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Debt and Financial Instability in Korea

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빈 면

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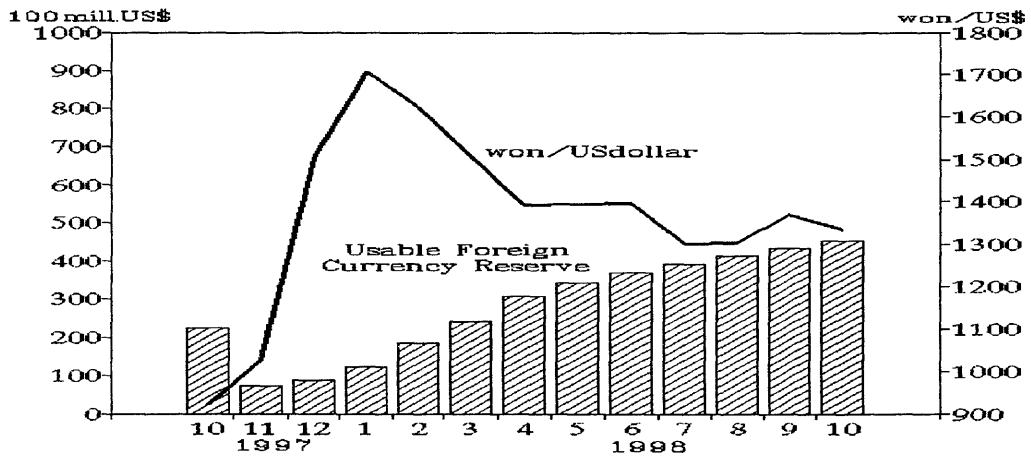
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I . Introduction

Market observers agree that the Korean economy has successfully overcome the immediate liquidity crisis thanks to the successful debt exchange program and the dramatic turnaround in current account balances. Korea's usable foreign reserves reached a record high \$45.7 billion by mid-November. Accordingly, the won has stabilized greatly now being steady at around a 1,300 level vis-a-vis the U.S. dollar, down from 1,950 last December. Currency stability has also led domestic interest rates to drop significantly.

<Chart 1> Usable Foreign Reserves and Won/Dollar Exchange Rate



Source: Bank of Korea

Having attained such positive results in the initial stage of crisis management, the Korean government completed the first stage of financial restructuring in September. 94 financial institutions had their operations

suspended or were closed down as of the end of September. Another 115 financial institutions are currently pursuing mandatory restructuring by the order of the Financial Supervisory Commission (FSC). As part of the restructuring program, the government has injected 38 trillion won (9% of GDP) in fiscal resources for purchasing non-performing loans (NPLs), the recapitalization of banks, and depositor protection. The government will use an additional 26 trillion won to lay a solid foundation for a "clean bank" environment.

<Table 1> Financial Institutions Suspended or Closed

(As of September, 1998)

	Total No. of			
	Institutions (end-1997)	License Revoked	Suspended	Subtotal
Banks	33	-	5	5
Merchant Banks	30	16	-	16
Securities Companies	34	2	4	6
Insurance Companies	50	-	4	4
Investment Trust Companies	8	1	1	2
Mutual Savings and Finance Companies	230	1	21	22
Credit Unions	1,653	12 ¹⁾	27	39
Leasing Companies	25	-	-	-
Total	2,063	32	62	94

Note: 1) bankruptcy.

Despite such progress in financial sector restructuring and the rapid decline of interest rates to a pre-crisis level, the credit crunch continues mainly because of the debt overhang in the corporate sector. In particular,

highly leveraged business conglomerate known as chaebols have been slow in their restructuring and debt workouts. Given the increased economic uncertainties and rising credit risks stemming from the corporate sector's weak financial structure, banks are still unwilling to provide new loans and prefer to accumulate riskless assets in order to meet the BIS capital adequacy standards.

As of the end of 1997, total corporate debt amounted to 811 trillion won (190% of GDP). In particular, the debt to equity ratio was 519% for the 30 largest chaebols. Such a leverage ratio is 2 to 3 times higher than the level in Japan, which has been experiencing a prolonged economic contraction since the early 1990s, and Scandinavian countries, hit by a financial crisis in the early 1990s. Given the far reaching implications of enormous corporate debt on financial stability, the devastating effects of the current financial crisis on the real sector of the economy are likely to be extended over a long period of time.

Unless the corporate debt problem is resolved, the current credit crunch is likely to trigger additional bankruptcies in the corporate sector and increase NPLs, which in turn would further intensify the credit crunch. Such a vicious circle will not only delay economic recovery but also raise the ultimate costs of structural reform. This lesson has already been seen in Latin America's experience in the 1980s and Japan's in the 1990s. In this regard, it is primordial to restore and normalize credit flows for speedy recovery.

The paper is organized as follows. Section II examines the financial structures of Korea's corporate sector. Section III addresses the credit crunch in Korea experienced since the onset of the financial crisis. Section IV analyzes the factors underlying the current credit crunch and provides an empirical analysis of the interaction between corporate debt and corporate bankruptcies. Section V concludes the paper.

II. Financial Structures of Korea's Corporate Sector

According to the flow of funds statistics, at the end of 1997, gross corporate debt amounted to 811 trillion won, equivalent to about 190% of GDP. This figure of domestic corporate debt dwarfs the external debt of the corporate sector of 101.6 trillion won, which accounts for only 12.5% of its total debt. In this context, Korea's debt overhang problem, if realized, is more likely to be caused by excessive domestic debt rather than external debt.

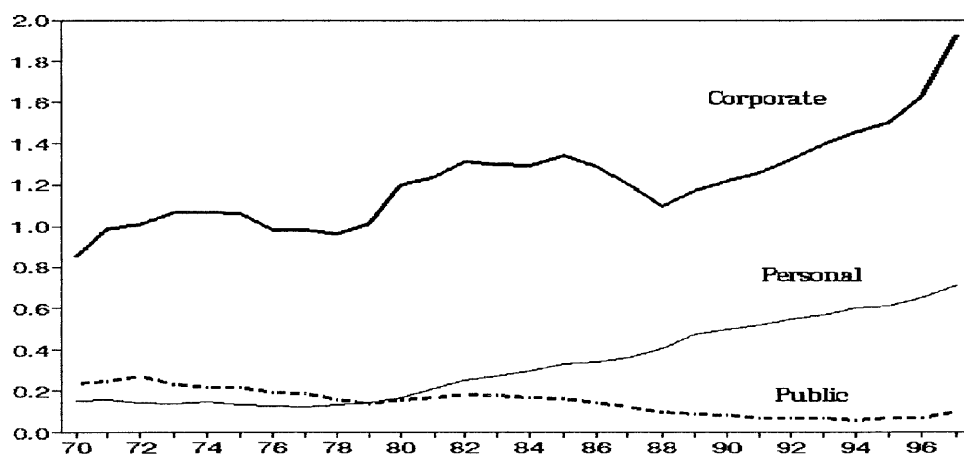
<Table 2> Outstanding Liabilities of Corporate Sector in Korea

	(unit: trillion won, %)			
	1980	1990	1996	1997
Loans by financial institutions	17.4(38.0)	97.8(44.6)	272.9(42.9)	337.9(41.7)
Banks	11.1	50.1	130.9	161.1
Investment & Finance co.	0.9	9.7	16.4	18.4
Insurance co.	0.5	8.7	24.2	26.7
Other Loans	4.8	29.3	101.4	130.8
Bonds	3.3(7.2)	47.3(21.6)	195.1(30.7)	245.4(30.3)
Short-term	1.3(2.8)	16.5(7.5)	69.8(11.0)	74.2(9.2)
Commercial papers	1.1	12.7	64.9	69.4
Government & public bonds	0.3	3.7	4.9	4.9
Long-term	2.0(4.4)	30.8(14.1)	125.3(19.7)	171.2(21.1)
Debentures	1.9	29.4	107.4	138.3
Foreign debentures	-	-	12.3	26.8
Government & public bonds	7.4	1.5	5.5	6.1
Trade credits	7.4(16.2)	27.1(12.4)	60.8(9.6)	72.1(8.9)
External debts	8.1(17.7)	14.6(6.7)	40.8(6.4)	74.8(9.2)
Others	7.7(16.8)	29.2(13.3)	65.8(10.4)	80.5(9.9)
Total	45.8(100.0)	219.1(100.0)	635.4(100.0)	810.7(100)

Source: Bank of Korea, *Flow of Funds*, each year

Chart 2 shows sectoral debt/GDP ratios over the last three decades. The debt/GDP ratio of the corporate sector has risen rapidly since the late 1980s, when the current account balance turned into a large deficit. Given the large share of international trade, the continued current account deficits have significantly strained corporate cashflows so that firms have been forced to rely more on borrowings to finance operational loss. The sharp increase in the debt/GDP ratio in 1997 was largely affected by the deterioration of profitability as well as the sharp depreciation of the Korean currency at the year end.¹⁾

<Chart 2> Debt/GDP Ratios by Sector: Korea



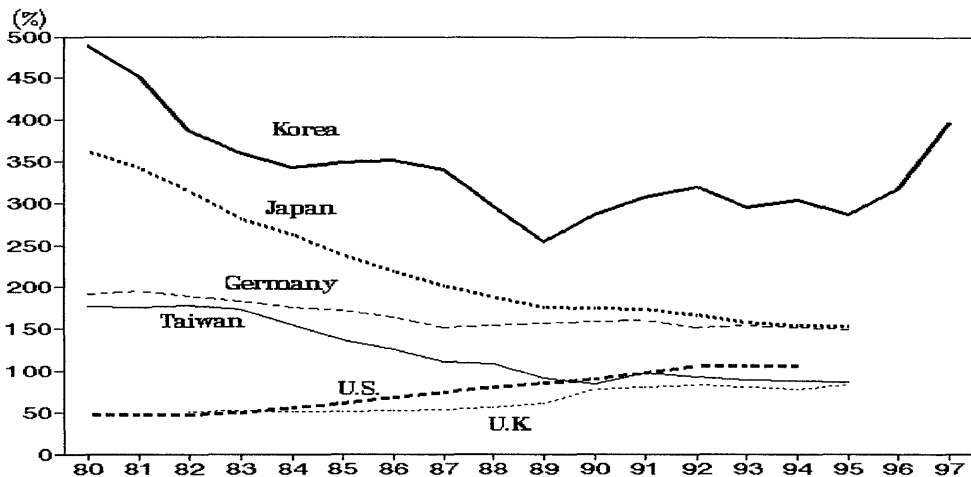
Source: Bank of Korea

As shown in Chart 3, the high degree of risk inherent in the liability structures of Korean corporates is evident. The corporate debt/equity ratio

1) The debt/GDP ratio of the personal sector is far lower than that of the corporate sector but has been steadily increasing since the early 1980s mainly due to the deregulation of consumer financing.

in Korea is the highest among many other countries, about 5 times higher than that of Taiwan and United Kingdom.²⁾ In particular, by the end of 1997, the debt to equity ratio of the 30 largest chaebols reached 519%, about 130 percentage points higher than a year earlier. Owing to the highly leveraged financial structure, the financial expenses to sales ratio in Korea is three times as large as Japan and Taiwan, as shown in Chart 4.

<Chart 3> International Comparison of Debt/Equity Ratio¹⁾



Note: 1) For the manufacturing sector in Korea, Japan and Taiwan.

2) In 1991, the ratios of Scandinavian countries are 197% for Sweden, 160% for Norway and 174% for Finland.

Source: Bank of Korea, *Financial Statement Analysis*

OECD, *Financial Statistics Part 3: Financial Statements of Non-financial Enterprises*

2) Chart 3 also shows a clear distinction between corporate sectors with low gearing in Anglo-Saxon countries such as the U.K. and U.S., and those with high gearing in Continental Europe (Germany) and Japan. The relatively high leverage in Germany and Japan can be related to their main bank systems which can help establish risk sharing between creditors and borrowers.

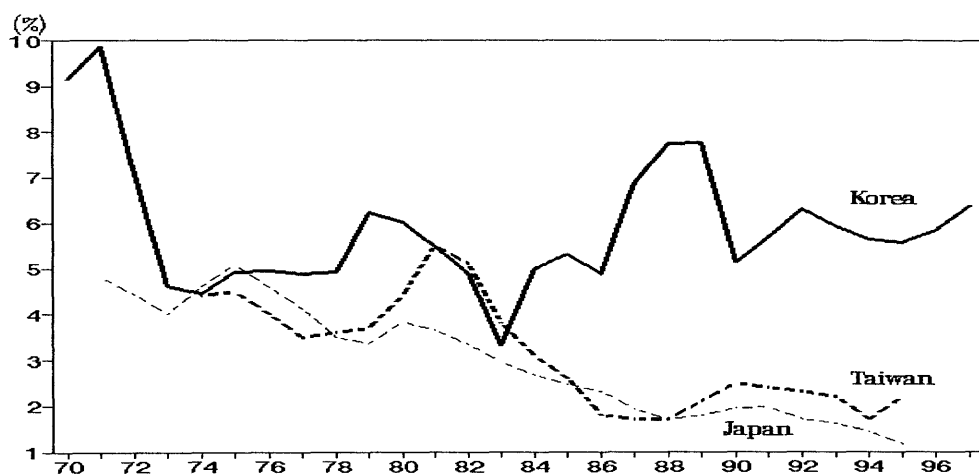
<Table 3> Top 30 Chaebols' Debt/Equity Ratio

(Unit : %)

1995		1996		1997	
Chaebols	Debt/equity ratio	Chaebols	Debt/equity ratio	Chaebols	Debt/equity ratio
1. Hyundai	376.4	1. Hyundai	436.7	1. Hyundai	578.7
2. Samsung	205.8	2. Samsung	267.2	2. Samsung	370.9
3. LG	312.8	3. LG	346.5	3. Daewoo	472.0
4. Daewoo	336.5	4. Daewoo	337.5	4. LG	505.8
5. Sunkyung	343.3	5. Sunkyung	383.6	5. SK	468.0
6. SSangyong	297.7	6. SSangyong	409.4	6. Hanjin	907.8
7. Hanjin	621.7	7. Hanjin	556.6	7. SSangyong	399.7
8. Kia	416.7	8. Kia	516.9	8. Hanwha	1,214.7
9. Hanwha	620.4	9. Hanwha	751.4	9. Kumho	944.1
10. Lotte	175.5	10. Lotte	192.1	10. DongAh	359.9
11. Kumho	464.4	11. Kumho	477.6	11. Lotte	216.5
12. Doosan	622.1	12. Halla	2,065.7	12. Halla	-1,600.4
13. Daelim	385.1	13. DongAh	354.7	13. Daelim	513.6
14. Hanbo	674.9	14. Doosan	688.2	14. Doosan	590.3
15. DongAh	321.5	15. Daelim	423.2	15. Hansol	399.9
Construction		16. Hansol	292.0	16. Hyosung	465.1
16. Halla	2,855.3	17. Hyosung	370.0	17. Kohab	472.1
17. Hyosung	315.1	18. Dongkuk	218.5	18. Kolon	433.5
18. Dongkuk	190.2	Steel		19. Dongkuk	323.8
19. Jinro	2,441.2	19. Jinro	3,764.6	Steel	
20. Kolon	328.1	20. Kolon	317.8	20. Dongbu	338.4
21. Tongyang	278.8	21. Kohab	590.5	21. Anam	1,498.5
22. Hansol	313.3	22. Dongbu	261.8	22. Jinro	-893.5
23. Dongbu	328.3	23. Tongyang	307.3	23. Tongyang	404.3
24. Kohab	572.0	24. Haitai	658.5	24. Haitai	1,501.3
25. Haitai	506.1	25. New Core	1,225.6	25. Shinho	676.8
26. Sammi	3,244.6	26. Anam	478.5	26. Daesang	647.9
27. Hanil	936.2	27. Hanil	576.8	27. New Core	1,784.1
28. Kukdong	471.1	28. Keopyong	347.6	28. Keopyong	438.1
Construction		29. Miwon	416.9	29. Kangwon	375.0
29. New Core	924.0	30. Shinho	490.9	Industrial	
30. Byucksan	486.0			30. Saehan	419.3
Total	347.5		386.5		519.0

Source: Fair Trade Commission

<Chart 4> The Comparison of Financial Expenses to Sales¹⁾



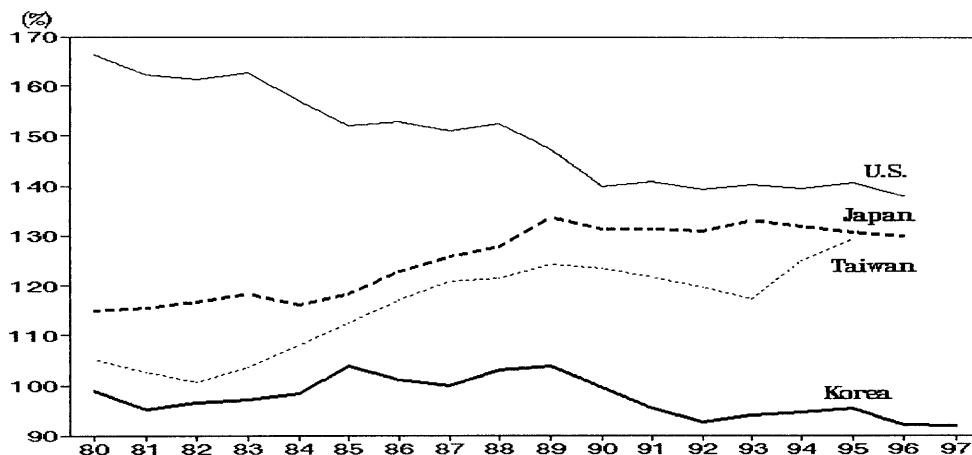
Note: 1) Manufacturing sector.

Source: Bank of Korea, *Financial Statement Analysis*.

Of course, an analysis solely based on debt figures would not capture the whole picture. Thus far, little or no account has been taken of corporate liquidity or assets such as deposits and other short-term financial assets. If liquidity grows in line with gross debt, the implications of large corporate debt on financial weakness are likely to be attenuated.

Chart 5 shows that Korea's liquidity ratio, defined as a ratio of liquid assets over short-term liabilities, remains barely above 90 percent, far below that in the U.S., Japan, and Taiwan. Such low levels of corporate liquidity in Korea seem to amplify the effects of cashflow shocks on the balance sheet with the onset of the financial crisis. Given the highly-leveraged and illiquid financial structure noted above, Korea's corporate sector has been vulnerable to default risk caused by both insolvency (negative net worth as liabilities exceed assets) and illiquidity (inability to pay debts owing to a lack of realizable assets or income).

<Chart 5> International Comparison of liquidity Ratio¹⁾



Note: 1) Manufacturing sector

Source : Bank of Korea, *Financial Statement Analysis*

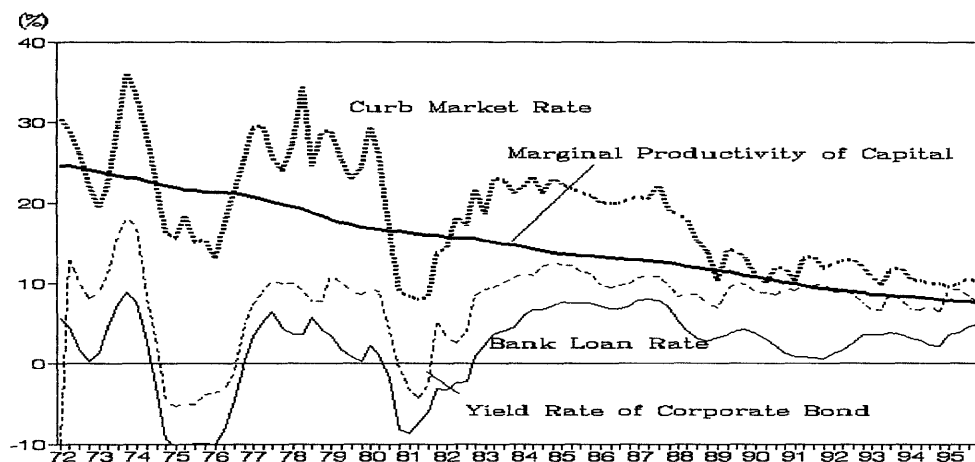
Why has the corporate sector's financial structure in Korea become so weak? There are several reasons. First, interest rate control combined with massive provision of policy loans to targeted sectors encouraged the corporate sector to rely more on borrowings than equity financing.³⁾ Since real interests rates have remained below the marginal productivity of capital as shown in Chart 6, overborrowing has taken place, and the subsequent increases in financial expenses induced further borrowing.

3) Interest rate deregulation in Korea had not been extensively implemented until recently due to both economic and political constraints. The interest rate surge after deregulation was a major policy-making concern because domestic firms were highly leveraged. Although more extensive interest rate deregulation began to be undertaken on a step by step basis in 1991, lending rates to small and medium-sized companies(SMCs) supported by the central bank's discount window remains subject to regulation even today.

Secondly, the exit barrier has tended to induce firms, particularly chaebols, to borrow excessively. Given the preponderance of chaebols' market share and the vertically integrated industrial structure, the social costs of bankruptcy would be enormous. In such an environment, the so-called *too big to fail* mentality has been deeply rooted: the more chaebols borrow, the safer chaebols are. This moral hazard problem has resulted in chaebols' overborrowing without paying attention to default risk.

These fault lines, left as a legacy in Korea, have made the business sector extremely vulnerable to unfavorable shocks and increased systematic risk in a globalizing financial market. Indeed, a series of corporate bankruptcies occurred when the Korean economy was hit by the crisis triggered by the major terms of trade shocks throughout 1996 and 1997, which dramatically constrained corporate cashflows.

<Chart 6> Real Interest Rate, Marginal Productivity of Capital¹⁾

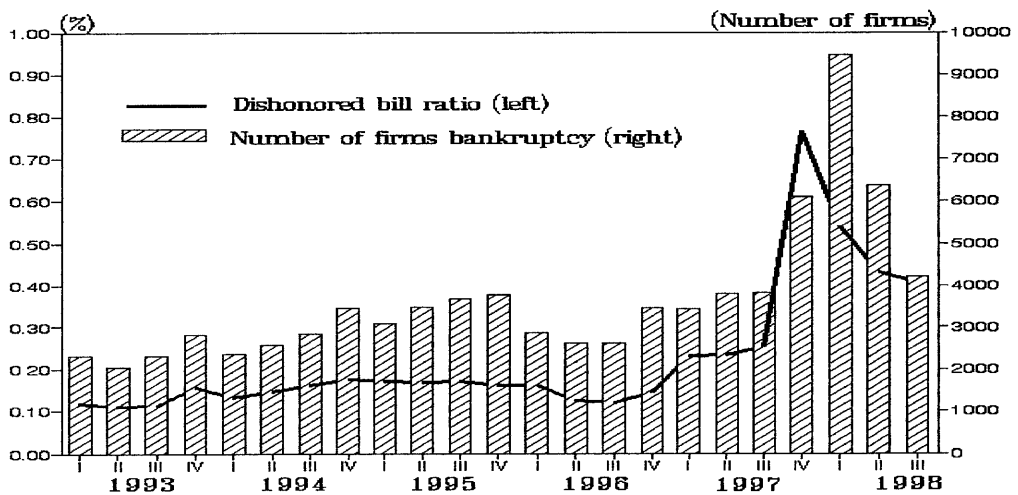


Note: 1) We estimate the marginal product to capital using the Cobb-Douglas production function approach in Cho and Oh (1996). We assume a capital-output ratio of 1/3 and depreciation rate of 0.065. We also estimate the potential GDP and capital stock derived from the KDI quarterly model.

III. Recent Credit Crunch Situation

Coming into 1998, the dishonored bill ratio, which reached a record high in December 1997, has subsided significantly as shown in Chart 7. This trend indicates that the credit crunch has eased to some extent compared to the situation at the onset of the crisis. Indeed, interest rates have declined significantly to a pre-crisis level, down from more than 30% early this year. In addition, wage rates have also fallen in accordance with rising unemployment. These improvements in factor costs contributed to restoring company balance sheets, thereby reducing the risk of default.

<Chart 7> Bankruptcies and Dishonored Bill Ratio



Source: Bank of Korea, *Monthly Bulletin*.

However, the declining number of business failures seems to be more largely affected by the bailout policy for troubled firms. In fact, creditor banks have not only provided co-financing loans to several distressed chaebols since the end of last year, but also entered into a corporate workout program, which has been applied to large-scale troubled borrowers (the top 6~64 chaebols and non-chaebol large corporations).

Moreover, the scope of the workout programs has been expanded to include SMCs. Creditor banks have evaluated the financial status of approximately 22,000 SMCs with outstanding loans of 1 billion won or more. In particular, despite the severe economic contraction, the number of large corporate bankruptcies has declined dramatically from 36 during the last two months (November~December) of 1997 to 33 during the first ten months of 1998. Considering the overlayed subcontracting structures, such a decline in large corporate bankruptcies reduced the incidence of chain bankruptcies of SMC subcontractors, thereby contributing to the reduction of overall business failures.

Despite the slowdown of business failures, the ongoing credit crunch is supported by several indicators. First of all, as shown in Chart 8, the share of outstanding domestic credit to the private sector in total assets of banking institutions declined from 75% in November last year to 64% in June this year, indicating credit restriction to the private sector has been intensified. In particular, as shown in Chart 9, the share of bank loans in total domestic credit to the private sector, which had sharply fallen after the crisis, has not yet rebounded.

<Table 4> Bankruptcies

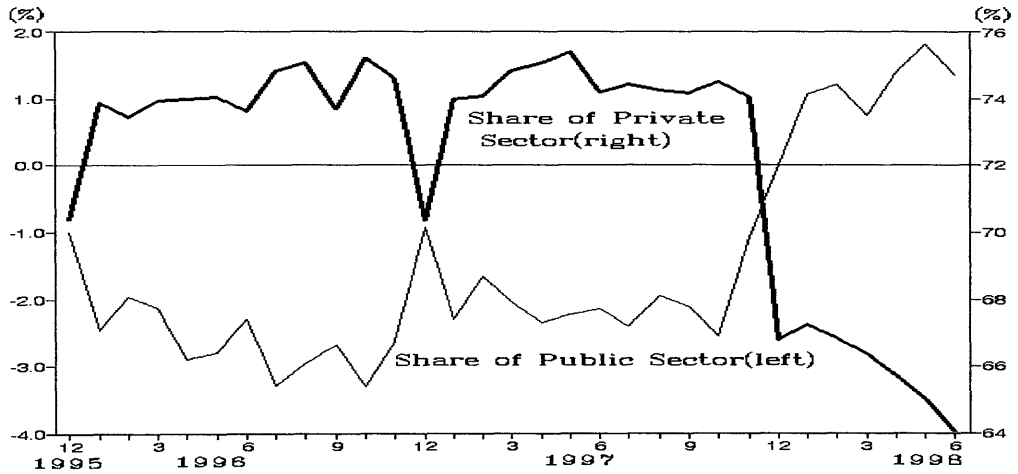
(unit: number of firms)

	Large firm	SMCs	Unincorporated	Total
1996 (yearly)	7	5,150	6,432	11,589
1997 (yearly)	58	8,168	8,942	17,168
	11	697	755	1,469
	12	1,540	1,638	3,197
1998 1~10	33	9,679	11,351	21,063
	1	1,591	1,723	3,323
	2	1,493	1,878	3,377
	3	1,191	1,557	2,749
	4	1,076	1,383	2,462
	5	945	1,122	2,070
	6	826	997	1,825
	7	860	933	1,799
	8	610	726	1,337
	9	561	523	1,085
	10	526	509	1,036

Source: Bank of Korea

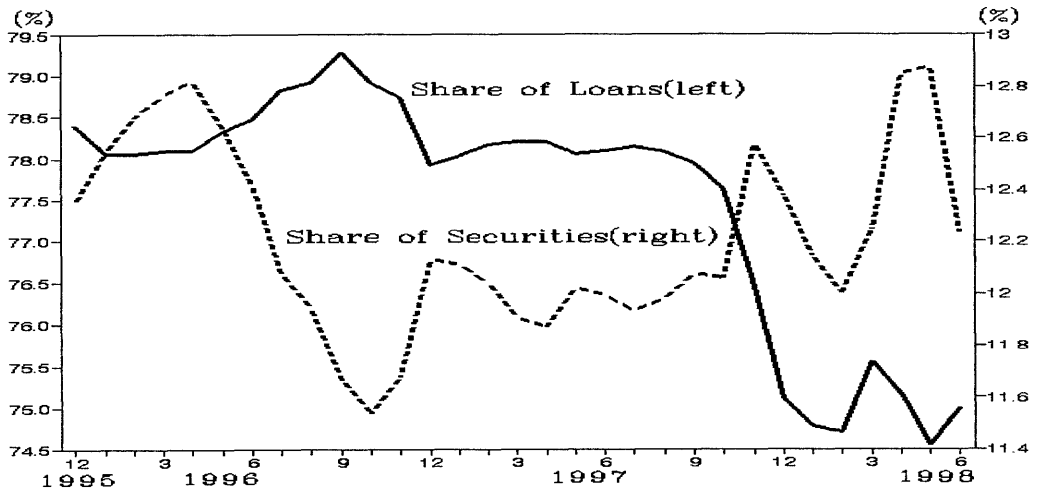
This indicates that the credit crunch still remains a serious problem in the credit markets (indirect financial markets). Such credit restrictions imply that financial institutions, which have already been undermined by large NPLs, prefer government/corporate bonds that are less risky and more liquid than credits in order to meet the BIS capital adequacy ratio.

<Chart 8> Share of Domestic Credit in Banks' Total Assets by Sector



Source: Bank of Korea, *Monthly Bulletin*.

<Chart 9> Decomposition of Banks' Domestic Credit to Private Sector



Source: Bank of Korea, *Monthly Bulletin*.

As for trade financing, the credit crunch has been partly alleviated thanks to the stabilization of the foreign exchange market. Before the crisis, the ratios of export and import credit divided by export and import volume, respectively, exceeded 80%, as shown in Table 5. These ratios sharply fell to approximately 40% in December 1997 due to the severe shortage of hard currencies. Entering this year, the trade financing situation partially improved as the foreign exchange market stabilized due to the debt exchange program as well as the emergence of a large current account surplus. Nonetheless, some banks are still reluctant not only to purchase usance L/C and DA (document against acceptance), but also to establish of import L/C.

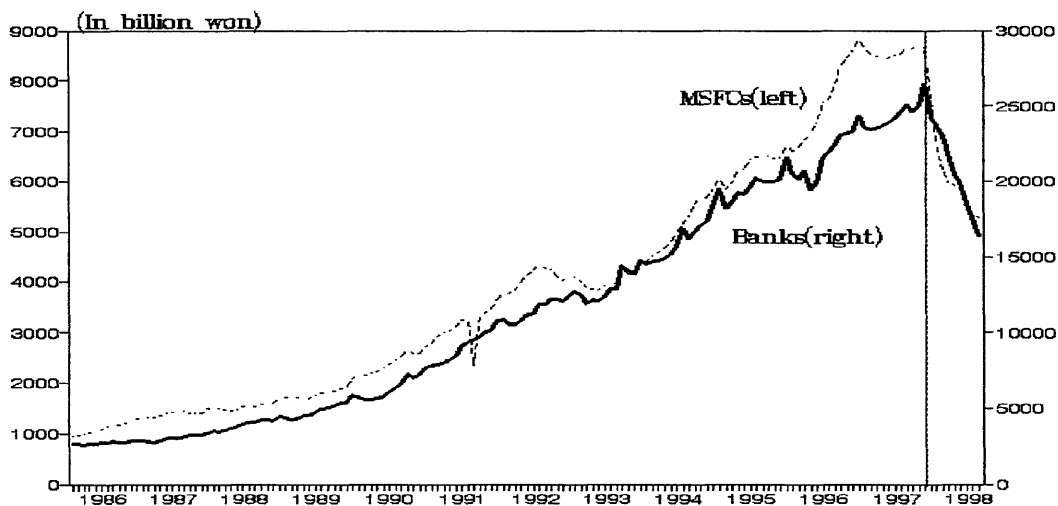
<Table 5> Trade Financing (Million US dollars)

	Establishment of Import L/C (A)	Import (B)	A/B (%)	Purchase of Export Bills (C)	Export (D)	C/D (%)
97. 1	10,020	12,515	80.1	8,127	9,034	90.0
97. 12	4,005	10,238	39.7	5,686	12,558	45.3
98. 1	3,871	7,530	51.4	4,886	9,007	54.2
98. 2	4,995	8,011	62.4	6,190	11,224	55.1
98. 3	5,393	8,365	65.3	7,884	12,077	65.3
98. 4	5,173	8,240	62.8	7,923	12,148	65.2
98. 5	4,846	7,670	63.2	6,993	11,437	61.1
98. 6	4,615	7,787	59.3	7,897	11,703	67.5
98. 7	4,784	7,120	67.2	7,239	10,195	71.0
98. 8	4,378	7,187	60.9	6,625	9,835	67.4
98. 9	4,613	7,314	63.1	7,627	10,945	69.7
98. 10	4,773	7,685	62.1	7,460	10,867	68.6

Source: Financial Supervisory Commission

The volume of discounted real bills, which have been a major instrument in SMCs' short-term financing, has also sharply fallen since the crisis. As of the end of August 1998, the outstanding amount of real bills discounted by banks and mutual savings and finance companies (MSFCs) amounts to merely 22 trillion won, a level 40% lower than November of last year (See Chart 10). Such a sharp reduction was caused not only by the restricted credit supply, but also the reduced demand for funds with the severe economic contraction. Indeed, Table 6 shows that the outstanding account payables of the listed companies decreased from 41 trillion won at the end of last year to 36 trillion won by the end of June this year.

<Chart 10> Real Bills Discounted by Banks and MSFCs



Source: Bank of Korea, Korea Federation of Mutual Savings and Finance Companies

<Table 6> Account Payables by Listed Companies

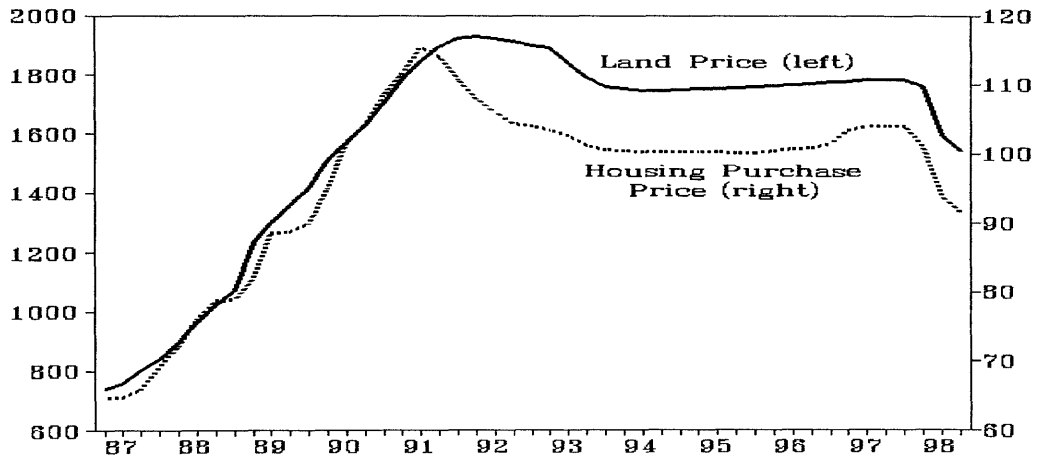
(the end of period, unit: trillion won)

	top 5 chaebols	top 6~70 chaebols	non-chaebol	total
1995 11	12.9	9.1	4.7	26.8
1996 12	16.0	10.6	5.2	31.9
1997 12 (A)	18.8	15.1	6.8	40.7
1998 6 (B)	16.2	13.9	5.7	35.8
B-A	-2.6	-1.2	-1.1	-4.9

Source: National Information and Credit Evaluation Inc.

Another critical factor in the credit crunch is the rapid decline of real estate prices. Given the usual practice of taking real estate as collateral for lending, the deflationary pressure in real estate prices seems to seriously limit the corporate sector's access to credit. As of the end of 1997, the share of loans collateralized with real estates in total bank loans was 38%. Despite the sharp fall in real estate prices after the crisis, the current level is still much higher than that in the mid 1980s. In light of this, further decline in real estate prices cannot be ruled out.

<Chart 11> Real Estate Prices



Note : Land Price Indices: 74. 3Q=100, Housing Purchase Price Indices: 95. 12=100.
Source: The Ministry of Construction and Transportation, *Land Price Statistics*.
Housing & Commercial Bank, *Quarterly Financial Review*.

IV. Factors Underlying the Credit Crunch

The credit crunch has been caused by two factors. First, financial institutions, suffering from increased NPLs and subsequent capital erosion, have been reluctant to extend credit in order to meet the BIS capital adequacy ratio. Second, the highly-leveraged financial structure of the corporate sector as well as severe economic contraction have greatly increased the credit risk faced by financial institutions.

In September, the Korean government completed the first stage of financial restructuring by injecting fiscal resources to dispose of NPLs and recapitalize banks.⁴⁾ This measure helps revitalize the banking sector, and consequently, the first underlying factor for the credit crunch was partially eased. Despite such progress, however, the second factor -- high credit risks -- still remains mainly because the corporate sector restructuring has proceeded slowly. Thus, unless restructuring and debt workouts for the corporate sector, particularly chaebols, are carried out upfront, the credit crunch is likely to persist.

4) The total amount of fiscal support approved by the National Assembly is 64 trillion won. The breakdown of this total is as follows: 32.5 trillion won for the purchase of NPLs by the Korea Asset Management Corporation(KAMCO), and 31.5 trillion won for the resolution fund of the Korea Deposit Insurance Corporation (KDIC) to be used for fiscal support for recapitalization and depositor protection. Of the 64 trillion won total, 37.7 trillion won, or 59% of the total, has already been applied by KAMCO and KDIC as fiscal support for financial institutions.

1. Financial Weakness of Banks

As of the end of June 1998, the estimated total of NPLs of all financial institutions, broadly defined to include loans classified as "precautionary," was 136 trillion (32% of GDP), an increase of about 57% from 86.4 trillion won at the end of last year.

<Table 7> Non-performing Loans (end of period)

(unit: trillion won)			
	Dec. 1997	Mar. 1998	June 1998
Non-performing Loans (A)	86.4	117.3	136.0
Precautionary	42.8	57.7	72.5
Substandard or below	43.6	59.6	63.5
Bank	31.6	38.8	40.0
NBFi	12.0	20.8	23.5
Total Loan (B)	647.4	668.7	624.8
A/B (%)	13.3	17.5	21.7

Source: Financial Supervisory Commission

The Korea Asset Management Corporation(KAMCO) had purchased NPLs of 39 trillion won in book value by the end of September. These NPLs carry an estimated market value of 17.7 trillion won, which is equal to approximately 45% of the book value. In September alone, NPLs of 23 trillion won in book value, held by 25 financial institutions (23 banks and 2 surety insurance companies), were purchased by KAMCO. According to the government plan, KAMCO will have spent an additional 15 trillion won to

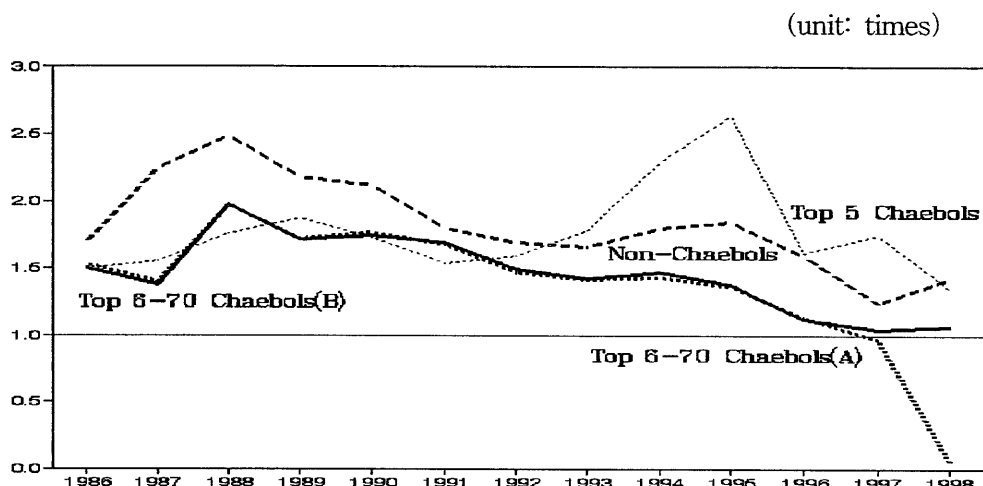
purchase NPLs of 40~50 trillion won in book value by the end of the first half of 1999. This plan indicates that NPLs of 76~86 trillion won total would be disposed of by the end of June 1999. However, considering the enormous size of NPLs of 136 trillion won, the targeted amount of the disposal of NPLs would be insufficient to fully ease the reluctance of financial institutions to extend credit.

2. High Credit Risk of the Corporate Sector

Domestic financial institutions are being faced with high credit risks. Chart 12 shows the trend of the interest payment coverage ratio of the listed companies. The interest payment coverage ratio, calculated as operating earnings over interest expenses, is the traditional measure of a firm's financial capability to service debts out of its earnings from normal business operations. Operating earnings used in this paper are EBITDA (Earnings Before Interest payment and Taxes plus Depreciation and Amortization). Therefore, those firms whose interest payment coverage ratio is below 1 are likely to go bankrupt.

The total number of listed companies covered by the sample is 504, and these companies are classified into two categories: chaebol affiliates and non-chaebol independent companies. At the end of the first half of 1998, the top 6~70 chaebols' interest payment coverage ratio (weighted average) is merely 0.04 (1.06, if Kia and Asia automobile companies are excluded), far below the level of the top 5 chaebols (1.35) and non-chaebol independent companies (1.42).

<Chart 12> Interest Payment Coverage Ratios for Listed Firms



Note: 1) Figures for 1998 are those for the first half of 1998.

2) (A) includes all subsidiaries of the top 6~70 chaebols, (B) excludes Kia and Asia automobile companies among the top 6~70 chaebols

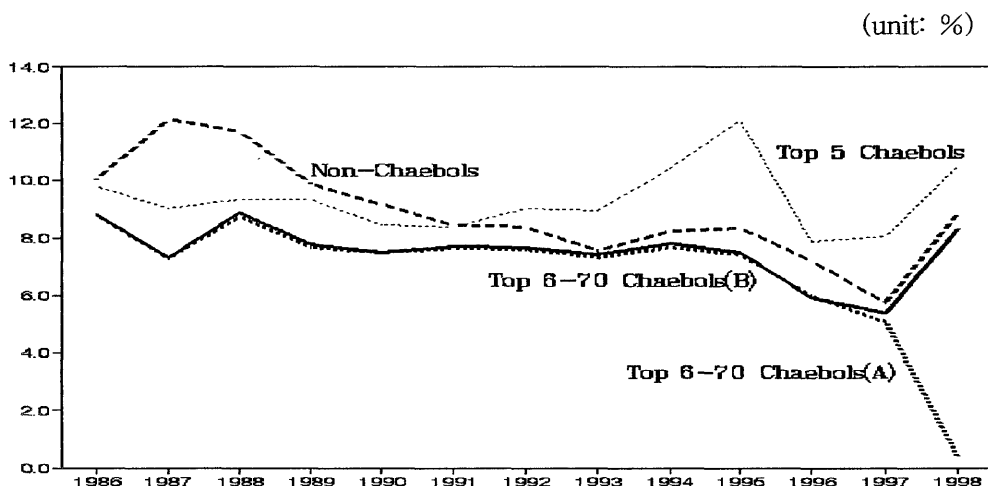
Source: National Information and Credit Evaluation Inc.

Such financial vulnerability of the top 6~70 chaebols has been attributed to weak business performance and high leverage. By the end of the first half of 1998, the top 6~70 chaebols' business performance, calculated as the EBITDA over total assets, was sharply deteriorated while their financial leverages continued to rise. Consequently, the top 6~70 chaebols' net profits to total assets plunged to -9.9% (-1.2%, if Kia and Asia automobile are excluded) from -1.8% in 1997 (-1.3%, if Kia and Asia automobile are excluded). Unfortunately, both poor business performance and high debt leverage are not a recent phenomenon as these conditions have been present since the mid-1990s.

For the top 5 chaebols, by the end of the first half of 1998 the operating earnings have increased, apparently due to robust exports. Despite the increased earnings, however, they have also experienced difficulty in servicing debt as their debt continued to grow. As a result, the top 5 chaebols' net profit rate fell to -0.4% in the first half of this year from -0.1% in 1997.

In contrast, non-chaebol independent corporations showed visible improvement during the first half of this year with substantial progress in restructuring. Their interest payment coverage ratios have risen due to a combined effect of debt reduction and increased earnings. Consequently, their net profit rates turned positive, 0.4%, in the first half of this year.

<Chart 13> EBITDA/Total Assets for Listed Firms



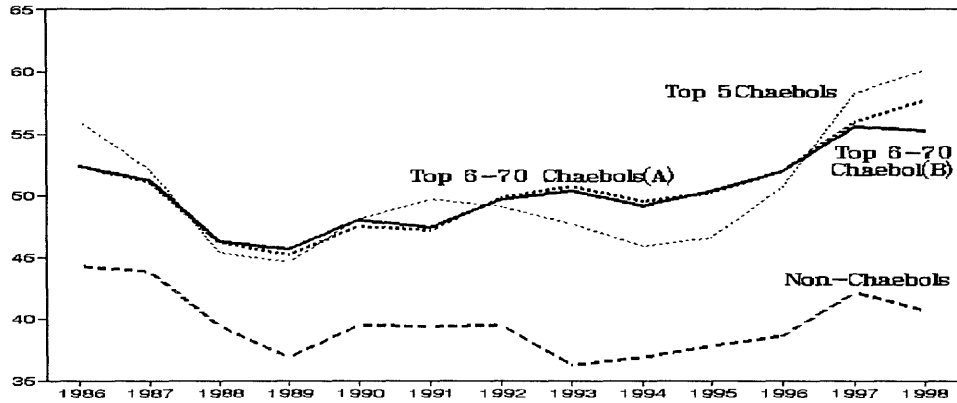
Note: 1) Figures for 1998 are those for the first half of 1998.

2) (A) includes all subsidiaries of the top 6~70 chaebols, (B) excludes Kia and Asia automobile companies among the top 6~70 chaebols

Source: National Information and Credit Evaluation Inc.

<Chart 14> Total Borrowings to Total Assets for Listed Firms

(unit: %)



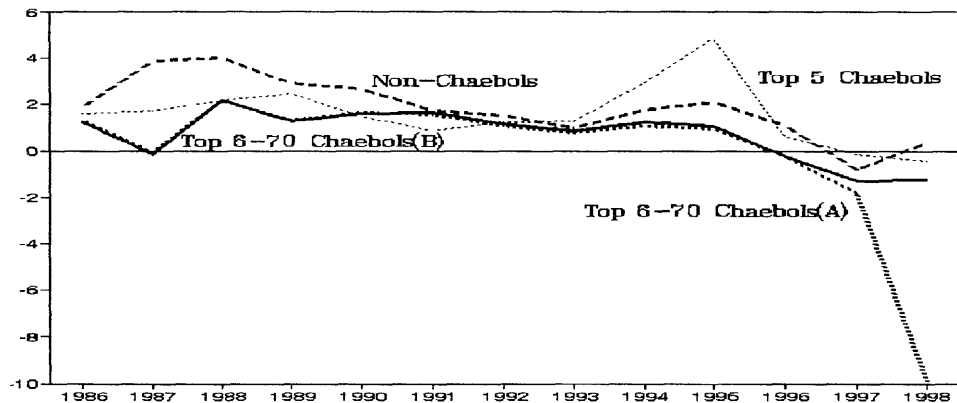
Note: 1) Figures for 1998 are those for the first half of 1998.

2) (A) includes all subsidiaries of the top 6~70 chaebols, (B) excludes Kia and Asia automobile companies among the top 6~70 chaebols

Source: National Information and Credit Evaluation Inc.

<Chart 15> Net Income to Total Assets for Listed Firms

(unit: %)



Note: 1) Figures for 1998 are those for the first half of 1998.

2) (A) includes all subsidiaries of the top 6~70 chaebols, (B) excludes Kia and Asia automobile companies among the top 6~70 chaebols

Source: National Information and Credit Evaluation Inc.

At this juncture, it should be noted that factor costs have stabilized considerably: not only have interest rates dropped significantly, but nominal wages have also fallen as firms struggled to survive and workers preferred pay cuts to reductions in employment. Such reductions in factor costs are improving firms' balance sheets. These developments seem to have partially reduced the risk of bankruptcy implied by the low interest payment coverage ratio.

However, considering the vulnerable financial structure of the corporate sector and the stagnating domestic demand, the likelihood of business failures still remains high. In particular, financial distress among chaebols could trigger a massive outburst of NPL problems. Moreover, given the cross-debt guarantees among subsidiaries and the vertically integrated industrial structure, chaebols' debt overhang can be mirrored in a systematic banking crisis.

As stated before, the Korean government has taken major steps to rehabilitate the banking sector by injecting fiscal resources. However, without an effective exit mechanism including closure of non-viable subsidiaries of chaebols, the progress to date in the financial sector cannot effectively alleviate the current credit crunch, nor expedite the overall structural adjustment required for economic recovery.

Thus far, chaebols' restructuring efforts seem to be inadequate considering their deep-rooted structural defects. For instance, in June 1998, creditor banks attempted to force the exit of 55 firms classified as non-viable. Out of these firms, 52 corporations are affiliated with Korea's top 64 chaebols and, specifically, 20 of the 52 are affiliates of the top 5

chaebols. However, as of August, only 20 firms went bankrupt and all firms belonging to the top 5 chaebols were merged with other subsidiaries rather than being driven out of the market.

Moreover, the government and the top 5 chaebols' leaders recently announced a framework for mergers and business swaps, referred to as the "big deals." To date, 7 industries have been identified as candidates for the big deals: semi-conductors, petrochemicals, automobiles, aerospace, power plant equipment/vessel engines, train car manufacturing, and oil refining.

Current discussions related to the "big deal" are centered around business mergers and swaps across chaebols. Considering the excess capacity problems in those industries, however, the positive effects of the big deal such as economies of scale in production may be limited. Rather, it may increase insolvency risks for both firms involved in the mergers. Such adverse effect, if realized, could hamper the inducement of foreign investment. Another concern with the big deal is that they may further intensify the chaebols' concentration of power as well as monopolistic and unfair business practices.

In addition, corporate workout programs applied to the top 6~64 chaebols and non-chaebol large firms could be less effective than initially expected in improving their financial structures. Specifically, the recent corporate workout programs have been focusing on debt rescheduling at low interest rates, not debt reduction. In light of heavy debt burden of chaebols, debt overhang would persist and the process of rehabilitation of troubled firms would be delayed unless debt reduction measures, including debt-equity swaps, are carried out upfront.

The slow pace of chaebols' debt restructuring can be attributed to the moral hazard problems on the parts of both chaebols and their creditor banks. Above all, the owners of chaebols are strongly motivated to exercise managerial control, and hence, have only weak incentives for negotiating debt-equity swaps. Instead, the owners of chaebols prefer *status quo* to painful restructuring, believing the myth of "too big to fail" and the government bailout with tax money.

Creditor banks, which are suffering from large NPLs and capital erosion, also have adverse incentives to rescue or bailout ailing chaebols rather than pushing them to restructure. Since additional NPLs can be borne during the process of chaebols' restructuring, creditor banks tend to extend rescue loans to troubled chaebols, expecting additional fiscal support from the government. Consequently, both the chaebol owners and creditor banks rely on the "too big to fail" concept and ungrounded expectation of economic recovery.

Unless these adverse incentive problems are resolved, it is difficult to expect the swift resolution of uncertainties stemming from chaebols' overborrowing and the related credit crunch. Under this circumstances, further bankruptcies in the corporate sector, economic stagnation and deflationary pressure could come existence, resulting in the prolonged credit crunch.

Indeed, Fisher (1933) argued that over-indebtedness could have a causal effect on the deflation and the deep recession through the emergence of a credit crunch. Fisher envisioned that if an unfavorable shock hit the debt-ridden economy, debtors could be forced into distress sales of assets in

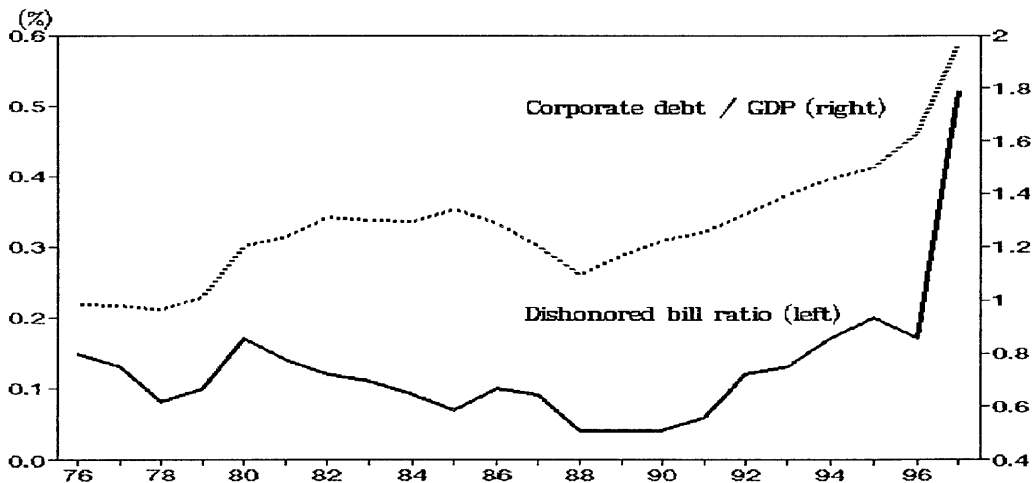
order to reduce the likelihood of bankruptcy, which in turn would lead to a decline in asset/commodity prices, financial difficulties (i.e., credit crunch) and a deep recession. Faced with the increased probability of default, the creditor banks are reluctant to lend money to the real sector, which in turn leads to further deflationary pressure for a whole economy. If this deflationary pressure continues to build up, there must be not only a greater fall in the net worth of business, but also a rise in the real rates of interest. Such deterioration of profits and capabilities of loan repayment due to a rise in interest expenses can trigger the diffusion of corporate failures and NPLs in the financial system. Consequently, production, trade, employment of labor, consumption, and investment will be reduced, which in turn will lead to the long-term economic depression. Fisher argued that the Great Depression of the 1930s followed the above path, and his diagnosis led him to urge President Roosevelt to undertake a reflationary policy, an advice that Roosevelt followed. Fisher's idea was less influential in academic circles, though, because of the counterargument that debt-deflation represented no more than a redistribution from debtors to creditors. Absent implausibly large differences in marginal spending propensities between the debtors and creditors, it was suggested, pure redistributions should have no significant macroeconomic effects. However, Fisher's hypothesis has recently been revived by Bernanke and Gertler (1990) and many others who attempted to review the hypothesis following the agency approach. In a world with imperfect information and agency costs in capital markets, they argued that if the net worth of the borrower decreases, the agency cost would increase to cause credit rationing which in turn would lead to increased business failures and reduced consumption and investment

3. An Empirical Study on the Credit Crunch

In this section, we attempt to study major factors underlying the credit crunch using econometric analyses. In the analysis, we first applied a simple static model to identify the major causes of the credit crunch, and then estimate the potential duration of the credit crunch using dynamic econometric tools. The dishonored bill ratio was used as a proxy variable for the credit crunch, as it represents credit risks, which has a direct causal linkage with the credit crunch.

Chart 16 shows that there exist a strongly positive correlation between the dishonored bill ratio and the gross corporate debt/GDP ratio since the late 1970s, indicating that the over-indebtedness has been a critical factor to cause bankruptcies.

<Chart 16> Dishonored Bill Ratio and Debt/GDP



Source: Bank of Korea.

As explanatory variables for the dishonored bill ratio, we consider the debt/GDP ratio, real wage, real land price index, and corporate profit margin. Corporate profit margin was measured as the ratio of consumer price index divided by producer price index.

As shown in the Box, all estimated coefficients have correct signs. The rise in the debt/GDP ratio and real wage tends to create more defaults on bills, while the improved profit margin and the increase in real land price turned out to reduce defaults. The negative correlation between the land price and the dishonored bill ratio seems to reflect Korea's usual banking practice of taking real estate as collateral for loans. Taking into account the fact that a major part of corporate loans is collateralized by real estates, the change of collateral value, i.e, the net worth of corporate assets, has a direct effect on the availability of funds to the corporate firms as argued by Bernanke and Gertler (1990).

<Estimation of Dishonored Bills Ratio>

$$DEF_t = -0.03 + 0.09 D_t + 0.75 W_t - 0.36 L_t - 0.97 P_t$$

$$(-0.3) \quad (2.1) \quad (4.2) \quad (-4.2) \quad (-3.5)$$

$$R^2 = 0.78 \quad DW = 1.9$$

* t-values are in parentheses, estimation period: 1976~96 (annual data)

DEF = dishonored bills ratio,

D = gross corporate debt/GDP

W = log difference of real wage

L = log difference of real land price index

P (profitability) = log difference of CPI over PPI

On the basis of these results, a VAR (Vector Autoregression) model was estimated to explore dynamic relationship among the variables used in the static analysis. The employed data are quarterly over the 20-year period from 1976 to 1996. All variables used in the VAR model are seasonally adjusted, and detrended if they have a clear time trend. Finally, the estimated VAR model allowed time lags of four quarters.⁵⁾

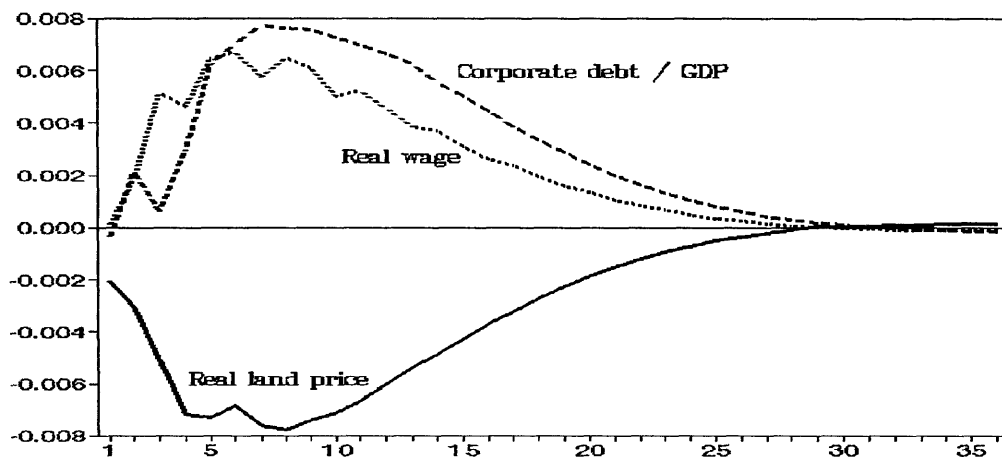
A useful way of summarizing the dynamics of the VAR model is to examine the impulse response: the system's response to a typical random shock to each variable over some time span. We estimated the impulse response of the dishonored bill ratio to the one-unit standard deviation shock in other variables.⁶⁾

Chart 17 shows that the dishonored bill ratio is positively correlated with the debt/GDP ratio and the real wage, but negatively with the real land price. In particular, the impulse response shows that the response of the dishonored bill ratio to shocks in other variables tends to peak with a time lag of 6 to 8 quarters, and then die out gradually over 30 quarters.

5) The results for the unit root test support that the debt/GDP ratio, real wage, and real land price have one unit root, while the dishonored bills ratio cannot be determined as having a unit root. Thus we assume the dishonored bills ratio is $I(0)$ process. Also, there does not exist cointegration relationships among $I(1)$ variables. Thus, for the VAR estimation we use all variables in differenced forms, but the dishonored bills ratio in level form.

6) To construct orthogonalized innovations, the Choleski decomposition is used. The Choleski ordering is assumed by the extent of exogeneity. Thus we impose ordering of real land price, debt/GDP ratio, real wage, and the dishonored bills ratio.

<Chart 17> Impulse Response to the Dishonored Bill Ratio



These findings have two important implications for the current restructuring process in Korea. First of all, swift debt workouts for the highly-leveraged corporate sector are essential for reducing credit risks. Given the sizable time lag between the changes in the dishonored bill ratio and debt/GDP ratio, and the fact that the chaebols' debt leverage continued to increase in the first half of 1998, the current credit crunch is likely to persist unless a visible progress in debt restructuring is implemented quickly.

Secondly, although the recent sharp decrease in real wages and money market rates will help improve cashflows of the corporate sector, it is hard to expect subsiding credit risks if real estate prices continue to decline along with the emerging deflationary pressure and severe economic recession.

V. Concluding Remarks

Korea is still facing an enormous challenge in its road to recovery. Most critical is the severe credit crunch. Despite substantive progress in the financial sector restructuring, credit flows are not yet normalized, largely due to increased credit risks in the corporate sector. If the current credit crunch is not resolved within a short period of time, the expected benefit from the progress in the financial sector will be not only limited but also short-lived. It is not a remote possibility that the Korean economy falls into a vicious cycle of prolonged credit crunch and economic contraction. Such adverse development, if occurs, will make the overall reform process unsustainable. History shows that this line of argument is not just theoretical possibility. Indeed, prolonged economic stagnation and the continued credit crunch experienced by the Latin American countries in the 1980s and Japan in the 1990s proves this point.

In this context, swift and comprehensive corporate sector restructuring is essential for Korea's durable economic recovery. At this juncture, what matters is the speed and scope of corporate restructuring. Given the preponderance of chaebols' market share and economic influence, chaebols' debt restructuring is of particular importance.

Given the fact that corporate debt problem translates directly into problems in asset portfolios of financial institutions, financial institutions must be ready to clean up their balance sheets on an ongoing basis throughout the course of chaebol restructuring. At the same time, financial institutions must apply corporate workout programs only to viable firms, and utilize various means of debt reduction, particularly debt-equity swaps

and asset sales, in order to expedite the restructuring process. The government needs to mobilize fiscal resources to support the clean-up efforts by financial institutions.

But these efforts must be made in line with market principles and clear loss-sharing scheme in order to prevent moral hazard. To this end, major shareholders of chaebols -- particularly chaebol owners -- and creditor banks must bear the primary burden of adjustment. The government's support must be provided conditional upon the strong and exhaustive rehabilitation efforts by chaebols and creditor banks.

In order to minimize the risk of the aforementioned vicious cycle, however, corporate sector restructuring need to be supplemented by other policy measures, including macroeconomic adjustment and fiscal reform. Let me briefly touch upon a few policy agenda that are intrinsically related to corporate sector restructuring.

First, asset deflation must be prevented, as it has extremely detrimental effects on restructuring and the resolution of the credit crunch. The prolonged recession of Japan in the 1990s and the Great Depression of the United States in the 1930s clearly shows the danger of asset deflation. Asset deflation is particularly dangerous for the heavily debt-ridden countries like Korea: it could threaten the reform process itself.

In light of this, an expansionary macroeconomic policy is called for. Both monetary and fiscal policies need to be aligned in such a way as to generate a market expectation for stable and modest inflation. Monetary expansion and subsequent reduction in interest rates will serve this purpose. At the same time, fiscal expansion is necessary not only for economic stimulus but also financing the cost of economic restructuring.

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