Corporate Bonds: A Spare Tire in Emerging Markets?

Todd Gormley (MIT)
Simon Johnson (MIT, NBER and CEPR)
Changyong Rhee* (Seoul National University)

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Abstract

In bank-dominated financial systems with weak investor protection, bond markets could potentially help (a) broaden the access to external finance, (b) reduce the power of large firms and politicians over the financial system, and (c) soften the impact of banking-related crises by acting as a 'spare tire'. However, theory suggests the heavy reliance on banks in emerging markets is not without foundation as bank deposits are an attractive contract when property rights are not well protected. This raises the question: Can bond markets develop in these emerging economies where banks have always dominated, and would they work better than banking contracts? This paper offers some relevant evidence from a quasi-natural experiment in Korea after the crisis of 1997-98. Evidence from Korea during and after 1998 confirms that bond markets can develop quickly even in countries where previously all private finance flowed through the banking system. This bond market helped in a crisis precisely because it allowed firms to borrow more directly from households. However, access to finance through issuing bonds was feasible only for the largest firms. Moreover, there is no evidence that bond finance was better directed or more sensibly used than bank finance. Firms with weaker pre-crisis corporate governance were no less likely to obtain bond financing in the post-crisis years, and direct ex-post evidence suggests the largest firms receiving bonds were not better run.

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1 Introduction

There is strong evidence that bank dominated financial systems are associated with three main problems. First, banks are subject to capture in ways that result in heavy lending to owners, politicians or the largest firms (La Porta, Lopez-de-Silanes, and Zamarippa 2003, Maurer and Haber 2004, Rajan and Zingales 2004), and this lending often leads to bad loans (Khwaja and Mian 2005). Second, partly as a result of related lending, banks repeatedly find themselves in a crisis that involves, among other things, several years of restricted lending where the real economy suffers as a result (Dell'Ariccia, Detragiache, and Rajan 2005, Boyd et al 2002). And third, as noted by Alan Greenspan, the absence of alternative capital markets reduces flexibility and hampers the economy's ability to overcome these banking crises. In essence, these bank-dominated economies lack a "spare tire".[1]

One way potentially to improve the flexibility and range of financial contracts in these bank-dominated economies would be to develop a corporate bond market. For example, the recent proposals for stimulating a pan-Asian Bond Market and developing domestic corporate bond markets in Latin America imply, among other things, strengthening the ability of corporate borrowers to attract funds directly from households.[2] If feasible, such bond markets could help broaden access, reduce the power of large firms and politicians over the financial system, and soften the impact of banking-related crises by increasing range of contracts available. Furthermore, bond investors may be less likely to become captive lenders, and thus firms with poor corporate governance will be unable to accumulate exorbitant amounts of debt.

However, theory suggests the heavy reliance on banks in emerging economies is not without foundation. In the theory of banking advanced by Diamond and Rajan (2001 and 2005), bank deposits are an attractive contract when property rights of investors are not well protected, and it can be rational for these investors to keep their funds as demandable deposits in banks. It provides a simple contract not easily subject to renegotiation, for which

[1] For more details, see Alan Greenspan's speeches, "Do efficient financial markets mitigate financial crises?" 1999 Financial Markets Conference of the Federal Reserve Bank of Atlanta, October 19, 1999 and "Global challenges," Financial Crisis Conference, Council on Foreign Relations, July 12, 2000.

[2] These proposals are being developed with the involvement of the Asian Development Bank, ASEAN+3 Finance Ministers and the Inter-American Development Bank.

monitoring is relatively straightforward (look to see if there is a line of people running to remove deposits). This kind of rigidity helps protect small investors during good times.[3]

This raises the question: Can bond markets develop in these in these emerging economies where banks have always provided most of firms' external financing, and would they work better than banking contracts when protections for investors and well-established institutions are lacking?

This paper offers some relevant evidence from a quasi-natural experiment in Korea after the crisis of 1997-98. Korea in 1997 had many of the classic features of a system in which almost all private financial flows were through the banking system. A great deal of economic power was concentrated in the hands of a few business groups (chaebol), which enjoyed privileged access to credit, over-invested in low profitability sectors, and had weak corporate governance. Banks, while nominally under state control, enjoyed close relationships with chaebol (Kim 2004). There is strong evidence that this structure contributed to the severity of the economic crisis in 1997-98.

When the crisis broke at the end of 1997, the Korean banking system stopped lending in net terms (i.e., repayments were greater than new loans). However, almost immediately a bond market sprang to life, with firms able to obtain funding directly from households. This market was a private initiative, with government permission but without direct government support. Seen in terms of Diamond and Rajan (2001 and 2005), the market offered more flexible (easier to renegotiate) contracts to households compared with bank deposits, as well as a wider range of terms on debt for firms than had previously been available through the banking system.

This bond market was large relative to the economy. Table 1 shows total net financial flows to the Korean corporate sector from 1990 to 2002. The two largest categories before the crisis were "indirect finance," which is all funds passing through financial intermediaries, and bonds. From 1990-1997, net flows from financial intermediaries averaged about 9 percent of GDP, while net finance flows from bonds averaged 4.5 percent of GDP. Prior to 1998, however, almost all of these bonds were a form of disguised bank lending, i.e., banks were

[3] Rajan and Tokatlidis (2005) make the more general argument that when public institutions are weak, private contracts will tend to be limited, rigid, and inflexible.

capped in their loans to firms, but they could circumvent this control by buying bonds issued by the same firms and guaranteeing the return to depositors. In contrast, during 1998 there were net repayments to the banking sector and in 1999, 2000, and 2001 financial intermediaries provided little net finance, averaging only 0.7 percent of GDP from 1999-2001 (Table 1). Almost all of the net finance to the Korean corporate sector in the course of 1998 came in the form of bonds, which increased to 9.5 percent of GDP in 1998.

This experience by itself answers the first question – a bond market can develop rapidly even where all finance has previously run through the banking system. It also suggests that the switch to bond market finance acted as a 'spare tire' and softened the blow from the banking crisis. But was this wider range of more flexible contracts widely available to firms or less prone to collapse?

In regard to their availability, a look at the data suggests that the largest firms gained disproportionate access to funds. The Herfindahl index of total gross funds, within our balanced panel of manufacturing firms, rose from 1.2 in the early and mid-1990s to 2.0 in 1998 and 1.6 in 1999. The top 5 chaebol received 34% of net finance in 1996 and 46% in 1998. Interestingly, the positive effects of size were only for the very largest. Chaebols 6 through 30 (as ranked in 1996) received 17% of net finance in 1996 and only 15% in 1998. The largest five chaebol also raised much more bond financing than anyone else, including the next 25 chaebol. The largest five accounted for 53% of net bond flows in 1998, while the next top 25 only accounted for 11%.

Was this because the largest firms were better run or had better projects, or was it just that investors saw them as too big to fail? This is a difficult question because post-crisis performance was likely affected by whether or not a firm could obtain external funding. Moreover, pre-crisis performance measures are likely not informative as crisis of this nature dramatically changes relative profitability of projects, so previously profitable firms may now be unviable.

However, there is a reasonable econometric strategy that exploits established features of emerging markets in general and Korea in particular – specifically the finding that corporate governance matters for firm-level outcomes in emerging markets. The literature has

established that firms with weaker corporate governance had less good performance in Korea before the crisis (Joh 2003) and less good stock price outcomes during the crisis (Baek, Kang and Park 2004). If the bond market was allocating capital on the basis of likely performance, it is reasonable to expect that more capital should have flowed to firms with better corporate governance. We find no evidence, however, that the bond market allocated credit to firms with better corporate governance.

Ex post, we have more direct evidence that the largest firms receiving bonds were not better run than other firms. Daewoo, which was responsible for a large share of the bonds issued after the financial crisis, went bankrupt. Hyundai, another large issuer of debt in 1998 also had a de facto default in 2000.[4]

This evidence suggests that while bond financing may add flexibility and be an important tool for the fast recovery of a crisis-hit and a bank-dominated economy, such as Korea, it may not necessarily be more efficient at allocating resources than the banking system. Our regression analysis, however, does not enable us to unpackage why exactly the bond market preferred the largest firms irrespective of their poor corporate governance structures. Was the problem with the bond market, for example, due to bad information or underdeveloped bond rating agencies? Qualitative evidence suggests risk was not factored into bond prices and the largest chaebols were able to borrow because investors thought them too large to fail.

The Korean experience also fits with growing evidence that firm-level corporate finance and corporate governance arrangements matter for country-level macroeconomic outcomes. The link seems to be particularly strong for crises in emerging markets. Firms with weaker corporate governance are more likely to suffer stock price declines when a crisis hits (Johnson et al 2000, Mitton 2002, Lemmon and Lins 2003). All of this literature builds directly on the measurement of investor protection in La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997 and 1998).

Section 2 explains the nature of South Korea's financial system through the mid-1990s.

[4] Unable to rollover its debt, the company was only able to avoid bankruptcy through government measures initiated to avoid another collapse similar to Daewoo. According to the measure, the Korean Development Bank purchased bonds from troubled companies such as Hyundai.

Section 3 reports our reduced form regressions. Section 4 offers a range of robustness checks. Section 5 concludes.

2 South Korea's Financial System

2.1 External Finance through 1997

From the 1960s into the 1980s, the South Korean financial system allocated credit at the behest of the government. These directed credits were provided to firms that fulfilled government priorities, particularly through developing exports (Krueger and Yoo 2003). By the 1990s, there had been some attempted switch towards a more market based system. However, almost all external financing for firms continued to flow through banks.

Official aggregate flow of funds data from the Bank of Korea reported in Table 1 demonstrate this. Bank finance, as captured by total indirect financing plus bank purchases of corporate bonds, dominates until 1997. In the mid-1990s, total annual financial flows to the corporate sector (the top row in Table 1) were around 25 percent of GDP, of which financial intermediaries provided between 45 and 60 percent.[5]

2.2 The Bond Market before 1998

Prior to the crisis, corporate bonds, not government bonds, played a dominant role in the Korean bond market and 3-year maturity corporate bonds were the benchmark securities. However, despite its large nominal size, the corporate bond market was quite inactive because, prior to 1998, corporate bonds were essentially disguised bank loans rather than capital market instruments.

Before the Asian financial crisis, Korean banks routinely guaranteed corporate bonds and held them to the maturity. Bond investment by banks was an alternative method to extend loans to a specific company when banks could not extend loans to the company due to loan exposure regulation. By investing in bonds, banks could escape the regulation which

[5] For example, in 1996 total financing to the corporate sector was 118,769 x 10^9 won. Of this, 14% came from bank lending directly and 17.5% came from banks through their purchases of bonds. A further 13.9% came from non-bank financial intermediaries. Other important sources of funds before the crisis were commercial paper (17.5% of all funding in 1996), stocks (10.9%), and overseas borrowing (10.4%); in 1998 there was net repayment of commercial paper and overseas loans.

limited loan exposure per firm as bond holding was classified as portfolio investment, not loans. Also, as banks were mostly buy-and-hold investors, there was no need for introducing a "mark-to-market" system. The government's regulation on interest rates also hampered the development of corporate bond markets. Instead of putting a ceiling on interest rates, the government took an indirect approach. It controlled the supply of corporate bonds (new issuance of corporate bonds had to be pre-approved) to manage market interest rates.

Before the crisis in 1997 the Korean bond market did not have well-functioning credit rating agencies, primary dealer, marked-to-market systems, etc. And the demand base for bonds was also very concentrated, with more than 80% of the total bond outstanding being held by banks and investment trust companies (ITCs, hereinafter). As they were mostly buy-and-hold investors, there was little trading in the secondary market and bonds were regarded as a saving tool rather than an investment tool.

2.3 External Finance in 1998

The corporate bond market changed drastically with the crisis. Guaranteed corporate bonds immediately disappeared from the market. Due to the financial crisis, banks and ITC's could no longer afford to provide a financial guarantee to bond issuers. Almost all corporate bonds issued after the crisis are non-guaranteed bonds.

The monthly average amount of corporate bonds issued was less than 3 trillion won prior to the crisis. But, it increased to 7 trillion won in the second half of 1998. For all of 1998, the Bank of Korea reports net bond financing was 45.9 trillion won, about 9.5 percent of GDP, while there were net repayments to the financial intermediaries of 15.9 trillion won.[6] This surge in bond issues was financed by household savings and the drawing down of bank deposits.[7]

In addition to the official aggregate flow of funds data from the Bank of Korea reported

[6] Pre-1998, the average exchange rate between the Korean won and U.S. dollar was 800 won per dollar, and in 1998 the average exchange rate was 1400 won per dollar. Thus, pre-crisis gross monthly bonds issued were valued around $3.75 billion, and net bond flows for all of 1998 were about $32.8 billion.

[7] This movement was triggered by the financial restructuring policy, mainly involving banks and merchant banking companies (MBCs). Funds left banks, partly because of increased uncertainty about which banks would survive, and partly because banks could not compete with the interest rates offered by investment trust companies (ITCs).

in Table 1, we can track financial flows using a firm-level dataset from a private company, the National Information Credit Evaluation (NICE). Described in greater detail below, these data cover primarily the manufacturing sector, and include up to 9,000 firms.

Figure 1A shows the main net financial flows to the Korean corporate sector during the 1990s as reported by the Bank of Korea, and Figure 1B shows the analogous flows in our NICE dataset over the same period.[8] Note that the Bank of Korea construction of net bond flows used in Figure 1A does not include bonds issued overseas with foreign currency denomination, while our measurement of bond flows from the NICE data does include such bonds.[9]

Nevertheless, the two series show the same general pattern, and our data from NICE picks up this dramatic switch from bank-based finance to the issuing of bonds. Figure 1B shows a very similar pattern to Figure 1A. For firms within our dataset, gross bond flows in 1998 were 82.4 trillion won, whereas gross trade credit between firms was approximately 55 trillion won.

Only after the government placed a limit on the amount of bonds that chaebol could issue on October 28, 1998, did the amount of corporate bonds issued start to decline. Figure 1A also shows clearly how hard the corporate bond market was hit by the collapse of the Daewoo group in July 1999.[10] After the Daewoo crisis, the amount of corporate bonds issued was almost negligible, as investors became very sensitive to corporate credit risk.

While the large increase in bonds in 1998 increased the flexibility of Korea's financial market and likely mitigated the crisis, the question remains as to whom received these flows.

For this we turn to the NICE data, the descriptive statistics of which are in Table 2. Between 500 and 900 firms received some flows from issuing bonds in each year. This is a

[8] We cannot separate out commercial paper from our loans in the NICE data. However, we know that net financing from commercial paper was negative in 1998-2000.

[9] The Bank of Korea measure called "Indirect Finance" is the closest to what we refer to as "Net Loans" in the NICE dataset.

[10] At the time of bankruptcy, Daewoo was the third largest chaebol in Korea. Even after the financial crisis, Daewoo continued to pursue its expansionary policy. It expanded its car factory in Poland and merged with the financially distressed Ssangyong motor company, one of its domestic rivals in Korea. After Daewoo's bankruptcy, the Korea Asset Management Company (KAMCO) purchased Daewoo's non-performing loans and debts, which were estimated at more than 57 billion US dollars, with public funds to prevent systematic risk to the financial market.

high number, although an order of magnitude less than those that received gross loan flows in each year prior to the crisis. Within the NICE dataset, nearly 600 firms issued bonds in 1998. Of these, about 500 were not affiliated with the top 30 chaebol.

The flow of funds in this fashion, however, was highly concentrated. The Herfindahl index for gross loan flows was around 1 before the crisis. The Herfindahl index for gross bond flows was higher, and in 1998 around 3. This suggests that the largest firms obtained disproportionately more funds from issuing bonds. In fact, the 64 firms associated with the top five chaebols and actively issuing bonds in 1998 accounted for 53% of the gross bond flows, though they only account for 1% of the firms with financial flows in 1998. And the 68 firms associated with the top 6-30 chaebols and actively issuing bonds in 1998 accounted for 12% of gross bond flows in 1998.[11]

3 Firm Size, Corporate Governance, and Credit

3.1 Identification Strategy

Economic recovery requires that firms invest appropriately in new projects. But firms often try to bailout existing old projects, particularly if they have weak corporate governance and seem "too big to fail". Providers of external finance therefore have to differentiate between good and bad projects.

We are interested in testing whether firms with better projects received more financing through the bond market. The relationship of interest is:

$$F_{iT} = \alpha + \beta \cdot P_{iT} + \varepsilon_{iT}$$

where F_{iT} is a measure of the finance obtained by firm i in period T, i.e., after the crisis, P_{iT} is a measure of the return on the firm's projects in T (and beyond), and we are interested in the size and sign of β. The problem is that we do not have a good measure of P. Using measures of performance after the crisis is not appealing as these are likely affected in part

[11] Total gross bond flows in 1998 for firms within the NICE data were 79.6 trillion Won, of which firms in top 5 chaebols accounted for 42 trillion Won and firms in top 6-30 chaebols accounted for 9.9 trillion Won.

by access to finance.[12] Using measures of performance from before the crisis is also not appealing as relative prices have changed a great deal.

However, the recent corporate governance literature suggests that, in general, corporate governance arrangements matter for firm-level performance. Furthermore, there is growing evidence that corporate governance mattered for performance specifically in Korea before, during and after the crisis (Joh 2003, Baek, Kang and Park 2004, Black, Jang, and Kim 2006). Making use of this idea, we can estimate the following specification:

$$F_{iT} = \alpha + \beta \cdot G_{i,T-s} + Z'_{i,T-s} \cdot \gamma + \varepsilon_{i,T}$$

where F_{iT} is the finance obtained by firm i in period T, which is after the crisis; $G_{i,t-s}$ is the corporate governance of firm i in period $T - s$, which is before the crisis; and $Z'_{i,t-s}$ is a vector of firm-level controls, which are all measured before the crisis.

The identification here rests on three assumptions. First, the crisis was a surprise to all concerned, so that corporate governance and other arrangements were not designed with the crisis in mind. Second, corporate governance is to some extent persistent, i.e., cannot be quickly changed, particularly during a crisis. Third, firms with bad corporate governance not only performed worse before the crisis, which is Joh's (2003) result, but also that it would be reasonable to suppose in early 1998 that these same firms would not make good use of external funds.[13]

3.2 Data Description

We employ a dataset compiled by the National Information Credit Evaluation (NICE). One of the largest Korean credit evaluating firms, NICE compiles and verifies firms' annual financial statements submitted to the Korea Securities Supervisory Board. After excluding observations on financial firms, the NICE data set contains the financial statements for

[12] Specifically, large firms with access to the bond market may have performed better simply because they could obtain credit when other firms that continued to rely on banks could not. For example, Daewoo, which issued a large share of the bonds in 1998, was probably able to avoid bankruptcy longer than it otherwise could have because of its ability to issue bonds.

[13] Note that we cannot use pre-crisis corporate governance in an instrumental variables framework because it may affect post-crisis projects through pre-crisis financing arrangements (e.g., debt overhang) or some other channel. Therefore our regressions should be interpreted just as reduced forms.

approximately 7,000 non-financial firms in 1996 and 8,500 firms by 2000. In our regressions, we restrict the sample to only those firm-year observations that have at least one non-missing financial cash flow from either bonds, equity, or loans.[14] In doing this, we lose about 1,250 observations per post-1997 year (or approximately 15% of our total observations), leaving us with about 7,500 observations in 2000. Additionally, NICE also maintains a smaller dataset pertaining to the ownership of these firms. When available, the ownership data contains a list of up to eight names of the largest shareholders. Pre-crisis ownership data, however, is only available for about 3,500 firms.[15]

Appendix Table 2 shows how the sample is reduced when we require certain variables to be present in order to use a firm's data from NICE. Below we report results both with as many firms as possible and with a balanced panel that uses only firms that are in our NICE dataset in every year from 1996 to 2000.

3.3 Chaebol Membership

A firm's chaebol affiliation was determined using the Korean Fair Trade Commission (KFTC) annual publication of the thirty largest chaebols, according to total assets. This is the standard measure used both in the literature and by practitioners in Korea.

A firm is classified as chaebol-affiliated based on the 1996 listing of the top 30 chaebols. Of the 343 firms included in the top 30 by the KFTC for 1996, 281 of them are found in the NICE data, of which ownership data are available for 173 firms, and 102 were listed firms. While these chaebol affiliated firms only account for approximately 4% of the NICE firms for 1996, they account for approximately 40% of total assets and 47% of total sales for that year. The top five chaebols alone (Hyundai, Samsung, LG, Daewoo, and SK) account for 24% of total assets and 34% of total sales. All remaining firms are considered non-chaebol.

There was some merger activity during the period of interest, and it is not clear how exactly to treat firms that join or leave a chaebol. In our base regressions, we drop all

[14] Both missing and zero values are reported as 'missing' within the NICE data. Therefore, missing values are assumed to be zero so long as one other financial measure is non-missing. Assuming all missing flows are zeros does not affect our main findings.

[15] The pattern of total finance flows exhibited in the economy-wide data (Figure 1A) and full sample of firms (Figure 1B) also persists in this more restricted sample.

firms that become a member of a top 30 chaebol during 1997-2000 or leave a chaebol during 1997-98. However, in our robustness checks, we add these firms to the sample and confirm that our results are robust to treating these firms as either non-chaebol or chaebol and clustering the standard errors on either pre- or post-crisis affiliation. In our base regressions, we cluster the standard errors by chaebol to avoid overstating the findings, which might occur if financing decisions or idiosyncratic shocks occur at the group level rather than among individual firms. Our results are robust to not clustering. Our results also survive dropping all firms that go bankrupt, including Daewoo, which was the largest chaebol bankruptcy.

3.4 Corporate Governance

Korean firms were almost all controlled by their largest shareholder. Typically this would be the founder or founding family. In most cases, it was possible to control a company while holding only a minority of the shares and in the case of chaebol, the controlling family often owns only a small minority of shares.

We use two variables to measure corporate governance: 'control-ownership rights gap' and 'ownership concentration'. Both of these variables were used by Joh (2003) and are derived using the ownership data provided by NICE. To calculate the 'ownership' or 'cash-flow' rights of the controlling family, Joh sums the ownership stakes (in percent) for personal holdings among the largest 8 shareholders reported by NICE. Thus, all institutional shareholders (financial institutions and non-financial corporations), foreign owners, government, and employee stock ownership are excluded when calculating the ownership concentration of the controlling family of shareholders. It is necessary to sum over all personal shareholdings since some shares are often controlled by spouses or family members of the spouse and it is not possible to distinguish such family connections (In Korea, wives do not adopt their husband's last name). The 'control' rights of these shareholders are then approximated using the total sum of ownership stakes for all 8 of the largest shareholders, including the non-personal holdings exluded from the measure of 'ownership' rights.[16]

Following Joh, we take the difference between the calculated 'control' and 'ownership'

[16] See Joh (2003) for more details on constructing the both measures of corporate governance.

rights to obtain a measure of the degree to which ownership and control rights are aligned within each firm. Firms with a greater spread between the control and ownership stakes of the top shareholders are more susceptible to poor management and misaligned incentives. Therefore, a larger control-ownership gap is negatively correlated with better corporate governance and various forms of firm performance (Joh 2003, Lemmon and Lins 2003, Baek, Kang, and Park 2004).

The inability of some institutional or smaller shareholders to exercise voting rights under Korean regulations can also allow a large shareholder to maintain control with a very small ownership stake. To account for this second possible form of poor corporate governance, we use Joh's measurement of ownership concentration as a second proxy for corporate governance. Controlling shareholders with a larger ownership stake likely face better incentives, and thus, ownership concentration is positively associated with better corporate governance and firm performance (Joh 2003, Mitton 2002, Baek, Kang and Park 2004).

Joh finds that profitability before the crisis was lower where (1) the controlling family's ownership was lower and (2) the gap between control rights and cash flow rights was higher. Table 3 reports summary statistics on these measures, and other variables we use in our analysis.

Within the NICE data set, 173 chaebol-affiliated firms had an average control-ownership gap of 48.3% while 3,883 non-chaebol firms had a smaller average gap of 20.1%. This finding confirms Joh's findings and anecdotal evidence that chaebol-affiliated firms are more likely to have been controlled by shareholders through indirect means.

Within our data, we see that ownership concentration of non-chaebol firms is much higher than that of chaebol-affiliated firms. Table 3 shows that non-chaebol firms had an average ownership concentration of 47.7% while chaebol-affiliated firms had an average of only 9.8%. Again, the summary statistics support the anecdotal evidence that chaebols are controlled by shareholders with very small ownership stakes.

3.5 Financial Flows: Bonds, Loans, and Equity

Our measures of firm-level financial flows, i.e., bonds, loans, and equity, are derived from operating activity cash flow data reported by firms. Net bond flows are calculated using the difference between cash flows from increases and decreases of debentures payable by the firm for a given year. Likewise, net flows from loans are the cash flows from increases in short- and long-term borrowings minus cash losses from decreases in short- and long-term borrowings. Net equity is the sum of cash flows from increases in capital stock, payments of margin for new stock offerings, and paid-in capital in excess of par values, minus the cash losses from a decrease in capital stock.[17] Finally, for our regressions, financial flows were divided by total assets as a way to control for firm size.

Even after weighting the finance flows by assets, chaebol-affiliated firms had higher average finance flows for all three types of financing in 1996, as shown in Table 4. However, in both 1998 and 1999, chaebol-affiliated firms were largely missing from the market for loans and those in our balanced panel actually had negative average net loan flows over assets of -5.2% and -15% respectively. While non-chaebol affiliated firms also experienced a drop in loan financing after the crisis, the average drop was much smaller, and net loan flows over assets for those in our balanced panel were 0.53% and -0.27% in 1998 and 1999.

Immediately following the crisis, bond financing replaced loans as the most prominent form of financing among chaebols in 1998. Chaebol-affiliated firms saw an average rise of net bond flows over assets in 1998 while non-chaebol firms had their lowest average bond-usage in 1998. By 1999, however, equity financing became the primary source of funding among chaebol-affiliated firms. In 1999, the net equity flows over assets average reached a 1996-2000 high of 5.8% for chaebols. Non-chaebols had a steadily increasing average usage of equity financing after the crisis.

[17] Before constructing each of the variables, however, missing finance flow observations within firms were assumed to be zeros so long as at least one other finance cash flow within a given firm-year observation is non-missing. Firms that were missing all financial cash flows for a given year were dropped from the sample for that particular year. Since negative cash flow observations are clear data entry errors, the absolute value of these observations is used. This only occurs in four observations.

3.6 Profits

We use two measures of profits: net income and ordinary income. Ordinary income is calculated as the revenues from sales plus dividends and gains on the valuation of securities minus the cost of sales, administrative and sales expenses, and interest payments. Net income is the same as ordinary income but also deducts taxes and extraordinary items. Both measures of profit performance are normalized by total assets.

For chaebol affiliated firms, weighted net incomes were only 0.25% and -0.95% in 1996 and 1997, while the average performance of non-chaebols was higher at 1.9% and .09%. This lower performance for chaebols continues in 1998 and 1999, coinciding with the years in which they received higher weighted financing from both the bond and equity markets. Only in 2000 was the average performance of all chaebols higher than that of non-chaebols.[18] Though, in 2000, the average Korean firm, non-chaebol and chaebol alike, was losing money.

3.7 Additional Controls

Included in many of the regressions are a number of additional control variables pertaining to pre-crisis firm characteristics. Each control is measured specifically with regards to 1996. The log of total assets is used to control for overall firm size since larger firms naturally borrow more in levels. The log of total liabilities controls for a firm's level of indebtedness and exposure to risk. Additionally, training, R&D, and advertising expenditures are each controlled for with missing values assumed to be zeros. The liquidity of the firm's assets is captured by the variable 'cash' which is the sum of assets pertaining to cash and marketable securities. Again, missing values are assumed to be zeros. Finally, a firm's market share is calculated based on its share of total sales within in the NICE data for its specific 4-digit industry code. Firms with missing total sales observations are dropped in the regressions that include market share as a control.[19]

[18] The average performance of firms in top 5 chaebols, however, was higher than that of non-chaebols in 1998.

[19] All these measures are essentially the same for our balanced panel (2575 firms) and the unbalanced sample, which has 3556 firms in 1996. Log of total assets, for example, is 19.29 for the 173 firms belonging to the top 30 chaebols in 1996 and 19.62 for the 139 firms which are in our balanced sample.

3.8 Results

Our main regression results are presented in Table 5, where the dependent variable is the log of gross bond flows in 1998. In the first panel we look at the effect of being a chaebol. The top 5 chaebol dummy is highly significant and it remains large even when we control for size and other variables. With controls, affiliation with a top 5 chaebol is associated with a 1.2 log point increase in gross bond flows for a firm in 1998. The top 5 chaebol effect is large. One log point in the gross bond flows regression is about half a standard deviation in our sample.The average log of gross bond flows in 1998 for all Korean firms is 16.3. The dummy for being a chaebol in the top 30 (but not the top 5) is significant, but loses some significance when we add other controls. The magnitude of the effect for the smaller chaebols is also about one-fourth of that observed for the largest five chaebols.

When we add our corporate governance measure of ownership concentration, in the second panel, it is not robustly significant either as a main effect or interacted with a dummy for top 30 chaebol. The top 5 chaebol dummy remains large and highly significant. The results are similar in the third panel where our corporate governance measure is the control-ownership rights gap. While chaebol affiliation is a strong predictor of gross bond flows in 1998, neither ownership concentration or the control-ownership rights gap appear to be associated with gross bond flows following the crisis.

As expected, size is a strong positive predictor of gross bond flows and log of total debt in 1996 is a negative and significant predictor. Our other controls for cash, market share, and expenses do not seem strongly related to bond flows in 1998. The tables that follow show our results are robust to alternative samples, alternative measures of bond flows, and alternative forms of clustering. The results are also robust to nonlinear size controls.

3.9 Interpretation

Overall, the largest five chaebol received a disproportionate amount of bond financing in 1998 despite their very poor corporate governance structures (see Table 3). This also holds even if you drop Daewoo and only consider the largest four chaebol. The remaining top 30 chaebols (numbers 6-30) were also more likely to receive bond financing in 1998,

but the top 5 chaebol were still predominantly favored. Moreover, there is also little evidence that bonds were allocated in larger amounts to non-chaebol firms with better corporate governance. Nor is there evidence that bond investors accounted for the credit risk of individual firms. Rhee and Oh (2001) find that the interest rate paid on bonds by defaulting companies, including Daewoo, and firms possessing an A+ credit rating were very similar in 1998 and 1999.[20]

4 Robustness Checks

4.1 Equity Finance in 1999

Equity flows in 1999 offer an interesting falsification test. Our conjecture is that investors wanted to invest in the largest firms and chose to do so through bonds in 1998. If this is the case, then when global equity markets rose strongly and equity investment came into fashion in 1999, they should have chosen to invest directly in the largest firms.

This is what we see in Table 6. The panels of this table have the same structure as Table 5, except the dependent variable is now the log of gross equity flows in 1999. In the first panel, we again see that the effect of being a chaebol is highly significant and large for both the top 5 chaebol and top 30 (but not top 5) dummies. The size effect for chaebol in 1999 is similar to that in 1998, although perhaps a little smaller.

Now corporate governance matters, but there is no indication that the market is getting it right, i.e., putting more money into firms with better governance. More ownership concentration is associated with less issue of equity and a larger control-ownership gap is associated with more issue of equity. Moreover, firms affiliated with a chaebol, which on average had worse corporate governance structures, were more likely to receive equity financing in 1999. Of course, there are difficult issues of supply and demand for equity, which we cannot sort out, but still, this evidence is suggestive.

[20] Rhee and Oh compare the yield to maturity of defaulted bonds at date of issuance against the average yield on three-year corporate bonds with an A+ credit rating from December 1997 to June 1999. They find no average difference between the yields. The evidence, while not conclusive, is suggestive of a general ignorance of credit risk by investors in Korea.

4.2 Banking After the Crisis

In 2000, when net bank financing for the entire Korean economy first became positive again, we see less evidence that chaebols were more likely to receive bank financing. This is shown in Table 7B, where the dependent variable is the log of gross loan flows in 2000. Table 7A uses log of gross loan flows before the crisis in 1996 as a comparison.

In the first panel of Table 7B, both chaebol dummies are positive and significant indicating chaebols were more likely to receive loans in 2000. However, the magnitude is smaller than that seen for bonds in 1998 and equity in 1999. Moreover, once we add the corporate governance measures and controls for size, the chaebols dummies are no longer significant.

Table 7A demonstrates that the weaker relation between chaebol affiliation and loan financing was also true in 1996. Comparing Table 7A to Table 5, funding from bonds in 1998 was more concentrated than bank lending before the crisis despite that the crisis was due in part to these large firms' failures.

Similar to bonds and equity, however, there is still no evidence that the banks were more likely to allocate loans to firms with better corporate governance.

4.3 Alternative Samples

Our findings are also robust to a number of alternative samples. In Table 8, we instead use net bond finance flows normalized by total assets as the dependent variable, and we report our corporate governance results for ownership concentration.[21] Beyond providing an additional check, the use of net bond flows allows us to check whether the findings are robust to excluding bond financing used to roll-over existing bonds. We also test the importance of chaebol affiliation and corporate governance for each post-crisis year: 1998, 1999 and 2000.

Similar to our earlier findings, the top 5 chaebol dummy is still positive and significantly related to bond flows in 1998. Affiliation with a top 30 chaebol (not in the top 5) is also positively related to net bond finance flows. However, in 1999 and 2000, there is less evidence that chaebols received more bond financing than other firms. The large reduction

[21] The findings when using the control-ownership gap instead are similar and available from the authors upon request.

in bond financing that occurred following the collapse of Daewoo may explain this decline. The failure of Daewoo likely increased the sensitivity of bond holders to risk and eliminated their perception that the largest chaebols were 'too large to fail'. Again, there is no evidence that ownership concentration predicts the amount of bonds firms received in the post-crisis years.

Table 9 restricts our sample to only the largest 500 firms in terms of total assets in 1996 to ensure that firm size is not driving our earlier findings. Despite the smaller sample, the findings are similar to those in Table 8. The findings for net bond flows / assets also do not change when we restrict the sample to a balanced panel of firms as done in Table 10.

Lastly, Table 11 reports the estimates for net equity finance flows normalized by assets using a balanced panel. Similar to our findings for gross equity flows in Table 6, affiliation with a top 30 chaebol is positively related to equity financing in 1999 even after controlling for firm size, corporate governance, and other firm characteristics. The top 5 chaebol is also positive and significant for net equity financing / assets in 1998.

4.4 Alternative Measures

In our identification strategy, we presume that firms with better pre-crisis corporate governance to be more likely to make effective use of financing in the post-crisis years. As noted, earlier evidence pertaining to Korean firms and corporate governance before and during the crisis suggest this to be true (Joh 2003, Baek, Kang and Park 2004). In Appendix Table 3, we test this directly by regressing net income / assets onto our chaebol dummies and measure of ownership concentration for each post-crisis year. In 1998, the coefficient estimate for ownership concentration is positive and significant. This suggests that firms with better corporate governance were more profitable, even though there is no evidence they were more likely to receive bonds in 1998. While weaker, ownership concentration is also a positive predictor of net income / assets in 1999. In 2000, it is no longer significant. Our findings for profits are similar when we use net income / assets as the dependent variable.

The top 5 chaebol dummy is also positively related to net income / assets in 1998.

However, this is hard to interpret as we are unable to disentangle the top 5 chaebols' preferential access to bonds in 1998. Were chaebols better able to navigate the financial crisis? Or, were they more profitable because they had preferential access to bond financing in 1998?

4.5 Within Chaebol Allocation of Finance

One potential issue that may limit our ability to identify significant relationships between pre-crisis chaebol affiliation, corporate governance, and post-crisis financing is the transfer of funds within chaebols. Anecdotal evidence suggests that many chaebols are dominated by a few large firms that obtain a majority of the financing for the entire chaebol and then reallocate this money within the group.

We do find evidence that a small number of firms within each chaebol obtain a majority of the groups' outside financing. While nearly all of the top thirty chaebols were involved in some form of bond financing in 1998, only half of the chaebol-affiliated firms were involved in any form of bond financing in 1998, and only about 10 percent of the chaebol-affiliated firms were responsible for the aggregate increase in net bond flows. The distribution of equity financing at its peak in 1999 among chaebol-affiliated firms is very similar.[22]

Overall, the concentration of bond and equity financing within chaebols raises some potential issues regarding our identification strategy. If bond and equity financing is redistributed within chaebols, this will obscure the true effect of corporate governance on post-crisis financing.[23] Such reallocations might imply that investors' willingness to purchase bonds depends on the overall ownership structure of the chaebol rather than the corporate governance structure of any individual firm in the chaebol.

[22] This concentration of external finances raised differs significantly for pre-crisis finance flows from loans. Only 2% of chaebol-affiliated firms in 1997 had zero net loan flows, which is consistent with arguments that larger firms have advantageous access to capital markets.

[23] This reallocation of money could occur through both direct loans among firms within a chaebol or more discrete forms of propping and tunneling.

5 Conclusion

Crises in emerging markets involve large output losses in part because financial intermediaries fail and credit contracts sharply. Tight monetary policy can stabilize the exchange rate, but higher interest rates contribute to financial distress. South Korean experience in 1998 offers a seemingly appealing exception: the severe currency crisis triggered a freeze in new bank lending, but the bond market sprang to life. In 1998, the bond market provided almost all the funds raised by firms, allowing firms to borrow directly from households and bypass the troubled banking system. In essence, the bond market acted as a 'spare tire'.

The evidence suggests that households were willing to forgo demand deposits during the banking crisis because they ex ante regarded corporate bonds as safe investments. This switch to bond financing was possible, not because of political favors or corruption, but because the largest chaebols were regarded by the public as too large to fail. The extreme concentration of economic power in Korea, the product of 40 years of a government-led financial market, made this form of financial development under duress and economic recovery possible.

Korea's experience, however, demonstrates two main findings. First, only relatively large firms had access to direct financing via the bond or equity markets. Funding from bonds was even more concentrated than bank lending before the crisis, despite the fact that the crisis was due in part to large firms over-expanding based on cheap credit. Smaller firms, even with their better corporate governance structures, were unable to access the new capital markets when banks stopped lending. Second, it is not clear which system – direct financing or indirect financing – works better in allocating funds more efficiently. In Korea, banks did a poor screening job prior to the crisis, and capital markets did equally poor after the crisis. Perceived as too large to fail, some chaebols, especially Daewoo, kept on pursuing expansionary strategies financed by bond issues. Ex post, there was essentially a bailout of many corporations by households who bought their bonds and the government who eventually bailed out these households following Daewoo's collapse in 1999.[24]

Overall, there are two important functions of a financial market: to provide liquidity

[24] See Oh and Rhee (2001) for more details.

and to allocate credit efficiently. Our evidence demonstrates that bond markets can provide liquidity to relatively large firms in bank dominated emerging economies, particularly during a banking crisis. However, capital markets have many pre-requisites, such as reliable credit rating agencies, no 'too big to fail' beliefs, etc.. In their absence, capital markets in emerging economies may allocate credit poorly leading to subsequent crises. In other words, the 'spare tire' may simply be a 'donut' tire that is inadequate for prolonged use or for driving at the standard speed limits.

6 References

Baek, Jae-Sung, Jun-Joo Kang, and Kyung Suh Park (2004), "Corporate Governance and Firm Value: Evidence from the Korean Financial Crisis," *Journal of Financial Economics*, Vol. 71 (2), February, 265-313.

Black, Bernard S., Hasung Jang and Woochan Kim (2006), "Does Corporate Governance Predict Firms' Market Values? Evidence form Korea," *Journal of Law, Economics and Organization*, forthcoming.

Boyd, John H., Sungkyu Kwak, and Bruce Smith (2002) "The Real Output Losses Associated with Modern Banking Crises, or, "The Good, The Bad, and The Ugly,"" Unpublished, University of Minnesota and University of Texas at Austin, February.

Dell'Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan (2005) "The Real Effect of Banking Crises," CEPR Discussion Paper, 5088.

Diamond, Douglas W. and Raghuram Rajan (2001) "Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking," *Journal of Political Economy*, Vol. 109 (2), 287-327.

Diamond, Douglas W. and Raghuram Rajan (2005) "Liquidity Shortages and Banking Crises," *Journal of Finance*, Vol. LX, No. 2, April, 615-647.

Joh, Sung Wook (2003), "Corporate Governance and Firm Profitability: Evidence from Korea before the Economic Crisis," *Journal of Financial Economics*, Volume 68, No.2, May, 287-322.

Johnson, Simon, Peter Boone, Alasdair Breach, and Eric Friedman (2000) "Corporate Governance in the Asian Financial Crisis," *Journal of Financial Economics*, Vol. 58 (1-2), October/November, 141-186.

Khwaja, Asim Ijaz and Atif Mian (2005), "Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market," *Quarterly Journal of Economics*, Vol. 120 (4), November, 1371-1411.

Kim, Se-Jik (2004) "Bailout and Conglomeration," *Journal of Financial Economics*, 71 (2), 315-47.

Krueger, A. and J. Yoo (2001) "Falling Profitability, Higher Borrowing Costs, and

Chaebol Finances during the Korean Crisis," a paper presented at the Conference on the Korean Crisis and Recovery, May 17-19, Seoul, Korea.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (1997) "Legal Determinants of External Finance„" *Journal of Finance,* 52 (3), 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny (1998) "Law and Finance," *Journal of Political Economy*, 106 (6), 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, and Guillermo Zamarippa (2003) "Related Lending," *The Quarterly Journal of Economics*, 118 (1), 231-268.

Lemmon, Michael L. and Karl V. Lins (2003) "Ownership Structure, Corporate Governance, and Firm Value: Evidence from the East Asian Financial Crisis," *Journal of Finance*, Vol. 58 (4), 1445-68.

Maurer, Noel and Stephen Haber (2004) "Related lending and Economic Performance: Evidence from Mexico," September 2, working paper, Stanford and Harvard.

Mitton, Todd (2002) "A Cross-Firm Analysis of the Impact of Corporate Governance on the East Asian Financial Crisis," *Journal of Financial Economics*, 64 (2), February, 215-241.

Oh, Gyutaeg and Changyong Rhee (2001) "The Role of Corporate Bond Markets in Korean Financial Restructuring Process," May 17, working paper, Chung Ang University and Seoul National University.

Rajan, Raghuram and Ioannis Tokliadis (2005) "Dollar Shortages," *International Journal of Central Banking*, Vol. 1 (2), September, 177-220.

Rajan, Raghuram and Luigi Zingales (2004), *Saving Capitalism from the Capitalists: Unleashing the Power of Financial Markets to Create Wealth and Spread Opportunity*, New York: Crown Business.

Figure 1A:
Net Finance Flows, 1990-2000, Aggregate Flows from BOK

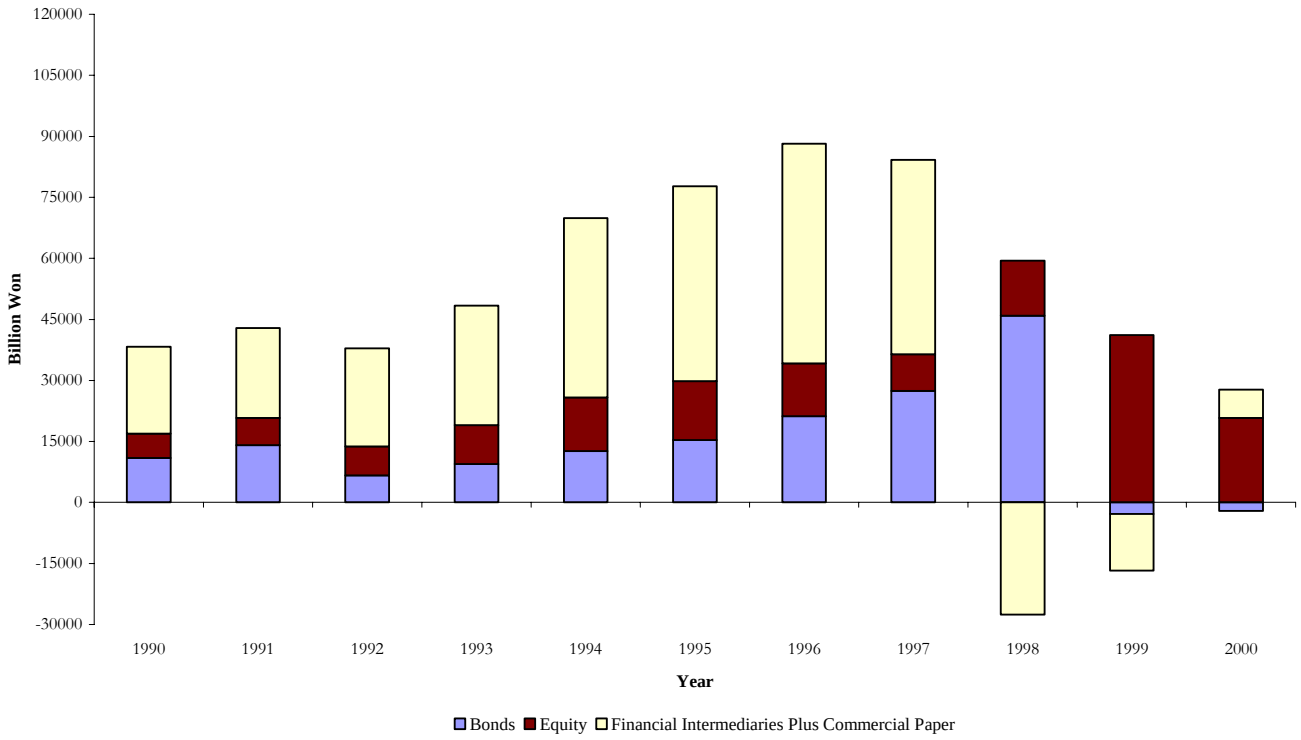

Figure 1B:
Net Finance Flows, 1990-2000, Aggregate Flows from NICE

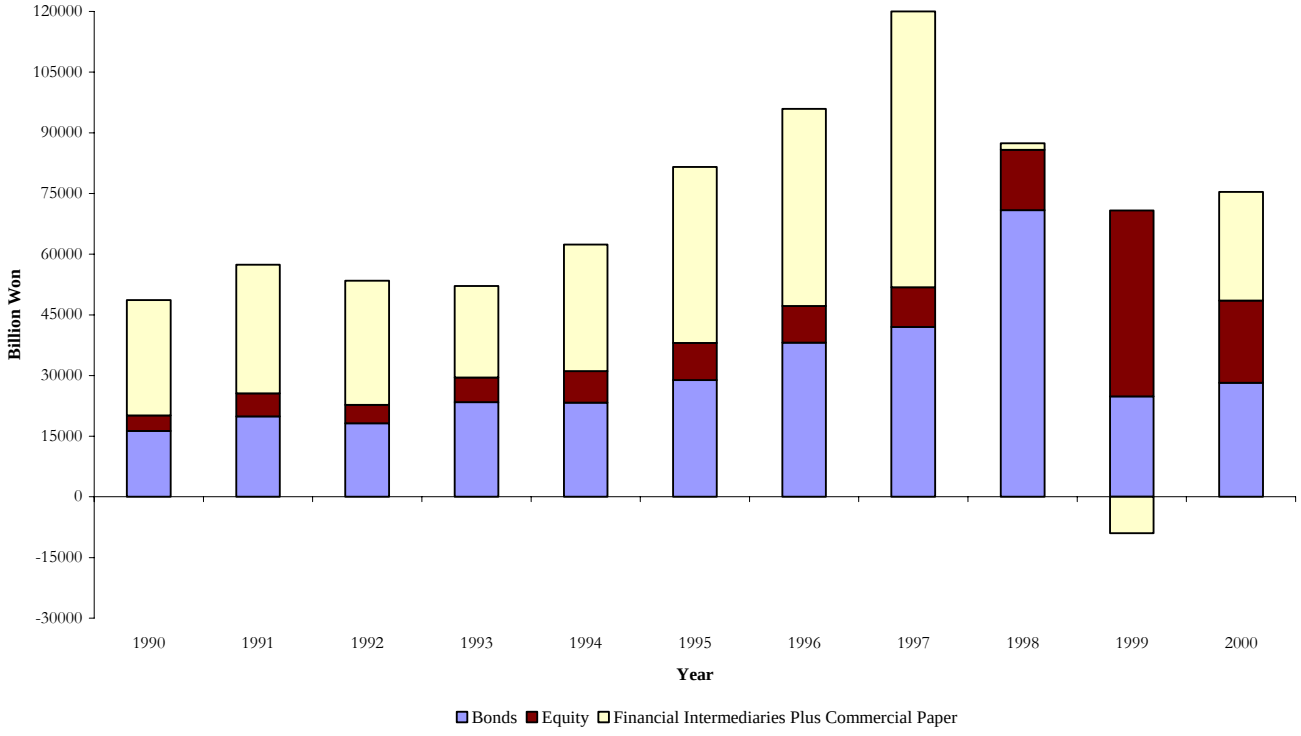

Table 1 -- Korean Corporate Sector Net Finance Flows, 1990-2002

All values are given in units of one billion Won. SOURCE: Bank of Korea

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Financing	50753	58180	54889	64982	89040	100016	118769	118022	27664	51755	65759	50645	83318
Direct Financing	21512	22079	21348	31928	32490	48071	56097	44087	49496	24792	17204	37735	20009
Corporate Paper	1902	-2211	4183	9017	4405	16096	20737	4421	-11678	-16116	-4764	4399	-3777
Bonds	10931	14065	6616	9452	12606	15351	21213	27460	45907	-2827	-2063	11444	-7857
Stocks	5987	6665	7177	9542	13198	14445	12981	8974	13515	41137	20751	16191	28720
Indirect Finance	19476	24343	19912	20373	39650	31855	33231	43375	-15862	2198	11728	-313	51102
Banks	7999	11541	8313	8487	18442	14898	16676	15184	259	15525	23279	3196	41137
Non-Banks	11477	12803	11599	11887	21208	16957	16555	28191	-16550	-13267	-11551	-3690	8606
Overseas Borrowings	3247	2402	3892	996	5857	8392	12383	6563	-9809	11577	16820	633	2446
Other	6517	9355	9737	11685	11044	11699	17058	23997	3839	13228	19967	12591	10761
Nominal GDP	186691	226008	257525	290676	340208	398838	448596	491135	484103	529500	578665	622123	684264

Table 2 -- Descriptive Statistics of the NICE Data (By Year, 1996-2000)

	1996	1997	1998	1999	2000
Panel A -- Gross Bond Flows					
Number of NICE Firms with Non-zero Gross Bond Flows	**961**	**828**	**591**	**634**	**517**
Firms Associated with a Top 5 Chaebol in 1996	56	57	64	47	42
Firms Associated with a Top 6-30 Chaebol in 1996	81	79	68	60	58
Average Log Gross Bond Flows	**15.9**	**16.0**	**16.3**	**16.2**	**16.3**
Firms Associated with a Top 5 Chaebol in 1996	18.3	18.6	19.1	18.5	18.5
Firms Associated with a Top 6-30 Chaebol in 1996	17.4	17.5	17.7	17.7	17.5
Herfindahl Index for Gross Bond Flows	**1.86**	**1.83**	**2.68**	**1.78**	**2.38**
Panel B -- Gross Loan Flows					
Number of NICE Firms with Non-zero Gross Loan Flows	**4976**	**5951**	**5496**	**6421**	**6166**
Firms Associated with a Top 5 Chaebol in 1996	86	88	82	77	77
Firms Associated with a Top 6-30 Chaebol in 1996	159	164	145	125	128
Average Log Gross Loan Flows	**15.7**	**15.5**	**15.4**	**14.9**	**15.0**
Firms Associated with a Top 5 Chaebol in 1996	18.6	19.0	18.6	18.7	18.3
Firms Associated with a Top 6-30 Chaebol in 1996	18.0	18.4	18.1	17.8	17.6
Herfindahl Index for Gross Loan Flows	**0.95**	**1.72**	**1.65**	**1.35**	**1.16**
Panel C -- Gross Equity Flows					
Number of NICE Firms with Non-zero Gross Equity Flows	**1050**	**1368**	**1212**	**2412**	**2128**
Firms Associated with a Top 5 Chaebol in 1996	37	18	39	49	16
Firms Associated with a Top 6-30 Chaebol in 1996	43	23	16	62	25
Average Log Gross Equity Flows	**14.2**	**14.1**	**14.0**	**14.2**	**14.4**
Firms Associated with a Top 5 Chaebol in 1996	17.1	16.5	17.5	18.6	16.8
Firms Associated with a Top 6-30 Chaebol in 1996	16.0	15.7	16.2	17.3	15.3
Herfindahl Index for Gross Equity Flows	**0.95**	**1.69**	**2.21**	**1.91**	**1.76**

Table 3-- Pre-Crisis (1996) Summary Statistics

All reported summary statistics are with regards to firm observations in 1996. The balanced panel subcategory refers to firms found in a balanced panel from 1996-2000. Standard deviations are presented below the means in parentheses. Ownership concentration is the sum of personal shareholder stakes found in the ownership data. The control-ownership rights gap is the difference in the total sum of shareholdings for large shareholders and personal shareholding stakes. The debt ratio is total liabilites over total assets. Cash is marketable securites plus cash assets. Market share is with respect to total sales within 4-digit industry codes. Profits is measured using ordinary income normalized by total assets. All variables are given in percentages except for log of total assets.

	All NICE Firms				Balanced Panel Firms			
	All Firms (N=6957)	**Top 5 Chaebols Only (N=98)**	**Top 6-30 Chaebols Only (N=183)**	**Non-Chaebol Firms (N=6676)**	**All Firms (N=3883)**	**Top 5 Chaebols Only (N=84)**	**Top 6-30 Chaebols Only (N=134)**	**Non-Chaebol Firms (N=3665)**
Ownership Concentration (%)	45.87	7.25	10.93	47.72	45.49	7.67	9.03	47.60
	(34.97)	(17.91)	(20.42)	(34.58)	(34.29)	(18.34)	(13.89)	(33.86)
Control-Ownership Rights Gap (%)	21.44	45.00	49.80	20.07	19.75	42.91	46.50	18.30
	(33.57)	(35.13)	(38.84)	(32.77)	(31.96)	(34.57)	(37.99)	(31.06)
Log of Total Assets	16.87	19.69	18.91	16.77	17.34	20.13	19.32	17.20
	(1.37)	(2.07)	(1.79)	(1.25)	(1.26)	(1.85)	(1.56)	(1.08)
Debt Ratio (%)	78.67	74.77	83.71	78.59	77.98	77.42	80.68	77.89
	(30.42)	(21.49)	(41.47)	(30.16)	(23.46)	(17.51)	(25.53)	(23.50)
Market Share (%)	5.50	22.31	13.20	5.02	6.39	22.45	15.57	5.68
	(14.31)	(25.30)	(20.45)	(13.63)	(14.91)	(26.13)	(21.61)	(13.90)
Training Expenditures / Assets (%)	0.07	0.40	0.12	0.06	0.07	0.24	0.13	0.07
	(0.27)	(1.19)	(0.21)	(0.23)	(0.21)	(0.50)	(0.20)	(0.20)
R&D Expenditures / Assets (%)	0.12	0.26	0.17	0.11	0.14	0.13	0.15	0.14
	(0.68)	(0.95)	(0.63)	(0.67)	(0.65)	(0.41)	(0.32)	(0.66)
Advertising Expenditures / Assets (%)	0.74	1.01	1.12	0.73	0.80	0.98	1.01	0.79
	(2.61)	(2.65)	(2.33)	(2.62)	(2.44)	(2.77)	(1.85)	(2.45)
Cash / Assets (%)	1.05	1.39	1.07	1.04	1.06	1.03	0.98	1.06
	(4.31)	(4.21)	(2.94)	(4.34)	(3.68)	(2.82)	(2.68)	(3.73)
Profits [Ordinary Income/Assets (%)]	1.70	0.88	-1.59	1.81	1.86	0.36	-0.19	1.96
	(11.64)	(10.54)	(13.52)	(11.58)	(8.55)	(10.49)	(7.81)	(8.51)

Table 4 -- Net Financial Flows and Profits (1996-2000) Summary Statistics, Balanced Panel

Summary statistics are presented for a balanced panel of firms from 1996-2000. All variables are presented in percents. Standard deviations are presented below the means in parentheses. Financial flows are calculated using cash flow data reported under financing activities and are normalized by total assets. Ordinary income is revenues from sales plus dividends and gains on securities, minus the cost of sales, administrative and sales expenses, and interest payments. Net Income is ordinary income minus taxes and extraordinary items. Both profit measures are normalized by total assets. The top 30 chaebols are determined using the 1996 KFTC listing.

	Top 5 Chaebols (N=84)					Top 6-30 Chaebols (N=134)					Non-Chaebol Firms (N=3665)				
	1996	**1997**	**1998**	**1999**	**2000**	**1996**	**1997**	**1998**	**1999**	**2000**	**1996**	**1997**	**1998**	**1999**	**2000**
Financial Flows															
Net Bond Flows / Assets	5.61	5.33	10.07	2.04	2.84	3.99	4.16	4.29	-2.25	2.02	1.41	0.98	0.56	0.87	0.71
	(6.40)	(6.10)	(8.68)	(7.50)	(6.01)	(5.60)	(5.68)	(7.42)	(57.19)	(5.19)	(4.06)	(3.83)	(3.53)	(4.87)	(5.83)
Net Loan Flows / Assets	8.93	9.53	-7.14	-3.10	6.62	7.90	7.24	-3.92	-22.49	-3.00	6.46	5.71	0.53	-0.27	-0.80
	(10.5)	(9.9)	(12.2)	(14.2)	(45)	(10.6)	(13.1)	(47.1)	(141.8)	(44)	(13.9)	(13.4)	(18.4)	(16.4)	(129)
Net Equity Flows / Assets	3.65	0.95	4.15	7.16	2.63	1.87	1.04	0.95	4.98	2.37	1.53	1.31	1.52	1.96	2.28
	(11.50)	(2.65)	(9.54)	(9.82)	(11.4)	(5.78)	(3.66)	(3.98)	(10.74)	(12.6)	(6.77)	(4.71)	(9.31)	(7.37)	(26.9)
Profit Measures															
Net Income / Assets	0.38	0.64	1.83	-0.53	-8.80	0.16	-1.95	-6.49	-0.61	1.89	1.88	0.09	-0.78	3.63	-5.06
	(10.51)	(5.2)	(6.7)	(23.7)	(120)	(8.17)	(10.7)	(23.9)	(21.9)	(19)	(9.29)	(12.9)	(22.0)	(14.4)	(313)
Ordinary Income / Assets	0.36	1.09	1.98	1.59	-13.81	-0.19	-1.49	-4.30	-1.06	1.12	1.96	0.48	-0.14	2.94	-5.79
	(10.49)	(4.9)	(6.9)	(17.9)	(118)	(7.81)	(10.2)	(13.2)	(15.0)	(13)	(8.51)	(11.3)	(20.5)	(13.3)	(313)

Table 5: Post-Crisis Gross Bond Flows, Chaebol Affiliation & Corporate Governance -- Chaebol Interaction Included (All Firms)

The table reports coefficients from firm-level regressions of 1998 gross bond flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Dependent variable is the log of 1998 gross bond flows (in 1000s of Won). All RHS variables are measured with respect to 1996 levels. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities (in 1000s of Won). 'Training' and 'Advertising' refer to expenditures (in 1000s of Won) on training and advertising. 'Cash' is the sum cash assets and marketable securities (1000s of Won). Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Top 5 Chaebol	Top 6-30 Chaebol	Corp. Gov. Measure	Corp. Gov. * Top 30	Log of Total Assets	Log of Total Debt	Log of Cash	Market Share %	Log of Training Exp.	Log of Advertising Exp.	# of Firms	R-Sq.
Dependent Variable = Log of 1998 Gross Bond Flows											
Panel A: No Corporate Governance Measures											
3.44 ***	2.01 ***									573	0.275
(0.27)	(0.21)										
1.16 ***	0.35 *			1.75 ***	-0.73 ***					573	0.709
(0.16)	(0.19)			(0.22)	(0.22)						
1.17 ***	0.32			1.93 ***	-1.00 **	0.028	0.0033	0.034	0.021	450	0.729
(0.18)	(0.20)			(0.30)	(0.31)	(0.022)	(0.0025)	(0.058)	(0.037)		
Panel B: Corporate Governance Measure #1, Ownership Concentration											
2.96 ***	1.52 ***	-2.23 ***	1.301							396	0.375
(0.36)	(0.33)	(0.44)	(1.409)								
1.26 ***	0.46 *	-0.16	0.003	2.40 ***	-1.35 ***					396	0.702
(0.20)	(0.25)	(0.42)	(0.649)	(0.34)	(0.32)						
1.22 ***	0.29	-0.20	0.864	2.29 ***	-1.33 ***	0.034	0.0027	0.061	-0.004	320	0.730
(0.20)	(0.31)	(0.51)	(0.852)	(0.36)	(0.37)	(0.026)	(0.0028)	(0.074)	(0.043)		
Panel C: Corporate Governance Measure #2, Control-Ownership Rights Difference											
4.37 ***	2.70 ***	-0.26	-1.918 **							396	0.337
(0.41)	(0.32)	(0.41)	(0.736)								
1.37 ***	0.54 **	-0.28	-0.035	2.41 ***	-1.35 ***					396	0.703
(0.20)	(0.24)	(0.30)	(0.446)	(0.29)	(0.28)						
1.40 ***	0.46 *	-0.33	-0.085	2.33 ***	-1.35 ***	0.031	0.0031	0.058	-0.007	320	0.731
(0.22)	(0.25)	(0.37)	(0.480)	(0.31)	(0.31)	(0.026)	(0.0028)	(0.072)	(0.045)		

Table 6: Post-Crisis Gross Equity Flows, Chaebol Affiliation & Corporate Governance -- Chaebol Interaction Included (All Firms)

The table reports coefficients from firm-level regressions of 1999 gross equity flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Dependent variable is the log of 1999 gross equity flows (in 1000s of Won). All RHS variables are measured with respect to 1996 levels. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities (in 1000s of Won). 'Training' and 'Advertising' refer to expenditures (in 1000s of Won) on training and advertising. 'Cash' is the sum cash assets and marketable securities (1000s of Won). Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Top 5 Chaebol	Top 6-30 Chaebol	Corp. Gov. Measure	Corp. Gov. * Top 30	Log of Total Assets	Log of Total Debt	Log of Cash	Market Share %	Log of Training Exp.	Log of Advertising Exp.	# of Firms	R-Sq.
Dependent Variable = Log of 1999 Gross Equity Flows											
Panel A: No Corporate Governance Measures											
4.52 ***	3.27 ***									1373	0.252
(0.30)	(0.22)										
2.25 ***	1.51 ***			1.11 ***	-0.55 ***					1369	0.414
(0.30)	(0.21)			(0.10)	(0.09)						
1.39 ***	1.00 ***			0.95 ***	-0.38	-0.093 ***	0.0039	0.095 **	0.131 ***	763	0.538
(0.35)	(0.20)			(0.26)	(0.24)	(0.027)	(0.0049)	(0.037)	(0.030)		
Panel B: Corporate Governance Measure #1, Ownership Concentration											
3.48 ***	2.11 ***	-2.14 ***	1.943							648	0.376
(0.36)	(0.30)	(0.22)	(1.258)								
1.02 **	0.55 **	-1.10 ***	0.022	0.94 ***	-0.10					648	0.548
(0.35)	(0.25)	(0.21)	(0.791)	(0.28)	(0.28)						
0.92 **	0.47 **	-1.05 ***	0.245	1.31 ***	-0.55	-0.086 **	-0.0009	0.089 *	0.079 **	451	0.599
(0.41)	(0.24)	(0.27)	(0.782)	(0.39)	(0.36)	(0.031)	(0.0053)	(0.048)	(0.035)		
Panel C: Corporate Governance Measure #2, Control-Ownership Rights Difference											
5.30 ***	3.87 ***	1.31 ***	-2.723 ***							648	0.313
(0.42)	(0.18)	(0.26)	(0.538)								
0.97 **	0.59 **	0.99 ***	-0.089	1.24 ***	-0.30					648	0.541
(0.42)	(0.27)	(0.25)	(0.480)	(0.28)	(0.29)						
0.97 **	0.58 **	1.09 ***	-0.319	1.66 ***	-0.82 **	-0.087 **	-0.0003	0.100 **	0.073 **	451	0.598
(0.46)	(0.28)	(0.30)	(0.511)	(0.38)	(0.36)	(0.031)	(0.0049)	(0.046)	(0.036)		

Table 7A: Pre-Crisis Gross Loan Flows, Chaebol Affiliation & Corporate Governance -- Chaebol Interaction Included (All Firms)

The table reports coefficients from firm-level regressions of 1996 gross loan flows onto firm characteristics using OLS with standard errors clustered around chaebol affiliation. Dependent variable is the log of 1996 gross loan flows (in 1000s of Won). Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE in 1996. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE in 1996. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. All remaining RHS variables are measured with respect to 1995 levels. 'Debt' refers to total liabilities (in 1000s of Won). 'Training' and 'Advertising' refer to expenditures (in 1000s of Won) on training and advertising. 'Cash' is the sum cash assets and marketable securities (1000s of Won). Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Top 5 Chaebol	Top 6-30 Chaebol	Corp. Gov. Measure	Corp. Gov. * Top 30	Log of Total Assets	Log of Total Debt	Log of Cash	Market Share %	Log of Training Exp.	Log of Advertising Exp.	# of Firms	R-Sq.
Dependent Variable = Log of 1996 Gross Loan Flows											
Panel A: No Corporate Governance Measures											
3.088 ***	2.51 ***									4956	0.087
(0.414)	(0.19)										
0.277	0.41 **			0.24 **	0.82 ***					4900	0.453
(0.204)	(0.19)			(0.11)	(0.11)						
0.032	0.31			-0.14	1.17 ***	0.033 **	-0.0005	-0.025	0.041 **	3005	0.529
(0.112)	(0.20)			(0.12)	(0.11)	(0.013)	(0.0018)	(0.017)	(0.013)		
Panel B: Corporate Governance Measure #1, Ownership Concentration											
2.999 ***	1.82 ***	-1.026 ***	1.377 *							3249	0.130
(0.407)	(0.27)	(0.096)	(0.778)								
0.301	0.25	-0.143 *	0.668	0.00	1.04 ***					3248	0.463
(0.229)	(0.27)	(0.082)	(0.586)	(0.10)	(0.10)						
0.206	0.15	-0.216 **	1.489	-0.17	1.18 ***	0.040 **	-0.0017	-0.017	0.016	2066	0.528
(0.156)	(0.29)	(0.100)	(1.037)	(0.14)	(0.13)	(0.017)	(0.0020)	(0.020)	(0.015)		
Panel C: Corporate Governance Measure #2, Control-Ownership Rights Difference											
4.691 ***	3.68 ***	0.277 **	-2.883 ***							3249	0.112
(0.478)	(0.35)	(0.105)	(0.490)								
0.365	0.33	0.090	-0.030	0.03	1.03 ***					3248	0.462
(0.304)	(0.29)	(0.085)	(0.391)	(0.10)	(0.10)						
0.176	0.17	0.162	0.197	-0.13	1.16 ***	0.042 **	-0.0014	-0.016	0.016	2066	0.527
(0.254)	(0.33)	(0.109)	(0.437)	(0.14)	(0.13)	(0.017)	(0.0020)	(0.020)	(0.015)		

Table 7B: Post-Crisis Gross Loan Flows, Chaebol Affiliation & Corporate Governance -- Chaebol Interaction Included (All Firms)

The table reports coefficients from firm-level regressions of 2000 gross loan flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Dependent variable is the log of 2000 gross loan flows (in 1000s of Won). All RHS variables are measured with respect to 1996 levels. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. The Control-Ownership Gap is Joh's difference between the sum of all large shareholdings and the sum of only personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities (in 1000s of Won). 'Training' and 'Advertising' refer to expenditures (in 1000s of Won) on training and advertising. 'Cash' is the sum cash assets and marketable securities (1000s of Won). Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Top 5 Chaebol	Top 6-30 Chaebol	Corp. Gov. Measure	Corp. Gov. * Top 30	Log of Total Assets	Log of Total Debt	Log of Cash	Market Share %	Log of Training Exp.	Log of Advertising Exp.	# of Firms	R-Sq.
Dependent Variable = Log of 2000 Gross Loan Flows											
Panel A: No Corporate Governance Measures											
3.22 ***	2.52 ***									4601	0.081
(0.51)	(0.23)										
0.98 **	0.91 ***			0.73 ***	-0.05					4587	0.262
(0.38)	(0.20)			(0.08)	(0.08)						
0.71 **	0.74 ***			0.29 **	0.45 ***	-0.004	-0.0021	0.017	0.010	2611	0.321
(0.36)	(0.21)			(0.13)	(0.12)	(0.016)	(0.0023)	(0.019)	(0.017)		
Panel B: Corporate Governance Measure #1, Ownership Concentration											
2.77 ***	1.89 ***	-0.978 ***	0.616							2455	0.117
(0.57)	(0.34)	(0.117)	(1.952)								
0.54	0.57 **	-0.095	-1.316	0.41 ***	0.50 ***					2455	0.332
(0.37)	(0.28)	(0.109)	(1.390)	(0.13)	(0.12)						
0.41	0.39	-0.068	1.048	0.37 **	0.53 **	0.008	-0.0016	0.011	-0.010	1650	0.357
(0.34)	(0.30)	(0.139)	(1.241)	(0.18)	(0.17)	(0.019)	(0.0025)	(0.024)	(0.021)		
Panel C: Corporate Governance Measure #2, Control-Ownership Rights Difference											
4.21 ***	3.48 ***	0.331 **	-2.533 ***							2455	0.103
(0.74)	(0.40)	(0.129)	(0.560)								
0.39	0.42	0.064	0.125	0.43 ***	0.49 ***					2455	0.332
(0.52)	(0.37)	(0.114)	(0.443)	(0.12)	(0.12)						
0.54	0.56	-0.039	-0.143	0.38 **	0.52 **	0.008	-0.0015	0.012	-0.010	1650	0.357
(0.42)	(0.34)	(0.141)	(0.440)	(0.18)	(0.16)	(0.019)	(0.0025)	(0.024)	(0.021)		

Table 8: Post-Crisis Net Bond Flows, Chaebol Affiliation & Ownership Concentration -- Chaebol Interaction Included (All Firms)

The table reports coefficients from firm-level regressions of post-crisis net bond flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Dependent variables are the post-crisis ratio of net bond flows over total assets, in percentage terms. All RHS variables are measured with respect to 1996 levels. For yearly regressions, all firms with non-missing observations are included. Regressions that average over 1998-2000 use all firms with at least one post-crisis, non-missing dependent variable. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Training', 'R&D', and 'Advertising' refer to expenditures on training, R&D, and advertising. 'Cash' is the sum cash assets and marketable securities. Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Dependent Variable	Top 5 Chaebol	Top 6-30 Chaebol	Owner-ship Conc.	Owner. Conc. * Top 30	Log of Total Assets	Debt / Assets	Training / Assets	R & D / Assets	Cash / Assets	Advertis ing / Assets	Market Share %	# of Firms	R-Sq.
Avg. Net Bonds / Assets (1998-2000)	4.75 ***	1.01	-0.81 ***	-7.97								3136	0.021
	(0.75)	(1.48)	(0.15)	(7.74)									
	3.45 ***	0.23	-0.22	-8.35	0.56 ***	-0.61 **						3136	0.035
	(0.96)	(1.31)	(0.18)	(7.74)	(0.13)	(0.20)							
	3.41 ***	0.24	-0.20	-8.70	0.50 ***	-0.58 **	-36.41	6.64	0.08	7.27 **	0.013 *	3136	0.038
	(0.94)	(1.32)	(0.18)	(7.81)	(0.14)	(0.19)	(35.19)	(7.14)	(0.90)	(3.02)	(0.008)		
Net Bond Flows / Assets (1998 ONLY)	9.41 ***	4.39 ***	-0.89 ***	-3.44								3027	0.138
	(0.89)	(1.11)	(0.18)	(2.56)									
	7.26 ***	3.11 **	0.04	-4.04	0.89 ***	-0.54 **						3027	0.190
	(0.73)	(1.07)	(0.20)	(2.49)	(0.11)	(0.20)							
	7.28 ***	3.13 **	0.03	-4.17 *	0.87 ***	-0.52 **	-47.29	4.46	-1.24	2.80	0.004	3027	0.191
	(0.74)	(1.08)	(0.19)	(2.48)	(0.11)	(0.20)	(60.90)	(8.59)	(1.30)	(2.97)	(0.005)		
Net Bond Flows / Assets (1999 ONLY)	4.31	-2.67	-0.97 ***	-27.89								3036	0.011
	(2.71)	(3.84)	(0.23)	(33.20)									
	3.64	-3.05	-0.64 *	-28.05	0.28	-0.67						3036	0.012
	(3.53)	(3.37)	(0.38)	(32.83)	(0.34)	(0.46)							
	3.57	-3.11	-0.54 *	-28.74	0.21	-0.60	58.83	19.68	4.16	13.17 *	0.015	3036	0.013
	(3.39)	(3.43)	(0.33)	(33.32)	(0.39)	(0.43)	(109.00)	(15.26)	(2.92)	(6.96)	(0.017)		
Net Bond Flows / Assets (2000 ONLY)	1.55 ***	1.65 **	-0.81 ***	-1.96								2850	0.011
	(0.48)	(0.57)	(0.22)	(2.21)									
	0.46	1.02 *	-0.29	-2.37	0.47 ***	-0.87 **						2850	0.024
	(0.58)	(0.55)	(0.22)	(2.21)	(0.09)	(0.33)							
	0.37	1.02 *	-0.28	-3.03	0.41 ***	-0.85 **	-25.93	-7.09	-1.94 **	5.79 *	0.018	2850	0.028
	(0.53)	(0.56)	(0.23)	(2.27)	(0.10)	(0.33)	(16.66)	(10.04) *	(0.93)	(3.46)	(0.016)		

Table 9: Post-Crisis Net Bond Flows, Chaebol Affiliation & Ownership Concentration -- Chaebol Interaction Included (Largest 500 Firms)

The table reports coefficients from firm-level regressions of post-crisis net bond flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Only the largest 500 firms (in total assets) in 1996 were included. Dependent variables are the post-crisis ratio of net bond flows over total assets, in percentage terms. All RHS variables are measured with respect to 1996 levels. For yearly regressions, all firms with non-missing observations are included. Regressions that average over 1998-2000 use all firms with at least one post-crisis, non-missing dependent variable. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped before determining the Top 500. 'Debt' refers to total liabilities. 'Training', 'R&D', and 'Advertising' refer to expenditures on training, R&D, and advertising. 'Cash' is the sum cash assets and marketable securities. Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Dependent Variable	Top 5 Chaebol	Top 6-30 Chaebol	Owner-ship Conc.	Owner. Conc. * Top 30	Log of Total Assets	Debt / Assets	Training / Assets	R & D / Assets	Cash / Assets	Advertis ing / Assets	Market Share %	# of Firms	R-Sq.
Avg. Net Bonds / Assets (1998-2000)	6.05 ***	1.29	-0.50	-24.44								473	0.030
	(1.65)	(1.54)	(0.82)	(26.93)									
	5.94 **	1.30	-0.21	-24.26	0.14	-1.10						473	0.031
	(2.23)	(1.35)	(0.93)	(26.66)	(0.47)	(1.27)							
	5.88 **	1.33	0.23	-25.37	0.00	-0.70	48.28	107.75 *	4.38	16.94	0.032	473	0.038
	(2.17)	(1.33)	(0.93)	(27.24)	(0.54)	(1.35)	(116.33)	(57.84)	(6.31)	(12.42)	(0.021)		
Net Bond Flows / Assets (1998 ONLY)	10.20 ***	4.77 **	-1.98 **	-4.29								457	0.195
	(0.89)	(1.80)	(0.96)	(7.75)									
	8.74 ***	4.27 **	-0.88	-4.86	1.14 ***	-2.40 **						457	0.216
	(0.91)	(1.84)	(1.01)	(7.69)	(0.35)	(1.20)							
	8.86 ***	4.31 **	-0.42	-5.46	1.14 **	-2.44 **	92.01	133.42 ***	-11.21	3.95	0.003	457	0.226
	(0.90)	(1.87)	(1.08)	(7.76)	(0.36)	(1.22)	(134.91)	(33.04)	(7.96)	(10.35)	(0.015)		
Net Bond Flows / Assets (1999 ONLY)	6.51	-2.94	-0.23	-69.73								464	0.026
	(4.84)	(4.23)	(1.09)	(78.69)									
	8.24	-2.26	-1.15	-68.68	-1.24	1.35						464	0.027
	(6.54)	(3.67)	(1.53)	(77.25)	(1.32)	(3.46)							
	7.97	-2.36	-0.40	-70.51	-1.65	2.90	17.06	232.88	31.82 *	36.67	0.081	464	0.032
	(6.41)	(3.70)	(1.40)	(78.83)	(1.55)	(3.66)	(235.57)	(152.00) *	(17.16)	(28.50)	(0.059)		
Net Bond Flows / Assets (2000 ONLY)	1.54 **	2.44 **	0.96	-0.80								445	0.021
	(0.78)	(1.00)	(1.72)	(4.35)									
	0.89	2.27 **	1.77	-0.64	0.58 *	-2.47 **						445	0.034
	(0.90)	(0.94)	(1.73)	(4.23)	(0.34)	(0.92)							
	0.87	2.34 **	2.02	-1.47	0.54 *	-2.60 **	33.75	-46.63	-6.80	14.38	0.014	445	0.043
	(0.90)	(0.94)	(1.76)	(4.47)	(0.32)	(0.94)	(83.28)	(38.26) **	(4.88)	(9.40)	(0.014)		

Table 10: Post-Crisis Net Bond Flows, Chaebol Affiliation & Ownership Concentration -- Chaebol Interaction Included (Balanced Panel)

The table reports coefficients from firm-level regressions of post-crisis net bond flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Only firms in a 1996-2000 balanced panel were included. Dependent variables are the post-crisis ratio of net bond flows over total assets, in percentage terms. All RHS variables are measured with respect to 1996 levels. For yearly regressions, all firms with non-missing observations are included. Regressions that average over 1998-2000 use all firms with at least one post-crisis, non-missing dependent variable. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Training', 'R&D', and 'Advertising' refer to expenditures on training, R&D, and advertising. 'Cash' is the sum cash assets and marketable securities. Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. *

Dependent Variable	Top 5 Chaebol	Top 6-30 Chaebol	Owner-ship Conc.	Owner. Conc. * Top 30	Log of Total Assets	Debt / Assets	Training / Assets	R & D / Assets	Cash / Assets	Advertis ing / Assets	Market Share %	# of Firms	R-Sq.
Avg. Net Bonds / Assets (1998-2000)	5.16 ***	1.26	-1.05 ***	-11.73								2570	0.027
	(0.89)	(1.67)	(0.16)	(10.93)									
	3.77 **	0.42	-0.39 *	-12.10	0.57 ***	-0.78 **						2570	0.041
	(1.22)	(1.47)	(0.20)	(10.90)	(0.15)	(0.25)							
	3.74 ***	0.41	-0.37 *	-12.47	0.53 **	-0.75 **	19.19	6.02	0.27	6.47 **	0.008	2570	0.042
	(1.17)	(1.49)	(0.20)	(11.07)	(0.17)	(0.24)	(44.75)	(7.86)	(1.17)	(3.14)	(0.008)		
Net Bond Flows / Assets (1998 ONLY)	9.77 ***	5.12 ***	-1.07 ***	-4.90								2570	0.166
	(0.79)	(1.29)	(0.19)	(3.30)									
	7.50 ***	3.74 **	-0.05	-5.63 *	0.92 ***	-0.65 **						2570	0.218
	(0.68)	(1.24)	(0.21)	(3.27)	(0.11)	(0.24)							
	7.49 ***	3.74 **	-0.05	-5.78 *	0.91 ***	-0.61 **	3.94	7.11	-1.53	2.28	0.002	2570	0.219
	(0.69)	(1.24)	(0.21)	(3.27)	(0.12)	(0.25)	(35.92)	(9.35)	(1.56)	(3.08)	(0.005)		
Net Bond Flows / Assets (1999 ONLY)	4.03	-3.28	-1.21 ***	-27.69								2570	0.012
	(2.68)	(4.48)	(0.27)	(32.83)									
	3.31	-3.71	-0.82 *	-27.79	0.31	-0.88						2570	0.013
	(3.64)	(3.91)	(0.47)	(32.49)	(0.40)	(0.55)							
	3.20	-3.76	-0.75 *	-28.51	0.22	-0.84	69.98	16.59	4.20	11.55 *	0.019	2570	0.014
	(3.49)	(3.97)	(0.44)	(33.04)	(0.48)	(0.54)	(119.06)	(16.55)	(3.24)	(6.97)	(0.021)		
Net Bond Flows / Assets (2000 ONLY)	1.67 **	1.93 **	-0.86 ***	-2.59								2570	0.014
	(0.53)	(0.63)	(0.23)	(2.28)									
	0.50	1.23 **	-0.29	-2.87	0.49 ***	-0.80 **						2570	0.028
	(0.63)	(0.61)	(0.24)	(2.28)	(0.10)	(0.35)							
	0.51	1.24 **	-0.30	-3.13	0.47 ***	-0.79 **	-16.37	-5.65	-1.87 *	5.57	0.002	2570	0.029
	(0.62)	(0.60)	(0.24)	(2.22)	(0.10)	(0.35)	(27.27)	(10.08) **	(1.09)	(3.62)	(0.006)		

Table 11: Post-Crisis Net Equity Flows, Chaebol Affiliation & Ownership Concentration -- Chaebol Interaction Included (Balanced Panel)

The table reports coefficients from firm-level regressions of post-crisis net equity flows onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Only firms in a 1996-2000 balanced panel were included. Dependent variables are the post-crisis ratio of net equity flows over total assets, in percentage terms. All RHS variables are measured with respect to 1996 levels. For yearly regressions, all firms with non-missing observations are included. Regressions that average over 1998-2000 use all firms with at least one post-crisis, non-missing dependent variable. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Training', 'R&D', and 'Advertising' refer to expenditures on training, R&D, and advertising. 'Cash' is the sum cash assets and marketable securities. Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. * = 10% level, ** = 5% level, *** = 1% level.

Dependent Variable	Top 5 Chaebol	Top 6-30 Chaebol	Owner-ship Conc.	Owner. Conc. * Top 30	Log of Total Assets	Debt / Assets	Training / Assets	R & D / Assets	Cash / Assets	Advertis ing / Assets	Market Share %	# of Firms	R-Sq.
Avg. Net Equity / Assets (1998-2000)	1.96 *	0.98	-0.93 *	-2.34								2570	0.002
	(1.14)	(1.00)	(0.53)	(2.93)									
	3.22 **	1.72 *	-1.66 **	-2.27	-0.55 **	2.04 **						2570	0.006
	(1.24)	(0.98)	(0.72)	(2.65)	(0.26)	(0.82)							
	3.28 **	1.69 *	-1.55 **	-2.59	-0.57 **	2.37 **	29.48	119.06	-4.45 **	3.99	0.004	2570	0.011
	(1.26)	(0.98)	(0.66)	(2.54)	(0.25)	(0.94)	(55.67)	(91.77)	(1.92)	(6.30)	(0.006)		
Net Equity Flows / Assets (1998 ONLY)	2.18 **	-1.26	-0.67	3.83								2570	0.007
	(0.76)	(0.79)	(0.42)	(7.36)									
	2.46 **	-1.14	-1.14 **	3.19	-0.20	3.66 ***						2570	0.028
	(0.90)	(0.80)	(0.51)	(7.09)	(0.17)	(0.98)							
	2.54 **	-1.11	-1.11 **	2.60	-0.22	3.79 ***	25.29	27.94	-4.24 **	15.82	-0.001	2570	0.035
	(0.91)	(0.74)	(0.51)	(6.50)	(0.18)	(0.98)	(65.08)	(19.95)	(1.73)	(10.18)	(0.007)		
Net Equity Flows / Assets (1999 ONLY)	4.46 **	3.72 **	-0.71	-4.95 *								2570	0.018
	(2.11)	(1.33)	(0.44)	(2.76)									
	4.59 **	3.79 **	-0.89	-5.16 *	-0.09	1.28						2570	0.020
	(2.12)	(1.37)	(0.60)	(2.73)	(0.17)	(0.99)							
	4.43 **	3.69 **	-0.84	-5.70 **	-0.14	1.41	65.11	31.03 *	-2.35	3.06	0.017	2570	0.023
	(2.19)	(1.36)	(0.60)	(2.80)	(0.18)	(0.99)	(64.95)	(18.21)	(2.83)	(9.59)	(0.011)		
Net Equity Flows / Assets (2000 ONLY)	-0.78	0.47	-1.40	-5.89								2570	0.000
	(1.51)	(2.06)	(1.41)	(4.21)									
	2.60	2.52	-2.94	-4.85	-1.37 *	1.19						2570	0.002
	(1.76)	(1.94)	(1.92)	(3.87)	(0.72)	(1.73)							
	2.86 *	2.50	-2.71	-4.66	-1.34 *	1.92	-1.97	298.22	-6.75	-6.90	-0.004	2570	0.005
	(1.72)	(1.94)	(1.73)	(4.02)	(0.70)	(2.20)	(125.73)	(275.71)	(4.48)	(8.46)	(0.011)		

Appendix Table 1 -- Definition and Source of Variables

All variables except the price index and chaebol indicators are obtained from either the NICE financial dataset or the NICE ownership dataset. Numbers given in parentheses represent the actual NICE code for that particular variable.

Financial Flow Variables

Gross Bond Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross bond flows = "Increase in debentures payable" (_43121). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Gross Equity Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross equity flows = "Increase in capital stock" (_43140) + "Payment of margin for new stock offering" (_43150) + "Increase in Paid-in capital in excess of par values" (_43161). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Gross Loan Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Gross loan flows = "Increase in short-term borrowings" (_43111) + "Increase in long-term borrowings (Foreign Currency)" (_43122). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Bond Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net bond flows = Gross bond flows - "Redemption of debentures payable by purchase" (_43521). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Equity Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net equity flows = Gross equity flows - "Decrease in capital stock" (_43550). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.
Net Loan Flows	Constructed using the 'cash flows from financing activities' section of the NICE financial data set. Net loan flows = Gross loan flows - "Redemption of short-term borrowings" (_43511) - "Redemption of long-term borrowings (foreign currency)" (_43522). All missing values were assumed to be zeros so long as at least one other financial cash flow variable was non-missing for that given firm-year observation.

Ownership Variables

Control-Ownership Rights Gap	This variable is obtained directly from Sung Wook Joh (JFE, 2003), who creates the variable using the ownership data provided by NICE. For each firm, the NICE ownership data lists the largest eight shareholders and their direct ownership stake (in percent) of that firm. 'Control-Ownership Rights Gap' is calculated by summing over the ownership stakes for all of the largest eight shareholders and than subtracting 'ownership concentration' (see below for construction of this variable). In all regressions, this variable is given as a fraction rather than a percent.
Ownership Concentration	This variable is obtained directly from Sung Wook Joh (JFE, 2003), who creates the variable using the ownership data provided by NICE. For each firm, the NICE ownership data lists the largest eight shareholders and their direct ownership stake (in percent) of that firm. 'Ownership concentration' is calcuted by simply summing the ownership stakes for "personal" holdings among the top shareholders. All institutional shareholders (financial institutions and non-financial corporations), foreign owners, goverment, and employment stock ownership stakes are excluded from this calculation. In all regressions, this variable is given as a fraction rather than a percent.

Appendix Table 1 Continued

Chaebol Indicators	
Top 5 Chaebol Indicator	The top 5 chaebols are determined using the Korean Fair Trade Commision's (KFTC) annual publication of the largest 30 chaebols based on total assets. The Top 5 Chaebols indicator in the regressions uses the 1996 KFTC listing. For firms associated with a top 5 chaebol in 1996, the indicator equals "1", while the indicator equals zero for all other firms. The top 5 chaebols are Hyundai, Samsung, Daewoo, SK, and LG.
Top 6-30 Chaebol Indicator	The top 6-30 chaebols are determined using the Korean Fair Trade Commision's (KFTC) annual publication of the largest 30 chaebols based on total assets. The Top 6-30 Chaebols indicator in the regressions uses the 1996 KFTC listing. For firms associated with a top 6-30 chaebol in 1996, the indicator equals "1", while the indicator equals zero for all other firms.
Firm Characteristics	
Advertising Expenditures	Equals the NICE financial dataset variable "Advertising Expense"(_24730). All missing values are assumed to be zeros.
Cash	Calculated using the NICE financial data on current assets. Cash = "Cash" (_11111) + "Marketable Securities" (_11120). All missing values are assumed to be zeros.
Debt Ratio	= Total Liabilities / Total Assets. Missing values are left missing.
Market Share	Calculated using the NICE financial dataset varialbe "Total Sales" (_21000). Missing total sales are assumed to be zeros. The market share is calculated using the four digit industry codes provided by NICE.
R&D Expenditures	Calculated using the NICE financial data on expenses. R&D expenditures = "R&D Costs" (_24780 + _24765) + "Usual R&D Expenses" (_24770). All mising values are assumed to be zeros.
Total Assets	Equals the NICE financial dataset variable "Total Assets" (_14900). Missing values are left missing.
Total Liabilities	Equals the NICE financial dataset variable "Total Liabilities" (_16900). Missing values are left missing.
Training Expenditures	Equals the NICE financial dataset variable "Training Expense" (_24440). All missing values are assumed to be zeros.
Profit Variables	
Net Income	Calculated using the NICE financial dataset variable "Net Income [or loss] Before Income Taxes" (_29000). According to Joh (2003), the accounting definition of net income is ordinary income minus extraordinary items.
Ordinary Income	Calculated using the NICE financial dataset variable "Ordinary Income [or loss]" (_27000). According to Joh (2003), the accounting defintion of ordinary income is operating income (sales minus the cost of sales, selling expenses, and administrative expenses) minus interest payments plus dividends and gains on securities.
Price Index	The NICE financial dataset reports nominal values. These nominal values were indexed for inflation using the Consumer Price Index (CPI) issed by the Korean Central Bank. The base year is 2000.

Appendix Table 2 -- Oberservations Dropped and Changes in Top 30 Chaebol Definitions

	1996	1997	1998	1999	2000
Panel A -- Number and Type of Observations Available					
Total Number of Firms in NICE dataset	**6975**	**7877**	**7574**	**8950**	**8429**
Firms with Non-missing Financial Flows [1]	5276	6408	6022	7628	7551
Firms with 1996 Ownership Data Available	**3422**	**3327**	**3033**	**3042**	**2855**
Firms associated with a Top 5 Chaebol in 1996	55	55	54	52	54
Firms associated with a Top 6-30 Chaebol in 1996	112	111	103	98	95
Firms in a Balanced Panel (1996-2000)	**3883**	**3883**	**3883**	**3883**	**3883**
Ownership Data Available & Balanced Panel (1996-2000)	2575	2575	2575	2575	2575
Firms associated with a Top 5 Chaebol in 1996	52	52	52	52	52
Firms associated with a Top 6-30 Chaebol in 1996	87	87	87	87	87
Panel B -- Changes in the Top 30 Chaebol Definitions					
NICE firms that exit a "1996 Top 30 Chaebol" during 1997-1998	3	3	3	3	2
Number with both ownership & financial data available [2]	*1*	*1*	*0*	*0*	*0*
NICE firms that enter a "1996 Top 30 Chaebol" after 1996	14	16	18	38	39
Number with both ownership & financial data available [3]	*7*	*7*	*6*	*6*	*5*
NICE firms associated with a Top 30 chaebol ONLY after 1996	n.a.	79	136	161	155
r *Number with both ownership & financial data available* [4]		*34*	*59*	*70*	*53*
"1996 Top 30 Chaebol" firms no longer in 'Top 30' due to chaebol bankruptcy	n.a.	8	12	13	23
Number with both ownership & financial data available [5]		*5*	*4*	*4*	*13*

[1] Financial flows are calculated by replacing missing values with zeros so long as at least one other financial cash flow in that particular firm-year observation is non-missing.

[2] There is no need to worry about these firms since none of them have both ownership & financial data.

[3] These firms are dropped from our baseline regressions. Our results are robust to their inclusion as either a "Top 30 Chaebol" or as a "non-chaebol" firm.

[4] These firms are not dropped from our baseline regressions but our results are robust to their inclusion as a "Top 30 chaebol".

[5] Three of the top 30 chaebols (Han Bo #14, Sammi #26, Kuk Dong #28) drop out of the top 30 in 1997 due to bankruptcy. Kia #8 and Hanil #27 drop out beginning in 1998 because of bankruptcy. Hanla #16 and Haitai #25 drop out beginning in 2000 because of bankruptcy. Daewoo #3 does not officially drop out of the top 30 until 2001 because of bankruptcy (and hence, is not included in these numbers). Dropping these firms (along with Daewoo) does not affect our results.

Appendix Table 3: Post-Crisis Net Income, Chaebol Affiliation & Ownership Concentration -- With Chaebol Interactions (Balanced Panel)

The table reports coefficients from firm-level regressions of post-crisis net income onto pre-crisis firm characteristics using OLS with standard errors clustered around chaebol affiliation. Only firms in a 1996-2000 balanced panel were included. Dependent variables are the post-crisis ratio of net income over total assets, in percentage terms. All RHS variables are measured with respect to 1996 levels. For yearly regressions, all firms with non-missing observations are included. Regressions that average over 1998-2000 use all firms with at least one post-crisis, non-missing dependent variable. Ownership concentration is Joh's sum of personal shareholdings using the largest eight shareholders identified by NICE. Top 5 and Top 6-30 chaebol indicator variables are determined using the 1996 KFTC listing of the top 30 chaebols. Firms entering a top 30 chaebol from 1997-2000 and firms that exit a chaebol from 1997-98 are dropped. 'Debt' refers to total liabilities. 'Training', 'R&D', and 'Advertising' refer to expenditures on training, R&D, and advertising. 'Cash' is the sum cash assets and marketable securities. Market share is measured using 4-digit industry codes. Standard errors are reported in parentheses. *

Dependent Variable	Top 5 Chaebol	Top 6-30 Chaebol	Owner-ship Conc.	Owner. Conc. * Top 30	Log of Total Assets	Debt / Assets	Training / Assets	R & D / Assets	Cash / Assets	Advertis ing / Assets	Market Share %	# of Firms	R-Sq.
Avg. Net Income / Assets (1998-2000)	-0.91	1.85	6.53 *	5.96								2570	0.000
	(8.45)	(5.00)	(3.36)	(10.30)									
	12.57	11.13	9.63	29.45	-2.98 **	-90.5						2570	0.028
	(13.98)	(10.20)	(7.41)	(25.89)	(1.29)	(76.62)							
	14.31	9.28	6.37	31.12	3.69	-81.1	1636.3	-57.42	-1054	-7.55	-1.131	2570	0.153
	(18.61)	(8.68)	(4.22)	(31.15)	(4.80)	(59.09)	(1391.7)	(182.98)	(924)	(35.36)	(0.964)		
Net Income / Assets (1998 ONLY)	4.62 **	-2.08	7.10 ***	-0.22								2570	0.011
	(1.72)	(5.02)	(1.56)	(13.77)									
	11.69 ***	2.44	5.90 ***	6.16	-2.33 ***	-18.2 ***						2570	0.050
	(2.11)	(5.08)	(1.54)	(12.61)	(0.50)	(2.34)							
	11.06 ***	2.09	5.96 ***	5.17	-2.46 ***	-18.1 ***	256.3	-9.75	-4.04	-4.26	0.043	2570	0.051
	(2.04)	(5.07)	(1.50)	(13.02)	(0.54)	(2.38)	(188.4)	(78.37)	(15.36)	(14.02)	(0.030)		
Net Income / Assets (1999 ONLY)	-3.97	-2.65	2.95 ***	2.41								2570	0.008
	(6.73)	(2.68)	(0.89)	(9.99)									
	1.41	0.73	1.59 *	6.35	-1.89 ***	-9.37 ***						2570	0.040
	(6.07)	(2.80)	(0.90)	(9.54)	(0.44)	(2.23)							
	1.24	0.61	1.81 **	6.25	-2.00 ***	-9.38 ***	252.7	43.18	22.24	3.69	0.015	2570	0.045
	(6.07)	(2.80)	(0.88)	(9.59)	(0.49)	(2.15)	(158.2)	(46.47)	(29.76)	(10.03)	(0.032)		
Net Income / Assets (2000 ONLY)	-3.38	10.27	9.52	15.70								2570	0.000
	(19.72)	(12.33)	(9.73)	(19.12)									
	24.60	30.22	21.41	75.84	-4.72	-244.0						2570	0.023
	(39.12)	(29.49)	(21.95)	(75.66)	(3.71)	(228.1)							
	30.62	25.14	11.35	81.94	15.54	-215.8	4400.0	-205.69	-3181	-22.09	-3.452	2570	0.153
	(52.63)	(26.80)	(12.33)	(93.26)	(14.24)	(175.5)	(4017.0)	(515.44)	(2746)	(100.4)	(2.867)		