been eliminated from the market after 1997 financial crisis. And therefore the excess competition regime seems to have been permanently displaced. But there seems to be no substitute regime to replace the excess competitive model.

In addition, because some of the incidents and the programs are

seem to have been politically motivated, they may have to be reevaluated in the years to come. Most of all the lack of strong political leadership and the continued political instability after the financial crisis together with the North-Korea's nuclear issue seem to exist as a bottleneck for resuming the pre-crisis path of higher growth.

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