Sources of Corporate Financing and Economic Crisis in Korea:

A Micro-evidence

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1. Introduction

Using the firm-level data set[1], this paper attempts to examine the dynamic patterns in

the allocation of credit across firms in recent Korea. Supposedly, in Korea, the

economic crisis in 1997 had a significant impact on the pattern in the allocation of credit

across firms. In particular, this paper aims to examine the dynamic patterns in the

allocation of credit across large and small firms after the crisis.

Corporate financing issues are intimately related to the cause of the Korean crisis.

For instance, the chaebols' indebtedness to banks is viewed as having contributed much to

the crisis. Among others, Krueger and Yoo (2001) demonstrate that the chaebols'

indebtedness is indeed the chief culprit of the crisis. Since the outbreak of the financial

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[1] The data set covers most of the Korean firms except for extra-small ones.

crisis in 1997, the government has undertaken various reform measures to restructure the financial and corporate sectors. The new regulatory system is now underway to induce the financial institutions to change their imprudent lending practices, and the capital market began to force the chaebols to correct their incentive structure. Supposedly, these post-crisis developments in Korea have caused the chaebols and financial institutions to change their previously imprudent (borrowing and lending) practices.

The paper suggests that large firms, to some extent, are leaving banks and going to the capital market for their financing after the crisis. The paper also suggests that profitable small firms are gaining easier access to credit by financial institutions after the crisis. There has been a shift in the allocation of bank credit from large firms to small firms. Is this shift due to lenders' choice or due to borrowers' changed incentives? The paper suggests that the improved lending practices of banks, at least partially, contributed to this shift of bank credit from large firms to small firms.

This paper is organized as follows. In Section 2, we provide the aggregate data on the corporate financing sources in recent Korea. Section 3 explains the firm-level data set. In Section 4, we examine the dynamic patterns in the allocation of credit across firms. Section 5 concludes the paper with agenda for future research.

2. Aggregate Patterns in the Corporate Financing Sources

In <table 1> we show the aggregate data for the sources of corporate financing before and after the economic crisis. We calculated the numbers in <table 1> from the information given in various issues of the Flows of Funds by the Bank of Korea.

//Table 1 here//

The main reason we present this table is that it decomposes indirect finance further into the detailed sources (commercial banks, insurance companies (including pension funds), short-term finance companies (e.g., merchant banks), and other non-bank financial intermediaries). Another point in the table is that it has been constructed by aggregating all the financial transactions for all the firms in the Korean economy. Hence, we could use this table for the check of the consistency in the firm-level data, for example, whether there is any systematic bias in the firm-level data due to the exclusion of extra-small firms.

After the crisis, in 1998-9, the share of external finance in the total finance sharply declines to 50% from about 70% throughout the 90's until 1997[2].

In 1998, as expected, the crisis changes completely the table for corporate financing sources. However, in 2000 when the crisis phases out, the table for corporate financing

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[2] Although not shown in the table, the share of external finance in the total finance declined steadily throughout the 1970's and 1980's until 1988. For this period, except for the period of oil shocks, overseas export markets, together with emerging domestic markets, helped Korean firms to realize large profits. The ratio of internal finance to total finance was less than 20 percent in 1975, but it continued to grow to a level of more than 40 percent in 1988.

sources takes a somewhat different composition compared to before the crisis.

First of all, the share of indirect finance does not recover the level before the crisis. A look into the components of indirect finance is necessary. The non-bank financial intermediaries, except for insurance companies, lose their share significantly compared with before the crisis. On the other hand, the share of commercial banks increases to almost double the average level before the crisis. Second, in 2000, the composition of direct finance changes compared to before the crisis. Equity takes away the share of the borrowing from financial markets (commercial paper, bonds, etc). Lastly, foreign borrowing increases its share significantly.

3. The Firm-level Data

This study uses detailed financial information on the firms that have external audit reports. According to the Act on External Audit of Joint-Stock Corporations, a firm with assets of 7 billion won or more must issue audited financial statements. The data thus include all the firms with assets of 7 billion won or more. The total number of firms in the data is about 11,000.

The Financial Supervisory Commission is responsible for establishing accounting and

auditing standards and the Securities and Futures Commission is then responsible for the review of the audited financial statements issued by firms. Finally, the National Information and Credit Evaluation, Inc. (NICE) coded this public information into their database after checking the consistency of the reported financial statements.

From the NICE data, we can estimate only the borrowing from all the financial intermediaries, not the borrowings from the detailed components of indirect finance. However, <table 1> in Section 2 shows that, after the crisis, most of the new lending by financial intermediaries is, in fact, from commercial banks, not from non-bank financial institutions.

3.1 Summary Statistics

<Table 2-1> presents sample means for the key variables in the empirical analysis It divides the sample period into the three sub-period around the crisis: 1992-1996 (before the crisis), 1997-1998 (during the crisis), and 1999-2000 (after the crisis). Profitability is measured by the EBIT (Earnings Before Interest and Tax Payment) divided by total assets. divided by total asset. After the crisis, the share of loans in asset increases compared with for the pre-crisis period; on the other hand, the weight of bond financing decreases.

//Table 2-1 here//

The financing pattern varies according to the size of firms. For example, the empirical distribution of the loans' share in total asset has a different shape according to the size of firms. For this reason, we divide all individual firms into ten groups based on the distribution of asset size, and select three representative size cohorts for presenting the empirical results. The results are robust to minor changes in the thresholds. We employ the following three size cohorts: (1) the largest firms (top 1% in asset size)[3], (2) the medium-sized firms (middle 10% in asset size), and (3) the smallest firms (bottom 10% in asset size).

For the three size cohorts, <table 2-2> provides sample means for the key variables in the empirical analysis It also divides the sample period into the three sub-period around the crisis.

//Table 2-2 here//

The statistics in <table 2-2> present a different picture compared to the one in <table 2-1>. The aggregate numbers in <table 2-1> do not fully capture the changes in the financing pattern experienced by heterogeneous firms during this period. Profitability evolves differently according to size groups. Profitability worsens for large and small firms whereas it rebounds for medium-sized firms. While the share of loans in asset decreases for large firms, the opposite is the case for the other groups. After the crisis, large firms finance more in the bond market, but the other groups have more limited

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[3] For the case of large firms, we present the results using this particular cohort, but defining the largest

access to the bond market compared to the pre-crisis period.

3.2 Firm Size Distribution

<Figure 1-1> and <figure 1-2> show the yearly firm-size distributions for all the firms in the sample before and after the crisis.   Before the crisis, the distribution shifts to the right-hand side – implying an increase in firm size on average.   The shape of the distribution gets skewed to the right gradually over time until 1997.   We find relatively less small-sized firms over time in the yearly distributions.

//Figure 1-1 here//

//Figure 1-2 here//

After the crisis, it is hard to find a clear pattern in the shift of the distribution itself. However, the left-hand tail of the distribution - the smallest firms in the sample – becomes thicker after the crisis.   The relative frequency of the smallest firms in the sample increases after the crisis.   This thicker right tail could come either from an increased number of new entrants or from the inclusion of extra-small firms (previously excluded from the sample) into the sample.   Note that we observe the opposite before the crisis - the left-hand tail of the distribution getting thinner.

3.3 Firm Profitability Distribution

<Figure 2-1> and <figure 2-2> present the yearly profitability distributions for all the

firms as differently like the top 5%, or top 10%, does not change the qualitative results of the paper.

firms in the sample before and after the crisis. The yearly distributions remain the same before the crisis. Then the crisis affects significantly the profitability distribution in 1997, indicating a decrease in firm profitability on average. After the crisis, the profitability distribution shifts much to the right or left depending on the macroeconomic situations. In fact, after the crisis, the magnitude of business cycle became larger than compared to the pre-crisis period.[4]

//Figure 2-1 here//

//Figure 2-2 here//

<Figure 2-3> shows that the small- and medium-sized firms have more dispersed distributions in 1992-2000. Since this pattern remains the same in the sample period, we do not present the yearly distributions here. Large firms are more homogeneous in terms of profitability compared to the other size cohorts.

//Figure 2-3 here//

<Figure 2-4-1> and <figure 2-4-2> show that the crisis had an impact on the shape of the profitability for small firms. After the crisis (1997-2000), the distribution gets more dispersed over time. After the crisis small firms become a more heterogeneous group compared to the pre-crisis period.

//Figure 2-4-1 here//

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[4] The annual growth rates of GDP after the crisis are 5.0% (1997), –6.7% (1998), 10.9% (1999), and 8.8% (2000), whereas, before the crisis, the difference between the peak and trough years dos not exceed 4%.

//Figure 2-4-2 here//

4. Financing Pattern and the Crisis: Micro Evidence

In Section 3.1, the summary statistics of key financing variables hint that the heterogeneity of firms is important in understanding the evolution of financing pattern after the crisis. The sample means of key financing variables also hint the following pattern around the crisis: the largest firms are leaving financial intermediaries and switching directly to the financial markets for their financing, whereas the small- and medium-sized firms are increasing their dependency on financial intermediaries for financing. In this section, we test these hypotheses rigorously. To get genuine cross-sectional results, we must control for the effect of the business cycles.

The empirical distributions of key financing variables have different shapes according to the size of firms and evolve differently after the crisis. In this section, therefore, we also present the result of comparing the empirical distributions of key financing variables.

4.1 Loans from Financial Institutions

<Table 3> shows the regressions of the loan-borrowing ratio (defined as the borrowing from financial intermediaries divided by total borrowing) on the dummy variables denoting the size cohort interacted with year dummies and on the macro variables (growth

rate of GDP, interest rate). The macro variables control for the effect of business cycles. In <table 3>, therefore, the reported coefficient for the specific year indicates the loan-borrowing ratio's difference between the size cohort in that specific year and all the other firms in the whole sample period.   <Table 3> shows the regression results for the three size cohorts (top 1%, middle 10%, bottom 10%).

//Table 3 here//

After the crisis (in 1998-2000), the largest firms decrease significantly the share of loans in total borrowing.   The coefficients for 1998-2000 are larger than 0.3 (all significant), whereas the coefficients for 1992-1997 are smaller than 0.2 (also all significant). That is, after the crisis, the largest firms are leaving financial intermediaries for their financing.

For the small-sized firms this share jumps to a higher number from 1995 and stays more or less there even after the crisis.   The coefficients for 1992-4 are smaller than -0.2 (all significant), whereas the coefficients for 1996-2000 are larger than zero (in 1995, -.0.03); these coefficients are all significant except in 2000.   The small firms did not have much access to financial intermediaries in 1992-4, but they have better access to the loans from financial intermediaries afterwards.

For the medium-sized firms, the share of loans in total borrowing does not show any marked trend around the crisis. Note that the summary statistics in Section 3.1 suggested a different interpretation as for the behavior of medium-sized firms.

< Empirical Distribution of Loans for Different Cohorts>

<Figure 3-1-1> and <figure 3-1-2> show the distribution of the loan-borrowing ratio for the largest cohort (top 1% firms in asset size) before and after the crisis. After the crisis (in 1998-2000), the loan-borrowing ratio distribution for the largest firms shifts leftwards clearly, as seen in <figure 3-1-2>. This leftward shift starts partly in 1997 during the crisis.

//Figure 3-1-1 here//

//Figure 3-1-2 here//

For the small-sized firms (bottom 10% firms in asset size) the distribution the loan-borrowing ratio shifts to the right markedly in 1996 (actually in 1995, although not shown in the paper) and maintains more or less this pattern even after the crisis (<figure 3-2-1> and <figure 3-2-2>).

//Figure 3-2-1 here//

//Figure 3-2-2 here//

In <figure 3-2-1>, we note that, until 1994, a certain portion of the firms in our database does not have access to financial intermediaries for their corporate financing.

One could see a certain dense around zero.   However, after 1994, this pattern changes: the dense around zero continue to disappear until 1997, and, after the crisis, a dense around zero appears again, but to a much smaller scale than before 1995.   <Figure 3-2-1> and <figure 3-2-2> make another interesting point.   After 1994, we continue to see a peak at one and a certain mass around one, which indicates that these firms depend (or do not depend) completely on the loans from financial intermediaries for their borrowing.

For the medium-sized firms, the share of loans in total borrowing does not show any marked changes before and after the crisis, except that, after the crisis, we could see a more cluster around one (<figure 3-3-1> and <figure 3-3-2>).

//Figure 3-3-1 here//

//Figure 3-3-2 here//

4.2 Determinants of the Changes in the Allocation of Loans

Why do we observe such shifts in allocation of loans by financial institutions as documented in Section 4.1?   Are they reflecting the firms' spontaneous choice for financing sources as a result of corporate restructuring?   Or, did the financial reform cause financial institutions to shift their lending patterns?   To see whether this is the case, we attempt to test the effect of individual firm profitability on the shift in allocation of loans by financial institutions.

<Table 4> shows the regressions of the change in loans on firm profitability (interacted with year dummy) for small firms.   We also test the effect of the affiliation with chaebols on the access to loans.   The chaebol dummy distinguishes the top 30 chaebols from the others.

//Table 4 here//

<Table 4> suggests the interpretation that, for the small firms, profitability is an important factor in determining access to loans by financial institutions after the crisis.[5] Financial institutions actively search for profitable small firms to provide loans after the crisis.   In Section 3.4, we pointed out that that the crisis had an impact on the shape of the profitability for small firms.   The profitability distribution becomes more dispersed after the crisis.   It means that selecting efficient small firms became more difficult after the crisis.

Before the crisis, profitability was not a factor in the access of small firms to loans; on the contrary, inefficient small firms did have more access to loans by financial institutions. This reflects the fact that small firms were much protected through various regulations by the government before the crisis.   Note that the affiliation with chaebols has a negative

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[5] For medium-sized and large firms, the regression of the change in loans on firm profitability did not produce meaningful results.

effect on the access to loans.   In Korea, small firms affiliated with chaebols usually do not get the protection but rather face tight regulations to the effect of protecting other independent small firms.   This kind of regulations is gradually shrinking after the crisis.

4.3 Total Borrowing

In Section 4.1, it is suggested that the largest firms are leaving financial intermediaries for their corporate financing after the crisis.   Then, the question arises: do the large firms decrease investment and scale down their business?   Otherwise, do they find other sources of financing after the crisis?   To check this, we look at total borrowing before and after the crisis.

<Table 5> shows the regressions of the borrowing-dependency ratio (defined as total borrowing divided by total assets) on the dummy variables denoting the size cohort interacted with year dummies and on the macro variables (growth rate of GDP, interest rate).   In <table 7>, the reported coefficient for the specific year indicates the borrowing-dependency differences between the size cohort in that specific year and all the other firms in the whole sample period.   <Table 5> shows the regression results for the three size cohorts (top 1%, middle 10%, bottom 10%).

//Table 5 here//

The crisis affected the borrowing-dependency ratio of all the cohorts only during the

crisis.   When the crisis dies out, the borrowing-asset ratio returns to the previous trend.

The share of borrowing in total assets went up much more for the small-sized firms

during the crisis than the other size cohorts.   Unlike the others, small firms didn't have

other cushions (e.g., equity, retained earnings) to absorb the adverse effect of the crisis.

4.4 Financing in the Bond Market

The above result implies that the large firms moves to some other sources of financing

after the crisis.   This section will show that the large firms go to the bond market to

compensate the decrease in loans by financial institutions.   This was hinted in Section

2.1.   We test it formally in the following.

<Table 6> shows the regressions of the bond-borrowing ratio (defined as the

borrowing from financial markets divided by total borrowing) on the dummy variables

denoting the size cohort interacted with year dummies and on the macro variables (growth

rate of GDP, interest rate).   In <table 6>, the reported coefficient for the specific year

indicates the bond-borrowing ratio's differences between the size cohort in that specific

year and all the other firms in the whole sample period.   <Table 6> shows the regression

results for the three size cohorts (top 1%, top 6% - top 10%, top 11% - top 20%).   The

reason for choosing a different set of cohorts for <table 4> is that, for the sample period,

the small- and medium-sized firms (the cohorts we used in the regression analysis before) don't have any access to the borrowing from financial markets.

//Table 6 here//

After the crisis (in 1998-2000), the largest firms increase markedly the share of bond financing in total borrowing. The coefficients for 1998-2000 are around 0.4 (all significant), whereas the coefficients for 1992-1997 are smaller than 0.3 (also all significant).

For all the size cohorts, the share of bond financing in total asset increases gradually from 1992 to 1996. This is due to the financial liberalization policy gradually taken by the government since the early 1990s. During this period the size of bond market in Korea gradually expanded. The bond market gets developed more rapidly with the speed-up of financial liberalization policy after the crisis.

< Empirical Distribution of Bond Financing for Different Cohorts >

<Figure 4-1-1> and <Figure 4-1-2> show the bond-borrowing ratio distributions before and after the crisis for the largest cohort. After the crisis (in 1998-2000), the bond-borrowing ratio distribution for the largest firms shifts clearly to the right (<figure 4-1-2>).

//Figure 4-1-1 here//

//Figure 4-1-2 here//

In <figure 4-2-1> and <figure 4-2-2>, we show the similar figures for another size cohort (top 11% - top 20% firms in asset size). This cohort is, in fact, the smallest firms to have any access to the bond market at all in the sample period. For this cohort, the loan-borrowing ratio distribution shifts to the right marginally before the crisis. After the crisis, however, the distribution shifts back to the left. There is a large peak around zero in 1999.and the distribution becomes degenerate in 2000 (i.e., this cohort does not have any access to bond market). A large proportion of the bonds that has been issued during the crisis, were under the risk of default, especially after the demise of the Daewoo group (one of the top four chaebols at that time in Korea) in 1999. This, in turn, put the whole market for corporate bonds into a state of malfunction in 1999 and in 2000.

//Figure 4-2-1 here//

//Figure 4-2-2 here//

5. Concluding Remarks

The paper documents that large firms, to some extent, are leaving banks and going to

the capital market for their financing after the crisis. [6]   The paper also shows that

profitable small firms are gaining easier access to credit by financial institutions after the

crisis.   Financial institutions are reallocating their credit from large firms to small firms

after the crisis.   Why do we observe such shifts in the allocation of loans by financial

institutions?   Are they reflecting the firms' spontaneous choice for financing sources as a

result of corporate restructuring?   Otherwise, did the financial reform cause financial

institutions to change their lending practices?   The paper suggests that the banks'

improved lending practices, at least partially, contributed to this shift.

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[6] Clearly, the liberalization of financial markets, which happened at an accelerating rate after the crisis,
contributed to broaden the supply base of various corporate financing sources.   But, in Korea, deepening
furthermore the supply base of various corporate financing sources still requires a better protection of
investors' legitimate rights for various corporate financing tools.

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Table 1. Sources of Corporate Financing (Flows)

For All the Firms in the Korean Economy 1992 - 2000

(Unit; %)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Finance	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	_
Retained Earnings	28.7	30.0	27.3	27.9	22.6	27.1	50.0	49.4	_
External Finance	71.3	70.0	72.7	72.1	77.4	72.9	50.0	50.6	_
External Finance	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Indirect Finance	36.3	31.4	44.5	31.8	28.0	36.8	-57.3	4.1	17.1
Commercial Banks	15.1	13.1	20.7	14.9	14.0	12.9	2.5	29.2	35.2
Insurance Companies	3.9	3.1	2.4	2.7	2.8	2.3	-20.8	0.5	3.1
Short-term Finance Companies (e.g., Merchant Banks)	-0.4	2.4	4.3	0.5	-0.4	1.8	-22.4	-2.6	-6.8
Other Non-bank Financial ntermediaries	17.7	12.8	17.1	13.7	11.5	19.8	-16.7	-22.9	-14.4
Direct Finance	38.9	49.1	36.5	48.1	47.2	37.4	178.9	46.8	28.6
Government Bonds	3.3	3.4	0.4	-0.9	0.3	0.5	2.0	0.0	-2.2
Commercial Paper	7.6	13.9	4.9	16.1	17.5	3.7	-42.2	-30.4	-1.7
Corporate Bonds	12.1	14.5	14.2	15.3	17.9	23.3	165.9	-5.3	-3.2
Equity	15.9	17.3	17.0	17.6	11.6	9.9	53.2	82.6	35.6
Foreign Borrowing	7.1	1.5	6.6	8.4	10.4	5.6	-35.5	24.1	23.7
Borrowing from Government	1.0	-0.2	0.2	0.2	-0.2	1.4	5.8	3.6	7.4
Inter-firm Credit	8.9	9.0	6.9	5.0	6.8	10.6	-27.2	10.2	6.8
Etc	7.9	9.2	5.3	6.5	7.8	8.4	35.3	11.1	16.5

Source: Author's own calculation from the information in each issue of the Flow of Funds.

Table 2-1. Summary Statistics of Firm-level Data

(simple mean, in percent)

	All the Firms in the Sample(Number of the Firms: 11026)		
	1992-1996	1997-1998	1999-2000
EBIT/Asset	6.615775	3.799436	4.627726
Borrowing/Asset	0.386551	0.437128	0.379096
Loans from Financial Institutions/Borrowing	0.76436	0.808799	0.83345
Bond Financing/Borrowing	0.07573	0.076052	0.057523

Table 2-2. Summary Statistics for the Three size Cohorts in Firm-level Data

(simple mean, percent; asset in billion won)

	Large Firms (Top 1% in asset size, n=81)			Medium-sized Firms (Middle 10% in asset size, n=1039)			Small Firms (Bottom 10% in asset size, n=1967)		
	1992-1996	1997-1998	1999-2000	1992-1996	1997-1998	1999-2000	1992-1996	1997-1998	1999-2000
Asset	3111.022	5552.276	6424.852	12.11443	16.53895	18.95957	3.986525	5.635815	4.590203
EBIT/Asset	7.155734	3.316438	1.834255	6.844423	5.624044	7.342637	4.505347	-0.02398	-4.61268
Borrowing/Asset	0.493031	0.575053	0.471116	0.409815	0.430318	0.376597	0.274567	0.437087	0.340989
Loans from Financial Institutions/Borrowing	0.644068	0.559247	0.495934	0.805886	0.831305	0.864931	0.646217	0.848398	0.846132
Bond Financing/Borrowing	0.292236	0.430513	0.480812	0.0372	0.041568	0.021368	0.013683	0.021823	0.017426

Table 3. Test of Loan-Dependency for Size Cohorts

Independent Variables : Dummy Variable Denoting a Specific Cohort Interacted with Year Dummies	Dependent variable Borrowing from Financial Intermediaries / Total Borrowing		
	Large-sized Firms Top 1% in Asset Size	Medium-sized Firms Middle 10% in Asset Size	Small-sized Firms Bottom 10% in Asset Size
1992	-0.0921139** (-2.62)	0.0387634** (2.87)	-0.2384735** (-13.00)
1993	-0.1586578** (-4.55)	-0.0235114* (-1.84)	-0.2903267** (-18.11)
1994	-0.1421788** (-4.14)	0.0256183** (2.16)	-0.2288625** (-14.64)
1995	-0.1293241** (-3.79)	0.0597968** (5.29)	-0.0301975** (-1.99)
1996	-0.167552** (-4.91)	0.0308845** (2.77)	0.0537893** (3.42)
1997	-0.1678041** (-4.96)	0.0447281** (4.27)	0.0459803** (4.15)
1998	-0.3016408** (-8.87)	0.0420476** (3.67)	0.0702478** (5.88)
1999	-0.3210245** (-9.54)	0.0575082** (5.51)	0.044566** (4.97)
2000	-0.3293786** (-9.84)	0.0455123** (4.06)	0.012498 (1.21)
GDP Growth Rate	-0.003067** (-10.53)	-0.0030401** (-9.93)	-0.0022235** (-7.36)
Yields to Corporate Bonds	-0.0161758** (-20.77)	-0.015893** (-19.42)	-0.0137879** (-17.11)
Number of observations	56,990	56,990	56,990

Note: 1. Number in the parenthesis are t-values.
    2.   *   significant at the 10% significance level.
       **   significant at the 5% significance level.
    3. Bond-dependency ratio refers to the borrowing from financial markets divided by total borrowing.

Table 4.　Determinant of Loans for the Small-sized Firms

(Unit of Loans; 10 million won)

Independent Variables	Dependent Variable: Change in Loans
Profitability * 1993 Dummy	-6.274161** (-4.87)
Profitability * 1994 Dummy	-4.568965** (-4.23)
Profitability * 1995 Dummy	-2.209054** (-2.03)
Profitability * 1996 Dummy	-2.243971** (-2.00)
Profitability * 1997 Dummy	3.39365** (3.36)
Profitability * 1998 Dummy	-1.682216** (-2.41)
Profitability * 1999 Dummy	1.092807** (2.76)
Profitability * 2000 Dummy	1.018708** (2.84)
Chaebol Dummy* (1993-1997) Dummy	-86.47024** (-2.37)
Chaebol Dummy* (1998-2000) Dummy	-85.39975* (-1.73)
GDP Growth Rate	-4.848598** (-5.33)
Yield to Corporate Bonds	2.478495 (0.93)
Number of observations	4,388

Note: 1. Number in the parenthesis are t-values.
　　　 2.　*　significant at the 10% significance level.
　　　　 **　significant at the 5% significance level.
　　　 3. Profitability refers to the EBIT divided by total assets.
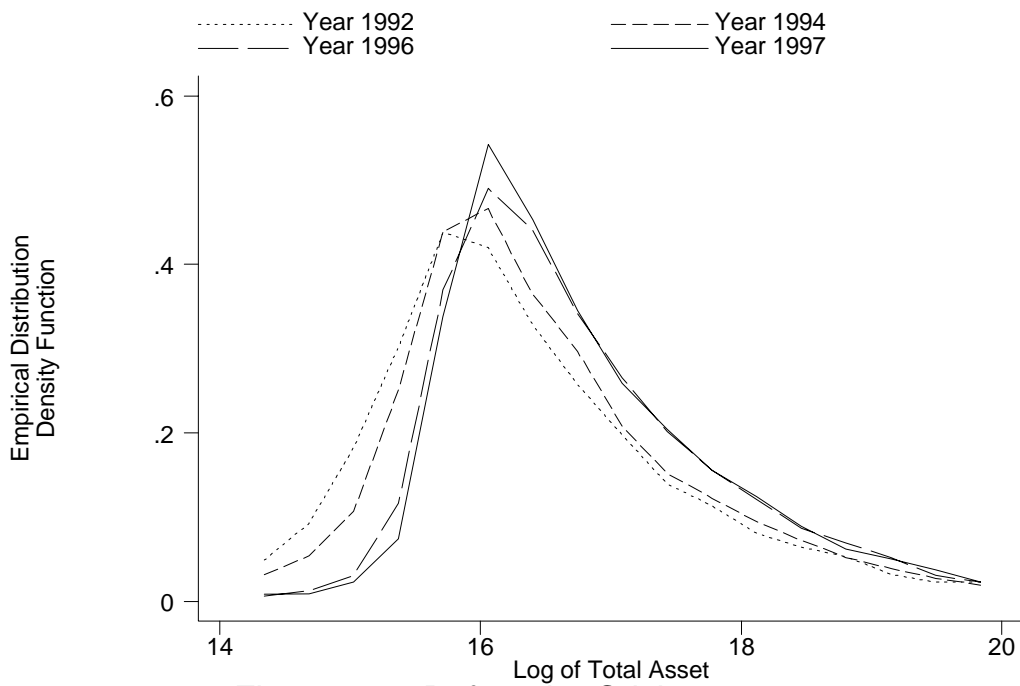
Table 5.   Test of Borrowing-Dependency for Size Cohorts

Independent Variables : Dummy Variable Denoting a Specific Cohort Interacted with Year Dummies	Dependent variable Total Borrowing / Total Asset		
	Large-sized Firms Top 1% in Asset Size	Medium-sized Firms Middle 10% in Asset Size	Small-sized Firms Bottom 10% in Asset Size
1992	0.0659514* (1.83)	0.0027719 (0.20)	-0.1472344** (-9.24)
1993	0.0877184** (2.46)	0.0005397 (0.04)	-0.1314321** (-9.44)
1994	0.1003124** (2.82)	0.0083273 (0.71)	-0.1498692** (-11.53)
1995	0.0980049** (2.77)	0.0236936** (2.08)	-0.1086328** (-8.28)
1996	0.1331074** (3.76)	0.0325365** (2.92)	-0.1086534** (-8.22)
1997	0.194158** (5.57)	0.0541859** (5.16)	0.0410924** (3.72)
1998	0.1328276** (3.79)	-0.0212598* (-1.86)	0.0013232 (0.11)
1999	0.0777977** (2.21)	0.0021754 (0.20)	-0.0092304** (-9.72)
2000	0.0994349** (2.84)	-0.0150282 (-1.29)	-0.1044781** (32.23)
GDP Growth Rate	-0.0017292** (-5.93)	-0.0020008** (-6.53)	-0.0013642** (-4.49)
Yields to Corporate Bonds	0.0028704** (3.64)	0.0024026** (2.91)	0.0024802** (3.03)
Number of observations	61,732	61,732	61,732

Note: 1. Number in the parenthesis are t-values.
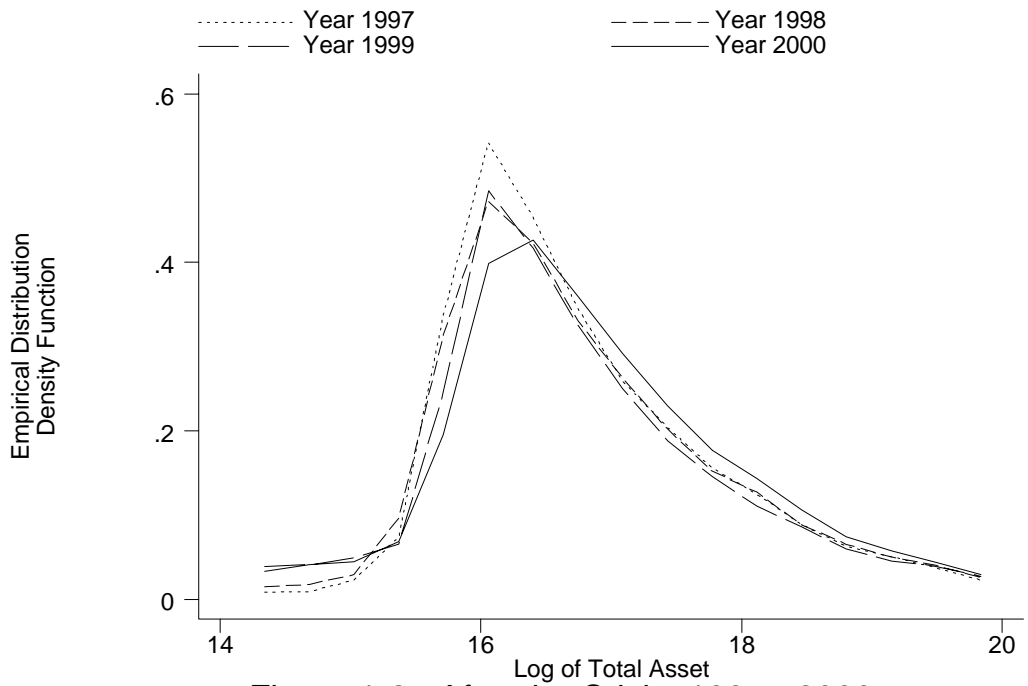   2.   *   significant at the 10% significance level.
       **   significant at the 5% significance level.
    3. Borrowing-dependency ratio refers to the total borrowing divided by total assets.

Table 6.   Test of Bond-Dependency for Size Cohorts

Independent Variables : Dummy Variable Denoting a Specific Cohort Interacted with Year Dummies	Dependent variable Borrowing from Financial Markets / Total Borrowing		
	Large-sized Firms Top 1% in Asset Size	Top 6% - Top 10% in Asset Size	Top 11% - Top 20% In Asset Size
1992	0.1606923** (2.62)	0.1033503** (11.35)	0.0474412** (6.94)
1993	0.1858304** (4.55)	0.1329246** (14.98)	0.0737644** (11.17)
1994	0.2457253** (4.14)	0.1504895** (17.09)	0.0773101** (11.96)
1995	0.2486298** (3.79)	0.1569188** (17.78)	0.0757029** (11.76)
1996	0.2660462** (4.91)	0.1723627** (19.57)	0.0849736** (13.27)
1997	0.2972274** (4.96)	0.1714493** (19.65)	0.0874618** (13.98)
1998	0.4214115** (8.87)	0.1781424** (19.35)	0.0676496** (9.98)
1999	0.4463751** (9.54)	0.1964039** (21.32)	0.0492785** (7.50)
2000	0.393401** (9.84)	0.1600738** (17.17)	0.0332003** (4.79)
GDP Growth Rate	0.0001438** (-10.53)	0.0000674 (0.39)	-9.01e-06 (-0.05)
Yields to Corporate Bonds	0.0031343** (-20.77)	0.0028533** (6.21)	0.0022457** (4.67)
Number of observations	56,990	56,990	56,990

Note: 1. Number in the parenthesis are t-values.
   2.   *   significant at the 10% significance level.
       **   significant at the 5% significance level.
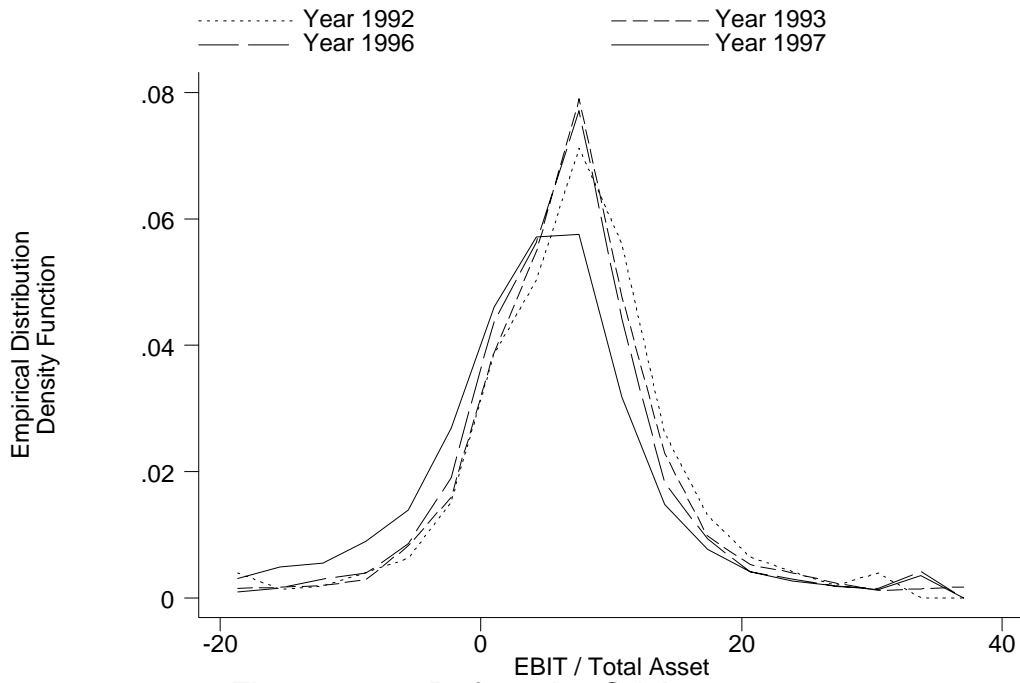   3. Bond-dependency ratio refers to the borrowing from financial markets divided by total borrowing.

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<Figure 1-1> Before the Crisis; 1992 - 1997

<Figure 1-2> After the Crisis; 1997 - 2000

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Year 1992   Year 1993
Year 1996   Year 1997

Empirical Distribution Density Function

EBIT / Total Asset

Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 2-1> Before the Crisis; 1992 - 1997

Year 1997   Year 1998
Year 1999   Year 2000

Empirical Distribution Density Function

EBIT / Total Asset

Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 2-2> After the Crisis; 1997 - 2000

Legend: Large-sized Firms - Top 1%   Medium-sized Firms - Middle 10%   Small-sized Firms - Bottom 10%

Y-axis: Empirical Distribution Density Function

X-axis: EBIT / Total Asset

<Figure 2-3> Sample Period; 1992 - 2000

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<Figure 2-4-1> Small-sized Firms - Bottom 10%; Before the Crisis

<Figure 2-4-2> Small-sized Firms - Bottom 10%; After the Crisis
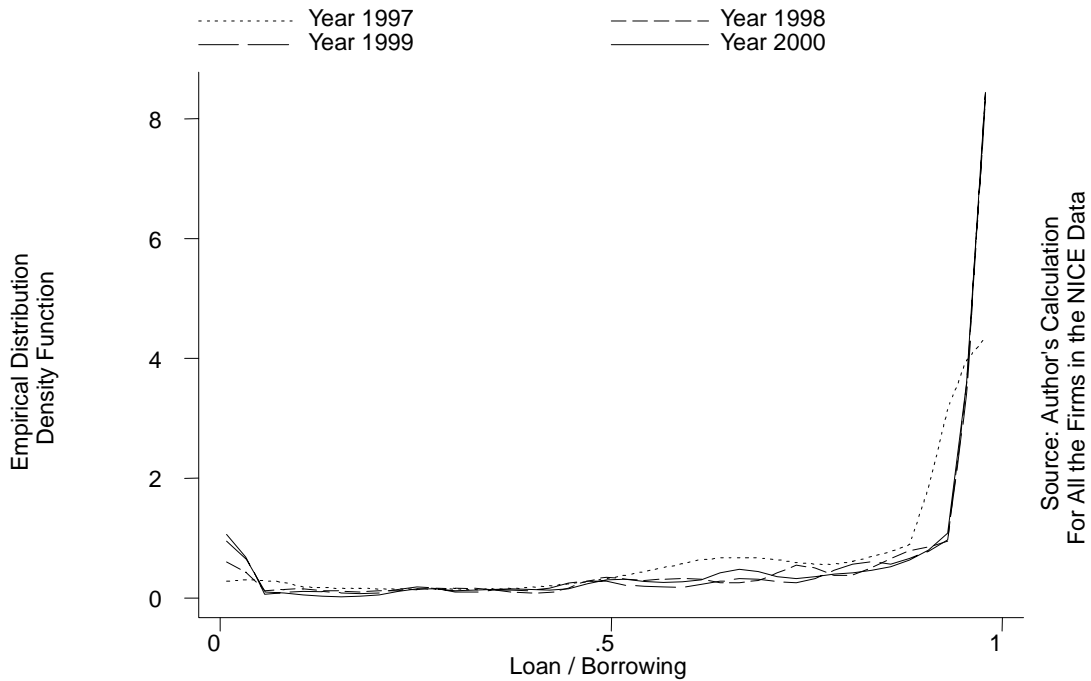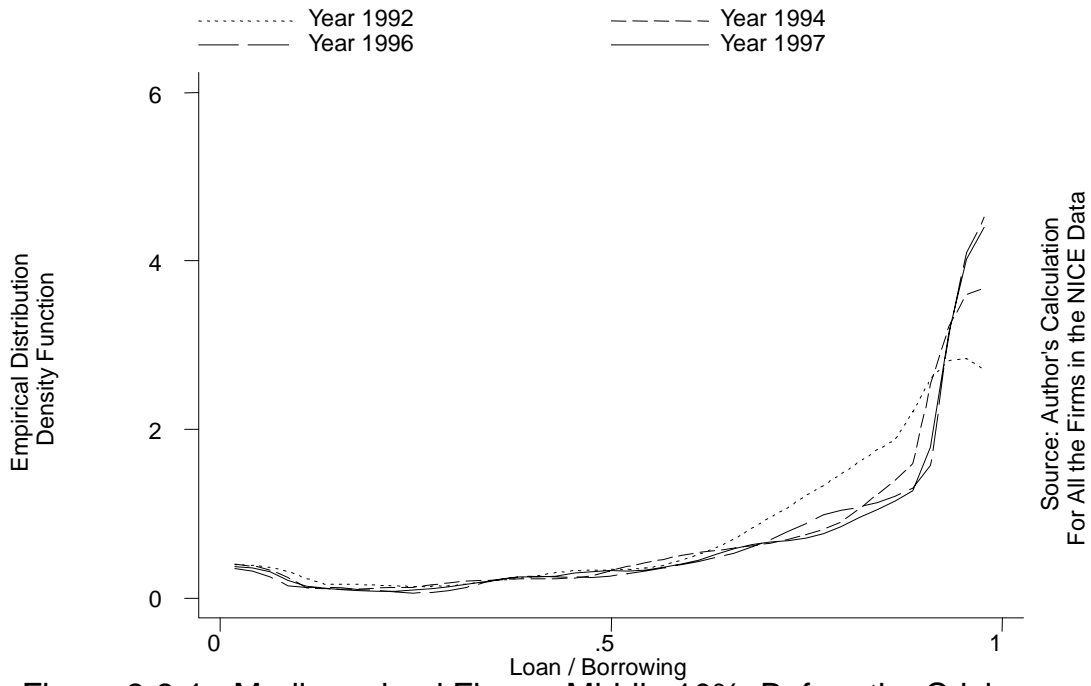
Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 3-1-1> Largest Firms - Top 1 %; Before the Crisis

Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 3-1-2> Largest Firms - Top 1 %; After the Crisis

<Figure 3-2-1> Small-sized Firms - Bottom 10%; Before the Crisis

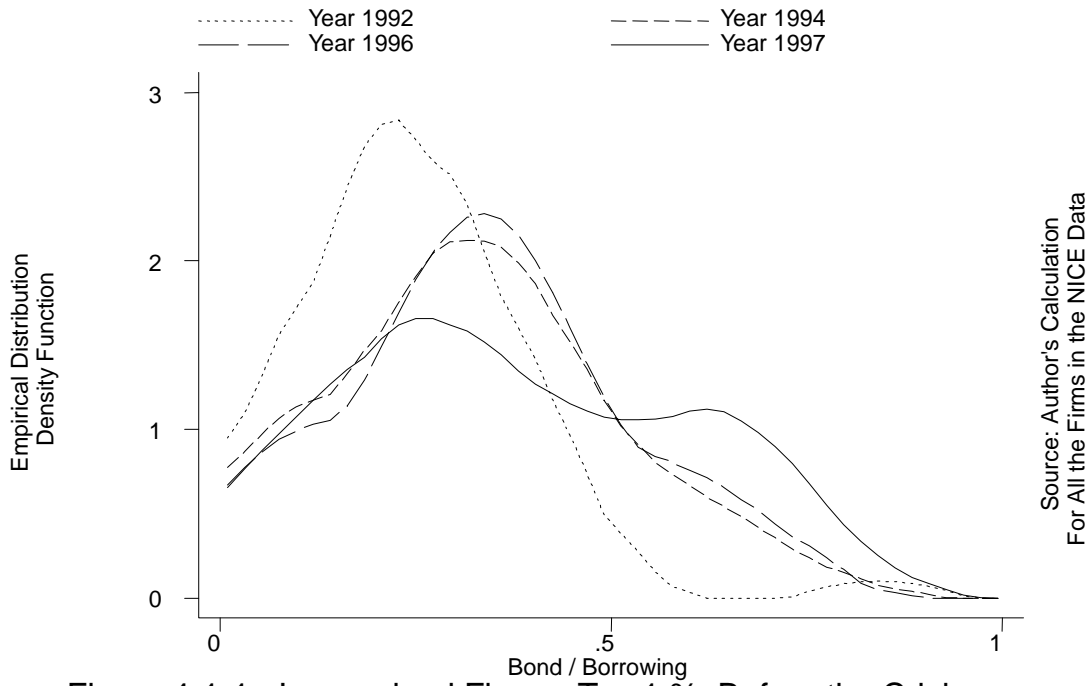<Figure 3-2-2> Small-sized Firms - Bottom 10%; After the Crisis

Year 1992 .... Year 1994 — — — —
Year 1996 — — — Year 1997 ————

<Figure 3-3-1> Medium-sized Firms - Middle 10%; Before the Crisis

Source: Author's Calculation
For All the Firms in the NICE Data

Year 1997 .... Year 1998 — — — —
Year 1999 — — — Year 2000 ————

<Figure 3-3-2> Medium-sized Firms - Middle 10%; After the Crisis

Source: Author's Calculation
For All the Firms in the NICE Data

Year 1992 .... Year 1994 -- -- --
Year 1996 —— —— Year 1997 ————

Empirical Distribution Density Function

Bond / Borrowing

Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 4-1-1> Large-sized Firms - Top 1 %; Before the Crisis

Year 1997 .... Year 1998 -- -- --
Year 1999 —— —— Year 2000 ————

Empirical Distribution Density Function

Bond / Borrowing

Source: Author's Calculation
For All the Firms in the NICE Data

<Figure 4-1-2> Large-sized Firms - Top 1 %; After the Crisis

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Year 1992 .... Year 1994 — — —
Year 1996 — — Year 1997 ———

<Figure 4-2-1> Top 11% - Top 20% in Asset Size; Before the Crisis

Year 1997 .... Year 1998 — — — —
Year 1999 — — Year 2000 ———

<Figure 4-2-2> Top 11% - Top 20% in Asset Size; After the Crisis

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