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# **A Case Study of Korean Credit Market Peculiarities in 1999: Issues and Lessons**

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# Preface

Having a well functioning capital market is important for at least two reasons. On one hand, it contributes to the efficient distribution of financial capital to competing users. Secondly, it provides an important additional source of funds for businesses to fall back on when credit provision by banks becomes disrupted for a particular reason.

The financial crisis that struck at the end of 1997 had immediate repercussions: the financial market seized up and the banking sector was in great disarray. Had a well functioning bond market been in operation, the subsequent negative effects would surely have been mitigated. This was not the case. The constrictive impact of financial market problems would have been far greater had there not been a rapid improvement in macroeconomic conditions made possible by a surge in exports that started in late 1998. Problems plaguing a weak bond market were compounded by a sharp rise in the issuance of bonds by the government as well as by government-backed agencies in efforts to raise funds needed to support the faltering banking sector.

Conditions have changed considerably for the better in some aspects but the Korean bond market still calls out for

further strengthening. The government and central bank, for one example, need to take steps to improve the government bond market. This, in turn, will greatly facilitate markets for non-government bonds. This paper takes a retrospective look at the Korean bond market around 1999. Its special focus on events surrounding the failure of Daewoo to glean vital lessons should assist future initiatives to improve the Korean capital market.

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# I

## **Introduction and Motivation**

Korea experienced an unprecedented financial crisis in 1997 touched off by a massive exits from Korean won denominated asset holdings and an ensuing shortage of foreign exchange reserves to meet the increased demand. A sharp focus was put on the high leverage ratio as a key attribute of businesses in Korea as well as over-exposure of banks to non-bank firms. The heavy debt service burden resulting from the former made Korean businesses highly vulnerable to adverse economic conditions that depress the cash flow stream. Any such problems experienced by one segment of the corporate sector will strike the Korean banks with unmitigated impact, substantially raising non-performing loans. The ill-effect, in turn, will propagate to the rest of the economy through the banking sector due to the fact that banks are the dominant source of funds for businesses in Korea. This chain of events describes what happened in Korea in 1997 and 1998.

Thus, the fact that the breadth of Korean financial markets was thin played a crucial role in turning the banking sector problem into a wholesale economy-wide crisis. Had there been well developed direct financing markets, i.e. equity and bond markets, the constriction of credit flow from banks might not have caused such widespread consequences on the corporate sector. Fed Chairman Greenspan made this point in 1999 when he commented on the financial market problems facing Japan, in which commercial banks play a dominant role.<sup>1)</sup> As pointed out by Greenspan, firms'

1) "Multiple alternatives to transform an economy's savings into capital

funding problems were exacerbated by the fact that there were no alternative direct financing markets when banks were hit hard. To mitigate the problem, it is critical to have a well-developed bond market. In this regard, the Korean government has not placed sufficient emphasis and effort in normalizing equity as well as bond markets when compared to the very focused drive to indiscriminately lower the leverage level of all Korean businesses.<sup>2)</sup>

One key reason a bond market was slow to emerge was the lack of a smooth functioning government bond market that could provide various benchmarks. The absence of a government bond market was mainly attributable to the government's aversion to seeing a budget deficit; hence, the government did not issue government securities. Although a balanced budget is a commendable thing in most cases, it is not entirely clear that the value of this model is so all-encompassing that it should be the overriding goal in the management of a nation's finance at all times. Perhaps, the Korean government should not have claimed bragging rights for its balance budget record. The nation's central bank, the Bank of Korea, instead of the government, was the main conduit of providing industrial development financing to various areas targeted by official economic

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investment offer a set of back-up facilities should the primary form of intermediation fail, ....." Greenspan's speech delivered at the annual meetings of the IMF and World Bank in Washington DC, September 27, 1999.

2) There have been several reports published so far about how to improve Korean bond markets by various groups.

development plans (see Cho and Kim (1997) among others, for more detailed account of the development financing issues). However, the landscape has undergone changes following the onset of the 1997 financial crisis. Suddenly the government was faced with the need to raise a substantial amount of funds for various purposes, at the very time when tax revenues dropped off sharply as real GDP contracted a record 6.8% in 1998.

Coinciding with the rising trend in the government securities issuance, efforts were made to put the necessary infrastructure in place to facilitate the government paper segment of the bond market. For example, the primary dealer system for auctioning government bonds was installed in mid 1999. Favorable condition for deepening the government bond market existed in 1999. One key development was the sharp decline in the supply of private corporate bonds as most large businesses had to pay down their borrowing, including bonds, to meet the target of leverage ratio of 200% by the end of 1999. This should have helped to improve demand conditions for the government bonds. However, as we will see shortly, the fledging government bond market was soon hit by a major turbulence in the second half of 1999 and it, in turn, gave rise to seemingly anomalous behavior of government bond yield.

The single most significant event that influenced financial markets in the second half of 1999 was the failure of Daewoo. Potential repercussions of the event on Korean financial institutions and markets were extremely grave

given the initial estimate of the total borrowing of Daewoo subsidiaries was close to 50 trillion won, roughly one ninth of Korea's GDP of 1999. It was not unusual for stock prices to fall sharply in the face of such a development. Yet the greatest curiosity was the sharp rise in yield on government bonds, perhaps the only asset that was safe from default risk during that period. Demand for safe assets, that is, fell steeply as the systemic risk of overall financial markets rose sharply.

Two conceivable explanations could account for this somewhat anomalous observation. The first is to blame it on the thinness of bond market, and particularly the government securities segment; thus, virtually anything could happen without much economic justification. The second focuses on finding some economic rationale for the observed behavior. The goal of this paper is to examine various pieces of evidence pertaining to the anomaly with an eye to drawing some sensible conclusion. To summarize, we find evidence that supports the view that the rise in the long-term interest rates in the second half of 1999 was caused by the markets' concern about a sharp rise in government's financial burden as a direct consequence of the collapse of Daewoo group. Especially at the early stage of the failure, uncertainties about the scope of the problem as well as its ramifications on the overall economy were rampant. Such concerns eclipsed the merits of the Korean government bonds as a safe-heaven instrument.

Several observations about the Korean bond market with

policy implications stand out in the search for clues to anomalies. First, despite a general perception that the Korean bond market is 'small', the outwardly size of the market is quite large. In particular, one cannot point to a lack of volume of bonds, particularly government bonds, as the key missing factor for a better functioning market. The pivotal reason for a rapid increase in bond market volume stems from the 1997 financial crisis that gave rise to the need for substantial funding by the government.

Second, we find evidence that indicates financial institutions consider government bonds less-than-desirable instruments to hold. The most telling is the extremely skewed distribution of government bonds across different types of financial institutions. This is particularly noticeable when compared to the situation in the U.S. Two factors might explain this outcome. First, a lack of a secondary market makes a bond of any type illiquid. Second, the practice of financial transactions among financial institutions of using government bonds as collateral, e.g. RPs, is still rare.

Third, earlier observations point to what remains to be done to improve functioning of the Korean bond market in the future. The central bank should take steps to use government bonds in its open market operations to create and foster secondary markets. At the moment, the central bank is the only entity that can bring about a liquid secondary market, the essential prerequisite for a smoothly functioning bond market. Secondly, the government should give serious priority to clear legal and other codes that are

currently preventing a more widespread use of RP transactions. What may appear a technical point, in fact, is not. Of course, a high rate of return will be the most important feature of any security. However, there is a limit to the rate government can offer on its bonds in terms of return since it is a risk-free asset. Thus, the next important feature in making government securities attractive to financial institutions is their utility. Borrowing money using safe government bonds as collateral will afford financial institutions the opportunity to borrow funds at a low cost. The need for the government to provide infrastructure for this to take place is urgent.

This paper is organized as follows: Section II examines the so-called “flight to quality” phenomenon seen in typical financial markets of advanced economies when the systemic risk increases and the observed absence of “flight to quality” in Korea in 1999. Section III offers an overview of noticeable developments in financial markets and bond market particularly around 1999 and highlights some odd findings. Section IV offers a quantitative assessment of seemingly anomalous behavior of government bond yields by adopting a simple econometric model. It asserts that anticipated future inflation as well as an expected increase in future government indebtedness could partly explain the pattern of government bond yield in the second half of 1999. Section V offers policy lessons from observations made heretofore far and offer counter-factual thoughts on what could have been done differently.



# I

**Increased Systemic Risk and  
Reaction: Flight to Quality**

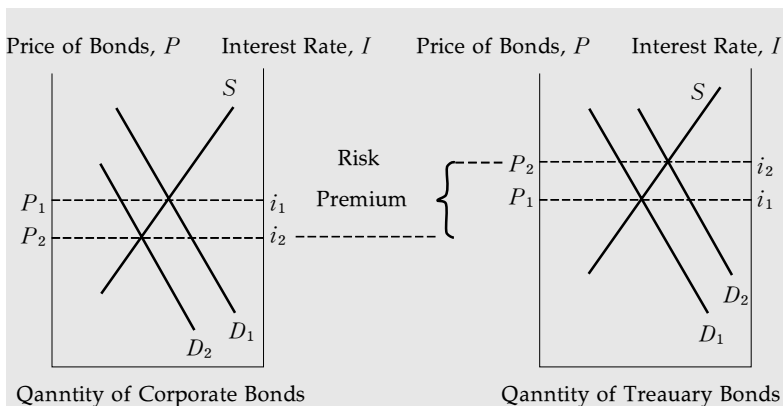
First, we examine the typical behavior of demand for various financial assets as general systemic risk increases. Understanding the typical reaction will provide a framework upon which to base our analysis to follow.

### **A. Flight to Quality<sup>3)</sup>**

A good example of a “flight-to-quality” is provided in Mishkin (2000) using the example of events that unfolded in the U.S. credit market in the wake of “Black Monday,” October 19, 1987. Figure 1 depicts supply and demand conditions of two class of assets. Figure 1 shows those for the default-free (or risk-free) Government bonds; and supply and demand for corporate bonds. On “Black Monday” the Dow Jones Industrial Average fell more than 500 points. In the wake of the stock market crash, investors began to doubt the financial health of businesses with lower credit ratings that had issued junk bonds. “The increase in default risk for junk bonds made them less desirable at any given interest rate, decreased the quantity demanded, and shifted the demand curve for junk bonds to the left.” Demand for junk bonds shifted to the left, lowering the price, and pushed up interest rates. At the same time,

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3) *The Handbook of International Financial Terms* by P. Moles and N. Terry defines it as “A tendency of market participants in times of uncertainty to sell low credit worthiness issues and buy high credit quality issues.....”



〈Figure 1〉 Response to an Increase in Default Risk

demand for a safe asset (U.S. Treasury securities) increased, shifting the demand curve in Figure 1 to the right. Prices of U.S. Treasuries shot up and their yields fell. As a result, “the spread between interest rates on junk bonds and government bonds rose by two percentage points, from 4% before the crash to 6% immediately after.” (Mishkin, 2000, pp. 129–132).

Another stylized and more recent observation related to a “flight-to-quality” can be cited. In the early fall of 1998, concern grew regarding turmoil in major global financial markets as Brazil experienced a large outflow of foreign exchanges and Russia defaulted on its sovereign debt. International financial markets reacted almost violently to these developments. In the US, the Dow Jones index fell 13% between July 1998 and September 1998. In Germany,

the DAX stock price index fell 23%, and in the UK the FT100 index also fell 13%. In the same period, the yields on 10-year government bonds fell from 5.5% to 4.8% in the US; fell from 4.7% to 4.1% in Germany, and fell 5.8% to 5.1% in the UK. The demand and supply graphs used earlier to illustrate the U.S. credit market reaction in the wake of the 1987 “Black Monday” can be applied to all three cases.

A common explanation for all three markets is as follows: the swelling systemic risk associated with the major global financial market turmoil in the early fall in 1998 raised concerns about the health of major financial institutions in the U.S. and Germany with large exposures to these economies. Such concerns were not limited to the financial sectors. If major banks were to suffer serious difficulties, it would negatively affect credit market conditions in general as large financial institutions would move to cut back their lending. The tightening of credit markets results in a negative impact on general economic condition as both businesses and households cut back their production and consumption. This, in turn, affects the profitability of businesses and, consequently, their stock prices. Thus, the developments in Brazil and Russia led to a sharp fall in stock prices in many G7 countries. In the face of such a surge of uncertainties, investors increased their demand for government bonds, the safest securities. Since the number of government securities is fixed in the short run, an increase in demand for them manifest itself in terms of a

〈Table 1〉 Daewoo Domestic Affiliates' Debt (June 1999)

(unit: trillion won)

Borrowings from Banks	8.6
Borrowings from Non-Bank Financial Institutions	4.0
Outstanding Corporate Bonds	22.0
Outstanding Corporate Papers	8.7
Total	43.4

Source: *Bond Brief*, September 5, 1999.

rise in their prices and, correspondingly, a fall in their yields.

## **B. An Absence of 'Flight-to-Quality' in Korea in 1999**

By mid-1999, the extent of financial problems of businesses belonging to Daewoo group and became widely known in Korea. This precipitated a surge of anxiety about potential repercussions on the financial sector as well as the macroeconomy. Daewoo's final self-rescue plan was announced on July 19th but was generally viewed as 'too little and too late.' Subsequently the Korean government announced a restructuring plan on July 25th, which effectively removed the managerial control of Daewoo group from its founder and extant managers. These measures directly increased the default risk of Daewoo's outstanding debt of various kinds amounting to 43 trillion

won, not including foreign borrowing. Table 1 shows details of Daewoo's debts.

Given Daewoo's staggering domestic debt, amounting to almost 10 percent of Korea's GDP, it is not surprising that serious repercussions were feared across the board in financial markets.<sup>4)</sup> As a consequence, the composite stock price index fell from 969 in July to 833 in October, a 14% decline. At the same time, the yield on corporate bond rose sharply from 8.63% to 9.48% in the one-week period beginning on July 16. In terms of monthly average, it rose from 8.58% in July to 10.41% in September. However, over the same period, the yield on the 3-year government bonds rose from 8.37% to 9.31%.

The relative changes in interest rates on the two types of bonds conform to the general pattern. That is, the risk spread (the spread between yields on the government and corporate bonds) indeed widened from about 70 basis points in July to 130 basis points in September. However, it appears to be an anomaly for the yield on the risk-free government bond to rise in circumstances wherein safe assets should be in high demand. More specifically, in response to increased risk, demand for this type of safe

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4) Shortly after the announcement of the government plan to put Daewoo affiliates on restructuring track, uncertainty abounded about the extent of losses the Daewoo creditors were going to bear. In addition to an immediate clear loss in the form of foregone interest payments, substantial loan write-offs at the affected banks were expected. Individual investors also were expected to lose parts of their investment in Daewoo related investment instruments.

instrument did not increase but actually fell and, thus, the price of the government bonds actually fell. To understand these unusual developments, we need to grasp the peculiarities of Korean financial markets since late 1998. We turn to this next.

# III

## **Developments in the Korean Bond Market around 1999**



## **A. An Overview of Developments in Financial Markets**

### **(1) Gradual Stabilization since 1998**

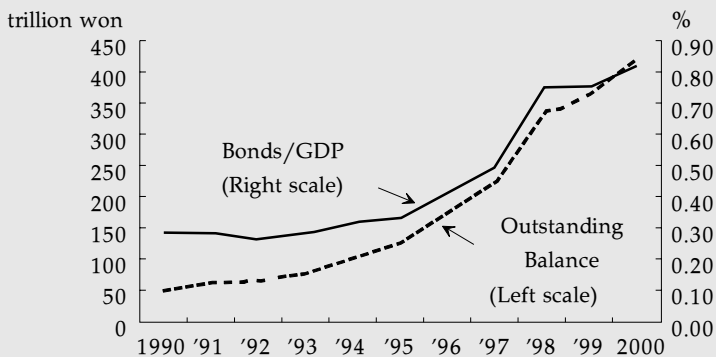
After experiencing a traumatic upheaval in 1998, financial markets began 1999 with a markedly stable and favorable trend. Short-term interest rates fell while long-term interest rates remain stable at the level seen at the end of 1998. Short (overnight call rate) and long-term rate (3-year corporate bond) respectively reached a peak of 25% in the beginning of 1998. The call money market rate fell to 4.9% at the end of March 1999 from 6.5% of December 1998. The yield on government bonds with 3-year maturity also fell from 7.0% to 6.5% over the same period. Stock prices rose 10% in the first three months in 1999 with the composite index of Korean stock prices reaching 619 at the end of March. The KOSPI had reached a nadir of 288 in mid June 1998. The exchange value of the Korean won vis-à-vis the U.S. dollar remained close to the 1200 won per dollar range seen in the fourth quarter of 1998, allowing for some volatility.

Such a stabilizing trend in financial markets was firmly undergirded by favorable macroeconomic conditions. Strong economic recovery aided by rising exports in the second half of 1998 dovetailed with rising foreign exchange reserves at the Bank of Korea and emerged as key stabilizing factors.

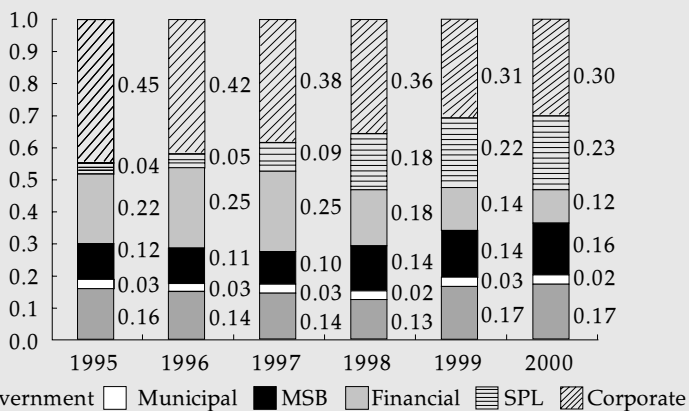
The central bank's reserve holding rose to US\$54 billion by the end of March 1999, from a low of about US\$9 billion at the end of 1997. Real GDP grew 5.4% in the first quarter of 1999 compared to the same period a year earlier. Inflation, which had been pushed up by a substantial depreciation of the exchange rate in 1998, showed signs of stabilizing in early 1999. The Consumer Price Index had reached a peak of 118.6 in October 1998 but remained below that level until April 1999. The Producer Price Index had risen to a peak at 122.3 in February 1998 but hovered near 117 in the first quarter of 1999. Employment conditions also started to improve in the early 1999. The unemployment rate peaked in January 1999 at 8.5% but began to decline rapidly. By March, it fallen off to 8.0%.

## **(2) Rapid Growth in Debts**

The total outstanding amount of listed bonds (both public and private) has grown rapidly since 1997 in Korea. The ratio of the total outstanding bonds to current GDP in 1995 was 33%. It steadily rose to 49% by 1997 before surging to 75% in 1998 and 1999. Along with the rapid growth of the total amount as shown in Figure 2, there has been a significantly visible shift in the composition of the total. Figure 3 shows that the share of corporate bonds in the total has steadily declined while the share for the government and public agencies bonds has risen. The corporate bonds' share was 45% in 1995, but fell sharply remain near 30% since 1999. In the same period, the share



(Figure 2) Total Outstanding Bonds and Bonds/GDP Ratio



(Figure 3) Composition of Outstanding Bonds

for government and public agencies rose from 32% to 51%. The share of public bonds rises to 60–65% if we add the

share of the Monetary Stabilization Bonds (MSB), which is a bond issued by the central bank, to that of government and public agencies.<sup>5)</sup>

This change took place in a relatively short period of several years as a direct consequence of 1997 financial market crisis and in recognition of the need for public funds to restructure various financial institutions. Typically, when the public sector's demand for financial resources rises so rapidly, one would expect a 'crowding out' effect and an attendant rise in interest rates. Unusual conditions that arose in Korean financial markets after the financial crisis prevented this from taking place. A type of general paralysis emerged among various lenders in the wake of 1997 financial crisis. Lenders became extremely averse to lending to businesses. In addition, a quantitative limit in the form of targeted debt ratio, was put on large businesses that were in the habit of relying on the issuances of corporate bonds for funds. In one sense, a precondition was put in place for a large scale public bond issuance. Bonds issued by government or with government guarantees fall into a separate category of assets in terms of risk characteristics as compared to privately issued papers. In

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5) Special law (SPL) bonds are issued by public agencies and corporations that were created by specific laws such as, Korea Deposit Insurance Corporation (KDIC), Korea Electric Power Corporation (KEPCO), Korea Asset Management Corporation (KAMCO), etc.. Financial bonds have been issued mainly by government owned banks such as the Korea Development Bank, Korea Housing and Commercial Bank to raise funds to be used for industrial development, provision of affordable housing and other purposes.

such circumstances, a large increase in public sector borrowing did not entail visible 'crowding out' effects.

However, *ex ante*, the prospect of a rapid rise in the public sector's borrowing must have sparked in policymakers a great deal of concern about potential subsequent adverse impacts. One way to reduce the ill-effects of such large increases in prices (i.e. interest rates) is to create extra room by imposing a quantitative limit on the private sector's borrowing. Such a consideration provides another possible explanation for various regulations imposed in 1998 that limited financial institutions' holding of debt securities of a particular company. The most notable case was the imposition of a uniform debt-to-equity ratio of 200% on large businesses that had been the primary source of corporate bonds until 1998. Our explanation offers a macro-finance rationale for that measure. More discussion of this point is offered later in the "Policy Lessons" chapter.

## **B. Notable Developments in Bond Market**

### **(1) Lowering of Overall Credit Quality**

In 1998, the determination to lower the leverage ratio of the top 5 business groups was riding high. One measure aimed at reducing financial institutions' exposure to a small number of large businesses limited the share of financial institutions' holdings of commercial paper and corporate bonds issued by firms belonging to a single business group

〈Table 2〉 Composition of Corporate Bonds with and without Guarantee  
(unit: %)

	1998. 1	II	July	Aug.	Sep.	Oct.	Nov.	Dec.
Guarantee	87.5	82.5	63.4	17.2	14.9	1.7	8.6	8.0
W/O Guarantee	12.5	17.5	36.6	82.8	85.1	98.3	91.4	82.0
(above A)	—	—	—	61.7	52.4	52.4	32.7	10.7
(above BBB-)	—	—	—	17.0	24.3	40.3	38.9	38.4
(below BB+)	—	—	—	4.1	8.4	5.6	19.8	42.9

to below 10 to 15 percent of the total debt securities holdings.

As a direct consequence of this measure, the share of the top five business groups' firms in the issuance market fell from 87 percent in August 1998 to 35 percent in December 1998 (see Table 2). In their place, firms with lower credit ratings increased their supply of corporate bonds. For example, the proportion of corporate bonds with a rating of BB+ or lower to total newly issued unsecured bonds rose from 4.1 percent in August to 42.9 percent in December of 1998.

Another important factor has contributed to the lowering of overall credit quality of corporate bonds since 1998. Until 1998, the majority of businesses issuing bonds obtained guarantees from banks or credit insurance funds to enhance marketability. Banks offered guarantees for fees, a seemingly easy source of income for banks as there had not been any significant default of corporate bonds to mention of until 1997. However, banks became hyper-sensitive to the credit risks of businesses from the onset of 1997 crisis, hence, stopped offering guarantees on corporate bonds. In addition,

the rule regarding the operation of credit insurance funds was changed in August 1998, prohibiting the use of insurance funds as guarantees for corporate bonds. About 86% of all corporate bonds issued since the second half of 1998 have not had a third-party guarantee. In contrast, about 80% of bonds issued used by corporations had a third-party guarantee before 1998. Hence, this development alone should have had negative effects on the overall credit quality of corporate bonds.<sup>6)</sup>

## **(2) Investment Trust Companies' Bond Hoarding**

Tables 3 through 5 show the trend in securities holdings for commercial banks, investment trust companies (ITC), and life insurance companies for the 1995–2000 period. These three groups constitute the three main bond holders in Korea. Comparisons of Tables 3 and 4 show that ITCs' bond holdings have been larger than commercial banks, which have been the largest sector. Securities holdings by these groups jumped substantially between 1997 and 1998. This basically reflects the overall trend of increasing debt shown in an earlier section. In the case of banks, they maintained more balanced portfolio holdings of variety of securities.

In comparison, increases in ITCs' bond holdings were more concentrated. ITCs' corporate bond holdings roughly doubled to 111.83 trillion won by the end of 1998. Based on this development, ITCs' sale of bonds beneficial

6) See Rhee, Oh, and Yang (2001) for related discussions.

**〈Table 3〉 Trend of Securities Holdings by Commercial Banks**

Year	Total	Gov't	Corporate	SPL	MSB	Stocks
1995	35.7	4.25	4.37	1.56	10.90	7.83
1996	43.6	4.59	6.53	1.80	12.17	8.33
1997	66.3	6.77	15.16	3.22	15.53	8.78
1998	111.3	12.82	42.68	7.06	19.97	6.16
1999	137.6	19.48	60.33	6.76	19.36	6.63
2000	145.8	21.04	71.02	5.01	20.91	4.66

**〈Table 4〉 Trend of Securities Holdings by Investment Trust Companies**

Year	Total	Gov't	Corporate	SPL	MSB	Stocks
1995	61.71	1.85	38.12	5.33	1.13	13.43
1996	66.02	2.18	44.27	5.19	0.07	12.59
1997	70.74	0.88	57.83	4.20	0.20	5.82
1998	133.94	4.45	111.83	5.17	6.47	3.58
1999	144.12	7.71	92.82	4.88	6.42	29.53
2000	99.70	10.26	54.43	4.62	14.61	15.12

**〈Table 5〉 Trend of Securities Holdings by Life Insurance Companies**

Year	Total	Gov't	Corporate	SPL	MSB	Stocks
1995	18.88	0.11	5.01	4.62	0.05	8.47
1996	22.53	0.13	6.09	6.33	0.02	9.50
1997	23.01	0.17	7.40	4.88	0.00	10.08
1998	35.28	0.52	7.33	18.50	0.00	8.25
1999	42.29	1.44	10.41	22.28	0.31	6.47
2000	47.04	3.00	17.37	18.41	0.40	5.54



certificates (based on bond funds) rose from 72 trillion won at the end of 1997 to 128 trillion won a year later. However, ITCs' stock holding declined from 5.8 trillion to 3.6 trillion won over the same period. ITCs appeared to have aggressively absorbed much of new issuance of bonds to boost the rates of return on various trust products they aggressively marketed to investors.<sup>7)</sup> Many individual investors, armed with funds previously held in bank accounts as well as stocks, converged on trust products that promised higher yields.<sup>8)</sup>

As mentioned earlier, ITCs were able to offer a high rate of return on bond funds because they had large holdings of low grade bonds with high yields. For example, "ITCs held 27.5 trillion won worth of Daewoo securities (corporate bonds and commercial papers) at the face value, which was 10.7 percent of the total investment of ITCs."<sup>9)</sup>

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7) Korean ITCs have traditionally offered contractual type trust products that are common in Japan and Europe in contrast to the corporate type products such as US style mutual funds. Two types of investment funds are available to investors. One is a stock fund and the other is a bond fund. A stock fund has to hold stocks from 20 to 90% of its total assets, and at least 40% of its total assets have to be in bonds in the case of a bond fund.

8) Interest rates on bank deposits rose sharply after the outbreak of the financial crisis at the end of 1997. For example, interest rate on 6-12 month time deposit reached a peak of 18.12% in February 1998 after staying below 11% for most of 1997. However, it started to decline rapidly and fell below 10% by October 1998. In comparison, yield on corporate bonds (AA rating) with three-year maturity rose to a peak of 24.31% in December 1997 and then remained above 10% until October 1998. Thus, the gap between rates of return on bank deposits and ITCs' bond fund was indeed substantial.

It is also peculiar that insurance companies did not increase securities holdings to the degree banks or ITCs did, but their increases were also more concentrated. Table 5 shows that between 1997 and 1999, increases in holdings of SPL bonds account for most of the increase in insurance companies' securities holding. It is not clear why such a concentration took place.

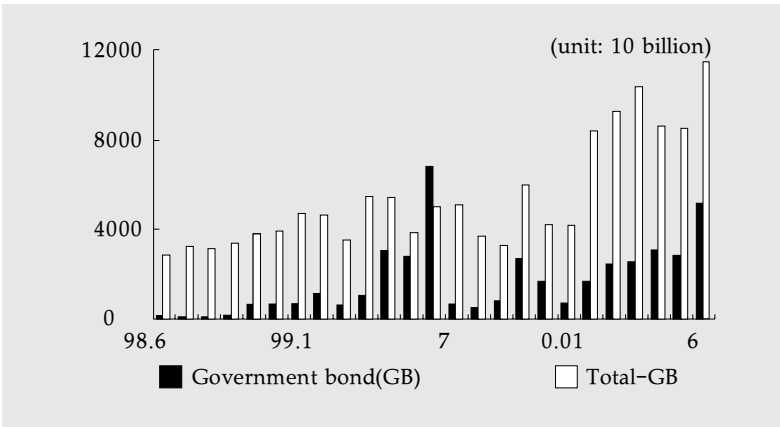
### **(3) Exaggerated Transaction Volume of Government Bonds**

The Korean government announced a plan in 1998 to institute a primary dealer system for the issuance market related to government bonds and to take effect by mid 1999. The plan was to select 20 or so financial institutions by mid-year based on their records of dealing government bonds as of the second quarter of 1999 and designate them as primary dealers. The primary-dealer designation was hotly pursued by many financial institutions. As market participants expected a sharp increase in the size and the scope of bond markets and transactions in government bonds, a primary dealership offered potentially prestigious and profitable business opportunities to them. The most important criteria of selecting a primary dealer was the applicant institution's record of dealings in government bonds prior to the time of designation.

This development created a pattern of exaggerated trade in government bonds as financial institutions tried to build

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9) Shin and Park (2001), p. 10.



(Figure 4) Bond Market Transaction Volume  
(June 1998–June 2000)

up their transaction records. The trend in bond market transaction volume during the 1998–1999 period is most illuminating. The total volume of bond market transactions rose by 77% (from 247 trillion won to 436 trillion won) between the second half of 1998 and the first half of 1999. In comparison, the volume of government bond transaction rose 530% in the same period (from 25 trillion won to 246 trillion won). However, this explosion in government bond trading turned out to be very short-lived. As shown in Figure 4, the volume of government bond trading fell drastically back to the level seen preceding the spring of 1999.

#### (4) Failure of Daewoo and its Aftermath

As noted earlier, the failure of Daewoo precipitated a

sharp rise in all long-term interest rates, including the yield on government bonds, evident first in late July. On July 25, 1999 the government announced emergency policy measures geared to stabilize financial markets, which at the time were in great turmoil caused by extreme uncertainties attached to the financial viability of firms belonging to the Daewoo group. The announcement acted as an official acknowledgment that Daewoo group was in the state of technical default. As pointed out earlier, Daewoo securities made up more than 10% of the total assets held by ITCs. Thus, it was unsurprising that investors of the ITCs' bond funds demanded early redemption of their shares fearing that their portfolios might include Daewoo papers. Demand for early redemptions began to gain momentum by the spring of 1999.

In the face of surging redemption demand, ITCs found themselves faced with the need to raise cash quickly, thus, resorted to selling the most marketable papers, in short, selling high-grade corporate bonds and government bonds.<sup>10)</sup>

As redemption demand increased, the Financial Supervisory Service, the main financial regulatory agency, imposed a temporary moratorium on redemptions of trust funds that had been invested in Daewoo papers to prevent a widespread run on ITC funds. To stagger the timing of redemptions,

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10) However, as we will see later, the total amount of government bonds sold by ITCs was not that large. Thus, explaining that the rise in government bond yield in the second half of 1999 as due to the ITCs' sell-off is too simplistic.

ITC bond funds holders were limited to redeeming only 50% of the amount invested in Daewoo papers if they wanted to redeem immediately, however the ratio was to rise to 95% after 6 months. Money that flowed out of trust accounts moved into short-term money market instruments as well as bank accounts. Many investors (presumably individuals) moved their funds into various bank accounts instead of increasing holdings of government bonds. Banks turned out to be their safe haven rather than risk-free government bonds.

#### **(5) Bond Market Stabilization Fund and a Return to Stability**

ITCs bond holdings that stood at 155 trillion won at the end of June 1999 fell by 14 trillion to 141 trillion won at the end of September. This fell further to 130 trillion won by the end of October. The total amount of bonds held by ITCs was 130 trillion won by the end of 1998. Thus in a four month period since July, ITCs sold off 25 trillion won worth of bonds.

Prompted by increasing instability in financial markets in the wake of the Daewoo failure, the government established the so-called “bond market stabilization fund” by pooling funds paid in by various financial institutions at the end of September 1999. The primary goal of the fund was to buy bonds that were being sold in large quantities by the ITCs, thus preventing a sharp run-up in interest rates. Needed resources were provided by 18 participating banks and, in

part, by 22 insurance companies. The final size of the fund, which was dissolved in March 2000, slightly exceeded a little over 27 trillion won. During its operating period (late September 1999 through the end of March 2000), the fund purchased 7.5 trillion won's worth of government and public agency papers, 1.9 trillion won worth of financial debenture, and 17.7 trillion won worth of corporate bonds. The fund realized a 9.8% rate of return during the same period.

The fund's active purchase of various bonds beginning in September 1999 is credited with lowering long-term interest rates. In slightly over a one-month period (from late September to the end of October), the fund purchased government and corporate bonds worth 3.8 trillion and 6 trillion won, respectively. In terms of total transaction volume, October's trading volume surged to 27 trillion won, an amount larger than the total volume of transactions covering the entire third quarter of 1999 (20 trillion won).

The creation of the stabilization fund was not without controversy. Most of all, it smacked of the old government practice of intervening in matters better left to markets for solution. In our view, the lack of well-functioning secondary markets was the pre-eminent reason for last-ditch governmental interventions to address the problems. Had there been secondary markets, ITCs would have had no need to cling to bonds that were part of redeemed bond funds. According to Shin and Park (2001), "when investors

demanded redemption, ITCs paid cash on the spot according to book value, then transferred securities to their own accounts rather than selling in the market.” Selling to markets would have allowed for not only a more accurate and timely reflection of valuation markets on various securities, but also would have prevented a lumping of securities that needed to be sold to raise cash for redemption purposes.

A defensible justification for the stabilization fund based on strategic behavior of banks and other financial institutions at that time does exist. Namely, knowing that ITCs with large securities holdings faced potentially huge redemption demand, other institutions expected a ‘fire sale’ of securities held by ITCs in the absence of a well-functioning secondary market. A good possibility existed that securities prices would fall further as the ITCs’ need for cash increased. Such a calculation would have forced other financial institutions to wait. When such a strategic consideration prevails across the market, an orderly disposal of ITCs’ securities becomes difficult. Such a situation would likely prompt a governmental intervention. Basically, the government stepped in to create a temporary secondary market with limited participation.

## **(6) Some Oddities**

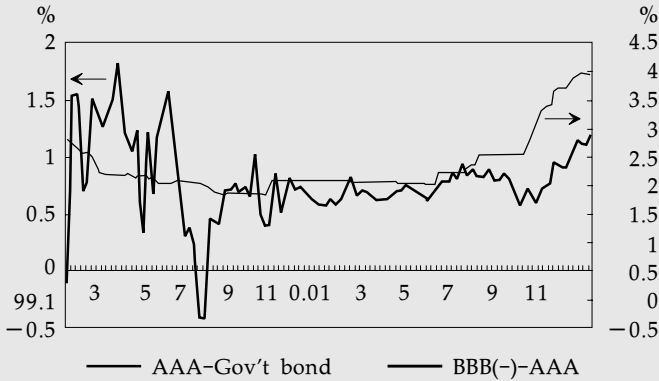
### **Risk Spreads Fail to Widen**

It is odd that despite growing concern related to Daewoo’s financial woes, the imploding conglomerate did not have a

more widespread influence in terms of heightened risk awareness. Figure 5 shows risk premium as measured by the spreads between yields on different types of bonds. The spread, designed to reflect the credit risk implicit in corporate bonds, was visibly volatile and the level remained high until the beginning of July. As mentioned above, this was largely due to the fact that government bond yield was artificially depressed in the first half of 1999 as government bond transaction volume surged ahead of the selection of the primary dealers for government bond market (see Section B (3) of this Chapter). However, the spread diminished and remained low from the early July when concerns about Daewoo should have been widely known and, hence, should have had the most serious effects on the risk perception about other corporate bonds. A literal interpretation of the pattern of narrowing risk spreads is that the imminent advent of the Daewoo default actually had a calming effect on corporate bonds. However, this makes little sense. More convincingly, it was likely the case that the rise in government bond yield was behind this anomalous observation rather than a fall in corporate bond yields.

One possible explanation argues that a premium associated with high grade (i.e. AAA rated) corporate bonds existed that lowered the yield on them. This premium may have been a reality because high grade corporate bonds became scarce in the bond market. As discussed in Section (2) of this chapter, large businesses had to withdraw from bond





(Figure 5) Risk Premia Measured by Yield Differences

markets as they had to lower their leverage ratios. This apparently created a scarcity of high-grade papers in bond market thus allowing an additional premium to high-grade corporate bonds. This premium would have lowered yields (correspondingly, raised the prices of) on high-grade corporate bonds. Such a scenario would explain the lowering of the spread between AAA rated corporate paper and government bond yields shown in Figure 5. However, if this were the case, we should have observed a rise in the spread between BBB(-) and AAA for the same reason. The patterns evident in these two spreads do not appear to support the notion that somehow the yield on AAA corporate papers fell disproportionately.

(Table 6) Trend of Securities Holdings by Foreign Bank Branches in 1999

(Units: End of period, trillion won)

Month	Total	Gov't	Corporate	SPL	MSB	Stocks
March		0.46	1.00	.30	3.04	8.47
July		0.60	1.02	.45	3.73	9.50
August		0.73	0.99	.49	3.93	10.08
September		0.94	0.93	.54	4.07	8.25
November		1.11	1.02	.66	3.90	6.47
December		1.02	1.01	.65	3.32	5.54

### Banks' Decision not to Increase Government Bond Holdings

As for the direct cause for the sharp rise in government bond yield from July 1999, an excess supply of government bonds is commonly cited. That is, while ITCs commenced to sell them in large quantities, there was insufficient demand for them. An obvious question is why was there insufficient demand?

Investigation reveals that some financial institutions actually increased bond holdings voluntarily before the bond market stabilization fund took effect; branches of foreign banks were particularly aggressive in increasing government bond holding. As shown in Table 6, their government bond holding stood at 0.46 trillion at the end of March 1999. This amount more than doubled to 1.11 trillion by the end of November 1999. These institutions also increased SPL bonds (including Monetary Stabilization

〈Table 7〉 Trend of Securities Holdings by Korean Banks in 1999  
(units: End of period, trillion won)

1999	Total	Gov't	Corporate	SPL	MSB	Stock
January	81.4	12.7	42.8	3.8	16.1	6.0
June	94.5	15.9	45.4	6.1	18.6	8.5
July	97.4	15.0	49.1	6.2	18.6	8.5
August	99.3	15.4	49.6	6.3	19.4	8.6
September	105.5	16.4	54.9	6.5	19.1	8.1
October	109.2	17.3	57.0	6.3	20.3	8.3
November	110.7	18.3	58.0	7.3	18.8	8.3
December	112.6	19.5	60.3	6.8	19.4	6.6

Bonds) from 2.5 trillion won to 3.97 trillion won in the same period. The SPL bond holding actually peaked at 5 trillion by the end of October as about 1 trillion won was added to the portfolio beginning in July. Foreign bank branches noticeably began to increase government bond holdings in August. Although the overall amount was not substantial, the development is suggestive in the sense that it offers an example of how banks would operate when there is little governmental interference. Branches of foreign banks in Korea have been relatively free from moral suasions of the government compared to Korean banks. It is interesting to note that they started to purchase government bonds and SPL bonds in July and August of 1999, when ITCs were selling them in large quantities to raise cash needed to meet redemption demand for bond funds. It

suggests that it indeed might have been a good time to buy these bonds, the most representative safe asset offered at relatively low prices.

# IV

## **Search for Economic Rationales**

Expositions on Korean bond market peculiarities thus far provide ample reasons for the expectation of a typical pattern of yield behavior of government bonds in 1999. Factors related to a thin market notwithstanding, however, developments in the Korean economy around that time raise a possibility that the rise in the yield of government bonds was caused by economic fundamentals. The pace of recovery in economic activities was strong enough to raise the possibility of a further rise in inflation going down the road. The failure of Daewoo was also expected to substantially increase the financial burden of the government to support affected banks. This, in turn, will likely increase long-term interest rates in the future.

## **A. Inflation Expectations and Anticipated Increase in the Public Sector Indebtedness**

### **(1) Inflation Expectations**

One possible explanation for the government bond yield anomaly was increased expectation about future inflation. That is, many market participants believed that inflation was going to rise shortly thereafter, and this anticipated higher future inflation in turn made government bonds less desirable. There are at least several reasons why this possibility cannot be dismissed. First, the Korean economy's recovery started to pick up steam in the last quarter of 1998. Compared with the same period of the previous year,

real GDP grew at 5.4, 10.8 and 12.8%, respectively, in three quarters starting in the fourth quarter of 1998. Such a rapid pace of recovery was cause for concern that the economy might overheat relatively rapidly. Worries about an overheating economy and a possible flare-up in inflation dominated financial press commentaries and policy discussions. For example, the Bank of Korea's Monetary Policy Board statement for August 1999 read, "..... long-term interest rates began to rise in July as markets expect higher future interest rates in light of a rapid improvement in cyclical economic conditions ....." The following quote also exemplifies the prevailing sentiment at that juncture, "Monetary Policy: Should the current rapid pace of recovery continue despite diminished progress in restructuring, it would be desirable to shift, in a gradual and preemptive manner, the focus of monetary policy toward cyclical stabilization ....." (Quarterly Economic Outlook, Korea Development Institute, July 1999).

## **(2) Anticipated Increase in the Public Sector Indebtedness**

A second cause for the gov't bond yield anomaly had to do with the fiscal ramifications of the Daewoo failure. As noted in Table 1, the overall size of the Daewoo debt was substantial, to put it mildly. Commercial banks were the major holders of the debt. Banks were already under heavy pressure from non-performing assets in the wake of the 1997 economic crisis, necessitating a large scale govern-

mental intervention in the form of capital injection in 1998. Thus, a real possibility existed that the government would end up holding a good part of the total debt, including Daewoo's external debts (indeed, foreign creditors, to secure their claims, threatened legal actions against the Korean government, the de facto administrator of Daewoo assets as well as liabilities). Therefore, the ultimate resolution of Daewoo was likely to entail a substantial burden shouldered by the government, which, in turn, had clear inflationary implications. The total revenue of the central government in 1999 was 97.3 trillion won whereas the 1999 current price Gross Domestic Product was 478 trillion won. Against such a backdrop, Daewoo's total debt of 43 trillion won (domestic) and US\$10 billion (foreign, roughly 12 trillion won) amounted to a rather daunting figure. If one assumes a 50% loss ratio (or recuperation rate), resolution of Daewoo debts implies an increase in debt burden of 5 percent of GDP to the government.

In addition to these domestic debts, there was speculation that Daewoo's numerous foreign affiliates had substantial amounts of debt to foreign lenders. As settlement negotiations that followed made clear, most foreign lenders demanded that the Korean government bear the burden, insisting that their lending decisions were based upon an implicit guarantee by the government.

The prospect of burgeoning aggregate demand coupled with a potentially large increase in the government's debt burden together made a substantial rise in inflation highly



likely in the near future. In turn, such an expectation could make holding government bonds a very unattractive option. In this section we examine whether an anticipated surge in the government's future financial burden could help explain the rise in the yields on government bonds in the second half of 1999. Such a sharp rise in government funding need would have lowered the price of government bonds, or equivalently pushed up yields on government bonds. For this analysis we need a quantitative tool. The next section explores this quantitative dimension.

## **B. Quantitative Assessment**

### **(1) A Model of the Government Bond Yield**

To find a suitable quantitative framework, we first examined whether some of existing models could be used. For this purpose we went over two sets of structural models that have been in use at the Bank of Korea and the Public Finance Institute. However, they did not prove particularly useful for our exercise for several reasons. First, they lacked separate equations that explain behavior of government bond yields. Instead, they focus on corporate bond yields. This is understandable as 3-year corporate bond yields have been used as the representative long-term interest until recently. Even though the volume of various government bonds could not be considered negligible, they had been issued in such a way that relatively little organized trading took

place in the secondary market. Thus, nothing comparable to the Treasury yield curve of the US existed until recent developments. In such circumstances, corporate bonds bearing an investment grade had more uniformity and, thus, were used as the headline long-term interest rate.

While it might be possible to modify and use existing models for corporate bond yields, doing so would introduce many difficult issues that we do not care to deal with for sake of this exercise. Instead, we chose to estimate a simple generic model for government bond yields. The equation includes such variables as money, prices, and interest rates that are expected to influence the rates on government bonds. They are; M3 growth rate (DLM3), CPI inflation rate (DLCPI), short-term money market interest rate (overnight call rate) (LCALL), and two types of outstanding stock of government bonds. The first type is the growth rate of the outstanding stock of government bonds (DLGD). The second variable is the ratio of total government bond to GDP (GD/GDP). An economic justification for using the ratio is as follows: what is important for economic agents is not the absolute size of the government debt but rather how much of a burden the government debt brings to bear on the national economy. For example, proportionate increases in both the GDP and the size of debt should have little effect on economic decisions by households and businesses as the impact of government's usage of economic resources remains effectively unchanged. As the dependent variable we used the yield on the national housing bond for the

sample period from 1986 to 1995 and the yield on government bonds for the period beyond 1996. This variable is designed to account for the fact that government bonds had not been available for the earlier sample period but it is used as the benchmark security in more recent years. A dummy variable was included to adjust for the switch in the long-term interest rate used in the model for the sample period after 1996. We have named the equations with DLGD and GD/GDP as Model I and Model II, respectively.

Table 8 shows the initial estimation results for the sample period of 1987:Q4 to 1999:Q2. First, the beginning period was determined by data availability. The end point was chosen as the second quarter of 1999 since the default of Daewoo took place in the third quarter. As can be seen in tables, both models serve the purposes of explaining yields on government bond for the sample period (adjusted R-square of 0.92) even though the specification was chosen without many diagnostic checks.

Block exclusion test results show that explanatory variables are indeed significant in explaining government bond yield behavior with the exception of the government debt variable. Though not significant, the government debt is retained for analysis to follow. In terms of individual variables, the estimation results seem mixed as to which direction they affect the government bond yield. A rise in the growth rate of M3 (DLM3) is expected to push up Treasury bond yield as the sum of coefficients on the M3 growth rate is positive.<sup>11)</sup> Next, turning to inflation, an increase in infla-

**〈Table 8〉 Initial Estimation Model 1 and Model 2  
(1987. Q1-1999. Q2)**

Variables	lag	Model 1		Model 2	
		Coefficient	Block Exclusion	Coefficient	Block Exclusion
C	t	-0.136	—	-0.171	—
DLM3	t	2.094*	LLR: 0.00	1.969*	LLR: 0.00
	t-1	-0.855		-0.881	
	t-2	0.376	F-stat: 0.00	0.919	F-stat: 0.00
	t-3	1.303		1.227	
DLCPI	t	-1.648	LLR: 0.02	-1.273	LLR: 0.04
	t-1	-1.541		-1.420	
	t-2	3.460*	F-stat: 0.13	3.124*	F-stat: 0.21
	t-3	-1.581		-1.722	
LCALL	t	0.273**	LLR: 0.00	0.241**	LLR: 0.00
	t-1	0.276**		0.238**	
	t-2	0.129	F-stat: 0.00	0.091	F-stat: 0.00
	t-3	-0.0001		-0.038	
DLGD	t	0.318	LLR: 0.183	—	—
	t-1	-0.052		—	
	t-2	-0.110	F-stat: 0.428	—	—
	t-3	0.195		—	
GD/ GDP	t	—	—	0.521	LLR: 0.183
	t-1	—		0.398	
	t-2	—	—	-0.244	F-stat: 0.428
	t-3	—		-0.389	
LRCB	t-1	0.170	—	0.302	—
dummy	t	-0.10**	—	-0.112**	—
Adj. R <sup>2</sup>		0.916		0.918	
D. W.		2.032		2.171	

tion is expected to lower the yield as the sum of the DLCPI coefficients is negative. This is not an intuitive result. However, the only significant coefficient is for  $(t-3)$  and it has the value of 3.46, suggesting a rather strong Fisher effect. A change in the call money market interest rate (LCALL) is expected to move the long-term government bond yield in the same direction since LCALL coefficients add up to a positive number. The sum of DLGD coefficients is positive suggesting that an increase in the supply of the government bonds is expected to exert an upward pressure on the government bond yield. LCALL seems to have the strongest explanatory power in the equation.

For further analysis, we streamlined these models. The idea was to improve the parsimony as well as their capacity to provide a better out-of-sample forecast. Table 9 shows the simplified new model was constructed based on earlier estimation results of Table 8. The government debt variable was dropped in both Model 1 and 2 as they were insignificant. Hence, the simplified model shown in Table 9 is common for both Model 1 and 2.

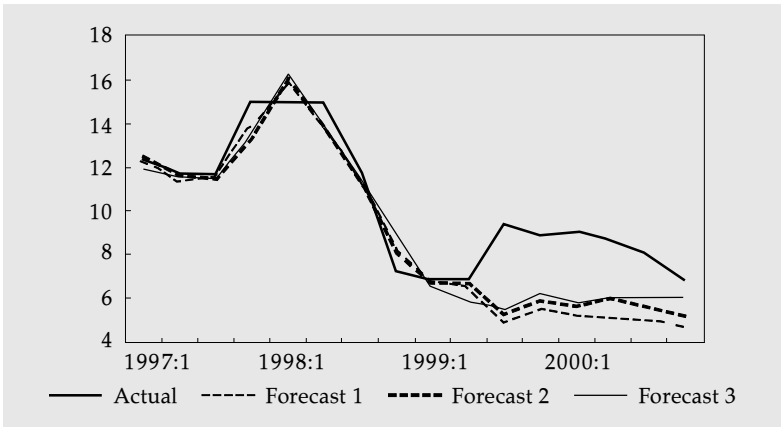
Figure 6 shows both in-sample (1997-1999.Q2) as well as out-of-sample forecasts (1999.Q3-2000.Q4) of the government bond yield respectively for Model 1 and 2 as well as from the simplified model, Model 3. Even though the fitted yield closely traces the actual in sample, its poor first for

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11) On a priori basis, the sign of money supply on the long-term interest rate could be either negative or positive. It would depend on the relative strength of the liquidity effect and the Fisher effect, respectively.

〈Table 9〉 Simplified Model for Models 1 and 2, Model 3

Variables	lag	Model 3
DLM3	t	2.112**
DLCPI	t-2	0.389
LCALL	t	0.196**
	t-1	0.158**
LRCB	t-1	0.494**
dummy	t	-0.091**
Adj. R <sup>2</sup>		0.900
D. W.		1.916



〈Figure 6〉 Forecasts of Long-term Interest Rate of Model 1, 2 and 3

the out-of-sample period in both cases is quite striking. Both Models 1 and 2 completely fail to reflect a sustained rebound in the government bond yield that commenced in

the second half of 1999. This is surprising in that a lagged dependent variable enters with a positive coefficient in both models that should have helped prevent a big divergence between the fitted and actual values. Thus, developments concerning the government bond yield in 1999 were indeed extraordinary. Model 3 fares somewhat better than the other two, but still it does not explain the upsurge in the long-term interest rate.

## **(2) Expected Inflation Scenario**

Our interest lies in examining some possible scenarios that could explain the behavior of government bond yield in the second half of 1999. One way of rationalizing the rise in government bond yield is to use the models developed thus far to ascertain if an expectation of either rising inflation and/or rise in the government's budget deficit as a direct consequence of Daewoo's failure could have been the catalyst.

To check this possibility, we modified the models to incorporate such a forward-looking component. Such a modification enables model to answer such questions as, "How would anticipated future increases in inflation affect the behavior of the government bond yield?" For this purpose, future (for period  $t+1$ ,  $t+2$ ,  $t+3$ ) as well as contemporaneous values of CPI were used in Models 1 and 2. We dubbed such changed models Model 4 (the specification with the growth rate of the government debt, DLGD) and Model 5 (the specification with the debt to

GDP ratio,  $GD/GDP$ ). Table 10 shows the estimation results for both. The end of the estimation period is was chosen to leave sufficient lead periods (three quarters) used in specifications for Models 3 and 4.

Estimation results of Table 10 reveal a number of changes from Table 8. Firstly, the overall fit of the model does not deteriorate when measured in terms of adjusted R-square. For both specifications, models with CPI lead variables do better than Models 1 and 2 with lagged CPI. Secondly, when future inflation is added to Models 1 and 2, the presence of future inflation erodes a measure of explanatory power of past money supply on the long-term interest rate. Thirdly, in Model 5, the inclusion of future CPI inflation somewhat enhances the explanatory power of the government debt variable (in Model 5). However, block exclusion tests suggest that government debt variables are not very useful in explaining the long-term interest rate as in the case of Models 1 and 2. In addition, it is noteworthy that the CPI lead variable is indeed significant in both Model 4 and 5 specifications.

Attempts to obtain a simplified version of Models 4 and 5 by following the same procedure did not yield useful results. Instead, we modified Model 3 by replacing the lagged CPI with a lead CPI. Table 11 shows estimated Model 6.

Judging by a preliminary examination, little difference can be found in terms of out-of-sample forecast accuracy across the three models. Thus, for the sake of parsimony Model 6 is used for some counter-factual exercises. Figure 7 shows

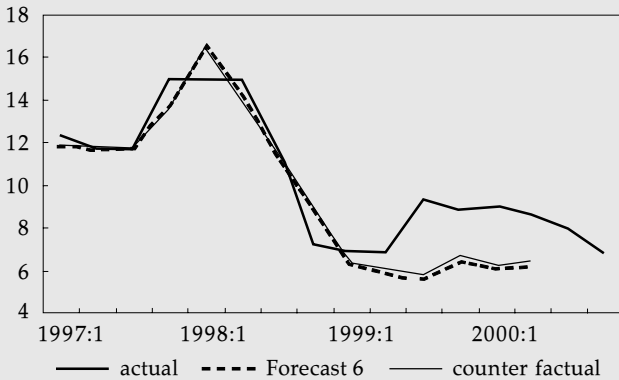


**(Table 10) Models with CPI Lead Observations  
(1987. Q1-1999. Q2)**

Variables	lag	Model 4		Model 5	
		Coefficient	Block Exclusion	Coefficient	Block Exclusion
C	t	0.113	—	-0.013	—
DLM3	t	1.209	LLR: 0.00	1.304	LLR: 0.00
	t-1	-0.446		-0.558	
	t-2	0.686	F-stat: 0.04	1.231	F-stat: 0.00
	t-3	0.833		0.942	
DLCPI	t	-0.255*	LLR: 0.02	-2.486*	LLR: 0.00
	T+1	2.522*		2.699*	
	T+2	-0.583	F-stat: 0.12	-0.381	F-stat: 0.07
	T+3	0.556		0.156	
LCALL	t	0.203**	LLR: 0.00	0.175*	LLR: 0.00
	t-1	0.235**		0.218**	
	t-2	0.138	F-stat: 0.00	0.106	F-stat: 0.00
	t-3	0.018		-0.019	
DLGD	t	0.271	LLR: 0.35	—	—
	t-1	-0.090		—	
	t-2	-0.089	F-stat: 0.60	—	—
	t-3	3.243		—	
GD/ GDP	t	—	—	0.334	LLR: 0.05
	t-1	—		0.553	
	t-2	—	—	-0.122	F-stat: 0.22
	t-3	—		-0.382	
LRCB	t-1	0.174	—	0.278	—
dummy	t	-0.08*	—	-0.102*	—
Adj. R <sup>2</sup>		0.917		0.925	
D. W.		1.866		1.956	

(Table 11) Simplified Model for Models 4 and 5, Model 6

Variables	lag	Model 6
DLM3	t	1.799**
DLCPI	T+2	0.516
LCALL	t	0.184**
	t-1	0.142**
LRCB	t-1	0.541**
dummy	t	-0.078*
Adj. R <sup>2</sup>		0.899
D. W.		2.06



(Figure 7) Forecasts of Long-term Interest Rate of Model 6

two forecasts generated based on Model 6. The line denoted as Forecast 1 shows out-of-sample forecast for the forecast period from 1999.Q3 to 2000.Q4. The other line marked

as Forecast 2 shows a counter-factual forecast; it has been generated by feeding altered data path for CPI inflation, M3 growth rate and call interest rate. More precisely, CPI was assumed to rise 10%, year-on-year instead of the actual observations that ranged from 1 to 3%. M3 was also assumed to rise 10%, year-on-year instead of the actual growth rates of about 6%. Call interest rate was assumed to rise a cumulative 25 basis point over the same period. These paths are chosen to reflect a condition of high inflation. When compared to the forecast based on actual data, however, the counter-factual forecast does not appear that significantly different. That is, the actual behavior of the long-term interest rate cannot be explained by investors' anticipation of a high inflation in the middle of 1999.

Next, we turn to an examination of whether investors' anticipation of a surge in public indebtedness could explain the yield behavior.

### **(3) Expected Rise in Public Sector Debt**

To examine the potential impact of an expected rise in public sector debt, we follow an identical procedure taken in the case of anticipated inflation. Models 1 and 2 have been modified by replacing lagged government debt variables with future ones and they are relabeled as Model 7 and 8, respectively. As shown in Table 12, future government debt variables do play a significant role in explaining the long-term interest rate individually (ie.,  $t+3$ ) as well as collectively. In strong contrast to the earlier results of Table 8, the block

(Table 12) Models with Government Debt Lead Observations  
(1987. Q1-1999. Q2)

Variables	lag	Model 7		Model 8	
		Coefficient	Block Exclusion	Coefficient	Block Exclusion
C	T	-0.212	—	-0.494	—
DLM3	T	2.268**	LLR: 0.00	2.499**	LLR: 0.00
	t-1	-0.250		-0.515	
	t-2	0.394	F-stat: 0.00	1.349	F-stat: 0.00
	t-3	1.519		1.312	
DLCPI	T	-1.822	LLR: 0.00	-1.712	LLR: 0.01
	t-1	-2.093		-1.770	
	t-2	3.053*	F-stat: 0.03	1.917	F-stat: 0.07
	t-3	-0.909		-1.053	
LCALL	T	0.287**	LLR: 0.00	0.237**	LLR: 0.00
	t-1	0.261**		0.267**	
	t-2	0.170**	F-stat: 0.00	0.121*	F-stat: 0.00
	t-3	0.054		0.038	
DLGD	T	0.326	LLR: 0.00	—	—
	T+1	-0.197		—	
	T+2	-0.144	F-stat: 0.03	—	—
	T+3	0.441**		—	
GD/ GDP	T	—	—	0.267	LLR: 0.00
	T+1	—		-0.405	
	T+2	—	—	-0.120	F-stat: 0.01
	T+3	—		0.972**	
LRCB	t-1	0.034	—	0.179	—
dummy	T	-0.116**	—	-0.141**	—
Adj. R <sup>2</sup>		0.934		0.938	
D. W.		2.025		2.026	

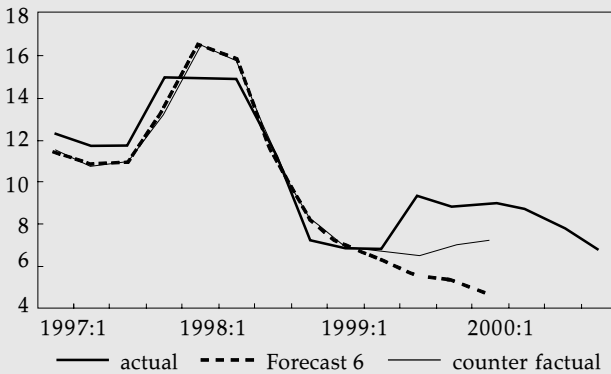
(Table 13) Simplified Model for Models 7 and 8, Model 9

Variables	lag	Model 9
DLM3	T	3.764**
GD/GDP	t+3	0.628**
LCALL	t-1	0.287**
	t-2	0.157**
dummy	T	-0.100*
Adj. R <sup>2</sup>		0.894
D. W.		1.43

exclusion test strongly rejects the assertion that the collection of debt variables is insignificant.

By following the streamlined steps as indicated in earlier sections, these models were similarly simplified. Table 13 shows the simplified model. Again this model was used to forecast the long-term interest rate path consistent with the CPI inflation case.

Figure 8 shows the actual long-term interest rate and forecast utilizing Model 9. The forecast denoted as 'counterfactual' refers to the forecast of long-term interest rate based on a counterfactual government debt path. That is, the government debt path was increased by 10 trillion won per quarter for 4 quarters in the year 2000. As shown in Figure 8, the long-term interest rate follows a rising pattern in response to the increase in government debt over this period. For example, the model's interest rate forecast is about 1 percentage point higher when conditioned on the



(Figure 8) Forecasts of Long-term Interest Rate of Model 9

higher government debt path as compared to the forecast conditioned on the actual path. However, the increase is relatively gradual comparable to the steep jump seen in the actual government yield in the second half of 1999.

#### (4) Interpretation of the Models and Results

The models that included only lagged variables roughly correspond to conditions under which economic agents are given a very limited set of information. That is, in a real world scenario, investors have to rely solely on past information pertaining to variables included in the model to make their decisions. In contrast, models that contain lead observations of CPI inflation and government debt allow a limited degree of perfect foresight regarding some key economic variables. In particular, investors are given perfect

knowledge of future path of government debt up to one year. Consequently, the two models stand in very strong contrast.

Our view is that the second model is to be preferred to the first. The advantage of the latter is not that investors have perfect foresight about the future but, rather, its ability to supply a greater amount of information about the likely future path of key variables that affect long-term interest rates. The list of variables included in the models is quite limited. In the second set of models, we endowed agents with perfect foresight as to the future path of government debt because it directly determines the supply of the instrument that investors in the government bonds are holding.

The point of interest is whether anticipated increases in inflation or government indebtedness can explain the behavior of the government bond yield around the second half of 1999. Quantitative exercises so far suggest a 'maybe not'. That is, the dynamic reaction of the government bond yield was muted even when substantially adverse paths for inflation as well as government debts were assumed, i.e. a substantial rise in inflation (7% point higher than actual for a year) as well as government debts (10 trillion higher than actual for a year).

**V**

**Policy Lessons**



## **A. A Macro-finance Interpretation of the Government's De-leveraging Drive**

The Korean government in faced a dire situation both in terms of the scope of balance sheet clean-up as well as the re-capitalization of banks and the financial resources needed for the job. One certainty was that it was going to require an enormous amount of financial resources.<sup>12)</sup> However, the size of Korea's long- to medium-term debt market was limited.

In 1996, for example, the total amount of bonds outstanding was 175 trillion won, 41% of which was non-financial sector borrowing. The remainder consisted largely of public sector debt. The nominal GDP of Korea in the same year was 418 trillion won. Issuing a substantial amount of new public debt into such a market would necessarily entail disruptive crowding-out effects including a sharp rise in interest rates. One way to minimize the price effect (i.e. rise in interest rates) was to limit the supply of bonds or, equivalently, the quantity of funds demanded. This was achieved by putting a ceiling on the amount of debt large businesses, the main issuers of corporate bonds until then, could carry. More specifically, in 1998 the government imposed a 200% debt-to-equity ratio as a target to be met

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12) To jump ahead of time, as of late 2001, it has taken about 150 trillion won in the four year period since 1998 to address those problems and many observers expect to sum to grow.

in two years. This limit was significant in reducing the share of corporate bonds in the debt market in the ensuing period.<sup>13)</sup>

To gauge the approximate impact of such a sharp rise in overall demand for funds in the bond market, examining what happened earlier under a similar circumstance should be instructive. In 1994, the overall bond issuance rose 30% as a result of a sharp rise in government bonds as well as SPL bonds. One consequence of this surge was a rise in the long-term interest rate to the high 14% range by early 1995 from the low 12% range at the beginning of 1994. That is, long interest rates were pushed up by 2%. In 1998, the overall bond issuance rose almost 50%. This time the rise was due to an increase of SPL bonds and MSBs. Had this trend continued into the following year, one would have expected severe upward pressures on long-term interest rates.

For an economy that had just experienced a serious

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13) As shown in Figure 3, the share of corporate bonds fell from 42% in 1996 to 31% by the end of 1999. Increases in government bonds and SPL bonds filled the gap left by the shrinking share of corporate bonds. Together, the combined share of government bonds and SPL bonds rose to 53% in 1999 from 44% level seen in 1996. This increase was more or less due to large issuance of bonds for the purposes of banking sector restructuring by the Korean Deposit Insurance Corporation (KDIC) as well as the Korean Asset Management Corporation (KAMCO) that started in 1998. The outstanding balance of bonds by those two government-sponsored agencies stood at about 55 trillion won making up about 13% of the total registered bonds at the end of 1999. This amount is roughly about half of the total outstanding corporate bonds at that time.

economic contraction in its recent history of negative 7% in 1998, as Korea's had, rising interest rates could have presented severe problems. An even worse scenario was the prospect that government might be unable to raise the financial resources needed to shore up the banking sector. These concerns would tend to justify taking strong measures to curtail demand for funds from private corporate sector. Indeed as a consequence of the imposition of the 200% debt-equity ratio goal, issuance of corporate bonds fell 7% in 1999. In terms of size, the outstanding balance of corporate bonds fell from 119.4 trillion won (as of December 1998) to 111.1 trillion won (as of December 1999), while the public bonds balance rose from 214.5 trillion to 253.2 trillion won in the same period.

Such a macro-finance perspective provide a strong argument for the government's adamant stance in applying very uniform and inflexible debt-equity ratio to all large businesses regardless of industry-specific idiosyncrasies. At the time, many observers expressed puzzlement with the government's decision to impose the rigid requirement regarding the key endogenous corporate capital structure variable at that time. It was perhaps convenient for the government to impose the quantitative limit on corporate borrowing since many experts and financial press pointed to high debt level of Korean businesses as the key source of vulnerability that brought about the foreign exchange crisis in Korea at the end of 1997.

Such a compositional shift, i.e. public borrowing replac-

ing private borrowing, has had a distinct effect on Korean financial markets. This transition has been an important contributing reason for interest rates remaining historically low since 1999. That is, the compositional shift of a rising share of public bonds with little credit risk has occurred at the expense of decreasing share of corporate bonds with higher credit risk. As a result, the average credit risk of the total pool of bonds has declined over time and, thus, has lowered the risk premium component of long-term interest rates. This, in turn, brought about a lowering of the long-term interest rates in general.

An interesting irony is worthy of note: low interest rates that typically would have benefited private borrowers in the past have had very limited beneficial effects on corporate borrowers at a given point in time. The situation existed since 1999 in the bond market can be characterized as a case of bifurcation: a plentiful supply of public bonds with little credit risk and to a lesser extent, a batch of low-grade private papers that were first issued in the second half of 1998. Apparently market demand for the low-grade private bonds was not strong enough at the prevailing price, forcing the government to come up with various schemes. Pooling them with high-grade papers and then offering credit enhancement seems to be the approach taken by the government so far.

One implication for the future trend in the bond market is that the share of corporate bonds will eventually have to rise. Given that bond issuance is an important source of

raising funds for businesses, their demand for funds will increase once the current economic doldrums passes. This will especially be the case in light of the following factors: first, bank financing has become more difficult since the 1997 financial crisis as banks balked at corporate lending; secondly, raising funds by new share issuance in the stock market will not be an easy option as far as the stock market remains relatively inactive. A sharp stock market rally in 1999, as stock prices recovered from very low level reached in the aftermath of the 1997 crisis, allowed many businesses to raise funds through this method. However, a repeat of such a sharp rally will be difficult to predict in the future.

Market interest rates are expected to climb in response to increases in corporate bond issuance. Two effects are anticipated that are likely to push up interest rates. The first is due to a simple increase in demand for funds. The second is an expected increase in risk premium component to long-term interest rates as the composition between public and private bonds shifts. Apart from the risk-premium interpretation, long-term interest rates are expected to increase as funds raised by businesses are put to more productive uses relative to funds raised through public bond issuance. For example, the KDIC raises funds to transfer income from one group (e.g. taxpayers) to another (e.g. deposit holders of defunct banks) to address banking sector problems accumulated over time. The payment might lead to higher consumption and investment but the effect is expected to

be secondary.

## **B. Risk Composition of Bond Market and Even Distribution of Bond Holdings Deserve More Attention**

A strange bifurcation has taken place in terms of risk characteristics of the bond market in Korea since 1998. As has been demonstrated earlier, the volume of public bonds with very low credit risk has grown very rapidly at the expense of bonds issued by businesses. At the same time, the balance of low-grade bonds has grown in terms of private sector papers. This second group of bonds first issued in 1998 has been a recurring source of problems in the bond market ever since their maturation. The government's solution has been to make them more marketable by offering credit-enhancement. In a nutshell, the government is offering a guarantee. However, despite such measures, they can hardly be called the 'hotcakes' investors are waiting in line to buy.

Strong credit has been the critical qualification that has enabled firms to issue bonds in an open market. Only businesses with high credit rating may participate and issue papers in most countries with well-functioning bond markets. Market based credit assessment is the ultimate yardstick that participants rely upon. No official guarantee is necessary or desirable in such a market. However, in

〈Table 14〉 Distribution of Ownership of U.S. Treasury Securities  
(end of 1999)

(unit: billions of dollars)

Total public debt	Federal Reserve and Government accounts	Held by private investors					
		Total Privately held	Depository Institutions	Pension funds	Insurance companies	Mutual Funds	Other Investors
5,776.1	2,538.3	3,233.9	246.3	445.5	140.0	349.5	2,052.6

Korea's bond market, governmental guarantees have become an essential part of the landscape. Such governmental participation does not seem desirable from the perspective of fostering a healthy bond market in the long run. Offering governmental support to selected papers has essentially the same effect as government's past guidance and implicit guarantees to commercial banks that extended credit to targeted industries. Korea's banking sector has suffered a great deal from this legacy. If the government is keen to fund businesses with low credit grade, it should mobilize government-run banks rather than employing such an unlikely means as the bond market. So far Korea's bond market lacks the infrastructure to deal with junk bonds (see Rhee, Oh, and Yang (2001) for related discussions).

The second issue concerns government bonds. It addresses the question of bond ownership. Tables 14 and 15 compare the ownership composition of government securities in the U.S. (at the end of 1999) and Korea (at the end of June

〈Table 15〉 Distribution of Ownership of Korean Government Bonds  
(June 2001)

(unit: trillion won)

Total	Securities Companies	Domestic Banks	Foreign bank branches	ITCs	Insurance companies	Pension funds	Others
67.1	7.7	36.1	5.8	10.1	2.5	2.4	2.5

2001).

A few points stand out. In the U.S., about half of the total amount is held mainly by the central bank, the Federal Reserve System. In comparison, the Bank of Korea, Korean central bank, holds only a miniscule amount. In Korea, the private sector holds almost all government securities. Also noteworthy is the fact that foreigners hold a substantial amount of Treasuries.

Let us limit our attention at this point on government securities held by private institutions. To focus exclusively on the distribution of government bonds among financial institutions, we will further limit our attention to banks and other institutions. Out of the four representative financial institutions, pension funds are the largest holder of government securities, pegged at 30%. However, holdings by the remaining three institutions are also quite substantial. The share held by insurance companies' is the lowest at 15%. Mutual funds, which could be viewed roughly equivalent to ITCs in Korea, hold about 25% of the total held by all



four institutions.

Turning to Korea, banks are the largest holders with approximately half the total. This share had been smaller until recently as we saw in the securities holdings by various financial institutions earlier in Section B, (2) of Chapter III. However, it is noteworthy that foreign bank branches hold a disproportionately large amount of government bonds. That is, the ratio of the total asset sizes of domestic banks and foreign bank branches is 300 to 1. The ratio of holdings of government bonds of the two groups is less than 7 to 1. These statistics suggest that Korean banks may be underutilizing government bonds. This assessment is based on the observation that foreign bank branches are significantly more profitable than Korean banks. The next largest holders are ITCs with about 15% of the total. Perhaps the most striking observation about the Korean distribution is how few government bonds both insurance companies and pension funds hold. Combined they hold 49 trillion won, even less than the 58 trillion held by foreign bank branches! Given that both insurance companies and pension funds have fixed liabilities over a long period of time, it is difficult to explain why they do not hold more government bonds, the most representative long-term safe asset. If we were to use the U.S. pattern as a useful benchmark, the distribution of Korean government securities among different types of financial institutions is extremely uneven and skewed.

With regard to insurance companies securities' holdings,

as shown in Table 4, a curious tendency to maintain a large concentration of SPLs in their portfolio can be noted. For most years between 1995 and 2000, insurance companies' holding of SPL bonds constituted their largest single type of security, even surpassing their holdings of corporate bonds. In comparison, insurance companies held only a negligible amount of government bonds. This is puzzling as government bonds are even more attractive than SPL bonds in terms of credit risk.

An important implication of observations made so far points to the need for strengthening secondary markets for Korea government bonds. A well functioning secondary market is imperative to imbue confidence about liquidity of government bonds. One reason Korea has not, until recently, issued government bonds with a long-term maturity (beyond 3 years) was the absence of secondary markets. Investors in government bonds, therefore, have little choice but to hold them until maturity. An absence of secondary markets directly reduces the usefulness of government bonds as a portfolio choice, hence, reduces demand for them.

## **C. What Could Have Been Done Differently?**

### **(1) A More Pro-Active Role by the Bank of Korea**

Many observers in Korea offer a summary explanation for the government bond yield increase in late 1999 by

pointing to ITCs' large scale sell-off of bonds to secure cash for redemption demand by holders of their bond funds. However, the so-called sell-off of government bonds by ITCs sold in the second half of 1999 amounted to about 2.8 trillion won, not a significant sum when compared to about 60 trillion won, the total outstanding balance of government bonds at the end of 1999. So such a simplistic explanation begs more questions.

A key player that could have played potentially a central role but absent in the overall picture of tumultuous financial market developments in the second half of 1999 was the Bank of Korea. As the key overseer and guarantor of stability of the national financial system, the central bank appears to have played a very minimal role. As part of the government plan announced in early October 1999 to stabilize financial markets in the aftermath of the Daewoo default, for example, the central bank announced that it would purchase public bonds from ITCs and banks if they requested. As mentioned earlier, the so-called sell-off by ITCs involved less than 3 trillion worth of government bonds and about 7.3 and 2.7 trillion won worth of MSB and SPL bonds. These are the actual amount of bonds that ITCs sold between July and December of 1999. A speedy and orderly disposal of these public bonds would have greatly helped financial markets by removing concerns about illiquidity of at least these types of papers. Thus, the necessary and expedient action at that time would have been for the central bank to actively participate in the

〈Table 16〉 Trend of Securities Holdings by Banks in 1999

(unit: trillion)

1999	Total	Gov't	Corporate	SPL	MSB	Stock
January	81.4	12.7	42.8	3.8	16.1	6.0
June	94.5	15.9	45.4	6.1	18.6	8.5
July	97.4	15.0	49.1	6.2	18.6	8.5
August	99.3	15.4	49.6	6.3	19.4	8.6
September	105.5	16.4	54.9	6.5	19.1	8.1
October	109.2	17.3	57.0	6.3	20.3	8.3
November	110.7	18.3	58.0	7.3	18.8	8.3
December	112.6	19.5	60.3	6.8	19.4	6.6

bond market to make open market purchases of public bonds instead of proposing to make direct purchases from ITCs and banks upon their request.

The very idea of the central bank relying on bilateral bond transaction instead of transactions in an open market clearly reveals why the bond market in Korea remains immature. One key problem is the market's relative lack of liquidity. Investors lack confidence in the feasibility of a prompt cashing of their bond holdings when the need arises. Such a problem can be solved only when the transaction volume increases.

The BOK had a rare opportunity to achieve two goals. The first was to enhance liquidity of the bond market by actively participating at a time when the market was under a great deal of stress. The second was to acquire public

**〈Table 17〉 Trend of Securities Holdings by Investment Trust in 1999**  
(unit: trillion)

1999	Total	Gov't	Corporate	SPL	MSB	Stock
January	149.7	9.0	118.0	6.5	11.4	4.8
June	170.4	12.6	121.8	7.5	12.9	15.6
July	178.8	13.5	121.3	7.6	13.7	22.7
August	172.2	13.0	116.9	6.8	12.0	23.5
September	166.4	12.5	111.2	6.5	10.7	25.5
October	156.6	11.2	103.1	6.8	8.8	26.8
November	148.1	10.7	97.4	3.6	8.2	28.2
December	144.1	10.5	92.8	4.9	6.4	29.5

**〈Table 18〉 Trend of Securities Holdings by Life Insurance in 1999**  
(unit: trillion)

1999	Total	Gov't	Corporate	SPL	MSB	Stock
January	35.4	1.1	7.1	19.5	0.1	7.6
June	36.6	1.3	6.3	21.3	0.2	7.5
July	36.7	1.5	6.4	22.9	0.1	5.8
August	36.5	1.6	7.0	22.0	0.2	5.7
September	36.7	2.0	6.9	21.6	0.3	5.9
October	38.0	2.2	7.3	22.2	0.4	5.9
November	40.5	2.6	9.5	22.1	0.4	5.9
December	42.3	2.8	10.4	22.3	0.3	6.5

bonds (government+SPL bonds) that could be used for monetary policy related open market operation purposes. In

its action, the BOK has stubbornly insisted on relying solely on the Monetary Stabilization Bonds, which are liabilities issued by the central bank and carry long-term inflationary implications, instead of adopting the use of now-plentiful public bonds. For example, the BOK holding of government bonds reached a peak of 7.9 trillion won in 1997 and has remained below that level ever since. The BOK increased SPL bond holding to about 8 trillion in 1998 but has reduced the level to about 2 trillion won over the past several years.

Two interpretations of the BOK's inaction are credible. The first asserts that the central bank has stubbornly refused to be drawn into playing the role of financing the government debt burden by purchasing government bonds. The second posits that the BOK is somehow averse to losing control of the traditional lever of aggregate liquidity, namely the MSB, so eschews the use of government bonds for the purposes of open market operations. The first argument does appear compelling as the BOK has played pseudo-fiscal policy roles in the form of providing industrial policy and export promotion related credit to commercial banks for many years. The situation in Korea following 1997 was truly unprecedented in terms of the severity of economic shock that took place. A substantial amount of the funds raised by the government through bond issuance in recent years was used to address problems in the financial sector owing to past malpractices of borrowers, bankers and the regulators. The BOK, Korea's bank regulator until regulatory

re-organization took place in 1998, cannot play innocent outsider to the structural problems plaguing the Korean financial sector. The bottom line is the BOK could have played a more active role and acted as a catalyst for market stabilization in 1999 by making open market purchases of public bonds. Instead of this route, the government relied on a coercive special 'market stabilization fund'; a method deployed often in the past.

A real possibility exists that had there been a clear sign that the central bank would support the public bond segment of bond market, a 'flight to quality' would indeed have occurred. The significance of this 'road untaken' is not that a 'flight to quality' did not take place in late 1999, but the financial market turmoil could have been more manageable. In addition, a more market-oriented solution to Daewoo-related financial market turbulence could have been found. The fact that there was no visible rise in government bond prices (equivalently, fall in yields) immediately after the public acknowledgment of Daewoo default of late July and the launching of the 'bond market stabilization fund', could have been the result of Korean banks and other financial institutions waiting on the sideline for a further slide in prices of public bonds that ITCs had to sell to raise cash. Intervention by the government or the central bank in the way of making open market purchases would have brought about a completely different reaction from Korean financial institutions. Namely, they would have participated and help resolve the cash

crunch situation of ITCs by buying up public bonds that were sold by ITCs. Had this been the case, ITCs would have been in a less desperate position of trying to sell any and all papers to raise cash. A smooth sale of public bonds would have also reduced the amount of corporate bonds that had to be offered as a 'fire sale'. This course of action would have eased the situation related to corporate bond sell-offs as well.

The central bank is the only player with sufficient means in financial markets with the capacity to improve liquidity of the government bond market. The simple use of government bonds in its open market operation should enhance liquidity as well as the depth of the market. It is hard to understand why the BOK is doggedly clinging to the exclusive use of MSBs in their open market operation. Before the central bank could have pointed to the lack of alternatives for MSB. Now, there is a relatively plentiful supply of public bonds amenable to open market operations. It appears that only at such a time when the central bank gets genuinely serious about enhancing bond market liquidity will a true improvement in Korea's bond market come about.

## **(2) More Prudent Investment Decisions by ITCs**

Undue concentration of high risk papers by ITCs was definitely a problem. The concentration of Daewoo papers in ITCs' portfolios was especially problematic. According to a report by the Financial Supervisory Commission, ITCs



held 27.5 trillion won worth of Daewoo securities (corporate bonds and commercial papers), making up 10.7% of the total investment of ITCs. Part of the rationale for ITCs holding so much Daewoo paper was to boost the rates of return on various trust products they aggressively marketed to investors who ploughed money that they had previously deposited in banks and merchant banks. In retrospect, the overall appetite for risk seemed to have gone unchecked by both market participants and financial regulators. Despite the fact that large businesses effectively stopped issuing new corporate bonds, as discussed earlier, the overall volume of corporate bonds rose during that same period. Rather, the trend was viewed in a positive light since firms that previously had no access to the corporate bond market were able to issue them.

### **(3) More Transparent Governmental Intervention**

The fact that at least part of the reason ITCs held large amounts of Daewoo securities appears to be due to strong moral suasion by the government is troubling. This surfaced publicly as a result of the court ruling issued on August 2001 that “ordered an ITC to compensate customers for losses from its purchase of bonds issued by troubled units of the Daewoo group in 1999.”<sup>14)</sup> The case brought some interesting facts to light on the inner workings of

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14) Korea Herald, “Court orders trusts to cover customers’ losses,” August 21, 2001. Also see a related editorial “A court ruling on ITC,” August 25, 2001.

ITCs around the time of Daewoo's default in summer of 1999.

First, they bought Daewoo papers even as the group's financial problems were becoming widely known, under pressure from the financial regulatory offices. Until the final decision was made in late August to put Daewoo on the so-called 'work out' program, the Korean government apparently had exerted considerable effort to sustain Daewoo firms by arranging credit infusions by various financial institutions.<sup>15)</sup> Secondly, ITCs had to meet the rule of limiting security holdings of a particular company to 10% of the total assets of a given fund. This rule in turn apparently forced ITCs to do some creative internal shifting of Daewoo securities across different funds.

Observations so far suggest at least two answers to the question of what could have been done differently. One, ITC fund managers should have acted more prudently. They flagrantly ignored the basic axiom that high return comes with undertaking higher risks. Discussions by Shin and Park (2001) offer some possible reasons for fund managers' behavior. Despite a rapid change in the regime of the government offering implicit guarantees on ITC products akin to bank deposits since the 1997 crisis, "most of all final investors still believed that ITCs were in the loss heaven." The second part of the answer is no less troubling.

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15) The government involvement was indirect, however, as financial assistance was arranged as a voluntary agreement among creditors of Daewoo.

Basically, government intervention in management decisions by financial institutions has not changed much despite much rhetoric that argues to the contrary. It clearly illustrates how difficult it is to change long-standing practices that rely on implicit coercion. Some might argue that policy-makers' concern about the looming adverse macroeconomic repercussions of Daewoo's failure largely justifies the government's leaning on ITCs and other financial institutions. Perhaps so. However, if Daewoo's collapse was indeed such a serious government concern, it should have laid out a more explicit contingency plan and clarified its own commitment in the event of that bailout efforts turned out to be unsuccessful and losses by financial institutions continue to mount. The government's abuse of its power persuading financial institutions through the use of vague threats and empty guarantees is the worst possible example of how to stunt the growth of a financial sector that inherently must shoulder the consequences of its own decisions.

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