Assessment of Progress in Corporate Restructuring in Korea Since the 1997-98 Crisis

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Joon-Kyung Kim*

* Senior Fellow at the Korea Development Institute.

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I. Introduction

Corporate restructuring has been one of the key policy issues in Korea since the onset of the financial crisis. As is well known, a string of bankruptcies of the chaebol affiliates in early 1997, starting from Hanbo Steel Co., was the prelude of Korea’s financial crisis. Also, the highly leveraged expansion of the chaebols and their reckless investment have been at the core of intrinsic vulnerability of the Korean economy, both financially and macroeconomically. By the same token, a genuine economic recovery cannot be achieved unless the corporate sector, particularly, the chaebols, is fully equipped with sound capital and governance structure.

During the past five years or so, Korea’s corporate sector has made significant progress in terms of soundness and efficiency, in fact, unprecedented by Korea’s own historical standards. After showing extremely high debt-equity ratios of over 500 percent in the years preceding the crisis, the largest chaebols reduced their debts to achieve the target goal of 200 percent debt-equity ratio by the end of 1999. Intra-chaebol debt guarantees of the thirty largest chaebols have decreased significantly. More importantly, many large-scale spin-offs have resulted in streamlining business activities among the financially vulnerable chaebols with a significant reduction in the number of poorly performing affiliates. Even though this led to the reduction of the top 30 largest chaebols in 1997 by nearly half by 2002, the restructuring of these poorly performing businesses enabled the reallocation of resources such as labor and capital from troubled firms to growing firms. At the same time, corporate governance reform has also produced new standards and practices conducive to enhanced transparency and accountability.

Even with progress in the restructuring of the chaebols with large debt reductions, Korea’s corporate restructuring is an ongoing process. Though on average, the profit
performances of Korean firms have reached levels similar to pre-crisis, however, profit performance among a number of firms indicates the need for further restructuring.

The objective of the paper seeks to empirically assess the interim progress of Korea’s corporate restructuring using a comprehensive firm-level data set to identify the strengths and weaknesses. Section II includes overall description of the financial landscape of the Korean corporate sector before the financial crisis. Particularly, we identify the degree of which the corporate sector in Korea was exposed to solvency risk before the crisis. Section III provides assessment on the progress in overall corporate restructuring since the onset of the crisis. Particularly, we analyzed the financial health of chaebols and non-chaebols in terms of debt servicing capacity, profitability, and so on. Section IV attempts to assess the performance of Korea’s corporate insolvency rehabilitation system by comparing the different rehabilitation procedures including the in-court and the out-of-court procedures in restructuring ailing firms. Section V summarizes the main conclusions.
II. Financial Landscape in Korea’s Corporate Sector Before the Crisis

To shed light on what the corporate sector financial landscape was like in the years before the financial crisis we examined the externally audited financial data of a sample of 6,116 non-financial firms collected by the National Information and Credit Evaluation, Inc. (NICE). In conducting the empirical analysis of the corporate sector’s financial condition before the crisis, we use financial data reported under pre-crisis accounting standards before they were revised in December 1998.\(^1\) To assess the financial health of the sample firms we first use the interest payment coverage ratio (IPCR) – the ratio of earnings before interest payment and taxes plus depreciation and amortization (EBITDA) to interest expenses. This definition implies that the firms with IPCR less than one are unable to even cover the interest payments, let alone the principal, with earnings.

Figure 1 shows the time profile of IPCR for the chaebols and non-chaebol firms during 1986-1997. One notable feature in Figure 1 is that IPCR for the top 6-70 chaebols and non-chaebol firms was clearly on a downward trend for almost a decade prior to the crisis while the ratio for top 5 chaebols was more or less stable with a sharp increase in 1994-95. This upward blip was, however, largely due to an unprecedented boom in the semiconductor industry, and when the three semiconductor companies affiliated with chaebols (Samsung Electronics, Hyundai Electronics, and LG Semiconductor) are taken out of the sample, IPCR for the top 5 chaebols also follows the general downward trend. Another important observation to be made about Figure 1 is that the IPCR for the chaebols excluding the three semiconductor companies was

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\(^1\) Korea’s accounting standards were revised to meet International Accounting Standards (IAS). Accordingly, the revised standards required changes in asset value such as bonds, equity and foreign exchange to be reflected as current capital loss/gain. In analyzing the pre-crisis financial condition of the corporate sector using data set reported under the revised accounting standards would offer a more consistent assessment. However, due to inconsistencies or possible deviations in pre-crisis financial information from the change in accounting standards, we analyze financial conditions before the crisis using the pre-crisis accounting standard.
lower than that for non-chaebol firms and the top 6-70 chaebols were most vulnerable to bankruptcy.

-- <Figure 1> Interest Payment Coverage Ratio (IPCR) Before the Crisis --

The declining IPCR of Korea’s corporate sector was due to both deteriorating business performance and a rising debt leverage. Specifically, since the late 1980s the business performance of firms in all three categories, measured as the ratio of EBITDA to total assets, has deteriorated except for the three semiconductor companies affiliated with the top 5 chaebols in 1994-95 (Figure 2). Business performance of the chaebols, again except for the three semiconductor companies, was generally worse than that of the independent companies. The debt leverage—the ratio of total borrowings to total assets—rose for all firms and the ratio for the chaebols was systemically higher than that for non-chaebol firms over the entire sample period (Figure 3).

-- <Figure 2> EBITDA/Total Assets Before the Crisis --

-- <Figure 3> Total Borrowings to Total Assets Before the Crisis --

With respect to the poor performance of the Korean corporate sector, key questions are; 1) why did the chaebols, once functioned as a core engine of Korea’s growth in the past, become weaker compared to independent firms? 2) why did profit performance of both chaebol and independent companies experienced the declining profitability since the late 1980s?

One explanation for chaebol’s poorer profit performance vis-à-vis independent firms is the conflict of interests stemming from disparity between ownership rights and control rights. When there exists a disparity between ownership rights and control rights, controlling shareholders tend to wastefully invest corporate resources and pursue their private interests at the cost of minority shareholders. Indeed, the direct personal ownership of the controlling owner in the top 30 largest chaebols in Korea was on average less than 10 percent, while a handful of the chaebol families had strongly
controlled many affiliated firms through cross-investment. Joh (2001) showed that firms with a high disparity between control rights and ownership rights exhibited low profitability using the Korea’s firm-level data during 1993-97.

What accounted for the declining profitability in Korea’s entire corporate sector? Kim and Lee (2002) argued that the declining profitability was due to rising labor costs in Korea and increasing competition from labor-abundant, developing countries such as China. To demonstrate this point, they classify the sample firms into four groups based on the OECD International Standard Industrial Classification (ISIC) and measure profit performance separately for each of the four groups: low-technology, medium-low-technology, medium-high-technology, and high-technology industries.²

As can be seen in Figure 4, both the low-technology and medium-low technology industries experienced a decreasing trend in profitability, their profit rate dropping from around 10 percent in 1987 to 5-6 percent in 1997. In the medium-high technology industries there were also signs of deteriorating profitability but to a lesser extent in comparison with the low and medium-low technology industries. In contrast, the profit performance of the high technology industries, which shot up markedly in 1994-95 but then fell sharply in 1996-97, was considerably stronger than that of the other three industry groups. But, as demonstrated in Figure 2, their relatively good profit performance was not sufficient enough to prevent declining profitability in the overall

² Low-technology industries are food and beverage, textile, apparel, leather, footwear, chemical textile, timber, wood products, paper products, and printing. Medium-low technology industries are petroleum refineries and coal products, rubber products, plastic products, non-metallic mineral products, iron and steel, non-ferrous metals, metal products, shipbuilding and repairing, and furniture and other manufacturing. Medium-high technology industries are industrial chemicals, other chemicals, non-electrical machinery, electrical machinery, railroad equipment, motor vehicles, other transport equipment, medical and precision equipment, photographic and optical instrument, and watch. High-technology industries are office and computing equipment, electronics, communication and broadcasting equipment, broadcast receiver/video, sound recording equipment, and aircraft.
corporate sector. Figure 5 shows the trend in the share of troubled firms with IPCR less than one by industry group. It is clear that starting in the late 1980s the proportion of such troubled firms, particularly in the low and medium-low technology industries, increased rapidly despite short-term ups and downs. By 1996, over 34 percent and 27 percent of firms in the low and medium-low technology industries, respectively, were in a vulnerable position. Even in the medium-high and high technology industries the share of troubled firms with IPCR less than one increased over time although not as much and as rapidly as in the low and medium-low technology industries.

To show that the sharp decline in corporate profitability was in part due to labor costs rising in excess of productive gains we calculated changes in the unit labor cost (ULC) for two large industry groupings—light manufacturing and heavy and chemical industries. The figures presented in Table 1 clearly point to deteriorating industrial competitiveness and profit performance of Korea’s corporate sector. Between 1987 and 1996 labor productivity in heavy and chemical industries increased by 10.3 percent per year while that in light manufacturing industries increased by 5.2 percent per year. In contrast, the rate of wage increase was quite similar in the two sectors at around 16 percent. Consequently, the increase in ULC in light manufacturing was twice as high (10.5 percent) as in heavy and chemical industries (5.0 percent). This explains in part why labor-intensive light manufacturing industries all suffered a marked decline in profitability since the late 1980s. If the firms in the light manufacturing industries had passed on the high labor costs as higher prices in the world markets their profitability would not have suffered. Being price-takers in the global markets, however, these firms would not have been able to do so. What made the situation worse for the Korean firms was China’s rapid entry into the world markets where their exports directly competed with those from China. Indeed, in the early 1980s China started to gain a comparative advantage in labor-intensive manufactured goods and achieved a rapid export expansion in those products (Abe and Lee 2001).
With respect to the chaebols’ unsustainably high debt leverage, key questions are; 1) how could the chaebols borrow to the point of unthinkable leverage before the financial crisis in the first place, and 2) how could the chaebols survive for several years with such heavy burden of debt at the time of economic downturn? These two questions are inter-related issues. Answers to both of these questions critically hinge upon poor governance of both corporate and financial sectors, as well as lax financial supervision.

Since the 1960s, interest rate control combined with massive provision of policy loans to targeted sectors had encouraged the Korean firms to rely more on borrowings than equity financing. In particular, the so-called heavy and chemical industry (HCI) drive in the 1970s set the stage for the emergence of chaebols. Policy loans have indeed been substantial during the HCI drive: they constituted about 50 percent of total domestic credit. (Cho and Kim, 1997) Such industrial policy resulted in large debt exposure of the chaebols as they are the major recipients of such a financial support. More important was the government’s implicit risk sharing with chaebols in making investment. Although the government’s financial support to and risk sharing with chaebols significantly contributed to rapid growth which was largely driven by the factor-input expansion, they also resulted in a serious problem of moral hazard not only in the corporate sector but also financial institutions. Implicit risk-sharing by the government encouraged chaebols to make reckless investment based on heavy debt financing, while discouraging financial institutions to properly monitor the soundness of borrowers and manage risk in their loan portfolios.
Unlike banks, many non-bank financial institutions (NBFIs) are owned by chaebols. As of 1997, the top 70 chaebols owned a total of 114 financial affiliates—an average of five financial affiliates in the case of the top 5 chaebols—concentrated in securities companies, merchant banking companies and non-life insurance firms. Although many NBFIs are owned by large industrial groups, financial supervision on NBFIs has been lax. Such combination was a disaster in waiting as can be seen from the fact that the financial trouble of MBCs acted as a triggering point for the financial crisis in 1997. The close links between NBFIs and the chaebols have created scope for conflict of interests. In fact, it appears that the chaebols have exploited their affiliated NBFIs as a financing arm to support and give a favor to other subsidiaries within their group in various ways. For example, the chaebols have been using their affiliated MBCs especially their overseas branches, to finance the activities of other subsidiaries within their groups. In this situation, it is hard to expect prudent corporate monitoring by NBFIs.

<Table 2> Number of NBFIs Owned by Top 70 Chaebols

In order to analyze the linkage between the chaebol’s debt leverage and its ownership of NBFIs, more than 5,000 firms in the sample were divided into two groups: Group I covers those firms that own NBFIs while Group II includes firms without any ownership in NBFIs. If one or more subsidiary companies of a chaebol own NBFIs, then all non-financial affiliated companies of the same chaebol are treated to belong to the first group. Then various financial indicators are reviewed and compared across different groups. Figure 6 presents the ratio of total borrowings to total assets for each group. It can be easily seen that Group I shows consistently higher debt leverage than Group II, and the gap between the two groups became more pronounced at the time of crisis in 1997. In addition, Group I has been favored in terms of interest costs as shown by Figure 7, and the gap between the two groups was also widened in 1997 when Korea’s credit situation was particularly tenuous due to the fear for the financial crisis.
These findings imply that chaebol-owned NBFIs have been functioning as a financing arm or cash vault of their affiliated subsidiaries. Particularly, the widened gap between the two groups in terms of debt leverage and interest costs at the time of the crisis can be taken as a crude evidence for the financial support to troubled subsidiaries at a favorable term.

*<Figure 6> Total Borrowings to Total Assets for Non-Financial Firms*

*<Figure 7> Interest Costs to Total Borrowings for Non-financial Firms*

On the basis of these findings, statistical analysis was carried out to test the hypothesis of the linkage between corporate debt leverage and NBFI ownership. In order to identify the effects of the ownership of NBFIs on corporate leverage, it is necessary to control firm-specific factors that can affect the capital structure of firms. Under this premise, the regression analysis includes firm size, the ratio of cash flows of total assets, the ratio of tangible fixed assets to total assets, and firm age as explanatory variables for the corporate leverage. The regression model also includes dummy variables for ownership of NBFIs in order to identify whether NBFIs have excessively lent to the affiliated chaebols. Finally, the pooling regression analysis in this study employs panel data over the sample period from 1990 to 1997.

The major regression results are provided in Table 3. The regression analysis was applied for two dependent variables: total debt leverage and the share of long-term borrowing in total indebtedness. All regression results presented in the Table indicate that, even after controlling firm-specific factors, the degree of corporate leverage is positively and significantly correlated with the chaebols’ ownership of NBFIs.

First, equation (I) in the Table employs, as an explanatory variable for the ownership of NBFIs, a dummy variable that differentiates only between ownership and non-ownership of NBFIs regardless of the business characteristics of financial
institutions. All coefficients turned out to be correct in signs and statistically significant as we postulate.

When another dummy variable whose value is 1 if the firms in question are chaebol-affiliated and 0 otherwise is added to the equation, however, the ownership dummy variable lost explanatory power. A plausible explanation for such result is that the statistically significant effect of the ownership of NBFIs on corporate leverage in equation (I) could reflect simply the too-big-to-fail hypothesis, not the advantage of the chaebols directly resulting from the ownership of NBFIs. Indeed, in Korea, even those chaebols with no ownership of NBFIs have been able to borrow at a favorable term simply because of the pervasive moral hazard in the financial sector that relies on the too-big-to-fail hypothesis. Another explanation is a possibility of multi-colinearity problem. The fact that most chaebols own NBFIs suggests that the ownership dummy and the chaebol dummy variables are likely to be highly correlated.

Given this diagnosis, equation (II) employs three separate ownership dummy variables for each non-bank financial sector, covering MBCs, securities companies and ITCs, and insurance companies. The regression results show that the ownership dummy variables are of correct signs and statistically significant at least at 10% level for MBCs and securities companies and ITCs, while not significant for insurance companies.

<Table 3> Estimation of Corporate Debt Leverage

Another set of regression equations were estimated in order to further investigate the effects of the ownership of NBFIs on corporate leverage by taking into account the differentiated business characteristics of NBFIs. As is well known, MBCs specialize in short-term financing such as CP discounting while securities companies and ITCs are focusing on long-term financing such as corporate bond underwriting and brokerage. Such difference in business orientation of NBFIs has an implication for the maturity
profile of corporate debt. For example, it is not surprising if the chaebols who own MBCs have relatively high share of short-term loans in their total liability.

Equation (IV) shows that the coefficients of ownership dummy variables for MBCs and securities companies and ITCs have correct signs and are statistically significant at least at the 5% level. This result implies that the ownership by the chaebols of NBFIs affected not only the overall leverage but also the maturity composition of corporate debt.
III. Post-Crisis Performance of Korea’s Corporate Sector

What is the level of improvement in performance of Korean firms in the aftermath of the crisis? We first assess the changes in the financial condition of the externally-audited firms following the crisis using various indicators. The financial data set used in this empirical analysis were reported under the revised accounting standards meeting international standards in December 1998. The sample include all externally-audited firms deemed as “technically normal” (de jure non-bankrupt) until the end of 2002, while excluding those that entered into the insolvency rehabilitation program including both the in-court and out-of-court procedures.

Figures 8-11 shows the pattern of debt servicing capacity, profitability, debt leverage, and interest expenses-sales ratio for the sample firms during 1996-2002. The ratios in the figures are weighted average across firms. The IPCRs for the entire sample firms have been on an upward trend following the crisis with some fluctuations. The reduction in debt combined with lower interest rates led to the upward trend in IPCR. A distinct feature for all indicators of the top 70 chaebols shows that chaebols consistently performed better than non-chaebol companies throughout the post-crisis period. In particular, chaebols were able to reduce debt leverage a more rapid pace compared to non-chaebols as the ratio of total borrowings to total assets for the chaebols decreased from 55 percent in 1997 to 28 percent in 2002, as can be seen from Figure 10. Although non-chaebols reduced their debt leverage, there was little improvement in the profitability of non-chaebol firms compared to pre-crisis performance (Figure 9).

<Figure 8> Interest Payment Coverage Ratio (IPCR) After the Crisis

<Figure 9> EBIT to Total Assets After the Crisis

<Figure 10> Total Borrowings to Total Assets After the Crisis
Despite the marked improvement in the debt servicing capacity of the corporate sector, there still exists a large number of financially weak firms measured by the IPCR. As can be seen in Table 4, in 2002, the number of firms with IPCRs of less than one reached 1,957, accounting for 25.2 percent for all the sample firms even though the economy was in a boom. Proportion of such firms was relatively higher in non-chaebol firms compared to the top 70 chaebols.

While an IPCR of less than one for just one year may reflect short-term liquidity problems, the firms with IPCRs of less than one for at least three consecutive years may pose severe credit risks. Beginning in 2000 until 2002, 550 firms recorded IPCRs of less than one for three consecutive years. The number of financially weak firms clearly indicates that there still remains the need for further corporate restructuring.

To examine the noticeable changes in the distribution of performance of every indicator following the crisis, we ranked the sample firms into five quintiles for every year based on their IPCRs for that year. In constructing the sample of firms during 1996-2002 for this analysis, we used externally-audited firms, however, because the number of firms with financial statements available varies by year, firms with financial data available for every year were selected for the sample. Due to movements between each quintile for analysis period, firms in the 1st quintile for 2002 may not be same as the firms in the 1st quintile for 1996. The first quintile showed marked improvement following the crisis for every indicator. For example, IPCR increased from 7.7 in 1997 to 50.7 in 2002; the ratio of EBIT to total assets increased from 11.4 percent in 1997 to 18.1 percent in 2002; the ratio of total borrowings to total assets decreased from 17.0

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3 According to an empirical study (Hahn et al., 2000), having IPCRs of less than one for three consecutive years was found to be a good predictor of business failures.
percent in 1997 to 8.0 percent in 2002. However, in the second and third quintiles the degree of improvement in debt servicing capacity, profitability and debt leverage was less compared to the 1st quintile. Furthermore, financial performance for the bottom quintile showed signs of continuing deterioration widening the gap between the top and bottom quintiles. Despite the significant reduction in debt leverage among firms in the bottom quintile, their IPCR fell to -2.0 in 2002 due to poor profit performance.

*Figure 12* Changes in IPCRs by Quintile (Current-Year Quintiles),

*Figure 13* Changes in EBIT/Total Assets by Quintile Based on IPCRs (Current-Year Quintiles)

*Figure 14* Changes in Total Borrowings/Total Assets by Quintile Based on IPCRs (Current-Year Quintiles)

*Figure 15* Changes in Interest Expenses/Total Sales by Quintile Based on IPCRs (Current-Year Quintiles)

In order to measure the degree of improvement in debt servicing capacity among the firms in the bottom quintile, we constructed a transition matrix between 1996 and 2002 based on IPCRs. As shown in Table 5, for the firms in the bottom quintile in 1996 14.1 percent of the firms moved to the top quintile in 2002 and 17.5 percent of the firms moved to the 2nd quintile in 2002, while 27.2 percent remained in the bottom quintile in 2002. The high proportion of firms moving up to the upper quintiles implies that there has been considerable progress in corporate restructuring.

*Table 5* Transition Matrix Based on IPCRs, 1996-2002

Figures 16-19 show how each cohort based on its IPCR in 1996 performed over period following the crisis. Hence, the firms in the top quintile in 1996 are identical to those in the top quintile in 2002. Figure 16 shows a small drop in IPCR for the top
quintile in 1996 decreasing from 7.8 to 6.8 in 2002, but the firms in the top quintile in 1996 were consistently the top performers over the whole period. Also, IPCRs of the firms in the 3rd quintile in 1996 collectively out-performed those in the 2nd quintile in 2000 and 2002 as result of a significant improvement in EBIT combined with the sharp reduction of debt for those years. Similarly, for the 5th quintile, IPCRs of firms increased from -0.1 in 1996 to 1.9 in 2002 to the same level as the 4th quintile.

<Figure 16> Changes in IPCRs by Quintile (Fixed 1996 Quintiles),

<Figure 17> Changes in EBIT/Total Assets by Quintile Based on the IPCRs (Fixed 1996 Quintiles)

<Figure 18> Changes in Total Borrowings/Total Assets by Quintile Based on the IPCRs (Fixed 1996 Quintiles)

<Figure 19> Changes in Interest Expenses/Total Sales by Quintile Based on the IPCRs (Fixed 1996 Quintiles)

Figures 20-23 show the performance for four industry groups as previously classified in Section II following the crisis. IPCR and profitability in the high-technology industry sharply increased in 1999-2000 only falling drastically back in 2001, and then rebounding again in 2002. These large swings in IPCR and profitability reflect the volatile external demand in the information and communication technology sector (ICT). However, IPCRs for other industries such as the medium-high-technology, medium-low-technology and low-technology industries showed steady upward trend following the crisis. In particular, IPCR for the high-technology industry was the highest among the all industries reaching 5.2 in 2002, followed by the medium-high-technology industry at 3.6, low-technology industry at 2.9, and the medium-low-technology industry at 2.6. Improvements in debt servicing capacity for the medium-high, medium-low and low-technology industries were largely due to the reduction of
debt leverage and interest costs coupled with slight improvement of profitability; in that by 2002, EBIT-total assets ratio for those industries remained at levels slightly above those before the crisis. Interestingly, IPCRs of the low-technology industry performed reasonably well out-performing the medium-low technology industry.

<Figure 20> IPCRs by Industry Group After the Crisis

<Figure 21> EBIT/Total Assets by Industry Group After the Crisis

<Figure 22> Total Borrowings/Total Assets by Industry Group After the Crisis

<Figure 23> Interest Expenses/Total Assets by Industry Group After the Crisis

Figure 24 shows trend for the share of troubled firms with IPCRs of less than one by industry group following the crisis. The proportion of such troubled firms for all industries sharply fell in 1999 reversing in 2000 and 2001, and then decreasing in 2002 except for the high-technology industry. Part of the swings in the proportion are cyclical. In the high-technology industry the share of troubled firms with IPCR of less than one began to sharply increase in 2000 until 2002. By 2002, 40 percent of firms in the high-technology industry were financially vulnerable, despite the fact that IPCR on average reached 5.2 (as seen in Figure 20), which was the highest among all industry groups. The governmentally driven industrial policy aimed at fostering the venture business in the ICT sector led to a bubble which burst in 2001. Consequently, the collapse of the ICT sector resulted in a large share of troubled firms in the high-technology industries. Indeed, IPCR for the externally-audited venture firms listed on the KOSDAQ plunged from 10.0 in 2000 to -0.1 in 2002. In this light, although the ICT sector has recovered since late 2001, there still remains the pressing need to restructure the financially vulnerable firms in the ICT sector.

<Figure 24> Share of Troubled Firms (IPCR<1) by Industry Group After the Crisis
IV. Performance of the Corporate Insolvency Rehabilitation System in the Aftermath of the Crisis

1. Overview of the Insolvency Rehabilitation System in Korea

Korea has three acts on insolvency rehabilitation: the Bankruptcy Act which deals with the liquidation of individuals and companies; the Composition Act which covers composition (arrangement) proceedings for individuals and companies; and the Corporate Reorganization Act which covers the reorganization process of joint stock companies. Since these statutes were first enacted in 1962 with no significant amendments until 1998.

Since the concept of insolvency laws in Korea was not familiar to many lawyers, not to mention the general public, they were rarely applied before the crisis. It was said that a judge handled one insolvency case on average during a tenure. There were several reasons for the infrequent use of insolvency laws. The Civil Procedure Act was usually used for debt collection on an individual case. In most cases, collective collection measures were not necessary because assets of a debtor were already subject to mortgage or security in most cases. Secured creditors collected their portion of the proceeds from the sales of secured assets according to the order of priority. In most cases, unsecured creditors received almost nothing because the asset value was usually smaller than the amounts of secured loans. Additional procedures for the collection of debts were not needed.

Although the most bankrupt firms were effectively liquidated on a non-judicial basis, some financially troubled companies were bailed out by the government through various “rationalization” measures. Prime examples for such measures are the August 1972 Emergency Measure, industrial restructuring in major HCIs (1979-81) and

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4 Il Chong Nam and Soogeun Oh originally provided this section in Nam et al. (1999), from which this report refers heavily.
industrial rationalization measures in depressed industries such as overseas construction and shipping industries (1984-88). The rationalization measures implemented by the government eliminated opportunities for the court to deliberate insolvency cases. Only a handful of insolvency cases, involving mostly small and medium sized firms, were filed and processed through court. Also, Article 7-3 of the Act on Special Measures for Unpaid Loans of Financial Institutions worked to impede wider use of judicial insolvency procedures. The article gave the Korea Asset Management Corporation (KAMCO) the exclusive authority to hold auctions of the assets of bankrupt firms before firm undergoes restructuring. This provision virtually paralyzed the Corporate Reorganization Act; without the consent of KAMCO, reorganization procedures could not take place because auctions were initiated by KAMCO.

In 1990, the Constitutional Court of Korea declared this provision unconstitutional and made the reorganization proceeding a more practical alternative. Although reorganization cases increased since then, the reorganization proceeding was widely criticized for being incomplete and too lenient in granting rehabilitation. In fact, few firms emerged as being viable following reorganization. In 1992, the Supreme Court began to move in the direction of improving judicial bankruptcy procedures. Furthermore, the new rule (1992 rule) established the three conditions for the initiation of corporate reorganization proceedings: high social value, financial distress and possibility of rehabilitation. It also enumerated detailed factors to be considered for each condition. Interestingly, economic efficiency was not a requirement for corporate reorganization.

The second bankruptcy of Non-No corporation, which had already been in the reorganization process, led the Corporate Reorganization Act to face public criticism again. The owner/CEO of Non-No corporation fled abroad after having issued checks

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which defaulted. Such abuse of the corporate reorganization procedure by the owner of ailing firm led the Supreme Court to amend the 1992 rule in 1996. In particular, the court argued that the shares of controlling shareholders responsible for a firm’s failure should be wiped out. The new rule also excluded the incumbent management from the reorganization process. The 1996 rule, however, produced an unanticipated outcome. Many firms that became insolvent filed for composition instead of reorganization in 1997 and early 1998 during the crisis as can be seen in Table 6. Dominant shareholders of these firms preferred composition to reorganization, because composition would allow them to maintain their ownership and control. Although the composition proceeding was originally intended for small firms, the court somehow granted petitions for composition by large firms around the crisis.

<Table 6> Number of Cases under Insolvency Laws

Responding to the economic crisis, the Korean government revised the insolvency laws in February 1998 and again in December 1999. The following is a synopsis of the 1998 amendments to the Corporate Reorganization Act and the Composition Act. First, instead of the prospects for rehabilitation and consideration of public interests, an economic efficiency criterion was adopted to qualify for judicial insolvency procedures. The court now must reject an application for judicial insolvency proceedings if it finds that the going concern value of the firm is smaller than its liquidation value. Second, to enhance the capacity of the court to deal with bankruptcy cases, a court receivership committee, similar to the U.S. Trustees in some respects, was established. It is composed of accountants and lawyers experienced in corporate reorganization. Third, to speed up proceedings, time limits were introduced for the critical steps in the proceedings such as the decision on stay, the report of debts and equities, the approval of a reorganization plan. Fourth, the 1999 Amendment further provides that the court shall send the reorganization case to liquidation procedure in the case that the reorganization procedure fails to proceed. The 1999 Amendment makes the effects of
reorganization procedure valid, in the event that the process moves from corporate
reorganization procedure to the state of liquidation. Fifth, to prevent the abuse of the
composition procedure, large firms with complicated capital structures were not allowed
to enter composition. Table 6 shows the impact of this change: the number of
composition filings decreased sharply, from 728 in 1998 to 140 in 1999.

On a separate track from formal insolvency mechanism, corporate workout
programs were introduced in July 1998 in order to prevent a systemic corporate
bankruptcy in the aftermath of the crisis and to facilitate an economic recovery. In the
exception of Daewoo, most workouts had been applied to medium-sized chaebols.
Korea’s corporate workout programs are based on the ‘Corporate Restructuring
Agreement’ signed by more than 200 financial institutions. If the creditors
representing more than 75 percent of a firm’s financial obligations approve the debt
restructuring plan, it becomes binding for all creditors. If the creditors cannot reach
agreement, the main bank may request arbitration by the Corporate Restructuring
Committee. The modality of debt restructuring includes debt-equity swaps, term
extension, deferred payment of principal or interest, interest rate cuts and provision of
new credits. 104 firms in total were initially selected by main banks for potential

6 Daewoo, once the second largest business group in Korea, faced serious financial trouble after the crisis,
and became technically insolvent by June 1999. The fall of Daewoo created non-performing debt of
about US$72 billion and posed systemic risks to financial system, particularly to investment trust
companies (ITCs) whose aggregate exposure accounted for about 45 percent of Daewoo’s total borrowing
from financial institutions. Major creditor banks of Daewoo decided to apply workout programs to
Daewoo, but the actual implementation of workout programs had not been easy given the large number of
both domestic and foreign creditors and the conflict of interests among them. In early 2000, at length
the steering committee of foreign creditors accepted the debt resolution proposal that KAMCO purchase
their unsecured loans at 39-40 percent of original value. KAMCO purchased US$3.9 billion of loans
from more than 300 foreign creditors. Furthermore, it had been difficult to correctly identify the true
significance of Daewoo’s financial trouble due to the lack of transparent accounting information. Indeed,
financial creditors of Daewoo and accounting firms had performed due diligence process two times, but
their assessments on the financial aspect of Daewoo showed great difference over time. As of the end of
1999, the final report on Daewoo’s financial status revealed that the net asset of 12 Daewoo affiliates
combined, which were subject to workout programs, was as low as –29.2 trillion won, while Daewoo
reported +14.1 trillion won for that figure in June 1999. This difference originated from inflated
reporting on assets combined with deflated debt figures by Daewoo. Specifically, total asset of those 12
affiliates turned out to be 59.7 trillion won in the final report, which is far below the figure provided by
Daewoo of 91.9 trillion won. The final figure for total debt was 89.0 trillion won, while Daewoo
initially reported 77.8 trillion won for that figure.
candidate of workout programs. Among them, 8 companies were rejected, 17 companies were merged, and 4 companies were partitioned. For the remaining 83 companies, 55 graduated from the workout program, 16 were suspended, and 12 companies were undergoing workout procedures as of the end of 2002. As of the end of 2002, 98 trillion won of debt was restructured under the workout program, 74 percent (72 trillion won) of which was debt forgiveness. Swaps of debt for equity (15 trillion won) and convertible bonds amounted to 18.3 trillion won, accounting for 19 percent of total debt.

2. Comparing the Performance of Insolvent Rehabilitation Procedures

Figures 25-34 show the pattern of debt servicing capacity, profitability, debt leverage, and interest expenses-sales ratio for two insolvent cohorts containing ailing firms that commenced rehabilitation procedures in 1997 and 1998, respectively. The 1997 insolvency cohorts include ailing firms having entered into corporate reorganization and composition, whereas the 1998 insolvency cohorts also includes firms having entered workout programs in addition to the aforementioned court procedures. Arranging the cohorts in this manner allows us to control for various year-specific effects. In the figures, we combined the performances of the “technically normal” (or solvent) firms as a reference point. Since financial information for some firms undergoing bankruptcy proceedings were incomplete or missing, for the sample we select firms with financial data available for every year for the 1996-2002 period. Due to large inconsistencies in measuring the progress of the different restructuring, we exclude Daewoo affiliates which entered into the workout program in 1999 from the sample.

---

7 In this exercise, we compiled a data set for the firms undergoing in-court procedures which only include those affiliated with the chaebols, in order to compare the performance of large sized insolvent firms undergoing rehabilitation procedures.
For the 1997 insolvency cohort, the firms in corporate reorganization (6 firms) show better performance in debt servicing capacity compared with those in composition. The IPCR for the firms in corporate reorganization was –2.8 in 1998, but rapidly recovered reaching 3.5 in 2002, which is even higher than that of technically normal firms at 3.0. In contrast, the IPCR for the firms in composition (12 firms) show no signs of improvement at a mere 0.3 in 2002.

Such improvement in the debt servicing capacity for the firms in corporate reorganization in the 1997 cohort was due to debt reduction combined with increase in profitability. Indeed, EBIT/total asset ratio for the firms in corporate reorganization dropped to –23.3 percent in 1998, and increased sharply in 1999 and reached 37.3 percent in 2002. This sharp increase in EBIT/total asset ratio in 1999 is mainly due to special gains from debt reduction. Indeed, the debt leverage for the firms in corporate reorganization fell from 67.9 percent in 1997 to 12.5 percent in 1999. In the meantime, as can be seen in Figure 27, operating income, which does not reflect non-operating income and special income, showed signs of improvement but slightly below the level of normal firms.

In contrast, the IPCR for the firms in composition (12 firms) show no signs of improvement at a mere 0.3 in 2002, due to the lack of debt reduction leaving those firms financially vulnerable. Indeed, the debt leverage for the firms in composition continued to rise and reached 121.8 percent by 2002.

<Figure 25> IPCRs for 1997 Insolvency Cohort

---

8 This sharp drop in IPCR in 1998 can be explained by the fact that once having entered into corporate reorganization, firms are ordered by the courts to freeze all business activities in order to allow creditors to perform due diligence on existing debt. Since all business activities of the firms are stopped, the firm can not generate revenues until the reorganization plan is approved.

9 However, the debt leverage of those firms rose again in 2001-2002, which may be attributed to the fact that firms in reorganization may have liquidated various non-essential assets rather than an increase in debt.
The differing rehabilitation results between corporate reorganization and composition are mainly due to the performance of debt restructuring. In the case of corporate reorganization, debt can be reduced using debt-equity swaps, which is possible with a reduction of capital enforced by the law. Because capital reduction is not required under the composition, existing owners and managers in the firms in composition continued to maintain their ownership and control. Under these circumstances, owners and managers had no incentive to pursue debt-equity swaps, since the reduction in capital would result in the loss of ownership control. Subsequently, this led to further deterioration of the firm’s debt structure.

In the case of 1998 insolvency cohorts, by 2002 the IPCR for firms in corporate reorganization (12 firms) was 3.0 (technically normal firm is 3.0), slightly outperforming the firms in composition (6 firms) which was 2.7, while showing better performance compared to the firms in workout program (43 firms) at 1.6, in terms of debt servicing capacity. When examining the figures, the relatively poor performance in IPCR for the workout firms is mainly due to the slower rate of debt reduction and consequent interest cost reduction. Given an absence of legal enforceability in workout programs, the slower debt reduction among the workout firms was caused in part from difficulties in devising restructuring plans due to inadequate coordination among creditors.10

---

10 Moreover, the rate of debt rescheduling was hindered by the fact that not only ailing firms in question but also their creditors were exposed to moral hazard problems; in that they tend to overstate the viability or future cash flows of firms in question. Troubled firms had strong incentive to conceal accurate information on their financial status in order to attract more financial support and less harsh restructuring...
Figures 35-39 compare the performance of two cohorts which include firms commenced corporate reorganization 1997 and 1998. The comparison covers the period for before and after commencement of the insolvent procedures.

Most of the indicators show that the performance of firms in the 1997 and 1998 cohorts were somewhat similar before entering into the corporate reorganization procedures. Given that the introduction the economic efficiency criterion in February 1998, where the firm’s going-concern value and liquidation value are considered by the judicial bankruptcy proceedings, expectations would be that the performance of the 1998 cohorts would be relatively better before the crisis, compared with that of the 1997 cohorts. However, our results imply that the introduction of the efficiency criterion did not have a significant impact on the selection of firms for reorganization in our sample firms.11

In contrast, for the years following the crisis, the performance of firms in the 1998 cohort out-performs the 1997 cohort for all indicators. This implies that, after the February 1998 reform, not only the capacity of the court to deal with reorganization procedures was enhanced but also the period for proceedings was shortened. Another measures. Financial creditors, which had been suffering from large non-performing loans and capital erosion, also had a distorted incentive to apply lenient accounting standards to their client firms in order to meet the capital adequacy requirement. As a result, restructuring plans have often been revised over time to be more consistent with true financial status of firms in question. Indeed, since the end of 1999, quite a few number of firms had to revise their restructuring plans.

11 This result may be due to sample selection bias, since our sample includes only chaebol affiliates.
notable feature is the sharp decreases of all indicators for the 1998 cohort when commencing reorganization, which implies the significant improvement in the due diligence process in terms of accounting and legal procedures after the 1998 reform.

<Figure 35> Pre- and Post-Insolvency IPCR for Corporate Reorganization

<Figure 36> Pre- and Post-Insolvency EBIT/Total Assets for Corporate Reorganization

<Figure 37> Pre- and Post-Insolvency Operating Profits to Total Assets for Corporate Reorganization

<Figure 38> Pre- and Post-Insolvency Total Borrowings to Total Assets for Corporate Reorganization

<Figure 39> Pre- and Post-Insolvency Interest Expenses to Total Sales for Corporate Reorganization

Similarly, Figures 40-44 shows the comparison of the performance of two cohorts which include firms commenced composition in 1997 and 1998. The firms in the 1998 cohort suffered less than those in the 1997 cohort before the crisis, and once having commenced composition, the 1998 cohort out-performed the 1997 cohort. Particularly, the debt leverage as well as interest cost-sales ratio for the 1998 cohort systemically out-performed the 1997 cohort. The resulting better performance for 1998 cohort both before and after the insolvency may be due to the reforms on composition in February 1998. As mentioned previously, before the revisions in 1998 many large firms with complex capital structures entered into composition instead of corporate reorganization in 1997. Following the 1998 revisions, large firms with complex capital structures were not allowed to enter composition. Hence, the better performance of the 1998 cohort, particularly in terms of debt reduction, compared to the 1997 cohort may be because, the non-chaebol firms in the 1998 cohort had less complex debt structures which made it easier for debt restructuring negotiations between firms and creditors.
<Figure 40> Pre- and Post-Insolvency IPCR for Composition

<Figure 41> Pre- and Post-Insolvency EBIT/Total Assets for Composition

<Figure 42> Pre- and Post-Insolvency Operating Profits to Total Assets for Composition

<Figure 43> Pre- and Post-Insolvency Total Borrowings to Total Assets for Composition

<Figure 44> Pre- and Post-Insolvency Interest Expenses to Total Sales for Composition
V. Conclusion

Korean chaebols are in transition. After many attempts at corporate restructuring, the chaebols are finally showing signs of real change in capital structure and corporate governance. The strong mandate by the IMF and the government, and the chaebol’s internal need for reform in order to survive, made this round of corporate restructuring more successful than past ones.

The main findings of this paper can be summarized in the following:

First, the financial vulnerabilities of chaebols, which were at the epicenter of the 1997-98 financial crisis, have improved significantly during the post-crisis period. Indeed, all indicators show that chaebols consistently out-performed non-chaebol companies following the crisis. In particular, chaebols were able to rapidly reduce their debts. Furthermore, although non-chaebols reduced their debt but at a lower extent, there were no signs of improvement in profitability.

Second, despite the considerable progress made in corporate restructuring, there remains quite a few number of impaired firms as of 2002; in that 25.2 percent of the sample firms are not able to even cover interest payments, let alone the principle, with earnings. Also, between the periods of 2000-2002, there were 550 firms suffering similar conditions for three consecutive years. In particular, we find that 40 percent of the firms in the high-technology industry, most of which consist of ICT firms, were financially vulnerable in 2002, despite the strong recovery in the ICT industry.

Third, our transition matrix based on IPCRs shows that a high proportion of firms in the bottom quintile moved up to the upper quintiles, implying that the financially vulnerable firms are able to move up rather than being immobile.
Finally, from our study it is reasonable to suggest that rehabilitation proceedings in Korea have made considerable improvements as a result of reform measures implemented following the crisis. The following reforms have worked to enhance rehabilitation procedures, including: the introduction of an economic efficiency criterion for the selection of firms for corporate organization, shortened periods for proceedings, the improvement in the due diligence process, and preventing large firms with complex capital structures in entering composition. With all of these measures in place following the crisis, our study shows that overall, the firms in the 1998 cohorts that entered both corporate reorganization and composition out-performed those in the respective cohort in 1997. Though it may be premature to make an assessment, we can surmise from our study that the relatively poor performance of the firms in the workout may be attributed to a slower rate of debt reduction. This may be as a result of the slow progress in devising restructuring plans in the absence of a legal enforceability in workout programs.
References


Lim Wonhyuk and Mo Jongryn, “Four Futures for the Korean Economy.” August 2002.


Hahn, Chin Hee, Kang Dong Soo, Lim Youngjae, and Yang Jeong Sam, 2000, firm Failures and Re-Crafting of Restructuring Policy (in Korean), Korea Development Institute.


<Figure 1> Interest Payment Coverage Ratio (IPCR) Before the Crisis

Note: 1) (A) includes all subsidiaries of the top 5 chaebols and (B) excludes semiconductor companies affiliated with the top 5 chaebols.

<Figure 2> EBITDA/Total Assets Before the Crisis

Note: 1) (A) includes all subsidiaries of the top 5 chaebols and (B) excludes semiconductor companies affiliated with the top 5 chaebols.

Data Source: National Information and Credit Evaluation Inc.
<Figure 3> Total Borrowings to Total Assets Before the Crisis

Note: 1) (A) includes all subsidiaries of the top 5 chaebols and (B) excludes semiconductor companies affiliated with the top 5 chaebols.

Data Source: National Information and Credit Evaluation Inc.
<Figure 4> EBITDA/Total Assets by Industry Group Before the Crisis

Low and Medium-low Technology Industries

[Graph showing EBITDA/Total Assets for Low and Medium-low Technology Industries from 1985 to 1997.]

Medium-high and High Technology Industries

[Graph showing EBITDA/Total Assets for Medium-high and High Technology Industries from 1985 to 1997.]

Data Source: National Information and Credit Evaluation Inc.
<Figure 5> Share of Troubled Firms (IPCR<1) by Industry Group

Before the Crisis

Data Source: National Information and Credit Evaluation Inc.
<Figure 6> Total Borrowings to Total Assets for Non-Financial Firms

Note: 1) I: Non-financial firms that own NBFIs.
   II: Non-financial firms without any ownership in NBFIs.
Source: National Information and Credit Evaluation Inc.

<Figure 7> Interest Costs to Total Borrowings for Non-financial Firms

Note: 1) I: Non-financial firms that own NBFIs.
   II: Non-financial firms without any ownership in NBFIs.
Source: National Information and Credit Evaluation Inc.
<Figure 8> Interest Payment Coverage Ratio (IPCR) After the Crisis

<Figure 9> EBIT/Total Assets After the Crisis (%)
<Figure 10> Total Borrowings to Total Assets After the Crisis (%)

<Figure 11> Interest Expenses to Total Sales After the Crisis (%)
<Figure 12> Changes in IPCRs by Quintile (Current-Year Quintiles), (%)

<Figure 13> Changes in EBIT/Total Assets by Quintile Based on IPCRs (Current-Year Quintiles) (%)
<Figure 14> Changes in Total Borrowings/Total Assets by Quintile Based the IPCRs (Current-Year Quintiles) (%)

<Figure 15> Changes in Interest Expenses/Total Sales by Quintile Based on IPCRs (Current-Year Quintiles) (%)
<Figure 16> Changes in IPCRs by Quintile (Fixed 1996 Quintiles)

<Figure 17> Changes in EBIT/Total Assets by Quintile Based on IPCRs (Fixed 1996 Quintiles) (%)
<Figure 18> Changes in Total Borrowings/Total Assets by Quintile Based on the IPCRs (Fixed 1996 Quintiles)

<Figure 19> Changes in Interest Expenses/Total Sales by Quintile Based on IPCRs (Fixed 1996 Quintiles) (%)
<Figure 20> IPCRs by Industry Group After the Crisis

<Figure 21> EBIT/Total Assets by Industry Group After the Crisis (%)
<Figure 22> Total Borrowings/Total Assets by Industry Group After the Crisis (%)

<Figure 23> Interest Expenses/Total Sales by Industry Group After the Crisis (%)
<Figure 24> Share of Troubled Firms (IPCR<1) by Industry Group After the Crisis (%)

- high-tech
- medium-high tech
- medium-low tech
- low-tech

Graph showing the share of troubled firms by industry group from 1996 to 2002.
<Figure 25> IPCRs for 1997 Insolvency Cohort

<Figure 26> EBIT to Total Assets for 1997 Insolvency Cohort (%)
<Figure 27> Operating Profits to Total Assets for 1997 Insolvency Cohort (%)

<Figure 28> Total Borrowings to Total Assets for 1997 Insolvency Cohort
<Figure 29> Interest Expenses to Total Sales for 1997 Insolvency Cohort

<Figure 30> IPCRs for 1998 Insolvency Cohort
<Figure 33> Total Borrowings to Total Assets for 1998 Insolvency Cohort

<Figure 34> Interest Expenses to Total Sales for 1998 Insolvency Cohort
<Figure 35> Pre- and Post-Insolvency IPCR for Corporate Reorganization

<Figure 36> Pre- and Post-Insolvency EBIT/Total Assets for Corporate Reorganization
<Figure 37> Pre- and Post-Insolvency Operating Profits to Total Assets for Corporate Reorganization

<Figure 38> Pre- and Post-Insolvency Total Borrowings to Total Assets for Corporate Reorganization
<Figure 39> Pre- and Post-Insolvency Interest Expenses to Total Sales for Corporate Reorganization

<Figure 40> Pre- and Post-Insolvency IPCR for Composition
<Figure 41> Pre- and Post-Insolvency EBIT/Total Assets for Composition

![Graph showing Pre- and Post-Insolvency EBIT/Total Assets for Composition](image)

<Figure 42> Pre- and Post-Insolvency Operating Profits to Total Assets for Composition

![Graph showing Pre- and Post-Insolvency Operating Profits to Total Assets for Composition](image)
<Figure 43> Pre- and Post-Insolvency Total Borrowings to Total Assets for Composition

<Figure 44> Pre- and Post-Insolvency Interest Expenses to Total Sales for Composition
### Table 1: Changes in Wage, Productivity and ULC in the Korean Manufacturing

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Rate of Wage Increase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and Chemical</td>
<td>18.6</td>
<td>13.8</td>
<td>15.7</td>
</tr>
<tr>
<td>Light</td>
<td>18.4</td>
<td>14.7</td>
<td>16.2</td>
</tr>
<tr>
<td><strong>Rate of Labor Productivity Growth</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and Chemical</td>
<td>11.0</td>
<td>9.9</td>
<td>10.3</td>
</tr>
<tr>
<td>Light</td>
<td>5.1</td>
<td>5.3</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>Rate of ULC Increase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy and Chemical</td>
<td>7.1</td>
<td>3.6</td>
<td>5.0</td>
</tr>
<tr>
<td>Light</td>
<td>12.7</td>
<td>9.0</td>
<td>10.5</td>
</tr>
</tbody>
</table>

National Statistical Office, *Report on Mining and Manufacturing Survey* (various years)  
Bank of Korea, *National Accounts* (various years)

### Table 2: Number of NBFIs Owned by Top 70 Chaebols

<table>
<thead>
<tr>
<th></th>
<th>Top 5 Chaebols</th>
<th>Top 6-30 Chaebols</th>
<th>Top 31-70 Chaebols</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merchant Bank (29)</td>
<td>3</td>
<td>7</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Securities (26)</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Investment Trust (24)</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Life Insurance (31)</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Fire &amp; Marine Insurance(13)</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Installment Credit (26)</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Mutual Saving &amp; Finance (219)</td>
<td>1</td>
<td>5</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Venture Capital (56)</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Credit Card (7)</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Finance &amp; Factoring (46)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td><strong>Total (487)</strong></td>
<td>29</td>
<td>46</td>
<td>39</td>
<td>114</td>
</tr>
</tbody>
</table>

Note: 1) The rank of *chaebols* is based on total borrowings.  
2) The figure in the parentheses represents the total number of financial institutions at each financial sector.  
3) Leasing companies are excluded as they are owned by banks.  
Data Source: National Information and Credit Evaluation Inc.  
*Source*: Financial Supervisory Commission
### Table 3: Estimation of Corporate Debt Leverage

<table>
<thead>
<tr>
<th></th>
<th>Total borrowings/ Total assets</th>
<th>Long-term borrowings/ Total borrowings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(I)</td>
<td>(II)</td>
</tr>
<tr>
<td>Log sales (firm size)</td>
<td>0.23** (2.0)</td>
<td>0.27** (2.4)</td>
</tr>
<tr>
<td>Cash flow/total assets</td>
<td>-0.91*** (-78.6)</td>
<td>-0.91*** (-78.7)</td>
</tr>
<tr>
<td>Fixed assets/total assets</td>
<td>0.21*** (29.8)</td>
<td>0.21*** (29.9)</td>
</tr>
<tr>
<td>Firm age</td>
<td>-3.24*** (-4.9)</td>
<td>-3.22*** (-4.8)</td>
</tr>
<tr>
<td>Ownership of NBFIs</td>
<td>3.85*** (6.4)</td>
<td></td>
</tr>
<tr>
<td>Ownership of MBCs</td>
<td>2.13** (2.0)</td>
<td></td>
</tr>
<tr>
<td>Ownership of Security firms-ITCS</td>
<td>1.79* (1.8)</td>
<td></td>
</tr>
<tr>
<td>Ownership of Insurance firms</td>
<td>0.83 (0.9)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>31.5*** (15.8)</td>
<td>30.8*** (15.4)</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>Number of samples</td>
<td>42,643</td>
<td>42,643</td>
</tr>
</tbody>
</table>

Note:
1) Estimation period: 1990~97 (annual period).
2) t-values are in parentheses. ***, ** and * indicate that the coefficient is significantly different from zero at 1, 5 and 10 percent levels respectively.
3) Firm age dummy: one if age is less than or equal to three years, and zero otherwise.
4) Industrial dummy (manufacturing, construction and others) and year dummy variables are included.
### Table 4: Share of Firms with IPCR below 1

(Number of firms, trillion won)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top 70 Chaebols</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of firms</td>
<td>113 (21.1%)</td>
<td>76 (7.1%)</td>
<td>51 (10.5%)</td>
</tr>
<tr>
<td>Borrowings</td>
<td>19.5 (17.5%)</td>
<td>14.8 (13.3%)</td>
<td>8.7 (7.8%)</td>
</tr>
<tr>
<td><strong>Non-Chaebols</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of firms</td>
<td>1,844 (25.6%)</td>
<td>995 (13.8%)</td>
<td>499 (6.9%)</td>
</tr>
<tr>
<td>Borrowings</td>
<td>44.2 (32.8%)</td>
<td>31.8 (23.6%)</td>
<td>14.9 (11.0%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of firms</td>
<td>1,957 (25.2%)</td>
<td>1,071 (13.8%)</td>
<td>550 (7.1%)</td>
</tr>
<tr>
<td>Borrowings</td>
<td>63.7 (25.9%)</td>
<td>46.6 (18.9%)</td>
<td>23.6 (9.6%)</td>
</tr>
</tbody>
</table>

Note: Figures in parentheses indicate the share of firms and the share of total borrowings in each group.

### Table 5: Transition Matrix Based on IPCRs, 1996-2002

<table>
<thead>
<tr>
<th></th>
<th>1st quintile</th>
<th>2nd quintile</th>
<th>3rd quintile</th>
<th>4th quintile</th>
<th>5th quintile</th>
<th>total</th>
</tr>
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<tr>
<td><strong>1996</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st quintile</td>
<td>333 (40.6%)</td>
<td>170 (20.8%)</td>
<td>101 (12.3%)</td>
<td>68 (8.3%)</td>
<td>148 (18.1%)</td>
<td>820 (100%)</td>
</tr>
<tr>
<td>2nd quintile</td>
<td>186 (22.7%)</td>
<td>181 (22.1%)</td>
<td>175 (21.4%)</td>
<td>130 (15.9%)</td>
<td>147 (17.9%)</td>
<td>819 (100%)</td>
</tr>
<tr>
<td>3rd quintile</td>
<td>113 (13.8%)</td>
<td>180 (22.0%)</td>
<td>197 (24.1%)</td>
<td>205 (25.0%)</td>
<td>124 (15.1%)</td>
<td>819 (100%)</td>
</tr>
<tr>
<td>4th quintile</td>
<td>72 (8.8%)</td>
<td>145 (17.7%)</td>
<td>192 (23.4%)</td>
<td>233 (28.4%)</td>
<td>177 (21.6%)</td>
<td>819 (100%)</td>
</tr>
<tr>
<td>5th quintile</td>
<td>116 (14.1%)</td>
<td>143 (17.5%)</td>
<td>154 (18.8%)</td>
<td>183 (22.3%)</td>
<td>223 (27.2%)</td>
<td>819 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>820 (100%)</td>
<td>819 (100%)</td>
<td>819 (100%)</td>
<td>819 (100%)</td>
<td>819 (100%)</td>
<td>4096 (100%)</td>
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### Table 6: Number of Cases under Insolvency Laws

<table>
<thead>
<tr>
<th>Year</th>
<th>Boodo</th>
<th>Bankruptcy</th>
<th>Composition</th>
<th>Reorganization</th>
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<td>1983</td>
<td>U/A</td>
<td>U/A</td>
<td>U/A</td>
<td>47</td>
</tr>
<tr>
<td>1984</td>
<td>U/A</td>
<td>U/A</td>
<td>2</td>
<td>52</td>
</tr>
<tr>
<td>1985</td>
<td>U/A</td>
<td>12</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>1986</td>
<td>U/A</td>
<td>11</td>
<td>-</td>
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Source: Court Administration Agency (1999), Bank of Korea