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Chaebol Capitalism and the Currency-Financial Crisis in Korea

Anne O. Krueger and Jungho Yoo

In the aftermath of the Asian "financial crises," a number of factors have been identified as the culprits in leading to the crises and intensifying their severity. Among them, so-called "crony capitalism," the weakness of the banking system precrisis, financial liberalization and opening of the capital account, and the nominal exchange rate regime have all been singled out.

However, although all these factors obviously contributed, their relative quantitative importance and the interactions between them are little understood. It is the purpose of this paper to delve, insofar as is feasible, into the contributions of exchange rate depreciation, the weak financial system, financial and capital account liberalization, and crony capitalism in leading up to the crisis and intensifying its severity. For that purpose, we focus on the Korean experience and trace the roles of the *chaebol,* the history of credit rationing and buildup of domestic credit and foreign indebtedness prior to the crisis, the opening of the capital account, and the impact of exchange rate depreciation on the crisis.

It is important to understand the role and relative importance of each of the key variables. If, for example, exchange rate depreciation was forced as the consequence of maintaining an unsustainable nominal exchange rate for a long period of time prior to the crisis and was quantitatively the largest factor in leading to the deterioration of the banks' portfolios, resort in the future to a genuinely floating exchange rate or preventing uncovered liabil-

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ities denominated in foreign exchange should greatly reduce the likelihood of future crises. Likewise, if bank lending practices had resulted in a rapidly increasing proportion of nonperforming loans (NPLs) in the banking system even had the exchange rate not been a significant factor, the relative importance of improving bank lending practices as a preventive measure for future crises looms much larger.[1] Moreover, if rigidities in the banking and financial system resulting from failure to liberalize or regulate sufficiently were a major contributing factor, the policy lessons would focus on the urgent need to liberalize and strengthen banking and financial systems in emerging markets.

In our first section, we briefly sketch the roles that each of these factors can play in theory in financial crises. In section 13.2 we then provide background on the Korean economy and the evolution of the banking and financial systems, the *chaebol,* and linkages to the international economy, which are essential building blocks for our later analysis. Section 13.3 then examines the history of financing of the *chaebol* and their role in the Korean economy. The fourth section then examines the financial structure and performance of the *chaebol* and the banking system. The fifth section then considers the role of foreign currency–denominated debt in intensifying the crisis. The final section then provides our best judgment as to the relative importance of the variables widely pointed to as contributing to crisis.

13.1 Domestic Credit Expansion, Lending to *Chaebol* or Cronies, Exchange Rate Depreciation, Capital Account Opening, and Crises

As the title of this section suggests, the problem for analysis of the Asian crises is not the lack of explanations: it is that there are too many. In those crises, and in the Mexican crisis of 1994, a foreign exchange crisis and a financial crisis occurred almost simultaneously and have come to be termed *twin crises.* As will be seen, there are a number of reasons to anticipate that these twin crises are likely to have a far more severe impact on a domestic economy than either a financial or a currency crisis alone, and it is not coincidental that their onset is virtually simultaneous.

In this section, we briefly review the role of each of the possible causal factors in precipitating and intensifying twin crises. Once that is done, focus turns to interactions between them. Thereafter, we attempt to assess how important these factors were and the quantitative magnitude of the interactions.

1. In some countries, NPLs increase because of lending to the politically well connected, who apparently do not expect, and are not expected, to repay. In Korea, however, the "cronyism" concerns surrounding bank lending focus on the lending by the banks to the large *chaebol.* Earlier lending to them had been sound, as will be seen, although as will also be seen, government officials supported lending to the *chaebol* by the banks when their profitability was falling sharply in the precrisis period.

13.1.1 Exchange Rate Pegging

Although any nominal exchange rate could, in theory, be associated with the appropriate real exchange rate,[2] empirical evidence shows that governmental policies with respect to nominal exchange rates over periods of three to five years, if not longer, significantly affect real exchange rates. Whether this is because of long lags in adjustment or the unwillingness of the domestic authorities to adopt the monetary and fiscal policies consistent with their choice of nominal exchange rate is not relevant for present purposes. Empirically, if the authorities intervene in the foreign exchange market for purposes other than smoothing short-term fluctuations (such as maintaining a fixed nominal exchange rate), the real exchange rate appreciates relative to major trading partners when domestic inflation exceeds the inflation rate in the partner countries. Likewise, if for any reason (such as changes in the terms of trade or rapid growth of domestic demand for imports) the real exchange rate would adjust in a well-functioning free market but is prevented from doing so, there can be imbalances between the demand for and supply of foreign exchange. As long as the authorities can meet this demand, buying or selling foreign exchange as demanded, they can maintain their exchange rate policy.

All of the countries afflicted with twin crises in the 1990s had intervened heavily in their foreign exchange market in one way or another to achieve target nominal exchange rates. In the cases of Mexico and Thailand, the nominal exchange rate had been either fixed, or adjusted according to a formula that resulted in significant appreciation of the real exchange rate. In Indonesia and Korea, terms-of-trade shocks probably called for a significant real exchange rate depreciation at a time when there was some degree of real appreciation—as will be seen below for Korea.

When government officials implicitly or explicitly indicate that they will maintain an exchange rate policy that results in an appreciating currency in real terms, they provide individuals and firms with a strong incentive to access the international capital market, because the real interest rate is typically lower than in the domestic market.[3] When domestic residents have access to the foreign capital market, or when domestic banks can borrow abroad, the result is an increase in the nation's liabilities, and exchange rate policy means that the government is increasing its contingent liabilities. The

2. This would require that the domestic authorities refrain from using monetary and fiscal policies in pursuit of domestic economic objectives and instead allow inflation or deflation to occur as the "equilibrium" real exchange rate changed. Thus, if from an initial position of balance the terms of trade deteriorated and warranted a real depreciation of the currency, the domestic price level would have to be allowed to decline to achieve that real depreciation.

3. Lowering the domestic nominal interest rate would result in more domestic inflation and is thus eschewed by the authorities. See Krueger (1997) for the calculation of Mexican real interest rates during the precrisis period when a nominal anchor exchange rate policy was followed.

unsustainability of the nominal exchange rate policy results in a buildup of domestic credit and foreign liabilities until the time when either domestic residents and foreigners anticipate that the exchange rate will alter and attempt to get out of domestic money and into foreign currency or the public or private debt-servicing obligations denominated in foreign exchange are not voluntarily met. At that point, either the run on the currency results in a currency crisis, or the prospective inability to continue voluntary debt-servicing forces the same outcome. Resolving the crisis almost always involves an alteration in the exchange rate, and usually in exchange rate policy.[4]

It should be noted here that there can be a "pure" currency crisis, one that exists without a financial crisis. The normal precondition for this outcome is a reasonably sound banking and financial system at the time of the onset of the currency crisis, or a preexisting highly restrictive set of capital controls that prevented the buildup of significant foreign indebtedness. Brazil's devaluation in 1999 is one good example of a currency crisis in which there was no serious domestic financial spillover.

13.1.2 Crony Capitalism and Crisis

If there is a continuing buildup of NPLs in the banking system, a financial crisis will result unless effective measures are taken to reverse the buildup. NPLs can come about for several reasons: (a) there can be an unforeseen macroeconomic disturbance (originating abroad or domestically) that leads to unfavorable outcomes for borrowers; (b) domestic credit expansion may be so rapid that banks are unwilling or unable to exercise normal prudence in lending, and a disproportionate number of borrowers are unable to service their debts (often after a macroeconomic downturn); (c) banks may be directed or induced to lend to politically well-connected cronies, who do not service their outstanding loans; and, finally, (d) banks may lend to favored (economically important) enterprises that do not or cannot service their debt obligations. This last case includes the circumstance in which banks provide "evergreen" accounts for large businesses that are indebted to them, rolling over existing debt and extending credit to finance interest payments on it.

For Indonesia, it is thought that the third explanation—obligatory lending to politically well-connected friends and relatives of the president—was a significant factor in the NPLs of the banking system. In Thailand (and to a degree in Korea, as will be seen below), rapid expansion of domestic credit, certainly at least somewhat associated with the fixed nominal exchange rate, was a major culprit. In Japan in the late 1980s, where currency

4. It should be noted that not all exchange rate changes will immediately quell the crisis. In the Mexican case, there was already a significant capital outflow when the authorities announced a nominal devaluation. In the view of most market participants, the magnitude of the announced devaluation was too small, and the run on the currency intensified. It was not until the exchange rate was permitted to float that the immediate crisis subsided.

crisis was not a factor, a large negative macroeconomic shock when the rapid inflation of asset prices was reversed was the trigger for difficulties in the banking system. Probably the best example of the last explanation, lending to favored enterprises and evergreening their accounts, is the Korean case, to be discussed below.

Here, the important point is that once NPLs become significant in a bank's portfolios, serious difficulties are likely to result in the absence of sufficient provisioning or capital. A bank with sizable NPLs must charge higher interest rates on its lending in order to cover its costs over a smaller proportion of its business. Consequently, if it has more NPLs than its competitors, only those unable to obtain cheaper credit at banks with healthier balance sheets will borrow from it, thus increasing the riskiness of its portfolio. At the same time, as depositors learn of the bank's difficulties, they are likely to attempt to withdraw their deposits.

When many domestic banks have these difficulties at the same time, domestic credit can contract sharply. If there are foreign competitors (or if creditworthy borrowers can borrow abroad), the entire domestic banking system can be threatened.

13.1.3 Domestic Credit Expansion

Domestic credit can expand unduly rapidly because of government direction of credit to cronies or to favored enterprises. However, it can also expand rapidly because of the incentives provided by the exchange rate regime or simply because government monetary and fiscal policy is very loose for whatever reason. Rapid expansion of credit is dangerous. On one hand, it is inflationary, which means that for a while a permissive environment will enable borrowers to service their debts until tighter monetary policy is adopted to curb the resulting inflation. On the other hand, accelerated lending is associated with a deteriorating quality of borrower, both because there are simply not enough sound borrowers to finance such a rapid expansion and because banks do not have the capacity to evaluate lending at such an increasing rate.

Rapid expansion of domestic credit was a feature of the precrisis period in Mexico, Indonesia, Thailand, Malaysia, and Korea. In the Indonesian case, the expansion of domestic credit exceeded 20 percent of gross domestic product (GDP) in the precrisis years.

13.1.4 Capital Account Liberalization

Many observers have blamed the opening of the capital account for the twin crises of the 1990s. The simple argument goes that without an open capital account, indebtedness could not have built up. However, there have been many experiences with foreign exchange crises in countries where the capital account was relatively closed. The degree to which cross-border financial flows must be regulated to prevent speculative flows when exchange

rates are greatly misaligned is more restrictive than is compatible with a relatively open trading regime.

Moreover, many countries with open capital accounts have not experienced the difficulties that the Asian countries did. Economies such as those of Taiwan and Singapore, where there were current account surpluses and high levels of foreign exchange reserves relative to trade volumes, did not experience difficulties.

To the extent that the opening of the capital account results in difficulties, there are more complex avenues than those associated with real appreciation of the currency. First, when the capital account is open and the nominal exchange rate is fixed without appropriate supportive monetary and fiscal policies, as discussed above, there are strong incentives for banks or private entities to incur foreign exchange–denominated liabilities (capital inflow) because of lower borrowing costs. When they view the government as having guaranteed the exchange rate, they may not match their future foreign exchange liabilities with foreign exchange assets. Second, banks may not have sufficient incentives for appropriate prudence in their lending policies, due either to a lack of capital adequacy (and existing NPLs) or to an absence of appropriate supervision.

In the first case, it would appear that the exchange rate regime is the real culprit; in the second, it is weaknesses in the domestic financial system, which become exacerbated with the opening of the capital account.

13.2 The Korean Economy, the *Chaebol,* Credit Rationing, and Growth

13.2.1 Korean Economic Growth After 1960

As is well known, Korea was one of the poorest countries in the world in the late 1950s and was then widely regarded as a country without serious growth prospects. After economic policy reforms began in the early 1960s, Korea began growing at sustained rates previously unheard of in world history.[5] Real GDP grew at an average annual rate of 10 percent per annum in the decade starting in 1963. High growth rates continued into the 1990s, and Korea's real per capita income in the mid-1990s was nearly nine times what it had been in the early 1960s (see fig. 13.1).

5. Taiwan's rate of economic growth was equally rapid. Prior to the crisis of the late 1990s, most observers would have claimed that the major difference between the Taiwanese and Korean economies was the relatively small scale of Taiwanese enterprises contrasted with the large share of the Korean *chaebol* in the Korean economy. However, there were other differences: perhaps because of greater strategic insecurity, the Taiwanese held very large foreign exchange reserves in relation to the size of their trade or their economy; the Taiwanese dollar showed no tendency for real appreciation; and Taiwan's current account had been consistently in surplus. The Taiwanese financial system appears to have been considerably sounder than that of Korea in the late 1990s, and the rate of expansion of domestic credit at that time was much lower than that in Korea.

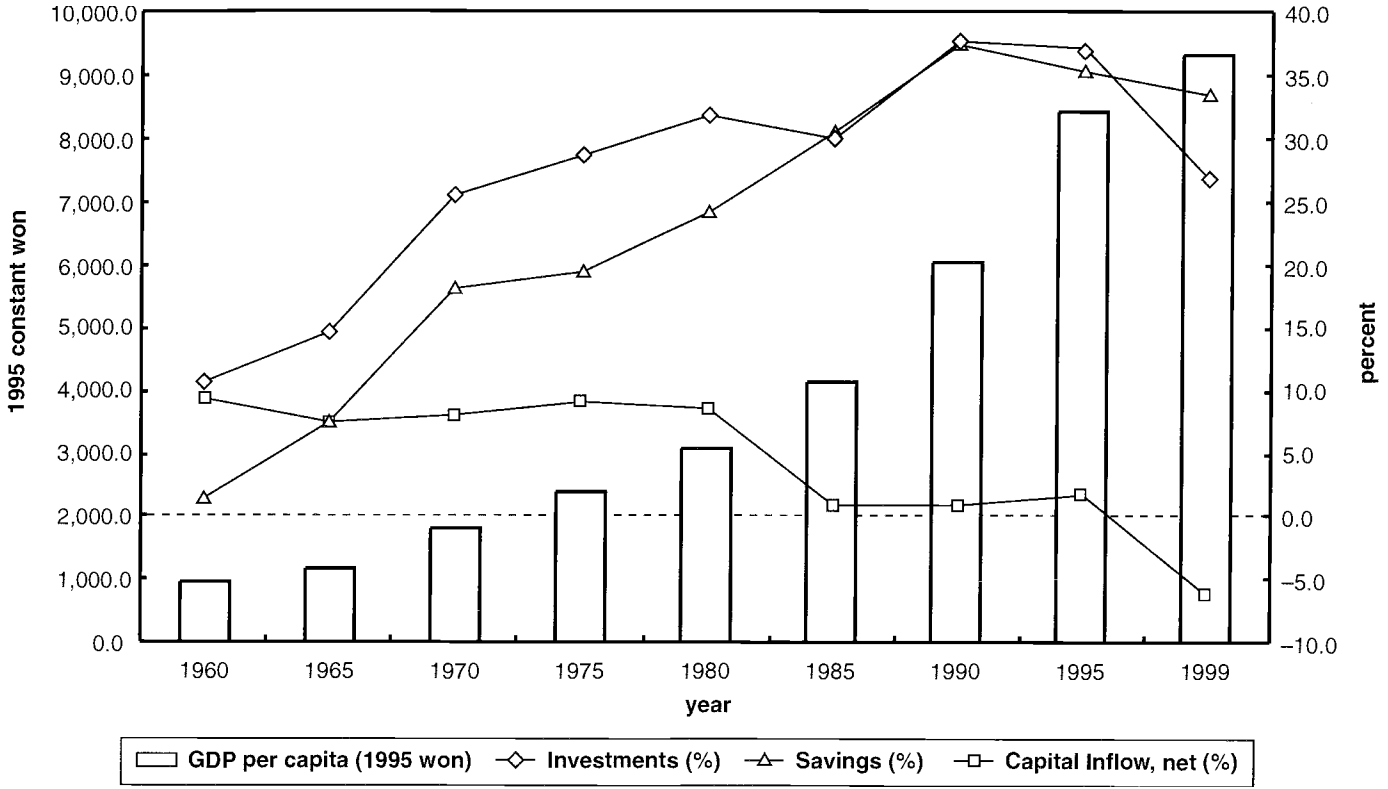

Fig. 13.1 GDP per capita, investments, savings, capital flows

Source: Appendix table 13A.1.

Economic liberalization took place throughout the first thirty-five years of Korea's rapid growth. In 1960, the country had had the usual developing-country mix of an overvalued exchange rate supported by quantitative restrictions on imports (and a black market in foreign exchange), consequent high walls of protection for domestic manufacturers, price controls on many key commodities, credit rationing, a large fiscal deficit, one of the highest rates of inflation in the world, and a huge (averaging around 9 percent of GDP over the period 1953–58) current account deficit, financed largely by foreign aid inflows.[6]

First steps in reform included a move to a more realistic (and constant real) exchange rate for exports and the relaxation of restrictions on importing by exporters. Imports were liberalized further in the late 1960s, and the exchange regime was unified by that time. Other major reforms also took place, including a major fiscal and tax reform in 1964, gradual removal of price controls, a shift from a regime discriminating against agriculture to a protective one, and further liberalization of the trade regime. In the later 1960s, quantitative restrictions on imports were greatly eased and tariffs were lowered in several steps, and further trade liberalization took place in the 1990s.

In the early years of rapid growth, however, the banking system remained tightly controlled. Even after a reform in 1965 (which resulted in a positive real rate of interest for borrowers), credit was rationed and the curb market rate was well above the controlled interest rate (see Hong 1981). Only in the late 1980s did deregulation of interest rates begin, although the apparent gap between demand and supply of loanable funds was declining over time (see section 13.3).

When economic policy reform began, Korea's exports were only about 3 percent of GDP, whereas imports were about 13 percent. Policy makers therefore began to focus on measures to increase exports. They did so by encouraging all exports uniformly,[7] but nonetheless they held something that might be regarded as approaching an "export theory of value." Any firm that could export was rewarded in proportion to the foreign exchange receipts from exporting. Moreover, many of the firms that were initially successful were *chaebol* (although they were very small at the time, and some Korean analysts today do not regard the Hyundais, Samsungs, and the like of the 1960s as *chaebol* at all). Because they were successful, they grew rap-

6. See Krueger (1979) and Frank, Kim, and Westphal (1975) for an account of the early period of Korea's rapid development.

7. All exporters were given an "export subsidy," an "interest subsidy," and a tax subsidy, each of a specified number of won per dollar of exports (the number being altered from time to time as conditions were deemed to warrant). In addition, exporters were permitted to import goods for their use in generous quantities, which undoubtedly permitted some profits through use of the excess for domestic sales. To a significant degree, these "incentives" offset the duties and other charges on imports and resulted in reasonably uniform incentives for import competing and exportable production.

idly. They received new loans as their exports grew and as they expanded into new exporting activities.[8] Given the underdeveloped state of the Korean financial markets at that time (and in the absence of measures to strengthen them), access to credit was vital for expansion.

The *chaebol* were successful exporters and, for the first decade or more of Korean growth, were regarded almost as the heroes of Korean development. They were rewarded for export performance and were highly profitable. Hong (1981) estimates the real rate of return on capital to have been about 35 percent or more in the first decade following the start of reforms. Although the *chaebol* were highly profitable and generally encouraged to enter whatever export markets they could, when the authorities wanted a venture undertaken, the *chaebol* were asked to do so. They undertook these ventures with the implicit guarantee of the government that credit, tax exemptions, and other support would be available to make the venture profitable.[9] However, the *chaebol* were on the whole remarkably profitable and had little difficulty in servicing their (subsidized) debt.

The extent to which the Korean economy changed structure is remarkable (see fig. 13.2). Exports and export earnings (the dollar price index of traded goods being stable in the 1960s) grew at over 41 percent annually for the period 1959–69 and continued growing almost that rapidly thereafter. Exports of goods and services as a percentage of GDP rose from 3 percent in 1960 to 14 percent in 1970 and to 33 percent in 1980; imports also rose, from their 10 percent level in 1960 to 41 percent of GDP in 1980. Hence, the Korean economy was becoming much more open.[10]

At the start of reforms, rationed credit financed a large fraction of new investment, especially in the manufacturing sector. The subsidies implicit in

8. Some of these activities were chosen by the *chaebol.* On occasion, however, the authorities suggested to *chaebol* owners that they should move into certain lines of production. This attempt to "pick winners" was not always successful; when it reached its height in the heavy and chemical industry (HCI) drive of the mid-1970s, the rate of economic growth and of export expansion slowed substantially, and policies were reversed by the late 1970s. When *chaebol* incurred losses while undertaking these mandated activities, the banks were directed to extend additional credit to the *chaebol,* thus setting a precedent for later difficulties.

9. It is important to underscore that these government "rewards" existed in the context of the export drive. When *chaebol* could not produce competitive exports, there was little support. Even in the HCI drive—the most industry-specific interventionist phase of Korean policy—the output from HCI industries was to be exported within a specified period. When it became clear that that performance test was not being passed, the entire thrust of policy was reevaluated.

10. Some of the increase in imports was of course intermediate goods used in the production of exportables. However, the percentage import content of exports remained fairly stable at around 35 percent of the value of exports over the period of rapid growth. From 1960 onward, exporters were entitled to import with little paperwork virtually anything that they might use in producing exportables; in addition, they were permitted to import a "wastage" allowance, which they were free to sell on the domestic market. Thus, the de facto liberalization exceeded that which took place because of the removal of quantitative restrictions and lowering of tariffs. With an average tariff rate in the tariff schedule of around 15 percent in 1970, average tariff collections as a percent of imports were about 6 percent.

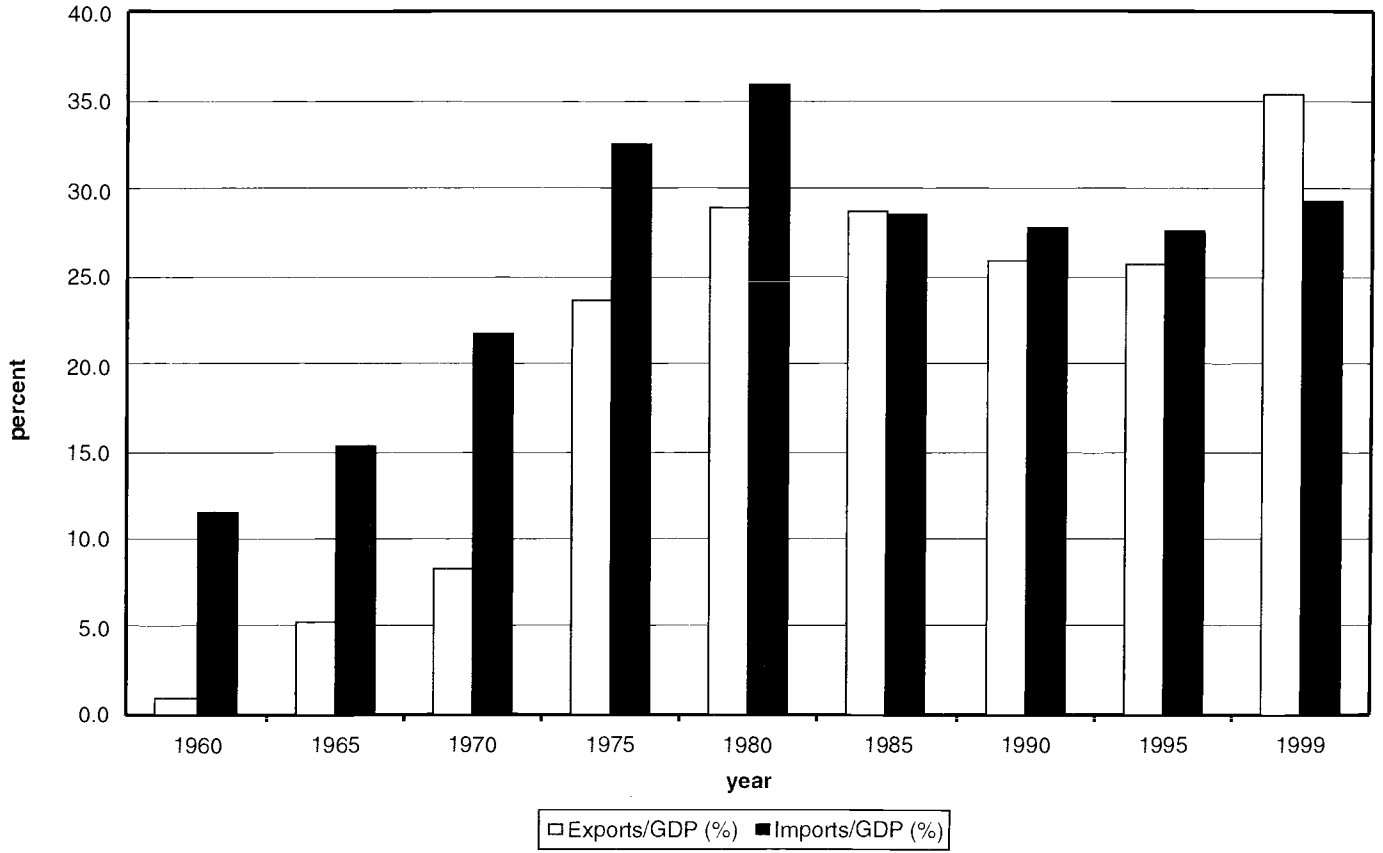

Fig. 13.2 Dependency on trade
Source: Appendix table 13A.2.

this credit served as a stimulus to industry and permitted much more rapid expansion than would have been possible had companies been forced to rely on reinvesting their own profits.[11] Exporters were allocated preferential credit based upon their export performance. The real rate of return was so high that all the *chaebol* would happily have borrowed more had they been able to; most of them, as reported by Hong (1981), borrowed additional funds at the much higher curb market rates. Thus, lending at controlled interest rates was, at least in the early years, equivalent to an intramarginal subsidy to the *chaebol.*

Estimates of rates of return suggest that the *chaebol* were highly profitable at that time even without subsidies. Indeed, given the huge distortions in the economy that prevailed in the late 1950s, it is likely that, at least in the 1960s, almost any reasonably sensible venture into unskilled labor–intensive exportable production had a high real rate of return.

As already mentioned, by the mid-1960s the borrowing rate from the banks was positive in real terms although below a market-clearing rate. Over the following three decades, the banking system was further liberalized as the real interest rate charged for loans rose and the gap between the controlled rate and what might have cleared the market diminished (see section 13.3). At the same time, the real rate of return on investments naturally fell, because the very high initial returns obviously could not be sustained. We trace the decline in real returns and the increase in the real cost of credit in the next section.

When policy reforms began in the early 1960s, the Korean saving rate was very low, even negative by some estimates. As growth accelerated and per capita incomes rose, domestic saving began to increase rapidly, rising from around zero percent of GDP[12] in 1960 to 18 percent by 1970 and to 24 percent by 1980 (see fig. 13.1). However, at least until the late 1970s, profitable investment opportunities greatly exceeded domestic saving. As a result, domestic saving was supplemented by borrowing from abroad, equaling as much as 13 percent of GDP in years in the late 1960s.[13] Despite the large capital inflows, however, the ratios of debt service to exports and debt to

11. In much of the public discussion about the reliance of firms in crisis countries on borrowing, what seems to be forgotten is that, starting from very low levels of income and development, there is very little equity, and a large fraction of investment must therefore be financed through other channels.

12. In 1960, it is estimated that private saving was a positive 3.2 percent of GDP, whereas government saving was a negative 2 percent of GDP. Foreign sources financed 78 percent of investment, which was 10 percent of GDP. See Krueger (1979, 206–07). In 1960, most foreign resources were foreign aid.

13. Most of the capital inflow was from the private sector—largely commercial bank lending—by the late 1960s. Foreign aid had peaked in 1958 and was less than 2 percent of GDP by the mid-1960s. The current account deficit was sustainable because of the profitability of investment and the declining debt-service ratio that resulted from such rapid growth of exports and of real GDP.

GDP did not increase because of the rapid rate of growth of export earnings and real GDP.

The Korean government guaranteed these credits and determined the maximum that could be borrowed, allocating borrowing rights among exporting firms. Because the foreign interest rate was well below the domestic interest rate (especially in the curb market) and the real exchange rate was fairly stable for exporters, there was intense competition for foreign loans.

As domestic saving rose, the proportionate reliance on foreign resources to supplement domestic saving in financing investment fell. By the 1980s, the domestic saving rate was in excess of 30 percent, and the current account went into surplus for several years in the mid-1980s.[14] Beginning at this time, the American government in bilateral trade negotiations began to pressure the Koreans to allow the won to appreciate in order to reduce the bilateral trade surplus with the United States.[15] By the mid-1990s most Korean economists believed that some real depreciation of the won would be in Korea's best interest but the pressures against such a move prevented it. Although the won exchange rate was not fixed, the range within which it fluctuated was relatively narrow: it appreciated from 890 won per dollar at the end of 1985 to 679 won per dollar in 1989, and thereafter it gradually depreciated to 808 won per dollar in 1993, appreciating again to 788 won per dollar in 1995. At the end of 1996 it stood at 844 won per dollar, and of course it depreciated almost 50 percent in 1997.[16] For the decade prior to the 1997 crisis, however, there had been little change in the real exchange rate.

Thus, by the mid-1990s, Korea had sustained three and a half decades of rapid growth. Although there had been periods of difficulty—both slowdowns and overheating—Korean policy makers had met their challenges successfully. As noted by the Organization for Economic Cooperation and Development (OECD), the country had progressed from being one of the poorest developing countries in 1960 to having a per capita income equal to that of some OECD countries and a higher rate of economic growth.[17]

The late 1980s had witnessed the introduction of a democratic process

14. Korean policy makers viewed the emergence of the current account surplus as a transitory phenomenon explicable by "three lows": the fall in oil prices in the mid-1980s, the drop in world interest rates (so that debt-servicing costs declined), and the low dollar (or high yen). The current account turned positive in 1986, rose to a peak of 8.5 percent of GDP in 1988, fell to 2.4 percent of GDP in 1989, turned negative (-0.5 percent) in 1990, and remained negative in the 1–2 percent range until 1997, when the deficit increased to 4.7 percent of GDP.

15. Korea was running a bilateral surplus with the United States and a bilateral deficit with Japan, and policy makers resisted as far as they could these pressures. One response was to ask the American authorities whether they should devalue with respect to the yen while they appreciated with respect to the U.S. dollar!

16. Exchange rates, saving rates, and current account deficit data are all taken from various issues of the IMF's *International Financial Statistics* unless otherwise noted.

17. For an account of the Korean economy in the mid-1990s reflecting this consensus view, see OECD (1994).

into Korea. The elected governments chose to liberalize further, especially in the financial sector and international capital flows.[18] In 1992–93 there was a "growth recession," as the growth rate slowed to just over 5 percent (in contrast with rates over 9 percent in the preceding two years and an average rate above 8 percent in the preceding decade). One response was to ease monetary policy: domestic credit expanded by over 18 percent in 1994, 14 percent in 1995, and 21 percent in 1996.[19] Real GDP growth responded, exceeding 8 percent in 1994 and 1995. However, as will be argued in section 13.3, underlying weaknesses were not addressed, and the stimulus to the economy, through expansion of domestic credit and other measures, increased the vulnerability of the financial system later on.

13.2.2 The Crisis

Export earnings failed to maintain their growth rate in 1996, increasing only 3 percent in dollar terms, as falling prices for semiconductors and a number of other factors resulted in the slowdown. Then, early in 1997, a number of events took place that surely eroded confidence. One of the large *chaebol,* Hanbo, went bankrupt early in the year. Given that the large *chaebol* were widely believed to be "too big to fail," this in and of itself must have resulted in some loss of confidence and a reexamination of Korea's creditworthiness. Moreover, 1997 was an election year, with the presidential elections scheduled for early in December. That the market anticipated difficulties is reflected in the fact that the Korean stock exchange index fell from 981 in April 1996 to 677 by the end of March 1997 and to 471 at the end of October, even before the outbreak of the currency crisis.

However, although the net and gross foreign (and especially short-term) liabilities of the banking and financial systems were continuing to increase, there was no visible evidence of crisis until the final quarter of the year. The Thai crisis had exploded in June, and the Indonesian crisis had begun during the summer of 1997, but most foreign observers were confident, given Korea's past history, that Korea would not be affected.[20] Korea's offshore banks were holding paper from Indonesia, Russia, and other countries with dollar liabilities, which would further deteriorate the net foreign asset position, but that was not widely known at the time.

However, capital flight began early in the fourth quarter of the year. In many instances, it was simply due to a refusal to roll over short-term debt,

18. See the OECD (1994) description of the five-year financial liberalization plan.

19. This rate was not markedly faster, however, than it had been over the entire preceding decade. Hahm and Mishkin (2000, 91) reject the notion that liberalization of the capital account was responsible for the increase in domestic credit, but note that it did play a role in permitting the banks to take on greater exposures to foreign exchange risk.

20. However, many Korean economists and policy analysts were very concerned. Krueger was at a conference of Korean economic policy makers in August 1997, and the mood was one of deep gloom. Many of the participants were extremely pessimistic about the *chaebol,* the state of the financial system, and the potential for reforms of economic policy.

but other factors contributed: Korea's sovereign risk status was downgraded by Standard & Poor's in October; reported NPLs in the banking system doubled between the end of 1996 and the fourth quarter of 1998, reaching 7.5 percent of total loans by that time, owing largely to the bankruptcy of six *chaebol* and the sharp drop in the Korean stock exchange. However, once it became known that reserves were decreasing, others sought to get out of won, and the capital outflow intensified rapidly.[21] Total reserves less overseas branch deposits and other unusable foreign exchange were $22.3 billion at the end of October and fell to $7.3 billion by the end of November.[22] It is reported that, by the time the International Monetary Fund (IMF) was approached, gross reserves were being depleted at a rate so rapid that they would have approached zero within forty-eight hours. In the program presented to the IMF board, it was reported that usable reserves had dropped from $22.5 billion on 31 October to $13 billion on 21 November and to $6 billion on 2 December.[23]

13.2.3 The IMF Program[24]

All three presidential candidates had declared repeatedly that under no circumstances would they approach the IMF. When the government did approach the IMF, the IMF's problem was complicated by several things: (a) it was not known who the new president would be, and hence with whom the IMF would have to deal on the economics team; (b) there was very little time to put together a program, and both because Korea had been viewed as "sound" until recently and because the candidates had all said they would not approach the Fund, there had been less preliminary work done than was usually the case;[25] (c) the exchange rate was depreciating sharply after the end of October, and when the band was widened to 10 percent on 19 November, the rate of depreciation began to accelerate rapidly; and (d) as has already been mentioned, the government was rapidly running out of foreign exchange reserves, and would soon be forced to default on its obligations (see Boughton 2000). The high short-term indebtedness meant that

21. However, even in November, the Finance Ministry was issuing reassuring statements, and private forecasters were minimizing the likelihood that Korea would approach the IMF. For a representative account, see John Burton's "Korean Currency Slide Shakes Economy" in the *Financial Times,* 12 November 1997, 5.

22. Data are from Hahm and Mishkin (2000, table 11).

23. Other factors also contributed. A financial reform bill, proposed by a blue ribbon committee, had been turned down by parliament, and it was not clear whether the government had legally guaranteed the foreign exchange liabilities of the financial institutions. Although interest rates had risen by about 200 basis points, the Bank of Korea was nonetheless injecting liquidity into the system, which reversed the increase.

24. The IMF documents cited in this section may be found at [http://www.imf.org/external/country/KOR/index.htm].

25. The fact that the Thai and Indonesian crises had already occurred no doubt diverted some of the attention that Korea otherwise might have received. At that time, too, it must have been anticipated that there would be Malaysian and Philippine programs.

foreigners could get out of won simply by refusing to roll over outstanding debt.[26]

The first (hastily assembled) program set forth the following as its objectives: "building the conditions for an early return of confidence so as to limit the deceleration of real GDP growth to about 3 percent of GDP in 1998, followed by a recovery towards potential in 1999; containing inflation at or below 5 percent; and building international reserves to more than two months of imports by end-1998."[27] The staff memorandum stated that there were three pillars in the government's program: the macroeconomic framework,[28] the restructuring and recapitalizing of the financial sector, and a reduction in the reliance of corporations and financial institutions on short-term debt.

For present purposes, the specifics of the IMF program are not relevant. However, understanding those aspects of the program that were important in affecting the severity of the downturn is necessary if an assessment of the role of the various factors leading in the downturn is to be made. In attempting to stem the speculative pressures, the exchange rate was allowed to float, and the won depreciated from the mid-800s level per dollar to almost 1,800 per U.S. dollar.[29] The liquidity that had been introduced into the financial system in prior weeks (in an effort to support the *chaebol*) was removed, and money market rates were raised sharply. In the words of the IMF staff, these rates would "be maintained at as high a level as needed to stabilize markets" (5). Day-to-day monetary policy was to be geared to exchange rate and short-term interest rate movements, whereas exchange rate policy was to be flexible, with intervention "limited to smoothing operations."

The 1998 budget as passed by the government had projected a surplus of about 0.25 percent of GDP. However, the IMF staff estimated that lower growth and the altered exchange rate would reduce the balance by 0.8 percent of GDP and that it would require 5.5 percent of GDP to recapitalize the banks to meet the Basel minimum capital standards. It was assumed

26. Hahm and Mishkin (2000) point out that "the speculative attack was not in the usual form of direct currency attack to exploit expected depreciation. Due to the tight regulation on currency forwards which should be backed by corresponding current account transactions and the absence of currency futures markets inside Korea at the time, opportunities for direct speculative attack had been much limited. Rather, the drastic depreciation of Korean won was driven by foreign creditors' run on Korean financial institutions and chaebols to collect their loans, and by foreign investors to exit from the Korean stock market" (25).

27. IMF, Korea, "Request for Standby," 3 December 1997, 5.

28. Much of the controversy surrounding the Korean program centers on whether the program tightened fiscal policy too much. This is discussed below. It should be noted that the Fund staff's introduction of the macroeconomic program indicated that the program would involve "a tighter monetary stance and significant fiscal adjustment" (5).

29. As stated in the "Request for Standby," "The inflation target reflects a very limited pass-through of the recent depreciation of the won to the aggregate price level.... In order to achieve the inflation objective, the government will aim to reduce broad money growth (M3) from an estimated 16.4 percent at end-September to 15.4 percent at end-December 1997, and to a rate consistent with the inflation objective in 1998" (5–6).

that these funds would have to be borrowed, and interest costs (0.8 percent of GDP) were therefore also included in the altered budget estimates. According to fund estimates, these factors would have shifted the fiscal account into deficit of about 1.5 percent of GDP in 1998. As stated by staff, "In order to prevent such a deficit and alleviate the burden on monetary policy in the overall macroeconomic adjustment, fiscal policy will be tightened to achieve at least balance and, preferably, a small surplus." The program therefore called for fiscal changes approximately offsetting the negative anticipated changes and thus for maintenance of the fiscal stance as anticipated prior to the crisis, with the 1.5 percent of GDP cuts equally distributed between government expenditures and revenues. The government initially raised some taxes to yield about 0.5 percent of GDP.

The second leg of the program was financial restructuring. As already indicated, NPLs were large and increasing prior to the crisis. The depreciation of the exchange rate increased debt-servicing obligations for *chaebol* and financial institutions, as did the increase in interest rates that came about with monetary tightening. An exit policy was to be adopted to close down weak financial institutions, and the remaining banks were to be recapitalized (through mergers or other means). A deposit guarantee was to be phased out at the end of December 2000 and replaced with deposit insurance for small depositors only.[30]

Bank restructuring required a prior, or at least concurrent, restructuring of the *chaebol* finances. Given their very high debt-equity ratios (for one *chaebol* at the height of the crisis, the debt-equity ratio reached 12:1),[31] financial viability, where feasible at all, would surely require swaps of debt by the *chaebol* to the banks, giving the banks equity in return. For this reason, it was predictable that the restructuring would require time. Data on the finances of the *chaebol* are given in section 13.3. The standby also addressed corporate governance and corporate financial structure issues, focusing on improving incentives and supervision for banking operations and reforming bankruptcy laws. The government also agreed to refrain from providing financial support, providing tax privileges, or forcing mergers for individual companies.

30. There were a number of other significant measures, which are less important for present purposes. For example, transparency was to be increased in a variety of ways. Large firms were to be audited by international accounting houses. Supervisory functions were to be reorganized, and the Bank of Korea was given much greater independence. Importantly, the government undertook to refrain from attempting to influence lending decisions, leaving those to the financial institutions. However, these actions had little impact on the short-run downturn.

31. These high debt-equity ratios were public knowledge. The *Financial Times* published data on debt-equity ratios for twenty *chaebol* on 8 August 1997. The highest was Sammi, with 33.3 times as much debt as equity; Jinro had 85.0 times as much debt as equity and Halla 20.0 times; Hyundai's debt was 4.4 times its equity, and so on. Profits were relatively small as a percentage of assets or sales. In Samsung's case, for example, net profits were 179.5 billion won on sales of 60 trillion won and total assets of 51 trillion won. Nine of the twenty *chaebol* listed in the *Financial Times* on that day had taken losses.

A final issue of concern here is the projected magnitude of the financial support for the Korean program. The current account deficit was expected to decline markedly in 1997 to about 3 percent of GDP, and then—with export growth and won depreciation—to about 0.5 percent of GDP in 1998. However, the very high level of short-term debt was considered worrisome. As stated in the "Request for Standby":

> It is difficult to estimate with any certainty the likely developments in capital flows . . . , given the uncertainty surrounding the rolling over of private sector short-term debt and the recent collapse in market confidence. . . . The working assumption is that, on the basis of the beneficial effects on market confidence of the announced program and the large financing package, the bulk of the short-term debt will be rolled over. Under this scenario, the purpose of the exceptional financing would be largely to reconstitute reserves. For this outcome to materialize, it is critical that the financing package provided is adequately large and the program is perceived to be strong. It is anticipated that a comprehensive financing package of about $55 billion will be provided on a multilateral and bilateral basis. (12)

13.2.4 The Severity of the Crisis

For at least two weeks after the announcement of the IMF program, questions remained as to whether the downward slide had been halted.[32] By late December, however, the exchange rate had stabilized, and by mid-January, foreign banks announced a $24 billion package of rollovers and new money.[33]

Domestic economic activity slowed markedly in 1998. For the year as a whole, real GDP fell by 6.7 percent, contrasted with the IMF's fund's projected 3 percent. The unemployment rate, which had been 2.2 percent at the end of the third quarter of 1997, rose throughout 1998 and peaked in the first quarter of 1999 at 8.4 percent. The seasonally adjusted industrial production index fell by 15 percent from the end of 1997 to the second quarter of 1998. Thereafter it rose, reaching its precrisis level by the end of 1998 and 144.9 at the end of 1999.

The external accounts improved markedly. There was a sharp drop in imports in immediate response to the crisis and a much-increased current account balance: Although exports were slightly lower in dollar terms in 1998 than in 1997, imports fell 22.4 percent, and the current account balance was equal to an astonishing 12.5 percent of GDP for the year. Foreign exchange reserves rose in response, reaching $74 billion by the end of 1999 and $83.6 billion by the end of the first quarter of 2000. The decline in real GDP ended

32. Because of this, it is very difficult to accept the argument that the Fund program was "too stringent." Indeed, given those uncertainties, it is more plausible to argue that the program might have been even more restrictive initially.

33. Financial Times, 30 January 1998, ll.

in mid-1998, and by the end of the year real GDP had exceeded its precrisis level. For 1999, real GDP growth exceeded 9 percent and was projected to attain the same rate for 2000.

After early 1998, the nominal exchange rate appreciated in dollar terms, entering the year 2000 at around 1,100 won to the dollar, contrasted with 1,800 to the dollar at the peak of the crisis. Moreover, prices at the end of 1998 were about 7 percent higher than at the end of 1997; in 1999 the rate of inflation was just 0.8 percent, as measured by the consumer price index.

Progress in restructuring the financial sector was necessarily considerably slower. Although interest rates had fallen below their precrisis levels by the end of 1999, restructuring of *chaebol* and financial institutions met with considerable resistance.[34] Government policy pronouncements and actions have continued to push for reforms, but the pace of reform has been much slower than that of the balance of payments and external finances.

However, by any measure, the negative impact of the crisis and the measures addressing it was felt most heavily in 1998. By early 2000, the Korean recovery was more rapid and more pronounced than had been anticipated by any.[35]

13.3 Estimating the Role of Financial and Other Variables in Leading to Crisis

Financial restructuring was absolutely essential—first to make the reforms credible (or capital outflows would have continued) and second as a prerequisite for economic recovery. Additionally, because the devaluation and higher interest rates would both weaken the financial sector in the short run (and this was understood by the markets), failure to address the issue of financial restructuring would clearly have increased the severity of the recession and delayed, if not aborted, the recovery. Moreover, financial restructuring could not be satisfactorily undertaken without addressing the very high debt-equity ratios of the *chaebol.* How much this intensified the downturn, however, cannot be addressed until consideration of the finances of the *chaebol* and the financial system are considered.

Either a financial crisis or a currency crisis must be addressed with measures that will cause economic pain in the short run. However, when the two interact, the resulting costs are much higher. To see how this scenario played out in Korea, we begin with an examination of the finances of the *chaebol*

34. See, for example, John Burton's "Boxed into a Corner" in the *Financial Times,* 23 November 1998, 17, whose first sentence read, "South Korea's *chaebol* are fighting a stiff rearguard action against government reforms but the conglomerates are being forced to change their ways."

35. This is not to say that corporate and financial restructuring had been completed. At the time of this writing (late 2000), unprofitable *chaebol* activities, including some large entities, are still being closed down, with attendant concerns about a slowing of the rate of growth in 2001.

prior to late 1997. An overview of their evolution and the problems that developed will be useful before we turn to details. As mentioned earlier, the *chaebol* had earlier contributed enormously to Korea's rapid economic growth. By the early 1990s, the largest thirty *chaebol* accounted for 49 percent of assets and 42 percent of sales in the manufacturing sector. Although they had received subsidized credit, this implicit subsidy was probably mostly intramarginal in the 1960s and 1970s and probably simply increased overall profitability and reinvestment rates. However, over time, the profitability of the *chaebol* necessarily diminished, while the real interest rate at which they borrowed was increasing.

Table 13.1 gives data on lending rates of deposit money banks from 1961 to 1987, the period during which interest rates were controlled. In 1987, the quantity of regulated loans was sharply reduced, and the Bank of Korea stopped reporting the interest rates by those loan categories separately. To estimate how much of a subsidy was involved in deposit money banks (DMBs) lending, it is necessary to contrast that rate with an estimate of what a market-clearing real interest rate might have been.[36] To that end, table 13.2 gives the curb market interest rates, the inflation rates, and the growth rates over the years from 1961 to 1998. We then construct an estimate of what a realistic real borrowing rate might have been by adding the inflation rate to the growth rate and calculating a three-year moving average.

Table 13.3 then gives the DMB loans enjoying preferential interest rates by type of loan. The last column gives these loans as a percentage of the total. As can be seen, they peaked in the late 1970s (which coincided with the so-called heavy chemical and industry [HCI] drive), but were sizable during the 1980s as well. Only in the 1990s after interest rate liberalization did their share drop to less than 5 percent of outstanding loans.

We then derive estimates of the subsidy through DMB loans in the first column of table 13.4. The estimates are made by multiplying the volume of DMB loans by the difference between the reference interest rate and the actual borrowing rate. Also shown in table 13.4 are similarly derived estimates of the subsidy through loans to the manufacturing sector from the Korea Development Bank, a nonbank financial institution that lent for investment in public utilities, infrastructure, equipment for manufacturing, and other purchases deemed desirable for developmental purposes. The sum of these estimates should be compared with the final column of table 13.4, which gives the estimates of all manufacturing firms' ordinary incomes (that re-

36. The curb market rate, given in column (1) of table 13.4, provides an alternate "reference interest rate." As can be seen, the estimated subsidy to borrowers would be considerably higher if the difference between the borrowing rates and the curb market rate were used. The two move together, however, and it seems reasonable that some part of the curb market rate would have been to adjust for additional risk. Our estimates of the implicit subsidy must, however, probably be taken as a lower bound on the value of loans to their recipients.

Table 13.1 **Interest Rates on Loans and Discounts, Deposit Money Banks**

Year	Discounts on Commercial Bills	Loan for Trade	Loans for Machine Industry Promotion	Loans for Equipment of Export Industry	Loans with NIF	"Lending Rate"
1961	13.9	13.9	n.a.	n.a.	n.a.	n.a.
1962	13.9	12.7	n.a.	n.a.	n.a.	n.a.
1963	13.9	9.1	n.a.	n.a.	n.a.	n.a.
1964	14.0	6.8	n.a.	n.a.	n.a.	n.a.
1965	16.5	6.5	n.a.	n.a.	n.a.	n.a.
1966	24.0	6.5	n.a.	n.a.	n.a.	n.a.
1967	24.0	6.3	n.a.	n.a.	n.a.	n.a.
1968	24.3	6.0	12.0	n.a.	n.a.	n.a.
1969	25.2	6.0	12.0	n.a.	n.a.	n.a.
1970	24.3	6.0	12.0	n.a.	n.a.	n.a.
1971	22.9	6.0	12.0	n.a.	n.a.	n.a.
1972	17.7	6.0	10.1	n.a.	n.a.	n.a.
1973	15.5	6.6	10.0	12.0	n.a.	n.a.
1974	15.5	8.9	11.1	12.0	9.2	n.a.
1975	15.3	7.6	12.0	12.0	12.0	n.a.
1976	16.3	7.4	12.4	12.8	12.8	n.a.
1977	16.7	8.0	13.0	14.0	14.0	n.a.
1978	17.8	8.5	14.1	15.1	15.1	n.a.
1979	18.8	9.0	15.0	16.0	14.7	n.a.
1980	24.1	14.8	20.2	21.2	18.2	18.0
1981	19.4	15.0	17.9	18.8	16.4	17.4
1982	12.3	10.8	12.1	n.a.	12.2	11.8

1983	10.0	10.0	10.0	n.a.	10.0	10.0
1984	10.3	10.0	10.0	n.a.	10.7	10.0
1985	10.8	10.0	n.a.	n.a.	10.8	10.0
1986	10.8	10.0	n.a.	n.a.	10.5	10.0
1987	10.8	10.0	n.a.	n.a.	n.a.	10.0
1988	n.a.	n.a.	n.a.	n.a.	n.a.	10.1
1989	n.a.	n.a.	n.a.	n.a.	n.a.	11.3
1990	n.a.	n.a.	n.a.	n.a.	n.a.	10.0
1991	n.a.	n.a.	n.a.	n.a.	n.a.	10.0
1992	n.a.	n.a.	n.a.	n.a.	n.a.	10.0
1993	n.a.	n.a.	n.a.	n.a.	n.a.	8.6
1994	n.a.	n.a.	n.a.	n.a.	n.a.	8.5
1995	n.a.	n.a.	n.a.	n.a.	n.a.	9.0
1996	n.a.	n.a.	n.a.	n.a.	n.a.	8.8
1997	n.a.	n.a.	n.a.	n.a.	n.a.	11.9
1998	n.a.	n.a.	n.a.	n.a.	n.a.	15.3

Sources: The first five columns are from Bank of Korea, *Monthly Statistical Bulletin* (various issues). "Lending rate" is obtained from *International Financial Statistics* (various issues).

Notes: Bank of Korea stopped reporting DMB interest rates in this format in 1988. "Lending rate" is the minimum rate charged to general enterprises by DMBs on loans of general funds for up to one year. From 1977 it is a weighted average, weighted by loans by nationwide commercial banks. National Investment Fund (NIF) was created in 1973 to help finance policy-favored investment projects. n.a. = not available.

Table 13.2 **Reference Interest Rates (percent per annum)**

Year	Curb Market Interest Rate (1)	Inflation, CPI (2)	GDP Growth Rate (3)	Reference Interest Rate (4) = (2) + (3)
1961	n.a.	6.5	3.5	10.1
1962	n.a.	7.7	3.3	11.0
1963	n.a.	11.5	5.7	17.2
1964	61.8	18.1	7.3	25.3
1965	58.9	20.4	8.2	28.6
1966	58.7	17.6	9.4	26.9
1967	56.7	11.9	8.4	20.3
1968	56.0	11.0	10.2	21.2
1969	51.4	11.3	10.6	21.9
1970	50.2	13.0	10.9	23.9
1971	46.4	13.9	10.0	23.9
1972	39.0	13.7	7.0	20.7
1973	33.2	9.4	8.6	18.0
1974	40.6	13.0	8.2	21.2
1975	47.6	17.6	8.8	26.3
1976	40.5	21.6	8.4	30.0
1977	38.1	16.9	9.2	26.1
1978	41.7	13.3	10.1	23.3
1979	42.4	14.3	8.7	23.0
1980	44.9	20.5	4.7	25.1
1981	35.3	22.8	3.8	26.6
1982	33.1	19.1	3.9	22.9
1983	25.8	10.6	8.1	18.8
1984	24.8	4.3	8.7	13.0
1985	24.0	2.7	8.5	11.2
1986	23.1	2.5	8.6	11.1
1987	23.0	2.8	9.5	12.2
1988	22.7	4.3	10.8	15.1
1989	19.1	5.3	9.2	14.4
1990	18.7	7.1	8.5	15.6
1991	21.4	7.9	8.1	16.0
1992	20.2	8.0	7.9	15.9
1993	16.2	6.8	6.7	13.5
1994	16.0	5.8	6.4	12.2
1995	15.3	5.2	7.6	12.8
1996	13.7	5.2	8.0	13.2
1997	14.6	4.6	6.9	11.5
1998	n.a.	5.6	1.7	7.3

Source: Bank of Korea, *Economic Statistics Yearbook* (various issues).
Notes: Inflation and GDP growth rates shown are three-year moving averages. n.a. = not available.

ported on their balance sheets). As can be seen, the estimated subsidy component of loans exceeded ordinary income in some years and represented a substantial portion of it in others.

There was almost certainly an element of subsidy in bank lending after 1988 and even in lending at nonpreferential rates prior to that date. Esti-

Table 13.3 **Deposit Money Bank Preferential Loans (billions of won)**

Year	Loans for Trade (1)	Loans for Machine Industry Promotion (2)	Loans Equipment of Export Industry (3)	Loans with NIF (4)	Sum of Preferential Loans [(1) – (4)] (5)	Total Loans (6)	Preferential Loans (% of total) (7)
1963	2.7	n.a.	n.a.	n.a.	2.7	49.0	5.5
1964	2.5	n.a.	n.a.	n.a.	2.5	53.0	4.6
1965	4.6	n.a.	n.a.	n.a.	4.6	72.1	6.4
1966	4.9	n.a.	n.a.	n.a.	4.9	102.7	4.7
1967	16.7	n.a.	n.a.	n.a.	16.7	178.0	9.4
1968	24.5	n.a.	n.a.	n.a.	24.5	331.2	7.4
1969	35.1	10.0	n.a.	n.a.	45.1	563.0	8.0
1970	55.9	15.9	n.a.	n.a.	71.7	722.4	9.9
1971	80.1	15.8	n.a.	n.a.	96.0	919.5	10.4
1972	108.4	20.2	n.a.	n.a.	128.6	1,198.0	10.7
1973	224.1	26.1	35.0	n.a.	285.3	1,587.5	18.0
1974	359.5	25.0	56.0	20.4	460.9	2,427.8	19.0
1975	338.9	23.2	61.2	53.4	476.7	2,905.5	16.4
1976	461.8	31.5	76.9	121.0	691.1	3,724.9	18.6
1977	567.4	28.2	70.9	196.7	863.2	4,709.0	18.3
1978	883.2	26.1	57.0	287.7	1,254.0	6,609.0	19.0
1979	1,227.2	15.1	42.7	362.7	1,647.7	8,977.8	18.4
1980	1,720.8	10.2	26.2	405.3	2,162.4	12,204.4	17.7
1981	2,197.2	6.1	179.9	487.2	2,870.4	16,481.7	17.4
1982	2,278.4	n.a.	192.1	626.7	3,097.2	20,225.8	15.3
1983	2,620.0	n.a.	185.7	831.1	3,636.8	24,150.3	15.1
1984	2,765.4	n.a.	176.3	909.2	3,850.9	27,978.9	13.8

(*continued*)

Table 13.3 (continued)

Year	Loans for Trade (1)	Loans for Machine Industry Promotion (2)	Loans Equipment of Export Industry (3)	Loans with NIF (4)	Sum of Preferential Loans [(1) – (4)] (5)	Total Loans (6)	Preferential Loans (% of total) (7)
1985	3,129.9	n.a.	595.2	965.6	4,690.7	33,810.7	13.9
1986	3,444.5	n.a.	1,866.9	1,055.0	6,366.4	39,098.6	16.3
1987	2,420.4	n.a.	2,416.5	1,067.1	5,904.0	43,095.8	13.7
1988	1,201.6	n.a.	2,725.8	1,076.1	5,003.5	48,805.4	10.3
1989	1,382.2	n.a.	2,905.0	1,053.3	5,340.5	62,547.1	8.5
1990	1,947.3	n.a.	3,015.0	1,023.8	5,986.1	74,028.6	8.1
1991	2,254.3	n.a.	3,201.1	983.9	6,439.3	89,415.6	7.2
1992	2,542.2	n.a.	3,043.9	803.3	6,389.4	102,797.0	6.2
1993	2,473.4	n.a.	2,838.0	609.2	5,920.6	115,137.4	5.1
1994	2,711.3	n.a.	2,492.2	445.2	5,648.7	135,850.3	4.2
1995	2,846.9	n.a.	1,841.4	316.7	5,005.0	152,477.7	3.3
1996	2,679.3	n.a.	1,214.5	197.1	4,090.9	177,184.2	2.3
1997	2,698.2	n.a.	711.2	119.5	3,528.9	200,401.0	1.8
1998	3,395.8	n.a.	355.7	73.6	3,825.1	200,289.1	1.9

Source: Bank of Korea, *Economic Statistics Yearbook* (various issues).
Note: n.a. = not available.

Table 13.4 **Estimates of Implicit Subsidy through Deposit Money Bank and Korea Development Bank Loans (billions of won)**

Year	Through DMB Loans	Through KDB Loans	Sum of Subsidy Estimates	Ordinary Income, Manufacturing Total
1963	0.2	1.1	1.2	4.5
1964	0.5	2.2	2.7	5.6
1965	0.8	3.1	3.9	6.6
1966	1.0	2.9	3.9	11.4
1967	1.5	1.8	3.3	13.4
1968	3.1	2.3	5.5	20.6
1969	5.2	2.7	7.9	24.3
1970	9.7	4.8	14.5	22.9
1971	14.1	6.2	20.3	11.8
1972	15.8	5.7	21.5	56.5
1973	21.9	4.2	26.0	62.3
1974	44.1	10.1	54.2	176.1
1975	82.6	25.0	107.6	169.7
1976	122.1	43.6	165.7	313.6
1977	125.6	47.3	172.9	390.0
1978	135.0	52.2	187.3	615.1
1979	179.4	77.3	256.7	573.9
1980	185.0	86.8	271.8	–55.7
1981	286.4	167.7	454.1	5.6
1982	331.5	215.1	546.6	403.6

Source: The last column is from Bank of Korea, *Financial Statements Analysis* (various issues).
Note: Estimates of subsidy are made in tables 13A.10 and 13A.11.

mating its magnitude is considerably more difficult, because there are no records of the interest rates at which loans were extended. An estimate was made using the "lending rate" reported by the IMF in *International Financial Statistics,* and taking the difference between the reference rate and that rate times the volume of loans outstanding. The results of those estimates are reported in appendix table 13A.3. Unlike the estimates used here, those estimates probably represent the upper bounds of the magnitude of the subsidy implicit in bank loans, both because some loans may have been extended at higher interest rates and because the reference rate may overstate the "true" interest rate, especially during periods of falling inflation. Nonetheless, even by our most conservative measure, the subsidy component of lending was large and constituted an important element of reported profits for the *chaebol.*

Figure 13.3 shows the rates of return on assets and on equity in manufacturing from 1962 to 1997. For the 1962–82 period for which we have estimates of the subsidy component of loans, estimates are given as to the rates of return that would have prevailed, all else being equal, had there been no subsidy implicit in borrowing. Three things should be noted. First, rates of return declined over time. Second, in earlier periods the returns to

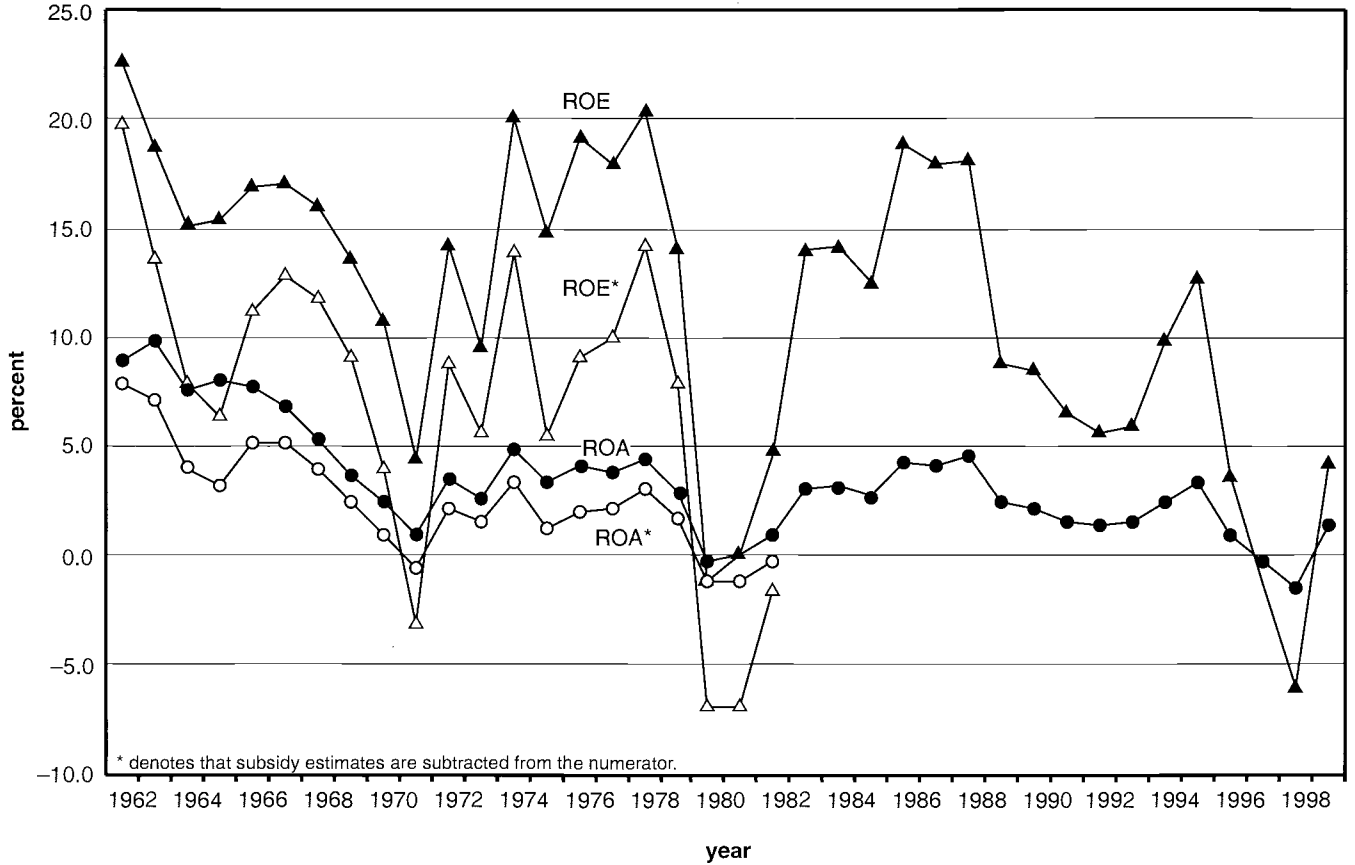

Fig. 13.3 Rates of return, manufacturing sector total

Source: Appendix table 13A.4.

firms would have been negative had it not been for the subsidized credit. Third, it is small wonder that *chaebol* were highly leveraged: given the incentive to use debt financing entailed in the loans, they were more profitable for doing so, and their founders could retain a stronger controlling interest.

13.4 The Status of the Banking System and the *Chaebol* Finances at the Time of the Crisis

There is little doubt that the *chaebol* had strong incentives to rely on credit rather than equity as much as they could for many years. The next step in the analysis is to consider the *chaebol* and their profitability in the years leading up to the crisis. Figure 13.4 shows the debt-equity ratios for the "Big 5," the largest five *chaebol,* and for all manufacturing firms.[37] The debt-equity ratios are given for Japan and the United States as well, for purposes of comparison. The ratios for all firms included in the largest thirty *chaebol* are provided in appendix table 13A.5 in the column labeled "Korea Big 30, All Firms."

As can be seen, and as is consistent with the incentives with which they were confronted, the financial structures of the Korean firms were in general highly leveraged. The manufacturing firms had a debt equivalent to three and a half times their equity in the mid-1980s. Although this ratio declined somewhat in the 1990s, it was usually two or three times higher than those in the United States. *Chaebol* firms were even more highly leveraged than Korean manufacturing as a whole.[38]

Obviously, highly leveraged firms are vulnerable to shocks, such as increases in the cost of capital, sharp changes in macroeconomic conditions, and sudden drops in foreign demand. The vulnerability of the *chaebol* was especially dangerous, given their importance to the Korean economy. The situation was even worse because the *chaebol* firms were closely linked to each other financially. Firms belonging to the same *chaebol* tended to invest in each other and guarantee the repayment of bank loans for each other. Although this may make sense for the individual *chaebol,* from the economy-wide viewpoint, there were risks. On one hand, *chaebol* activities that should have been closed down could continue operating, given financial support from their *chaebol* affiliates. When difficulties were short-run, this support was evidently warranted. However, problems arose because there was little way to determine when difficulties were short-run, and compo-

37. Each year, the Fair Trade Commission (FTC) of the Korean government designates the thirty largest *chaebol* in terms of assets and lists the firms belonging to them. The list changes over time. The list used in this paper is the same for each year as that which the FTC designates, and therefore changes over time. The Big 5 are Hyundai, Samsung, Daewoo, LG, and SK.

38. The debt-equity ratios, rates of return, and asset growth rates were estimated on the basis of the financial statements of firms subject to the requirement of external audit, compiled by the National Information and Credit Evaluation agency (NICE). This source is used throughout this paper, unless otherwise noted.

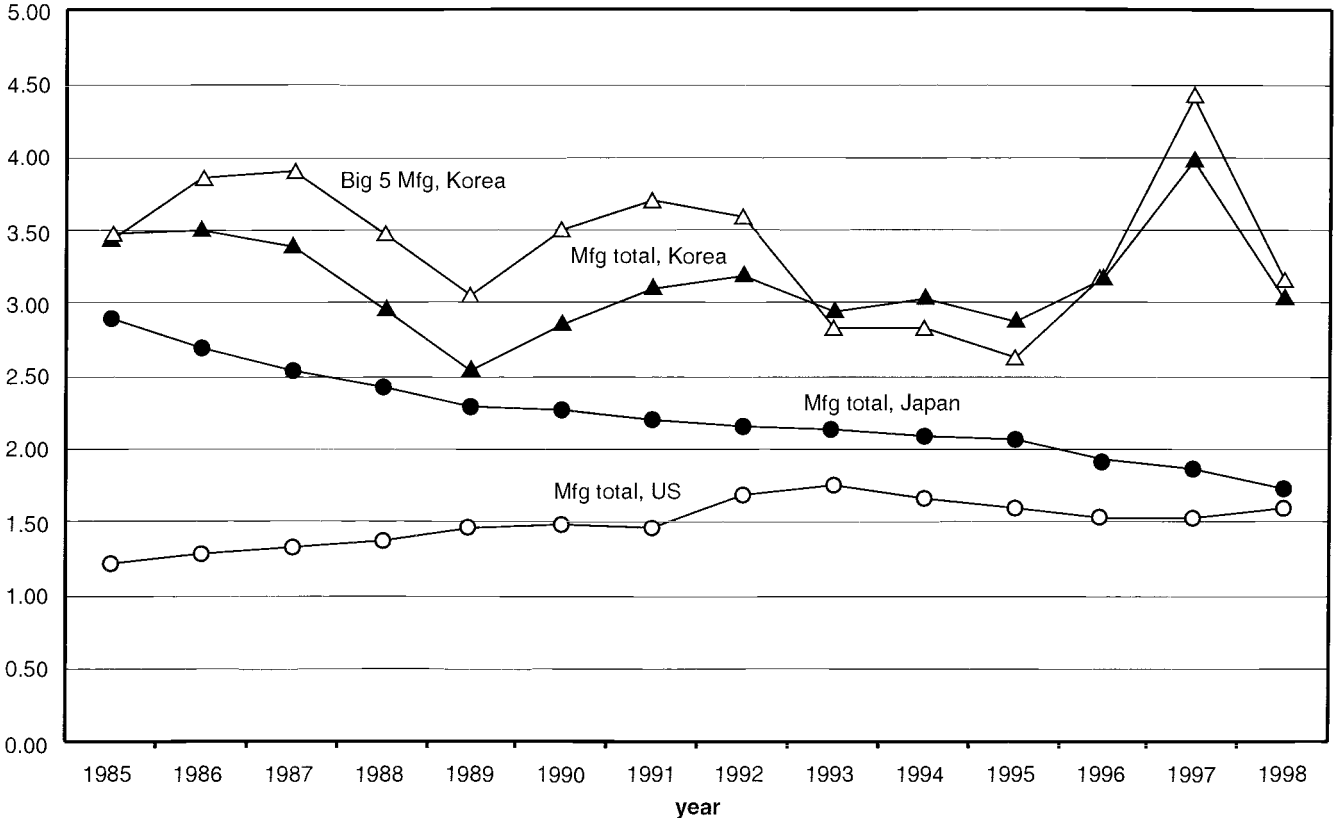

Fig. 13.4 Debt-equity ratios, international comparison
Source: Appendix table 13A.5.

nents of the *chaebol* remained in business regardless of their own situation, reducing the profitability of the *chaebol* as a whole. Because of this, the high leverage combined with subsidized lending resulted in declining rates of return for *chaebol* over time.[39]

We turn, then, to the estimated rates of return on assets in figure 13.5 and those on equity (appendix table 13A.7), for the same comparison groups. The rates of return were also falling during the 1990s except for the cyclical boom years of 1994 and 1995. For all Korean manufacturing, the rate of return on assets fell from an average above 4 percent in the late 1980s to under 2 percent in the early 1990s, and becoming negative in 1997. This contrasts sharply with rates of return in the United States, which were both higher and more sustained (with the exception of the recession years 1991 and 1992), and Japan, where returns fell but were still about 2.3 percent in 1998, after the impact of the Asian financial crisis. Returns on equity show the same pattern, with more pronounced fluctuations. The pattern for the Big 5 was much the same, except that the rates of return for the *chaebol* tended to be lower than for all Korean manufacturing firms over the same period, excluding the boom years of 1994 and 1995.

Table 13.5 gives estimates of the growth rates of assets of the Korean firms. What is striking, given the high debt-equity ratios and low rates of return of the *chaebol,* is the fact that the growth of their assets has been incomparably more rapid than that of the non-*chaebol* firms. As can be seen in columns (2) to (4) the Big 30 and Big 5 have been growing at 20 to 30 percent annually since the mid 1980s. As a result, their assets in 1997 at the time of the financial crisis were 14.0 and 19.0 times, respectively, as large as in 1985.[40] The same holds true within the manufacturing sector. Whereas manufacturing as a whole saw its total assets increase 8.5 times, the Big 5's assets rose 20.0 times, and the assets of the firms other than the Big 5 rose 6.5 times.

As a result, *chaebol* assets accounted for an increasing proportion of the corporate sector's total. In 1985, the Big 5 *chaebol* firms in the data used here held 16 percent of the assets in the manufacturing sector; the proportion rose to 40 percent in 1997.

The disproportionate increase in lending to *chaebol* by the banks, despite their lower returns, seems to reflect the banks' preference for lending to the *chaebol* in the later period. From the banks' viewpoint, the *chaebol* were relatively safer borrowers, as they were likely to have better collateral, and repayments were often guaranteed by other member firms of the same

39. It should be noted that the practice not only increased vulnerability and lowered the rates of return for the *chaebol* but also doubtless resulted in the banks' turning down loan applications from small firms that might have had very high rates of return.

40. Although Korean inflation was double-digit for some earlier years, it was relatively low during the late 1980s and early 1990s: most of the increase in assets reflects changes in real variables.

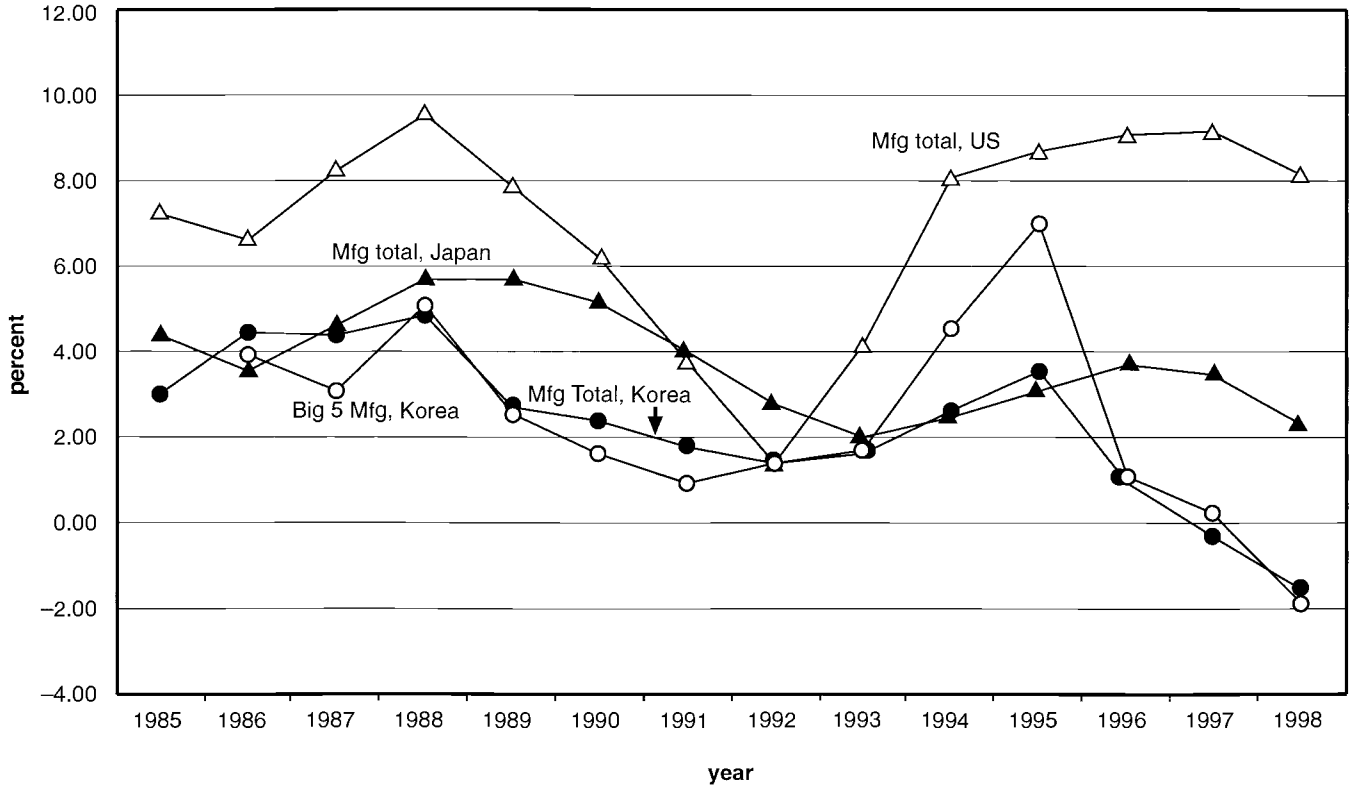

Fig. 13.5 Return on assets, international comparison

Source: Appendix table 13A.6.

Table 13.5 Asset Growth Rates (percentage change per annum)

Year	Big 30 Total	Big 5		Manufacturing Total
		Total	Manufacturing	
1986	51.84	45.96	60.90	14.1
1987	20.03	26.44	29.15	23.4
1988	20.03	26.44	29.15	16.4
1989	31.19	27.04	31.59	22.7
1990	29.07	33.03	33.81	36.2
1991	24.17	22.09	25.20	23.0
1992	11.91	10.94	6.26	10.5
1993	12.03	10.84	11.03	15.0
1994	23.45	25.92	28.73	21.6
1995	25.57	30.20	27.81	15.5
1996	19.48	21.29	20.72	13.6
1997	34.97	40.63	42.23	24.9
1998	3.91	13.12	11.35	1.9
1999	n.a.	n.a.	n.a.	10.6
1997/1985 (ratio)	14.4	18.7	19.7	8.5

Source: See table 13A.5.

Notes: The growth rates for Big 5 and Big 30 shown for 1987 and 1988 are averages for the two years. Big 5 held 16 percent of all assets in manufacturing sector in 1985 and 40 percent in 1997. n.a. = not available.

chaebol. Indeed, the government intervened and set a minimum quota of bank lending that should go to small and medium-sized firms so that their access to bank credits might not be unduly restricted.

However, government policy was not repressive toward the *chaebol.* They had come into being supported by policy favors, especially during the (HCI) drive of the 1970s. As they grew in assets, sales, employment, exports, and the like and increased their relative importance in the economy, they became indispensable and appeared "too big to fail."

In this regard, an episode of interest rate cuts in the early 1990s provides an interesting case. In January 1993 and again in March 1993, interest rates were cut. The cuts were the policy response to sharply deteriorating economic conditions, especially falling investment (in part in response to the American recession of 1990–91). However, it is noteworthy that these cuts coincided with a period of financial difficulty for the *chaebol.* The return on assets (ROA) of the Big 5 was barely 1 percent in 1991 (see fig. 13.5 and appendix table 13A.6), and there was a sharp drop in the growth rate of assets in 1992 (table 13.5).

In two steps, the Bank of Korea lowered the rediscount rates under its control by 2 percentage points "to counter the slowdown of economic growth and contraction of firms' equipment investment." In line with the slowing growth, the Bank "encouraged" the deposit money banks to lower

their loan rates twice, by 1 percentage point each time. Each time, their loan and deposit rates were reduced (Bank of Korea, 1993a,b).

This is significant because the 1993 action was similar to those of earlier years when the ROA had fallen (in 1971 and in 1980–82). If all manufacturing firms, including the *chaebol,* had had to pay interest on all their debts, their income would have dropped almost 3.6 trillion won, more than wiping out their incomes for that year (see appendix table 13A.3). The interest rate cuts preceded the cyclical boom of 1994 and 1995, when credit expansion in their aftermath resulted in rapid economic growth.

We conclude that, by 1997, the *chaebol* were highly vulnerable to negative shocks. Their profitability had been falling and was low, so that there was little margin for a reduction in cash flow or an increase in debt-servicing costs. However, debt-servicing obligations were mounting, and cash flow does not appear to have been increasing commensurately. The large increase in lending by the commercial banks would appear to have had a significant element of "evergreening" to it. Had the interest rate risen in 1994 or 1995 because of macroeconomic conditions, it seems reasonable to conjecture that NPLs would have increased substantially (or evergreening would have increased significantly) at that time. The *chaebol* were overleveraged and vulnerable to interest rate increases.[41]

We turn now to the banking side of the picture. Figure 13.6 shows the rates of return for the commercial banks during the 1990s. As can be seen, total assets of the banks rose dramatically during the 1992–97 period, more than tripling. Net income, however, peaked in 1994 and turned negative by 1997 (appendix table 13A.8). The rate of return on assets was falling continuously during the period, as was the rate of return on equity.

Table 13.6 provides more detail. By 1998 the combined net loss of the banks was 46 percent of their equity. The changes up to and including the crisis year reflect three things. The loss provision for NPLs peaked in 1994 and was declining until it rose sharply in 1997 and 1998. Provision for valuation loss on securities was steadily increasing. And non-operating income dropped by more than 2.4 trillion won in 1997.[42]

There was little prior indication of the deterioration in the banks' assets. Interest had been paid, although it is difficult to estimate how much of this may have been "evergreening" accounts by lending to enable *chaebol* to service their debts. The sudden jump in NPLs in 1997 would seem to suggest that evergreening had been taking place in earlier years (as shown in table 13.7).

Not all banks collapsed in 1997, and some had, for all practical purposes,

41. Most of the chaebol sold large proportions of their products overseas. For that reason, they were almost surely less vulnerable to exchange rate changes, as their won sales would have increased significantly in response to a currency depreciation.

42. This loss reflects the losses banks suffered when they had to sell their NPLs to Korea Asset Management Company (KAMCO), a public enterprise charged with clearing the financial institutions' balance sheets of their bad loans.

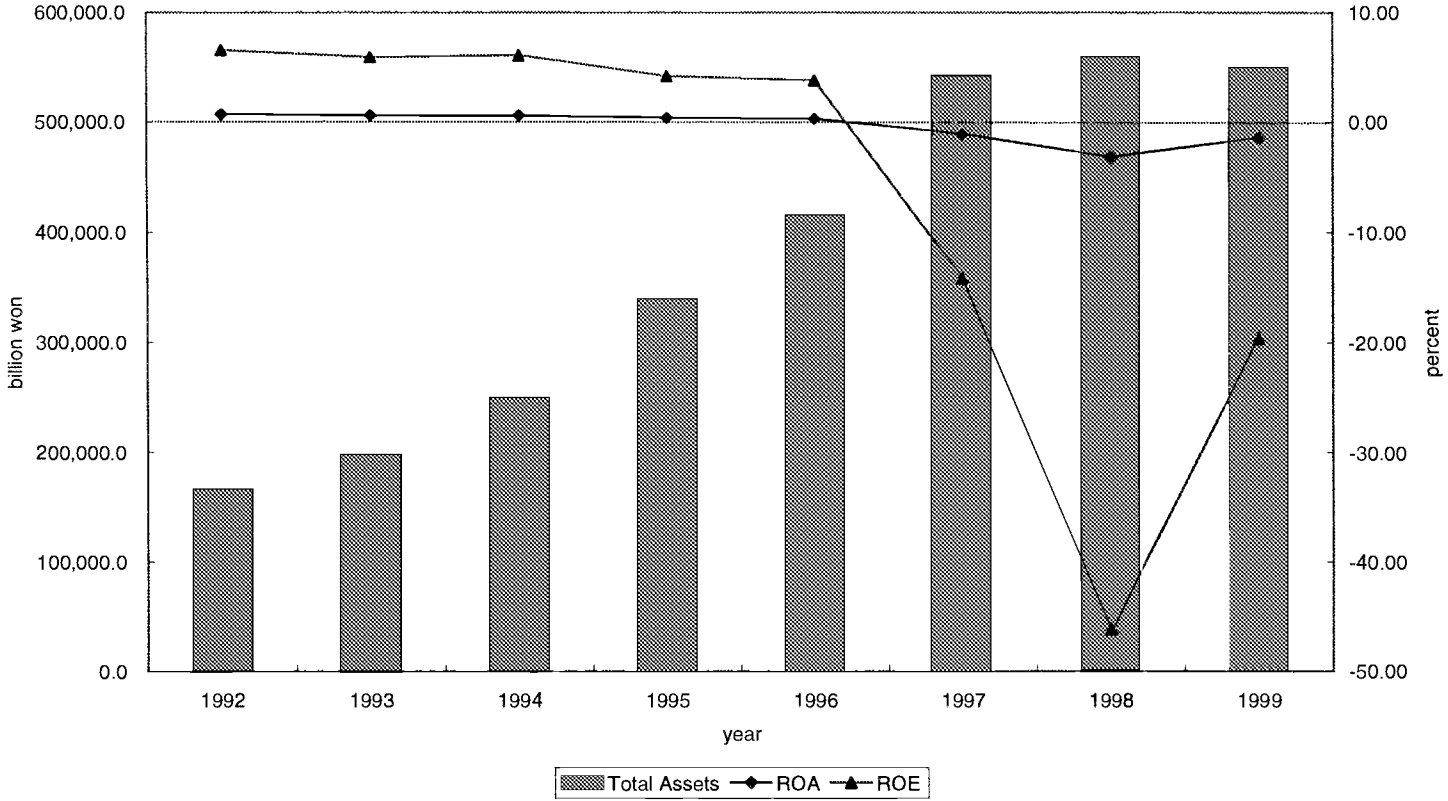

Fig. 13.6 Assets and rates of returns, commercial banks total

Source: Appendix table 13A.8.

Table 13.6 **Changes in Income, Commercial Banks Total (billions of won)**

	1992	1993	1994	1995	1996	1997	1998	1999
Gross Income	5,336.0	5,995.8	8,332.7	9,339.7	10,418.0	10,505.9	2,909.4	8,367.1
Interest income, net	3,088.1	3,127.0	3,426.7	4,920.2	6,059.5	7,817.2	6,777.2	9,046.8
Interests received	10,471.3	10,109.9	12,308.6	18,321.7	21,755.8	31,892.0	37,943.0	35,017.4
Interests paid (less)	7,383.2	6,983.0	8,882.0	13,401.6	15,696.3	24,074.8	31,165.9	25,970.7
Non-interest income	2,247.9	2,868.9	4,906.1	4,419.5	4,358.6	2,688.7	–3,867.8	–679.6
Fees received	1,250.5	1,551.8	2,480.8	2,249.4	2,281.0	10,299.2	13,266.4	8,210.3
Fees paid (less)	184.1	175.9	237.9	372.8	650.1	8,039.4	11,849.0	5,292.1
Other non-interest income	1,139.7	1,453.1	2,407.9	2,353.9	2,569.1	2,696.9	614.7	444.1
Non-operating incomes	41.8	39.9	255.3	189.1	158.6	–2,268.1	–5,899.9	–4,041.9
Operating expenses (less)	3,176.5	3,649.8	4,362.6	6,033.0	6,982.0	8,093.9	7,587.3	6,445.6
Of which, personnel expenses	2,221.3	2,595.4	3,187.4	4,228.8	4,964.4	5,609.0	5,596.0	2,885.9
Ordinary income	2,159.5	2,346.0	3,970.1	3,306.7	3,436.0	2,412.0	–4,677.8	1,921.5
Increase in loss provision (less)	942.5	1,023.4	2,371.8	2,319.7	2,342.0	6,192.7	7,780.4	7,487.3
Loans	787.6	995.5	2,127.3	1,758.0	1,547.7	3,511.3	8,066.7	7,487.3
Security valuation	95.7	–33.1	183.6	543.5	895.0	2,759.4	–125.8	0.0
Others	59.2	61.0	60.9	18.2	–100.7	–78.0	–160.5	0.0
Income before income tax	1,217.0	1,322.6	1,598.3	987.0	1,094.1	–3,780.7	–12,458.2	–5,565.8
Income tax (less)	285.5	433.6	550.1	119.2	247.2	139.2	52.4	430.2
Net income	931.5	889.0	1,048.2	867.8	846.9	–3,919.9	–12,510.6	–5,996.0

Source: Financial Supervisory Commission, online service

Table 13.7 NPLs of the Commercial Banks

	1991	1992	1993	1994	1995	1996	1997	1998
Billion won	8.27	10.16	11.93	11.39	12.48	11.87	22.85	21.22
Percent of loans	7.0	7.1	7.4	5.8	5.2	4.1	6.2	7.4

Source: Financial Supervisory Commission, online service.

been in difficulty earlier. Table 13.8 shows the changes in net income in 1993–98 for the six largest nationwide commercial banks. It also gives data on the three factors that contributed most to the income changes. The last column gives the reported NPLs on their balance sheets. As can be seen, Seoul Bank reported virtually zero net income in 1995, as did Korea First in 1996, before other banks experienced income losses in 1997. Their plight seems unrelated to the currency crisis in the region or to the sudden and sharp depreciation of the won that occurred in the last month of 1997.

There is thus considerable evidence of a weakening of the quality of the banks' portfolios prior to the crisis, in the sense that the financial health of the borrowers was deteriorating. Nonetheless, the proportion of NPLs in their portfolios was generally stationary or falling until the crisis, although this may in part have reflected the evergreening of accounts. After the crisis, the proportion of NPLs rose sharply, and they were then assumed by the asset management company, whereupon the banks booked their losses. The key question is whether those losses were already there and being evergreened, or whether the events associated with the exchange rate crisis itself precipitated the financial crisis. Certainly, the *chaebol* were highly leveraged, and a small change either in their profitability or interest charges would have been enough to tip them into nonperforming status.

13.5 The Foreign Currency Vulnerability of the Banks

Table 13.9 gives data on foreign currency–denominated assets and liabilities of the commercial banks, and appendix table 13A.9 gives the same data for deposit money banks. As can be seen, foreign currency–denominated assets were slightly below liabilities throughout the 1990s for both the commercial banks and the deposit money banks. At their peak in February 1998, postcrisis, commercial banks' liabilities denominated in foreign currency were 25.1 percent of total liabilities, whereas assets were 21.8 percent. The same general pattern held for deposit money banks, although the imbalance between foreign currency assets and liabilities was smaller. Interestingly, both the assets and liabilities had risen by about the same percentage during the crisis months, although the gap between them was about 2 percent wider in early 1998 than it had been in mid-1997.

A question that these data do not answer is the extent to which the

Table 13.8 Factors behind the Sudden Changes in Income, Individual Banks (billions of won)

	Net Income	Provision for NPLs	Provision for Valuation Loss	Non-Operating Income	NPLs, Reported
Choheung					
1993	975	1,520	–72	68	n.a.
1994	1,363	2,967	44	125	14,465
1995	1,066	1,867	860	181	15,476
1996	1,102	1,484	873	214	14,137
1997	–2,896	3,891	3,094	–1,136	26,232
1998	–19,708	5,840	n.a.	–10,071	15,155
Korea Commercial Bank					
1993	87	1,376	–32	50	n.a.
1994	545	3,622	423	2,205	20,260
1995	916	1,860	776	999	19,193
1996	1,055	893	686	442	10,340
1997	–1,639	1,775	1,982	-1,206	14,512
1998	–16,438	3,721	n.a.	–9,918	9,686
Han II					
1993	1,195	660	22	56	n.a.
1994	1,292	1,490	342	117	12,131
1995	805	828	875	120	11,569
1996	590	688	974	142	6,756
1997	–2,809	2,989	3,634	–313	13,244
1998	–17,166	5,696	n.a.	–3,795	17,495
Korea Exchange Bank					
1993	834	1,224	–107	16	n.a.
1994	1,003	2,996	–109	90	17,886
1995	1,053	1,700	501	125	17,433
1996	1,041	1,283	757	58	12,943
1997	–684	2,859	2,072	–1,543	25,176
1998	–8,435	2,056	n.a.	–8,927	15,084
Korea First					
1993	1,541	913	–36	7	n.a.
1994	1,313	3,168	354	50	14,186
1995	174	2,667	112	188	15,913
1996	62	2,732	871	393	18,697
1997	–16,151	4,514	3,518	–9,064	30,559
1998	–26,149	2,581	n.a.	–6,769	38,323
Seoul					
1993	103	1,712	–19	107	n.a.
1994	531	2,694	33	103	16,958
1995	50	2,216	341	204	16,639
1996	–1,668	2,735	977	208	20,353
1997	–9,166	1,731	3,047	–3,996	24,040
1998	–22,424	3,530	n.a.	–2,266	29,872

Source: Financial Supervisory Commission, online service.
Note: n.a. = not available.

Table 13.9 **Foreign Currency–Denominated Assets and Liabilities, Commercial Banks (billions of won)**

	Assets			Liabilities		
	Total	Foreign Currency–Denominated	Share (%)	Total	Foreign Currency–Denominated	Share (%)
1991	161,516.6	18,511.7	11.5	147,736.0	19,169.8	13.0
1992	180,615.6	20,809.4	11.5	165,724.4	20,963.7	12.6
1993	194,988.6	23,787.2	12.2	178,766.0	24,672.2	13.8
1994	228,961.5	30,165.5	13.2	210,044.8	31,313.1	14.9
1995	288,687.8	39,621.3	13.7	267,308.2	40,466.9	15.1
1996	341,558.7	51,861.5	15.2	318,321.7	52,802.2	16.6
1997						
J	354,654.9	55,596.3	15.7	325,827.7	55,608.7	17.1
A	360,179.4	56,504.4	15.7	331,075.6	57,767.2	17.4
S	402,529.2	58,197.9	14.5	370,370.1	59,758.2	16.1
O	414,296.5	61,738.5	14.9	381,377.5	64,719.6	17.0
N	435,322.1	72,772.1	16.7	402,357.5	74,440.5	18.5
D	483,498.6	96,448.7	19.9	461,208.8	102,828.2	22.3
1998						
J	498,298.8	101,167.1	20.3	467,189.8	113,532.7	24.3
F	504,682.4	110,024.8	21.8	472,441.0	118,551.5	25.1
M	479,636.4	96,407.9	20.1	445,908.6	99,483.8	22.3
A	469,613.1	93,215.7	19.8	435,165.8	96,635.3	22.2
M	471,013.8	97,461.6	20.7	435,140.6	101,132.7	23.2
J	467,583.0	92,560.0	19.8	433,414.5	96,257.4	22.2
J	459,565.3	81,936.0	17.8	425,298.6	85,374.6	20.1
1998						
D	469,280.5	72,676.7	15.5	448,765.9	70,633.9	15.7
1999	519,748.6	58,092.9	11.2	493,261.7	55,028.4	11.2

Source: Bank of Korea, *Monthly Statistical Bulletin* (various issues).

quality of the assets and the liabilities were similar. At the time of the crisis, there were reports that many of the loans denominated in foreign currency were to Indonesia, Thailand, and Russia, and that one of the factors precipitating the Korean crisis was the nonperformance of those loans. The data may therefore understate the differential between foreign currency assets and liabilities when risk-adjusted. Even so, it is not evident that the differential was so large that exchange rate changes should have triggered a major decline in the banks' balance sheets. To the extent that there was deterioration caused by the exchange-rate change, it would have had to be either in the ability of the *chaebol* to service their outstanding debts or in the failure of foreign debtors to continue servicing their loans to Korean banks.

13.6 Conclusions

The *chaebol* were in weak financial condition long before the crisis. Although the data do not indicate an increase in NPLs, the rapid increase in

assets, combined with their deteriorating profitability, certainly seems to indicate that the banks were evergreening the outstanding *chaebol* debt. If even a quarter of the net increase in *chaebol* borrowing from the banks was evergreened, the banks were in very bad shape prior to the Korean crisis in 1997.

In an important sense, the vulnerability of the system was extreme. While very favorable conditions—increased semiconductor prices on world markets, falling world interest rates, a pickup in economic activity in the rest of the world—might have prevented the crisis and enabled the *chaebol* to regain profitability and reduce the degree to which they were leveraged, their behavior during the boom of 1994 and 1995 does not suggest that they were inclined to do so. Instead, in the boom years, they continued to borrow and to increase their assets, while the rate of return remained low with only a slight cyclical upturn.

The conclusion must be that the Korean crisis was a disaster waiting to happen: When very favorable circumstances did not materialize, the needed increase in evergreening was more rapid than the system could tolerate. The foreign exchange crisis itself probably did not trigger the financial crisis: rather, the increase in interest rates did.

The *chaebol* debts to the banks are the chief culprit, and because the *chaebol* were major exporters, the change in the exchange rate per se probably did not harm their ability to service their debts. However, the increased interest rate clearly did.

In the short run, therefore, more exchange rate depreciation and less interest rate increase—as was in fact the chosen stabilization path—was probably appropriate. Failure to raise the interest rate at all would surely have resulted in larger capital outflows and perpetuated the foreign exchange crisis. Indeed, as was seen, there were doubts over the several weeks after the first IMF program that the package as undertaken was enough. However, further increases in the interest rate (which probably would have reduced the magnitude of exchange rate depreciation) would surely have intensified the financial crisis.

At an analytical level, the impact of the exchange rate depreciation on the banks' balance sheets either directly or indirectly through the ability of the *chaebol* to service their debts must be deemed to have been relatively small in the Korean case. The fundamental problem was the magnitude of the *chaebol* precrisis leveraging. That, in turn, made the postcrisis workout of the banking system extremely difficult because of the necessity of restructuring the finances of the *chaebol* first.

Appendix

Chronology of Selected Events

1945	Liberation from Japanese colonial rule
1948	Establishment of Republic of Korea
1950–53	Korean war
1957–58	IMF stabilization program
1960–65	Announcement of first major step in trade policy reform and continuous expansion of export incentives
1961	Nationalization of commercial banks
1964	Major devaluation of won, the domestic currency
1965	Unification of exchange rates; move to positive real interest rate for commercial banks
1967	Korea joins the General Agreement on Tariffs and Trade (GATT); import regime is liberalized by switching from positive list to negative list system
1972	First domestic debt crisis; presidential emergency decree places a three-year moratorium on the payment of corporate debts to curb-market lenders
1973	Government launches a heavy and chemical industry (HCI) drive
1979	Government announces "comprehensive stabilization program," which ends the HCI drive
1980	Major devaluation of the won; further trade liberalization, including multi-year tariff reduction plan
1980s	"Rationalization" of industries in financial troubles
1983	Privatization of commercial banks
1988	Interest rate deregulation begins
1989	Piecemeal liberalization of international financial transactions begins, including a more market-determined exchange rate
1993	Government announces "new economy 100 days plan"; Bank of Korea lowers its rediscount rates from 7 to 5 percent
1996	Korea joins OECD; commitments to financial liberalization are made
1997	December: Korea and IMF agree on a rescue package; free floating exchange rate system
1998	Sweeping reform and liberalization of financial sector

Table 13A.1 **Korea's GDP, GDP Per Capita, Investment, Capital Inflows, and Saving (1960–2000)**

Year	Real GDP (billions of 1995 won)	GDP per capita (1995 won)	Investments (%)	Saving (%)	Capital Inflow, Net (%)
1960	24,524.5	981.4	10.8	1.4	9.3
1965	33,207.5	1,158.3	14.8	7.5	7.4
1970	56,209.0	1,788.1	25.4	18.2	8.1
1975	82,257.5	2,372.0	28.7	19.4	9.0
1980	114,977.7	3,073.7	31.9	24.2	8.5
1985	167,501.9	4,142.8	30.0	30.6	0.8
1990	263,430.4	6,068.3	37.7	37.6	0.8
1995	377,349.8	8,459.1	37.2	35.4	1.8
1999	436,798.5	9,321.4	26.8	33.5	–6.1

Source: Bank of Korea, *Economic Statistics Yearbook* (various issues) and online service.

Table 13A.2 **Foreign Trade in the Korean Economy (1960–2000)**

Year	Exports ($millions)	Imports ($millions)	Exports/ GDP (%)	Imports/ GDP (%)
	For Goods and Services on the Balance-of-Payments Basis			
1960	116.9	379.2	3.4	12.7
1965	289.8	488.4	8.6	16.2
1970	1,379.0	2,181.7	13.8	23.9
1975	5,883.6	7,997.2	27.2	35.7
1980	19,815.3	25,151.5	32.7	40.6
1985	30,455.4	30,017.0	32.9	32.1
1990	73,295.4	76,360.5	29.1	30.3
1995	147,459.5	154,882.5	30.2	31.7
1999	171,692.4	143,972.5	42.1	35.3
	For Goods Only on the Custom Clearance Basis			
1960	32.8	343.5	1.0	11.5
1965	175.1	463.4	5.2	15.3
1970	835.2	1,984.0	8.3	21.8
1975	5,081.0	7,274.4	23.5	32.5
1980	17,504.9	22,291.7	28.9	36.0
1985	26,632.6	26,652.8	28.8	28.5
1990	65,015.7	69,843.7	25.8	27.7
1995	125,058.0	135,118.9	25.6	27.6
1999	143,685.5	119,752.3	35.2	29.3

Source: Bank of Korea, *Economic Statistics Yearbook* (various issues).

Table 13A.3 **Estimates of Upper Bounds of Subsidy through DMB Loans (billions of won)**

Year	Estimate I	Estimate II	Ordinary Income, Manufacturing Total
1963	1.5	n.a.	4.5
1964	5.5	n.a.	5.6
1965	7.1	n.a.	6.6
1966	2.4	n.a.	11.4
1967	–4.8	n.a.	13.4
1968	–7.4	n.a.	20.6
1969	–13.5	n.a.	24.3
1970	–2.2	n.a.	22.9
1971	7.2	n.a.	11.8
1972	28.7	n.a.	56.5
1973	30.0	n.a.	62.3
1974	93.8	n.a.	176.1
1975	243.0	n.a.	169.7
1976	373.5	n.a.	313.6
1977	326.1	n.a.	390.0
1978	253.6	n.a.	615.1
1979	267.0	n.a.	573.9
1980	91.6	754.8	–55.7
1981	847.4	1,316.5	5.6
1982	1,628.3	2,044.8	403.6
1983	n.a.	1,946.1	1,454.3
1984	n.a.	790.2	1,619.1
1985	n.a.	372.8	1,666.5
1986	n.a.	399.4	2,839.4
1987	n.a.	921.1	3,413.5
1988	n.a.	2,299.1	4,433.1
1989	n.a.	1,749.7	2,950.7
1990	n.a.	3,851.9	3,575.7
1991	n.a.	4,873.3	3,199.2
1992	n.a.	5,678.1	2,948.4
1993	n.a.	5,348.9	3,855.8
1994	n.a.	4,586.5	7,623.0
1995	n.a.	5,410.5	11,842.4
1996	n.a.	7,213.1	3,551.7
1997	n.a.	–721.0	–1,408.7
1998	n.a.	–16,004.9	–7,754.1

Notes: This estimation recognizes that DMBs' general purpose loans other than the loans enjoying preferential rates also had an element of subsidy, since the loan rates were lower than a market-clearing rate might have been. However, Estimate II, since it must make use of the *IFS*'s "lending rate," is an estimate of the upper bounds of subsidy rather than that of actual subsidy.

Estimate I is made by multiplying the total loans less sum of preferential loans (table 13.3) by the difference between the reference interest rate (table 13.2) and the loan rate applied to "discounts on commercial bills" (table 13.1).

Estimate II is made by multiplying the total loans (table 13.3) by the difference between the reference interest rates and the lending rates (table 13.1). n.a. = not available.

Table 13A.4 Rates of Return, Manufacturing Sector (percent per annum)

Year	ROA	ROA[a]	ROE	ROE[a]
1962	8.9	7.8	22.6	19.8
1963	9.7	7.1	18.8	13.7
1964	7.5	3.9	15.1	7.8
1965	7.9	3.3	15.3	6.3
1966	7.8	5.1	16.9	11.1
1967	6.8	5.1	17.0	12.8
1968	5.3	3.9	16.1	11.8
1969	3.7	2.5	13.5	9.1
1970	2.5	0.9	10.7	3.9
1971	0.9	–0.6	4.4	–3.2
1972	3.4	2.1	14.2	8.8
1973	2.6	1.5	9.6	5.6
1974	4.8	3.3	20.0	13.9
1975	3.4	1.2	14.7	5.4
1976	4.1	1.9	19.1	9.0
1977	3.8	2.1	18.0	10.0
1978	4.4	3.0	20.3	14.2
1979	3.0	1.6	14.1	7.8
1980	–0.2	–1.2	–1.2	–6.8
1981	0.0	–1.2	0.1	–6.8
1982	0.9	–0.3	4.6	–1.6
1983	3.1	n.a.	14.1	n.a.
1984	3.2	n.a.	14.1	n.a.
1985	2.8	n.a.	12.5	n.a.
1986	4.2	n.a.	18.8	n.a.
1987	4.1	n.a	17.9	n.a
1988	4.6	n.a.	18.2	n.a.
1989	2.5	n.a.	8.7	n.a.
1990	2.2	n.a.	8.5	n.a.
1991	1.6	n.a.	6.5	n.a.
1992	1.3	n.a.	5.6	n.a.
1993	1.5	n.a.	6.0	n.a.
1994	2.5	n.a.	9.9	n.a.
1995	3.3	n.a.	12.8	n.a.
1996	0.9	n.a.	3.6	n.a.
1997	–0.3	n.a.	–1.4	n.a.
1998	–1.5	n.a.	–6.0	n.a.
1999	1.4	n.a.	4.3	n.a.

Source: ROA and ROE are estimates based on Bank of Korea, *Financial Statements Analysis* (various issues).

Note: n.a. = not available.

[a]Indicates that numerator is ordinary income less subsidy estimates reported in table 13.6.

Table 13A.5 Debt-Equity Ratios

Year	Korea Big 30, All Firms	Korea Big 5		Korea, Manufacturing Total	United States, Manufacturing Total	Japan, Manufacturing Total	Taiwan, Manufacturing Total
		All Firms	Manufacturing Firms				
1985	4.62	4.40	3.44	3.49	1.21	2.89	1.37
1986	4.93	4.42	3.87	3.51	1.27	2.69	1.26
1987	4.62	4.45	3.90	3.40	1.33	2.55	1.11
1988	3.32	3.64	3.48	2.96	1.38	2.44	1.08
1989	3.31	3.14	3.06	2.54	1.47	2.30	0.91
1990	3.70	3.61	3.51	2.86	1.49	2.27	0.83
1991	3.89	3.77	3.71	3.09	1.47	2.21	0.98
1992	4.00	3.75	3.60	3.20	1.68	2.16	0.93
1993	3.51	3.17	2.83	2.95	1.75	2.13	0.88
1994	3.59	3.18	2.82	3.02	1.67	2.10	n.a.
1995	3.53	3.07	2.64	2.87	1.60	2.07	n.a.
1996	3.90	3.54	3.18	3.17	1.54	1.93	n.a.
1997	5.24	4.67	4.41	3.96	1.54	1.87	n.a.
1998	3.62	3.31	3.16	3.03	1.59	1.73	n.a.
1999	n.a.	n.a.	n.a.	2.15	n.a.	n.a.	n.a.

Sources: The first three columns are estimated from the firm-level data by National Information and Credit Evaluation in its magnetic tapes *Financial Statements of Non-Financial Firms* (various years). The rest are from Bank of Korea, *Financial Statement Analysis for 1999* and *Explanation of Financial Statement Analysis* (1985).

Notes: The estimates for 1987 are not directly comparable with those for other years. n.a. = not available.

Table 13A.6 Return on Assets (percent per annum)

Year	Korea Big 30, All Firms	Korea Big 5		Korea, Manufacturing Total	United States, Manufacturing Total	Japan, Manufacturing Total	Taiwan, Manufacturing Total
		All Firms	Manufacturing Firms				
1985	n.a.	n.a.	n.a.	3.00	7.23	4.40	3.12
1986	1.95	3.03	3.93	4.50	6.67	3.60	6.84
1987	2.11	2.54	3.09	4.40	8.29	4.60	6.89
1988	3.96	4.23	5.07	4.90	9.57	5.70	5.72
1989	2.30	2.72	2.55	2.70	7.87	5.70	3.84
1990	1.57	1.71	1.61	2.40	6.22	5.20	4.27
1991	1.22	1.20	0.97	1.80	3.79	4.00	3.99
1992	1.09	1.49	1.38	1.40	1.40	2.80	2.89
1993	1.24	1.78	1.75	1.60	4.19	2.00	2.50
1994	2.50	3.82	4.55	2.60	8.12	2.50	n.a.
1995	3.35	5.41	7.03	3.59	8.72	3.10	n.a.
1996	0.61	1.18	1.07	0.93	9.10	3.70	n.a.
1997	–0.87	0.37	0.27	–0.30	9.16	3.50	n.a.
1998	–1.82	–1.33	–1.82	–1.52	8.20	2.30	n.a.
1999	n.a.	n.a.	n.a.	1.38	n.a.	n.a.	n.a.

Source: See table 13A.5.

Notes: The estimates in the first three columns for 1987 and 1988 are not directly comparable with those for other years. n.a. = not available.

Table 13A.7 Return on Equity (percent per annum)

Year	Korea Big 30, All Firms	Korea Big 5		Korea, Manufacturing Total	United States, Manufacturing Total	Japan, Manufacturing Total	Taiwan, Manufacturing Total
		All Firms	Manufacturing Firms				
1985	n.a.	n.a.	n.a.	13.20	15.98	17.70	7.57
1986	11.33	16.37	18.42	20.10	15.16	13.30	15.89
1987	12.20	13.80	15.08	19.90	19.33	16.60	15.00
1988	18.76	20.76	23.38	20.60	22.80	20.10	12.14
1989	9.94	11.84	10.77	10.10	19.42	19.10	7.51
1990	7.11	7.51	6.93	9.10	15.47	16.90	7.94
1991	5.86	5.62	4.47	7.00	9.37	13.10	7.87
1992	5.40	7.09	6.41	5.80	3.75	9.00	5.54
1993	5.87	7.86	7.30	6.40	11.50	6.50	4.76
1994	11.38	15.95	17.40	10.50	21.64	7.70	n.a.
1995	15.26	22.28	26.12	14.00	22.65	9.60	n.a.
1996	2.89	5.08	4.18	3.74	23.07	10.80	n.a.
1997	–4.83	1.92	1.28	–1.38	23.26	10.20	n.a.
1998	–9.61	–6.47	–8.51	–6.72	21.23	6.40	n.a.
1999	n.a.	n.a.	n.a.	4.96	n.a.	n.a.	n.a.

Source: See table 13A.5.

Notes: The estimates in the first three columns for 1987 and 1988 are not directly comparable with those for other years. n.a. = not available.

Table 13A.8 Rates of Return, Commercial Banks Total

Year	Total Assets (billions of won)	Net Income (billions of won)	ROA (%)	ROE (%)
1992	167,425.1	931.5	0.71	6.56
1993	198,481.3	889.0	0.62	5.90
1994	250,081.2	1,048.2	0.62	6.09
1995	340,543.0	867.8	0.38	4.19
1996	415,437.8	846.9	0.31	3.80
1997	542,552.8	–3,919.9	–1.06	–14.19
1998	560,059.7	–12,510.6	–3.15	–46.15
1999	550,345.3	–5,996.0	–1.42	–19.62

Source: Financial Supervisory Commission, online service, available at [http://www.fsc.go.kr].

Table 13A.9 Foreign Currency–Denominated Assets and Liabilities, Deposit Money Banks (billions of won)

	Assets			Liabilities		
	Total	Foreign Currency–Denominated	Share (%)	Total	Foreign Currency–Denominated	Share (%)
1991	220,388.9	19,468.4	8.8	205,736.3	19,890.5	9.7
1992	251,321.4	21,936.1	8.7	235,470.7	21,802.8	9.3
1993	275,689.9	25,339.1	9.2	258,353.5	26,035.6	10.1
1994	322,956.2	32,294.4	10.0	302,300.1	32,856.3	10.9
1995	379,517.1	41,872.6	11.0	356,754.7	42,157.2	11.8
1996	451,180.2	55,390.7	12.3	426,074.9	55,445.4	13.0
1997						
J	467,317.3	59,759.7	12.8	433,348.2	58,823.7	13.6
A	474,123.4	60,605.0	12.8	439,853.5	60,720.3	13.8
S	486,928.8	61,079.6	12.5	452,840.5	61,870.5	13.7
O	499,979.2	64,830.9	13.0	464,928.4	66,957.9	14.4
N	523,516.3	76,362.1	14.6	488,161.1	76,587.6	15.7
D	573,695.5	100,370.8	17.5	550,809.0	105,597.1	19.2
1998						
J	587,023.5	105,081.9	17.9	554,035.1	116,204.9	21.0
F	593,032.3	114,330.5	19.3	558,806.3	121,549.8	21.8
M	568,554.5	100,139.0	17.6	532,861.5	101,892.1	19.1
A	557,955.0	96,606.7	17.3	521,434.1	98,887.7	19.0
M	559,347.1	101,118.8	18.1	521,442.7	103,574.4	19.9
J	558,430.3	96,174.0	17.2	522,543.7	98,821.8	18.9
J	552,177.6	84,909.6	15.4	516,205.7	87,797.6	17.0
1998						
D	576,919.5	75,757.1	13.1	554,868.3	72,683.9	13.1
1999	640,011.2	61,181.4	9.6	611,824.4	57,534.5	9.4

Source: Bank of Korea, *Monthly Statistical Bulletin* (various issues).

Table 13A.10 Estimates of Subsidy through DMB Loans (billions of won)

Year	Loan for Trade	Loans for Machine Industry Promotion	Loans for Equipment of Export Industry	Loans NIF	Subsidy Estimates
1963	0.2	n.a.	n.a.	n.a.	0.2
1964	0.5	n.a.	n.a.	n.a.	0.5
1965	0.8	n.a.	n.a.	n.a.	0.8
1966	1.0	n.a.	n.a.	n.a.	1.0
1967	1.5	n.a.	n.a.	n.a.	1.5
1968	3.1	n.a.	n.a.	n.a.	3.1
1969	4.7	0.5	n.a.	n.a.	5.2
1970	8.1	1.5	n.a.	n.a.	9.7
1971	12.2	1.9	n.a.	n.a.	14.1
1972	13.9	1.9	n.a.	n.a.	15.8
1973	19.0	1.9	1.1	n.a.	21.9
1974	36.1	2.6	4.2	1.2	44.1
1975	65.4	3.4	8.4	5.3	82.6
1976	90.4	4.8	11.9	15.0	122.1
1977	93.4	3.9	9.0	19.3	125.6
1978	107.3	2.5	5.3	20.0	135.0
1979	147.3	1.6	3.5	27.0	179.4
1980	151.9	0.6	1.3	31.1	185.0
1981	226.8	0.7	8.0	50.9	286.4
1982	271.0	0.3	n.a.	60.2	331.5

Notes: Estimates are based on tables 13.1–13.3. For the purpose of estimation the amount of a loan for a given year is taken to be the same as the average of the outstanding loan amounts at the end of the year and of the previous year. n.a. = not available.

Table 13A.11 KDB Loans and Interest Rate

Year	KDB Loans to Manufacturing Sector (billions of won)	KDB Interest Rate (%)
1962	11.0	8.4
1963	11.9	8.3
1964	13.2	8.4
1965	16.4	9.6
1966	21.2	13.0
1967	24.6	13.1
1968	29.0	13.1
1969	37.3	14.7
1970	51.7	14.5
1971	65.4	14.4
1972	75.4	13.1
1973	79.0	12.8
1974	118.6	12.7
1975	186.7	12.9
1976	258.0	13.1
1977	377.4	13.6
1978	550.7	13.9
1979	856.8	13.9
1980	1348.9	18.7
1981	1771.2	17.1
1982	2097.6	12.7

Source: Bank of Korea, *Monthly Statistical Bulletin* (various issues).

Note: One representative interest rate was estimated for each year.

Table 13A.12 **Won/Dollar Exchange Rate**

	End of Period	Period Average
1980	659.9	607.9
1981	700.5	681.3
1982	748.8	731.5
1983	795.5	776.2
1984	827.4	806.0
1985	890.2	870.5
1986	861.4	881.3
1987	792.3	822.4
1988	684.1	730.5
1989	679.6	671.4
1990	716.4	708.0
1991	760.8	733.6
1992	788.4	780.8
1993	808.1	802.7
1994	788.7	803.6
1995	774.7	771.0
1996	844.2	804.8
1997		
J	892.0	890.5
A	902.0	895.9
S	914.8	909.5
O	965.1	921.9
N	1,163.8	1,025.6
D	1,415.2	1,484.1
1998		
J	1,572.9	1,706.8
F	1,640.1	1,623.1
M	1,378.8	1,505.3
A	1,338.2	1,392.0
M	1,410.8	1,394.6
J	1,385.2	1,397.2
J	1,236.0	1,300.8
1998		
D	1,207.8	1,213.7
1999	1,145.4	1,189.5

Source: Bank of Korea, online service, available at [http://www.bok.or.kr].

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Comment

Jorge Braga de Macedo

Anne O. Krueger, one of the world's experts on Korea, has joined forces with Jungho Yoo to understand the factors leading to the Korean financial crisis of late 1997. The authors suggest a chain of causation going from *chaebol* capitalism to the collapse of the won, via weak banks and excessive foreign borrowing. As stated in the conclusion, the "*chaebol* were in weak financial condition long before the crisis," the extreme vulnerability of the system being due to the fact that "banks were 'evergreening' the outstanding *chaebol* debt." In short, "the Korean crisis was a disaster waiting to happen."

In terms of diagnostics, Krueger and Yoo conclude that there was no currency trigger for crisis but rather that the increase in interest rates made *chaebol* debt to banks more difficult to service. Since exports helped recovery, they surmise that the path of stabilization was probably appropriate.

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The paper ends with the argument that "the necessity of restructuring the finances of the *chaebol* first" made "the postcrisis workout of the banking system extremely difficult." Depending on whether the difficulty is overcome, then, future prospects will be better or worse.

While Krueger and Yoo do not attempt to measure the relative importance of each one of the four factors they mention, Dekle and Kletzer (chap. 11 in this volume) show a fairly consistent pairing of Korea and Thailand on the one hand and Singapore and Taiwan on the other in terms of rising financial reputation. Malaysia is somewhere in between, and the debate continues on whether its response to the crisis was special. In chapter 9 in this volume, Rudi Dornbusch shows convincingly that this is not so, while Kaplan and Rodrik (chap. 8) present evidence in defense of the Malaysian way.

According to the latest country survey by the Organization for Economic Cooperation and Development (OECD; 2001) the sustained recovery of the Korean economy is threatened by the possibility that reforms may stall. Since then, of course, the rise in the price of oil and the slowdown of world growth have each taken a toll as output fell in the fourth quarter of 2000. In this comment I plan to elaborate on this point and to assess whether the crisis helped bring about structural reforms that could prevent future crises. In so doing I will go back in time, following the historical and institutional approach of Krueger and Yoo but perhaps giving greater weight to the ambiguity of domestic liberalization in Korea, following the common description of the country as a "permit kingdom."

With respect to the currency-financial crisis itself, it is generally acknowledged that a financial crisis with severe real consequences on the economy typically involves a combination of exchange rate devaluation, debt service difficulties, and banking failures (Dornbusch, chap. 16, in this volume; Macedo 1999), and that the three elements were undoubtedly present in Korea. Moreover, recalling earlier National Bureau of Economic Research (NBER) work on the Korean financial crisis, summarized in McHale (2000), it is evident that noted Korean economists tend to see this crisis as a good example of contagion through herd behavior, rather than as a "disaster waiting to happen."

It is to be hoped that taking the analysis back in time and giving greater weight to domestic distortions will help promote consensus on the Korean pattern of development, which was once described as a miracle but has recently come under closer scrutiny, notably through the regular OECD peer reviews.

Korean Miracle?

Korea can certainly be seen as one of the best examples of what was called the Asian miracle. Not only was its 1960 gross domestic product (GDP) per capita about the same as Sudan's, but growth expectations at the

time were also higher for Africa than for Southeast Asia. Krueger and Yoo coin the elegant phrase an "export theory of value" held by Korean policy makers over the last four decades, illustrating the power of export-led growth over import-substituting industrialization.

This power has been recognized at least since the work of Ian Little, Tibor Scitovsky, and Maurice Scott at the OECD Development Center in the late 1960s. Anne's former colleague at Stanford Ron McKinnon (1973) pointed out, however, that financial development was often neglected in the assessment of experiences of export-led growth, which tended to focus on trade in goods and services rather than trade in assets. International trade theory shows that value comes from imports, not exports, so that the export theory of value is bound to tolerate or even to create domestic distortions. The distortions may pertain to domestic factor mobility between sectors, as captured by the traditional Fei-Ranis two-sector model of domestic labor mobility from agriculture to manufacturing. This model was taught for many years at the Yale Economic Growth Center as a rationalization of the Asian miracle. There are many other sources of distortion, however, from imperfect competition in goods markets to financial repression.

At the Growth Center's twenty-fifth anniversary conference, McKinnon introduced macroeconomic instability as an additional distortion and showed how this distortion exacerbated the Stiglitz-Weiss equilibrium credit rationing brought about by the inability of banks to monitor project returns perfectly. Indeed, McKinnon (1988, 390) noted that, compared to Japan, Taiwan, and Singapore, Korea in 1980 "had a much lower ratio of M2 to GDP (0.34) and had to make up for this shortage of domestic loanable funds by borrowing heavily abroad." Again, the Singapore-Taiwan pair is close to the Japanese benchmark.

The interaction between macro-instability and the covariance of returns is bad enough. In Korea, however, the determining factor of the crisis may have been the interaction between industrial and financial structures associated with the export theory of value thought to be behind the Korean miracle.

Industrial and Financial Structure

The latest OECD survey (2001) summarizes Korea's industrial structure as follows:

> One dilemma for Korean policymakers, both before and after the crisis, has been setting appropriate policies to deal with the chaebols, which have played a key role in the country's economic development. Chaebols are large conglomerates linking many individual companies—an average of 27 in 1997—that are diversified across a wide range of industries. The companies are linked by centralized family control and management, ownership links and mutual debt guarantees that facilitate high levels of leverage. At the beginning of the 1980s, the authorities were faced with

two possible methods of dealing with the chaebols, a transition to a free-market economy in which the pressure of stakeholders, competition, both domestic and international, and the threat of bankruptcy would discipline chaebol behavior; or the use of various regulations on financing, investment and loan guarantees to control the chaebols.

The authorities relied primarily on the latter approach to limit the role of the conglomerates. This choice, however, has had several negative consequences. First, it implied considerable government intervention in the private-sector's economic decision-making, thus limiting the role of market forces. The negative impact was compounded by the lack of an effective corporate governance framework to guide management decision-making. Second, it created considerable moral hazard for chaebols, which were essentially protected from bankruptcy. Policies to limit the role of the conglomerates were accompanied by measures to assist small and medium sized enterprises (SMEs), which, nevertheless, remained a relatively backward part of the Korean economy.

Korea's industrialization was led by large firms affiliated with the chaebols. During the 1960s and 1970s, SMEs accounted for only a third of growth in value-added and less than half of the rise in employment. Since the end of the Heavy and Chemical Industry drive of the 1970s, government policy has gradually shifted to place more emphasis on assisting SMEs in ways that have not always been market-conforming.

As the literature on financial structure in Japan and Germany quoted by McKinnon (1973, 1988) emphasizes, the preference for conglomerates, including financial institutions (called *grupos* in Latin America), has disadvantages that become apparent during the process of economic development. The effects of linking a financial structure too closely with the industrial structure go beyond the efficiency with which saving is transformed into productive investment. Under the *grupos* system, no domestic constituency for financial freedom arises, and that bailout guarantees become part of corporate culture. As illustrated by Macedo (1996) regarding the Portuguese change in economic regime toward stability in convertibility that preceded the creation of the euro, all of this makes the combination of political and financial freedom appear less relevant, and thus threatens the growth of civil society.

Other examples can be gathered from Latin America and Europe. Perhaps the most celebrated case is the bailout of Banco Osorno in 1997 by Chilean authorities, to which Carlos Diaz-Alejandro attributed the banking crash of a few years later. Some work along these lines has been carried out for European countries in the process of development (Macedo 1988), and the role of the curb market in Korea and Turkey was investigated in Sweder van Winjbergen's Ph.D. dissertation at MIT in the late 1970s. Recently, Bradley (2001) contrasted the Korean to the Irish model, with the latter encouraging "export-oriented foreign investment inflows," in contrast

to the former's exclusive objective of "capturing greater export market share."

In other words, to understand *chaebol* capitalism it is essential to go back to the heavy and chemical industry period in the mid-1970s, which not coincidentally was used as a model for the Portuguese nationalization of banks and insurance companies in 1975 by the industry minister João Cravinho.[1] Note that *chaebol* are not allowed to own banks—the 4 percent limit on bank ownership is designed specifically to exclude them. However, they have been allowed to own nonbank financial institutions and have used them as cash cows, with the result of a falling market share for banks. In sum, when the Korean administration embraced globalization in the early 1990s, it did not put in place the appropriate governance structures, and the question is whether this contradiction remained after the crisis.

Crisis and Recovery

In spite of the distortions in the industrial and financial structures, there was no sense of vulnerability—instead, complacency was widespread in policy circles as the 1997 Korean presidential election neared. No one thought of calling the International Monetary Fund (IMF) in the summer of 1997 (despite the gloom Krueger observed at that time). Indeed, during the NBER meeting on Korea's crisis, Jeff Shafer made it clear that banks were not being asked to coordinate a response in November. Dooley and Shin (2000) note that central bank deposits in foreign currency rose from zero to US$5 billion in the week of 17 November and to US$10 billion in the week of 24 November; this rate would have exhausted reserves by the time the IMF program was announced. Dooley and Shin (2000) also report that the rollover of credits falls to 24 percent in the first week of December, from a 50 percent average in October. As they note, the lack of reliable figures on useable foreign exchange reserves, foreign debt, nonperforming loans, and so on was astonishing. Whatever the initial complacency, once the debt/banking crisis hit, combining the end of the passive dollar peg with tight money may have been the only viable alternative, even though a huge controversy remains in Korea about the appropriateness of the IMF's monetary conditions.

It is widely recognized that the Korean recovery was faster than that of other OECD economies—namely, Mexico, Turkey, Sweden, and Finland—that had been hit by financial crises. The main reason noted in the OECD survey (2001) is that import compression was greater in Korea than in the other countries, to the point that the current account balance moved

1. Cravinho does not mention the Korean model in his written remarks at the 1976 international conference on the Portuguese economy, but he did make the point while presenting his paper.

into a surplus that reached 13 percent of GDP. The increase in reserves was sterilized, so that there was no increase in inflation. Wage flexibility is another reason for the subdued response of inflation to the sharp fall in the currency. The decline in nominal wages in 1998 prevented a wage-price spiral.

The central bank was given independence in matters of monetary policy, with a regime that may be characterized as "quasi–inflation targeting" at a rate set around 2.5 percent per annum. The monetary regime remains ambiguous, however, because there is the objective of seeking a current account surplus, which may confuse the market.

In addition, an activist fiscal policy toward SMEs is being implemented, and the past tradition of government handouts to enterprises may not yet have been fully overcome, even though the stated objective is to promote the new economy. This explains part of the debt buildup (with debt reaching 40 percent of GDP), even though much of it is government-guaranteed debt related to financial-sector restructuring.

The danger of expenditure rises due to the social safety net, North Korea, and tax reform may be less now than it was in 2000; but, on the other hand, Korea is set to experience the most rapid aging process of any OECD country.

The structural reforms brought about by the crisis thus pertain to the macroeconomic regime, including the independence of the central bank, more effective financial supervision, the beginning of public-debt management, and more transparent budgetary procedures. Because a new government framework cannot change the industrial and financial structure, more progress is to be expected in areas related to the issue of how the government is dealing with the *chaebol,* such as competition policy, regulatory reform, and corporate governance. Until then, the signals are conflicting. On the one hand, the government limits and controls the *chaebol* through the Fair Trade Commission, which has enforced rules on intragroup dealing, cross-ownership, and debt guarantees since the late 1980s. On the other hand, the government is involved in guiding companies' decisions.

Competition

One measure of competition, the degree of mark-up of price over cost for manufactured goods, suggests that—before the crisis—competition was relatively weak in Korea compared to other OECD countries (it was found to be 36 percent in Korea, compared with 25 percent in Japan, 20 percent in Germany, and 15 percent in the United States).

After recent initiatives to promote competition through reforming government regulations, strengthening competition policy, reducing trade barriers, encouraging inflows of direct foreign investment, and privatizing state-owned enterprise, it can be said with the OECD (2000) regulatory review:

> [T]he competition law and competition authority are well designed, consistent with good international practices. The most serious kinds of horizontal agreements are now treated more harshly and the Fair Trade Commission is moving away from a purely structural approach to abuse of dominance. Most statutory exemptions have now been eliminated. Enforcement processes are adequate, although more power to collect evidence would be welcome, and criminal sanctions may not be effective. Consumer protection is also the responsibility of the competition agency, helping ensure that consumers see the benefits of market-based reforms. Competition authorities have also been responsible for chaebol policy, though many chaebol policies deal with corporate governance and financial prudence rather than with competition policy. Chaebol reforms may also involve conventional competition policy issues such as market domination, exclusion, and discrimination, that can be dealt with using consistent economy-wide principles.

After the crisis, the Korea Asset Management Corporation was created to buy bad loans, and it has been very successful in selling those loans to private investors. However, there have been no sales of the government shares in recapitalized banks held by the Korean Deposit Insurance Corporation. There also remains considerable ambiguity about the extent of government involvement in enterprises. This is especially worrying in view of likely political paralysis toward the end of the year, with both presidential and local elections scheduled in 2002.

Since the crisis, the *chaebol* have restructured by reducing debt-equity ratios and cutting the number of affiliates. Hyundai, in particular, will soon become three separate *chaebol,* as shareholding ties are cut. This is a positive development because it limits the risk of chain insolvencies. Nevertheless, the *chaebol* as a group remain highly indebted (they increased equity more than they cut debt during the sharp 1998–2000 upturn).

Regulatory Reform

Quoting the survey, "the conglomerates' measures to reduce the number of affiliates and sell assets created competitive opportunities for SMEs. In addition, the requirement that chaebols lower their debt to equity ratios to 200 per cent reduced their borrowing from banks, improving loan availability for smaller firms. Indeed, SMEs accounted for 46 per cent of the increase in bank lending in 1999."

According to the review, new disciplines of transparency and market principles are needed throughout the entire policy apparatus, at all levels of government. Massive deregulation was accomplished in 1998–99, when the number of government regulations was cut by nearly 50 percent. Reforms are now shifting toward more proactive and comprehensive attention to regulatory quality and institution building. Institutions have been established to promote regulatory reform at political and administrative levels.

Korea has taken steps to improve regulatory transparency, although stakeholder representation in decision making should be broadened. Korea's program of regulatory impact analysis (RIA) is well conceived, although implementation by the ministries remains weak and new legislation proposed by the members of parliament is not subject to RIA. Transparency and accountability would be boosted by establishing independent sectoral regulators. Implementation is now a high priority to embed new practices throughout the public administration, since, as President Kim Dae-Jung said, "Reform must begin with the government."

Corporate Governance

In spite of the reforms induced by the crisis, the survey argues that the creation of a strong corporate governance framework will require significant changes in Korea's corporate culture. To hasten such changes, detailed, prescriptive legal measures that in some cases go beyond those found in other countries are needed to achieve fundamental change. For example, although outside directors are required to make up at least 50 percent of the boards of directors at listed companies, the actual independence of these "independent" directors is in doubt.

To promote further improvements in this area, the Ministry of Finance and Economy established the Committee on Improving Corporate Governance in March 1999. The committee, which consisted entirely of private-sector experts, issued a "Code of Best Practices" in September 1999. The recommendations of this committee, in line with OECD principles for corporate governance, are voluntary. However, the Korea Stock Exchange has required listed companies to provide information to their shareholders about the extent to which they conform with the code. Moreover, the efforts of Jang Hasung, who participated in the OECD Development Center's workshop on corporate governance in the spring of 2000, have been well publicized (as can be seen, e.g., in Hamlin, 2000, Larkin 2000, Lee 1999, Scott 1998, *The Economist* 1999).

An example of improved corporate governance is the refusal of other *chaebol* to assist Hyundai Engineering and Construction in spite of the government's encouragement, when the company teetered on the edge of bankruptcy. The other *chaebol* were afraid of being sued by minority shareholders.

Conclusion

The Korean case suggests four possible lessons for crisis prevention:

1. Even in a crisis, you can't import credibility; you have to earn it in domestic market institutions.
2. There are many exchange rate/convertibility options besides the two-corner solutions of a currency board and pure float. The exact solution should recognize that financial freedom interacts with political freedom,

and therefore that a constituency for capital account openness cannot arise unless financial supervision is operative. This is developed in Macedo, Cohen, and Reisen (2001).

3. Peer-pressure mechanisms are useful to intermediate the process of earning credibility; this can be facilitated by regional surveillance. In addition to the worldwide surveillance provided by the IMF and the peer pressure derived from OECD membership, the mechanism adopted by the European Union can be helpful. This is evident in the Association of Southeast Asian Nations (ASEAN+3) swaps (also called the Chiang Mai initiative). The alternative chosen by Taiwan, stressing bilateral rather than multilateral surveillance mechanisms, implies a high standard (as pointed out earlier). The caveat about peer pressure suggested by the European experience, as reviewed in Macedo (2000) and in Macedo, Cohen, and Reisen (2001), is that entry conditions may not be as effective in earning credibility as accepted norms would be. This is the difference between the so-called Maastricht criteria and the stability pact approved in 1996. In Korea, the liberalization brought about to qualify for OECD membership was defensive rather than cooperative, so that additional measures must be agreed upon domestically.

4. A myth concerning "Asian values" has often been contrasted with supposed Latin American values, when in fact policies and institutions that are appropriate for one stage of development may not be appropriate for another. This is similar to the comparison made at the outset between Korea and Sudan at a time when Africa was seen as having greater potential than Asia. The importance of making comparisons is, of course, that it is an essential prerequisite of peer pressure. The comparison between the Korean and the Irish model, for example, suggests that domestic taxation and foreign investment policies can go a long way toward differentiating the two experiences of export promotion, with a clear advantage for Ireland's model.

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Discussion Summary

Sebastian Edwards made two comments. First, he expressed his sympathy with the view that the discussion of crises should focus on economic arguments rather than cultural differences. He said that, unfortunately, this is not the trend in the current public debate. The most popular book of the year 2000 on public policy (according to the *New York Times*), *Culture Matters,* edited by Harrison and Huntington, argues the exact opposite—that perhaps the only thing that matters is values. Second, he praised the paper for discussing the historical events that affected the Korea's present situation and suggested that the authors add a timetable. He emphasized that the fact that the United States labeled Korea an exchange manipulator (the only country ever given that title by the United States) and pushed Korea to open up its capital account in the late 1980s had a great deal to do with the currency crisis in 1997. *Martin Feldstein* later shared this view.

Joshua Aizenman asked about the welfare effects of opening capital markets. He said that the effect is ambiguous, because opening up the capital markets in Korea might have advanced the occurrence of the crisis, but it also helped to prevent Korea from running into a later crisis with more serious internal problems (like those that occurred in Japan).

Dani Rodrik commented that the paper seemed to support the idea that Korea had structural problems and therefore it also seemed to support the IMF program, which emphasized structural reforms and cleaning up the financial sector. However, he said that this was contradicted somewhat by the fact that Korea had recovered very nicely since the crisis and had been doing very well long before any of these policies were implemented. The question is how to reconcile the high speed of recovery and argument in favor of structural reform; one possibility could be that the current growth is a short-term leap. Rodrik also said that one could have made the same argument regarding the earlier Korean crisis in the 1980s, which was also preceded by severe structural problems in the heavy and chemical industries and a very large current account deficit. Yet Korea not only turned around in one year, but also had very nice growth rates for another seventeen years before it was hit by the Asian crisis.

Robert Dekle also commented on the structural problems of Korea and said that a paper by Yung-Chul Park (1991) found that the heavy and chemical industry policies led to many problems for the commercial banks, and the Bank of Korea was forced to use policy lending to maintain them.

Charles W. Calomiris said that a recent McKinsey report on Korean manufacturing argued that the heavy protection through trade policy, rather than corporate governance, was the cause of the Korean crisis. He personally disagrees with this view, which, however, seems to be influential. He suggested that the author refer to and contradict the viewpoint of the report.

John McHale remarked that this paper complemented the paper by Dekle and Keltzer (presented earlier in the conference) and described a march toward disaster through domestic credit expansion. He asked if the authors could discuss the time inconsistency problem in the context of Korea and provide some explanation why the Korean government could not make a commitment not to provide guarantees and stop the domestic expansion.

Simon Johnson pointed out that the paper rightly put corporate structures and corporate financial relationships at the center of the cause of the Korean crisis. Second, he commented that the paper was convincing on the issue of vulnerability, but there was still a question why and how the crisis happened in 1997. As shown in the paper, the debt-equity ratio was high and asset returns were negative for a long period of time. He stressed that domestic investors believed that if individual *chaebol* did badly, the group as a whole would bail out that individual company, and that was why investors

trusted their money to *chaebol.* What triggered the crisis in 1997 was the collapse of Hanbo and, later, that of the heavily leveraged Daewoo, which underscored the vulnerability of the system. Once people stopped believing that individual companies could be bailed out, the whole *chaebol* system collapsed, resulting in a crisis.

Alejandro M. Werner commented on the data on the currency composition of assets and liabilities of Korean banks. He said that before the Mexican crisis in 1994, the official balance sheet of banks showed very good currency composition of registered assets and liabilities (because of obligations imposed by bank regulations), but the off–balance sheet items were actually in a much more vulnerable position. His question was to what extent the official balance sheet data could be confirmed by other evidence, and whether one could be sure that Korean banks really did not have problems in this respect. Later in the discussion *Michael P. Dooley* cited his joint paper with Shin in which they found that Korean regulators did watch the exposure of the banking system carefully and there was no anecdotal evidence of unbalanced exposure.

Feldstein remarked on the paper's finding that the damage to the Korean economy through the interest rates was greater than that through the exchange rate. He said these findings were important in light of the argument put forward by the IMF, namely that high interest rates would support the won and the currency would be adversely affected by the depreciation of the exchange rate without a corresponding increase in the interest rates. Feldstein also talked about the issue of exit strategy, that is, how to get out of the government protection of *chaebol* and individual firms. He said that the problem of not having an exit strategy was that once it became clear that the economy had become too big and complex for the government to apply first aid, there would be a change of expectation, and consequently a crisis would unravel.

On the comment that the structural problem in Korea may not have been very severe, given its rapid recovery, *Jungho Yoo* said that the rapid recovery should be thought of as a "technical rebound." He said that the huge cut in investments and drop in consumption after the crisis could not continue forever. In addition, the large depreciation of the currency had helped exports to grow, which provided the impetus for the rapid recovery in Korea. The question is whether the recovery could be sustained for a few years, and this does not seem to be the case. *Anne O. Krueger* said that she also found the conclusion that Korea had successfully recovered to be premature. She added that the *chaebol* issue was critical in understanding the cause of the crisis. For example, she said, *chaebol* accounted for 17 percent of the Korean manufacturing output in 1985, a share that increased to 40 percent in 1995 with expanded and diverted credit. This was not only a problem of corporate governance, but also a political problem: these large *chaebol* were so powerful that politicians themselves did not know how to handle them.

In response to the question why the crisis happened in 1997, Yoo said the

following. Up to the mid-1980s, Korean firms were competitive, especially in the labor-intensive products, but they were beginning to face tough competition from Southeast Asian countries and China. The weakening international competitiveness did not immediately give rise to noticeable difficulties for the firms, however. In the second half of the 1980s, because of such external factors as substantial realignment of major international currencies, which depreciated the effective exchange rate of Korean won, and the huge increase in U.S. imports, Korean firms experienced a surge in foreign demand, and the current account registered large surpluses. The favorable external conditions could not continue to improve, and the firms began to have serious difficulties in the early 1990s. Following the past practice of helping the corporate sector out of financial trouble, the Bank of Korea lowered the rediscount rate and the commercial banks their lending rates. This expansionary monetary policy, together with the semiconductor boom in the international market, postponed the crisis to the second half of the 1990s.

On capital account liberalization, Krueger confirmed that there was a strong fear in Korea of opening up the capital account ahead of time, but she disagreed with the view that the capital account liberalization had much to do with either the timing or the magnitude of the crisis. She said that having capital controls might have postponed the crisis, but it would not have led to a very different result. On the welfare effect of opening the capital account, Krueger said that one had to answer two other questions first: that is, whether the liberalization delayed or had anything to do with the crisis, and whether crises are good because they imply earlier structural reforms or bad because they bring huge short-term losses. Because we do not know much about either of these questions, she said it would not be easy to address the welfare effects.

Krueger also discussed issues related to the heavy and chemical industries in Korea. She said that the promotion of these industries in Korea was not economically desirable by all measures, and it was the only time that the Korean government systematically handpicked the industry and told the investors what to do. Fortunately, Korea spotted the problem quickly and stopped many projects within a few years.

On the role of excessive government protection, Krueger stressed that the effect came through the implicit guarantee to *chaebol,* rather than from the trade channel. She also said that she and Yoo had checked the Korean data on banks' currency exposure and did not find any inconsistency similar to the Mexican case.