Corporate Governance and Firm Profitability: Evidence from Korea before the economic crisis

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Abstract

This study examines how ownership structure and conflicts of interest among shareholders under a poor corporate governance system affected firm performance before the crisis. Using 5,829 Korean firms subject to outside auditing during 1993-1997, the paper finds that firms with low ownership concentration show low firm profitability, controlling for firm and industry characteristics. Controlling shareholders expropriated firm resources even when their ownership concentration was small. Firms with a high disparity between control rights and ownership rights showed low profitability. When a business group transferred resources from a subsidiary to another, they were often wasted, suggesting that "tunneling" occurred. In addition, the negative effects of control-ownership disparity and internal capital market inefficiency were stronger in publicly traded firms than in privately held ones.

JEL classification code: G3

Key words: corporate governance, ownership, profitability, shareholder expropriation, business group

1. Introduction

Many countries that suffered during the recent economic crises in Asia and other emerging markets had weak legal environments and poor governance systems. This observation has triggered much discussion on the importance of corporate governance. For example, Johnson, Boone, Breach, and Friedman (2000) show that countries with weak legal protections suffered greater exchange rate depreciation and severer stock market declines during the crisis. Using firm level data, Mitton (2002) shows that corporate governance measures, such as high disclosure quality and concentrate ownership, affected stock market valuation during the crisis. Lemmon and Lins (2002) show that, during the crisis, firms showed low performance when their controlling managers had more control rights than ownership rights.

Most prior research has focused on the effects of corporate governance structure *during* the crisis. In contrast, this study examines its effects *before* the crisis. Aghion, Bacchetta, and Banerjee (2000) and Krugman (1999) argue that the financial distress of firms helped cause the crisis. If poor corporate governance helped lower firm value and financial survivability before the crisis, it arguably increased the economy's aggregate vulnerability.

This study examines whether a firm's ownership structure affected its performance before the crisis. Using ownership and financial data of firms in a country that experienced the crisis, I examine whether owners with more control rights than ownership rights expropriated firm resources before the crisis.

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When controlling shareholders' control rights exceed their ownership rights they have an incentive to expropriate firm resources, as their private benefits exceed their costs. Furthermore, expropriation is more likely when the disparity between control and ownership is large and when their position is secure. Firms experiencing greater expropriation of resources likely show lower performance.

I also investigate whether these effects are stronger in business groups. Controlling shareholders in business groups can maintain their control with the help of indirect pyramidal ownership (La Porta, Lopes-de-Silanes, and Shleifer (hereafter referred to as LLS), 1999; Claessens, Djankov, and Lang, 2000). These controlling shareholders therefore have greater incentives and means to expropriate firm resources than their counterparts in independent firms. In addition, firms affiliated with business groups can suffer more, as their controlling shareholders have more tools to divert firm resources through the transfer of assets from one subsidiary to another. Lamont (1997), Shin and Stulz (1998), Scharfstein and Stein (2000), and Scharfstein (1998) argue that multidivisional firms overinvest capital in weak divisions and underinvest it in stronger ones. This study examines whether business groups have lower firm profitability than independent firms do. This study also identifies a mechanism through which controlling shareholders can waste firm resources --investment in affiliated firms.

I used 5,829 Korean firms subject to outside auditing during the pre-crisis period of 1993-1997; I have selected the Korean case for the following reasons. Many have argued that Korea's poor corporate governance system helped cause the 1997 crisis. Moreover, the Korean economy can be characterized by the prevalence of business groups (*chaebols*) that consist of legally independent, horizontally and vertically distributed firms. According to Joh (2001a), more than 60% of Korean firms subject to outside auditing belong to business groups (including small ones). Chung and Yang (1992) report that the largest 30 *chaebols* produced 35.4% of total output and 16.3% of GDP in 1989, respectively. The OECD (1998) reports that the top 30 *chaebols* accounted for 40.2% of the value added in the manufacturing sector in 1995.

A cross-sectional, time-series country analysis can be more advantageous than cross-country analyses. A country analysis avoids endogeneity problems. Cross-country analyses can also underestimate the importance of country-specific laws. This study examines the performance of firms operating with the same legal institutions, corporate governance environments, macro- and developmental economic stages, accounting standards, etc. Firms in the same country face the same legal protection and institutional constraints, or lack thereof; so a country analysis can avoid the endogeneity problems between ownership structure and institutional environments. In particular, many studies have shown that differences in legal institutions explain much of the cross-country ownership differences (La Porta, Lopes-de-Silanes, Shleifer, and Vishny (hereafter referred to as LLSV) 1997, 2000, 2002). For example, in Korea until 1994, by article 200 of the security exchange law only existing incumbent controlling shareholders were allowed to hold more than 10% of shares. In addition, by law foreign ownership was restricted until the end of 1997; foreign individual investors were forbidden to hold more than 7% of shares, and foreign ownership as a group could not exceed 26% of total shares. Together, these laws protected the incumbent controlling shareholders from outside investors.

Many cross-country studies likewise do not account for important, country-specific laws that affect measures of ownership and control rights. Consider the Korean law requiring "shadow voting" and a mandatory tender offer, for example. Korean financial institutions were legally forbidden from affecting outcomes in corporate voting decisions ("shadow voting"). Also, anyone acquiring 25% of a firm's shares had to tender an offer on at least 50% of its shares. This mandatory tender offer protected incumbent controlling shareholders from plurality ownership takeovers. Moreover, both hostile and foreign takeovers were prohibited until 1998. As these laws reduced the threshold shareholding needed to control a firm, they helped Korean controlling shareholders maintain their control despite their small ownership stakes.

This study measures firm performance through its profitability. For this analysis of Korean data, accounting profitability is likely a better performance measure than stock market-based measures for at least three reasons. First, researchers have shown some market inefficiencies even in the most developed countries (De Bondt and Thaler, 1985, 1987; Lo and MacKinlay, 1988; Conrad and Kaul, 1998). Developing countries also show stock market inefficiency.[1] Thus, stock prices in Korea are not likely to

[1] For some evidence of inefficiency in emerging markets, see Butler and Malaikah (1992), and Kim and Singal (1997).

reflect all available information. Second, Mossman, Bell, Swart, and Turtle (1998) show that a firm's accounting profitability is more directly related to its financial survivability than its stock market value is. Many studies use accounting measures to predict bankruptcy (Altman, 1968; Takahashi, Kurokawa and Watase, 1984) or financial distress (Hoshi, Kashyap and Sharfstein; 1991). Third, accounting measures allow us to evaluate the performance of privately held firms as well as that of publicly traded firms.

The results show that a firm's profitability is lower when the controlling family's ownership is lower, controlling for firm, industry, and macro-economic effects. Likewise, firm profitability was low for firms when the difference between control rights and cash flow rights was high. The paper also provides some evidence of nonlinearity of ownership effects on firm profitability. Independent firms outperformed firms affiliated with large business groups. In addition, resources transferred from firms in business groups to affiliated firms lowered firm profitability. Moreover, negative effects of control-ownership disparity and internal capital market inefficiency were stronger in publicly traded firms than in those privately held.

These results contrast with Lemmon and Lins' (2002) study showing no significant ownership effects on the changes in Tobin's Q before the crisis in East Asian countries. The results likely differ because this study uses a better detector of financial distress (accounting profitability), accounts for more country-specific factors, controls for more firm and industry characteristics, examines longitudinal data, and uses continuous control and ownership rights variables instead of a dummy variable. (See the data section for more details). In addition, lower performance of large *chaebols* contradicts Khanna and Palepu's (2000) recent argument that firms affiliated with large diversified business groups perform better than independent firms in emerging markets. This result suggests that the advantages of business groups disappear while their disadvantages may increase as the economy develops further.

The paper is organized as follows. I briefly discuss Korean corporate sector problems before the crisis. Then I discuss ownership structure and the determinants of firm profitability. Next, I describe the data used in the study. Finally, I present and discuss the results.

2. The crisis and corporate sector problems

High debt-equity ratios and low profitability in Korean firms persisted for many years, unobstructed by a weak corporate governance system. Together, these factors helped increase the vulnerability of the corporate sector before the 1997 economic crisis.

Before the Korean crisis, the corporate sector showed very high debt-equity ratios and low profitability. In 1997, the average debt-equity ratio of Korean firms far exceeded that of other countries (Korea, 396%; U.S., 154%; Japan, 193%; and Taiwan, 86%).[2] As Joh (2001b) shows, the average debt-equity ratio of Korean firms has been very high for a long time. It did not sharply increase in recent years.

With high debt-equity ratios, Korean firms were expected to yield high profitability on their equity. Yet, the average rate of return on equity was often *lower* than the prevailing interest rates for loans (see Figure 1). The return on capital fell short of its opportunity cost for almost 10 years before the crisis. While the average profitability was much lower in 1996 and in 1997 compared to the opportunity cost and compared with previous years, there does not appear to be a sudden drop when other factors are controlled for. Moreover, variation across firms for 1996 and for 1997 does not seem to be different in a systematic way than in earlier years (see Section 6.2). When firm-specific factors, industry-specific factors, and macro economic conditions are controlled for, profitability has been declining over time (see Section 6.3). Krueger and Yoo (2001) show that corporate performance has deteriorated over time. They also showed that the rate of return on assets (ROA) of the Korean manufacturing sector has been lower than that of other countries, such as Japan, Germany, the United States, and Taiwan. Such chronic low profitability suggests that, on average, capital was wasted on unprofitable projects.

<insert Figure 1 around here>

Both the external and internal components of Korea's corporate governance system failed to provide sufficient monitoring and discipline to end this waste (Joh, 2001b). Krueger and Yoo (2001) do not examine whether and why there has been a large variation across firms. Joh (2001b) argues that unlike

[2] For Taiwanese firms, the figure is based on 1996 data. Source: Bank of Korea's Financial Statement Analysis for 1997.

small firms, large firms faced few, if any, exit threats. Through repeated rescues of weak large firms, governments implicitly guaranteed large firms. Korean laws protected incumbent controlling shareholders. By prohibiting both hostile and foreign M&As. Also, anyone acquiring 25% of a firm's shares had to tender an offer on at least 50% of its shares, this mandatory tender offer virtually prevented plurality ownership takeovers. Furthermore, opaque accounting and management prevented banks and investors from receiving accurate firm information. Internal governance systems did not properly monitor firm management either. For example, controlling shareholders selected most of the directors on the board (including outside directors) (see Jun and Gong, 1995; Seoul National University Management Research Institute, 1985). Consequently, outside directors rarely opposed agenda items and often did not attend meetings regarding major transactions with controlling shareholders.[3]

This combination of high debt-equity ratios and low profitability was not sustainable. Six of the thirty largest business groups (c*haebols)* went bankrupt before the currency crisis,[4] triggering a cascade of nonperforming loans. Starting with the default by Hanbo (ranked #14 in 1995) in January 1997, a series of large *chaebols*' defaults raised suspicion regarding the conglomerates' survival and the fundamental soundness of the corporate sector. Due to their size and importance, the failure of these *chaebols* devastated the economy. Their failures led to a series of subcontractor bankruptcies and sharply increased the number of nonperforming loans. By the end of 1997, 6.7% of all loans were nonperforming loans, totaling 64.7 trillion won (over $45.6 billion) according to the end-of-year exchange rate, 1,415 won per dollar. By June 1998, over 10% of all loans were nonperforming loans (Financial Supervisory Commission, Various Press Releases.). These nonperforming loans severely weakened many banks and eventually provoked the liquidity crisis.

3. Ownership structure of Korean firms

The largest shareholder, usually the founder, typically controls a Korean firm (Seou National University Management Research Institute, 1985; Lim, 1989). In over 80% of large firms, the largest and controlling shareholder or family members are among the top executives (Claessens, Djankov, and Lang, 2000). The other 20% are likely to be state-controlled enterprises and financial institutions. Even when a hired professional CEO manages the firm, his decision-making power and scope are often quite limited Seoul National University Management Research Institute, 1985).

In large firms, Korean controlling shareholders and their families often own little equity, forming a controlling minority structure as described by Bebchuck, Kraakman, and Triantis (1999). As Table 1 shows, the largest shareholder and family of a publicly traded firm owns less than 31.7% of shares on average (less than 13% of asset-weighted shares). In contrast, controlling shareholders of privately held (private) firms own 49.5% of shares on average.

<Insert Table 1 around here>

Despite their low ownership, controlling shareholders in publicly traded firms maintain control for at least two reasons. First, ownership among individual shareholders is dispersed. Large firms in Korea often have more dispersed ownership than those in most other East Asian countries (LLS, 1999; Claessens, Djankov, and Lang., 2000). In 1997, the aggregate individual ownership was about 40% of shares. More than 95% of all shareholders were small individual shareholders holding less than 1% of total shares. More than 80% of all shareholders owned less than 1,000 shares. Most individual shareholders owned less than 500 shares. Aggregate individual ownership has been large but declining over time, from 60% in the 1980s to less than 40% in 1997 (Korea Stock Exchange, 1999). As most shareholder rights required

[3] Despite the introduction of new rules regarding directors after the economic crisis, Joh (2001b) shows that outside directors routinely approved agenda items (over 99%). Outside directors rarely attended meetings regarding transactions with controlling shareholders. The attendance rate was lower than 37%. For more information on outside directors, see Joh (2001b).

[4] In 1997, six of the 30 largest conglomerates went bankrupt: Hanbo, Sammi, Jinro, KIA, Haitai, and New Core. Their default dates were January 23, March 19, April 21, July 15, November 1, and November 4, respectively.

at least 5% ownership, these small shareholders could not easily oppose the controlling shareholder.

Second, institutional shareholders did not monitor firm activity, despite owning over 40% of the shares.[5] Banks, virtually controlled by the government, held around 10% of listed firm shares. Other financial institutions owned more than 10%. These included insurance companies, security firms, and investment trust companies. The "shadow voting" rule forbade all financial institutions from voting on firm decisions.[6] Nonfinancial corporations held more than 20% of shares. Most nonfinancial corporation ownership consisted of cross-holding or interlocking ownership of affiliated firms. Thus, nonfinancial institutional investors often protected the incumbent controlling shareholder from potential outside threats.

Using interlocking ownership, controlling shareholders of business groups (*chaebols*) maintained control despite owning even less than their counterparts in independent firms. Table 1 shows that the average controlling shareholder ownership stake was 29.2% for firms affiliated with business groups. The average ownership concentration of controlling shareholders of the 70 largest *chaebols* was 17.1%. Within the largest *chaebols*, larger firms showed lower ownership. For example, the asset-weighted average ownership for the 70 *chaebol*-affiliated firms was 9.9%. Direct ownership understates the true controlling shareholders' ownership since it does not take into account their stakes in other affiliated firms that hold shares of the firm. However, as the overall controlling shareholders' ownership in a group is small, the difference is also small.

The controlling shareholder controlled *chaebol*-affiliated firms through extensive interlocking institutional ownership, including many cross-holdings. Direct interlocking ownership, in which firm A owns firm B and firm B owns firm A, is illegal, so *chaebol*-affiliated firms used complex, pyramidal, or circular patterns of institutional interlocking ownership. Several *de facto* holding firms (holding companies were not allowed until 1998) owned a large portion of affiliated firms' stock. The indirect ownership and institutional ownership that the controlling shareholders in business groups essentially controlled was 32.5%. In particular, for the 70 largest *chaebol*-affiliated firms, controlling shareholders essentially controlled over 43.5%.

In short, shareholders exercised control far beyond their ownership stake. They exploited dispersed ownership and inadequate monitoring by institutional shareholders. Moreover, controlling shareholders in *chaebols* maintained control with even less ownership by exploiting affiliated firms' interlocking ownership.

4. Determinants of firm profitability

In firms with high disparities between control and ownership rights, conflicts of interest among shareholders can affect performance. A firm's organizational structure can exacerbate these conflicts. Other factors that affect firm profitability include firm attributes such as financial structure, size, market share, and business strategy. Industry and macro-economic attributes are also included. For a brief summary of how size, industry attributes, and firm attributes (such as market share and business strategy) affect firm performance, see Martin (1993).

4.1 Control-ownership disparity

In a firm with a high control-ownership disparity, a controlling shareholder exercises control but owns only a small fraction of the firm's cash flow. Bebchuck, Kraakman, and Triantis (1999) call it a controlling minority structure. LLSV (2002) find that this ownership structure is widespread around the world. In this firm, the controlling shareholder's benefit from appropriating firm resources exceeds its cost. As a result, these controlling shareholders have an incentive to pursue their private benefits at the expense of other shareholders. Jensen and Meckling (1976) argue that this tendency increases when the controlling shareholder owns less. Morck, Shleifer, and Vishny (1988) argue that such effects do not have a monotonic relationship. In general, as the control-ownership disparity increases, controlling shareholders appropriate more firm resources (Shleifer and Vishny, 1997). Thus, conflicts of interest among

[5] In 1997, the government owned 6.6%, and foreigners owned 9.1%. (Korea Stock Exchange; 1999).

[6] Depositors and investors ultimately own shares owned by financial institutions. Votes by financial institutions are allocated in the same proportion as the nonfinancial institution votes. This rule was abolished in 1998.

shareholders can lower firm performance. Using data from 27 countries, LLSV (2002) show that firms with high ownership concentration show high Tobin's Q. Lemmon and Lins (2002) show that firms with greater separation of control and ownership rights had severer firm devaluation (as measured in Tobin's Q and stock market returns) during the crisis. Mitton (2002) shows that firms with high disclosure quality and ownership concentration showed better stock market performance during the Asian economic crisis.

4.2 Firm organization

Firms affiliated with business groups are prevalent in emerging markets because they have advantages over independent firms through intragroup trading and internal capital markets (Leff, 1978; Hubbard and Palia, 1999; Khanna and Palepu 2000). [1] Leff (1978) argues that business groups in less developed countries appropriate quasi-rents accrued from control of scarce inputs. Through diversification, business groups can reduce risk and uncertainty in firm operations, thereby lowering default and bankruptcy risks. Business groups can reduce Williamsonian transaction costs through intra-group trading (Chang and Choi, 1988), thereby overcoming imperfections in the labor and product markets in less developed economies. Moreover, a business group can exploit its large size to borrow money at a lower cost. It can then operate an internal capital market for its subsidiaries, acting as the headquarters of a multidivision firm.

Yet business groups' advantages can decrease as the economy develops. In a competitive product market, intragroup transactions are less attractive. Without competition, the seller with a captive buyer has less incentive to lower costs and improve quality. Likewise, a developed external capital market erodes the advantage of an internal market. Lamont (1996), Scharfstein (1998), Shin and Stulz (1998), and Scharfstein and Stein (2000) argue that internal capital markets in diversified conglomerates are often inefficient. They claime that these firms overinvest capital in weak divisions and underinvest it in stronger ones. Thus, internal capital markets tend to lower the value of multidivisional, diversified firms. Several studies support these arguments. Wernerfelt and Montgomery (1988), Lichtenberg (1992), and Lang and Stulz (1994) show that the firm value and productivity of specialized firms often exceeds those of diversified conglomerates.

Moreover, a controlling shareholder with uneven ownership of subsidiaries can exploit the internal capital market and intragroup trading for private gain. As business groups provide many opportunities for intragroup transactions, controlling shareholders can expropriate minority shareholders through engaging in "tunneling" (Johnson, La Porta, Lopes-de-Silanies, and Shleifer, 2000). Controlling shareholders of business groups can move away resources for their private benefits, such as self-dealing, and divert resources from one subsidiary in which they own less to firms in which they own more, resulting in inefficient investment.

In sum, a business group's intragroup trading and internal capital market can provide advantages in a less developed economy, but its disadvantages include inefficient capital investment and expropriation by a controlling shareholder with uneven ownership. Furthermore, a developed economy with a competitive product market and an external capital market reduces the advantages of intragroup trading and an internal capital market.

4.3 Financial structure

Past literature has shown mixed effects of debt on firm profitability. Debt affects profitability positively in Hurdle (1974), but negatively in Hall and Weiss (1967) and in Gale (1972). Debt may yield a disciplinary effect when free cash flow exists (Jensen, 1986; Stulz, 1990). A rise in debt increases default risk, firms can reduce wasteful investment and increase firm performance to secure their survival. On the other hand, debt can increase conflicts of interest over risk and return between creditors and equity holders. Facing large debts, equity holders with limited liability may encourage the firm to undertake overly risky projects (Stiglitz and Weiss, 1981).

5. Data

This study uses financial and ownership data from the National Information and Credit Evaluation's

(NICE) database.[7] Each firm gives its financial statement to the Korea Securities Supervisory Board. Upon receiving the financial data from the board, NICE checks the integrity of the data. Financial statements are checked more carefully than ownership information. Ownership information requires special care and attention as relationships of large individual owners are sometimes misreported.[8] As all firms in the same country are subject to the same accounting standards, the potential problems associated with poor accounting practices will likely be smaller than those in cross-country studies. To further reduce the likelihood of these problems, this study only uses firms subject to outside auditing. About 24% of the firms in this data set were publicly traded. In 1997, there were 1,135 publicly traded firms; 776 were listed on the Korea Stock Exchange, and the rest were registered with the Korea Securities Dealers Automated Quotation (KOSDAQ). All the firms used in the analyses had at least 6 billion won in assets in 1997. The data includes 5,829 firms in the standard four-digit Korean industrial classifications between 1993 and 1997. Financial institutions and state-controlled firms are not included.

5.1 Variables

This study measures firm performance through profitability. As discussed earlier, accounting profitability is likely a better performance measure than stock market-based measures for the following reasons. First, stock prices are less likely to reflect all available information when the stock market shows inefficiency. Second, a firm's accounting profitability is more directly related to its financial survivability than is its stock market value. Third, accounting measures allow us to evaluate the performance of privately held firms as well as that of publicly traded firms.

Several accounting profitability measures are used: ordinary income divided by assets, net income divided by assets, and those income variables divided by sales. 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, etc. Net income is ordinary income minus tax and extraordinary items, etc. These profitability measures help address concerns regarding variations in taxes and accounting conventions. In these analyses, the results are similar for all profit measures. Although not reported here, the results also hold for operating income as a profitability measure. Together, these results suggest that accounting distortions, if any, are not significant.

To examine governance effects, Lemmon and Lins (2002) define cash flow rights leverage as the sum of ownership rights and indirect ownership over ownership rights. In their actual analysis, however, they omit information by using a cash flow rights leverage dummy instead of a continuous variable. Furthermore, a leverage ratio can distort the degree of the control-ownership disparity when ownership is very low or very high. I therefore, I use the difference between control rights and ownership rights instead of their ratio. This difference is the same as LLSV's (2002) "wedge".

I also use ownership concentration, because neither the leverage ratio nor the difference variable encompasses all cases that cause control-ownership disparities and shareholder conflicts. They only include cases in which the cash flow rights leverage is greater than unity, i.e., those in which indirect management ownership occurs. Yet, control-ownership disparities can also occur when cash flow rights leverage is unity. For example, the "shadow voting" requirement restricts independent financial institutions' voting rights, so financial institution ownership can facilitate controlling shareholder control. Even without institutional ownership, a controlling shareholder with large ownership can hold more control rights than cash flow rights. As discussed earlier, a controlling shareholder does not face any credible external threat in a weak corporate governance system. Thus, the controlling shareholder can exercise full control over the firm's resources, and the controlling family's ownership concentration can serve as a better control-ownership disparity measure for the Korean firm data.

The ownership data provided by NICE includes the names and shareholdings of the largest individual, family members, and institutional shareholders. I compute the controlling family's direct ownership stake

[7] Financial statements of Korean firms are available from two major credit evaluating firms, NICE (National Information Credit Evaluation) and KIS (Korea Information Service). There are two major sources for ownership information in Korea; one is the Fair Trade Commission data recorded from 1987, but this includes ownership information for *chaebol*-affiliated firms only, and releases the information at the aggregate level for each *chaebol*. The other source is information compiled by NICE and KIS.

[8] For example, a person declares no relationship one year and later declares a family relationship with the controlling shareholder of the firm. Therefore, intertemporal consistency of ownership should be checked.

of each firm. The family ownership for all sample firms used in the study is nearly 46%. As shown in Table 1, ownership varies depending on the type of firm. Ownership concentration in publicly traded firms is lower than in privately held firms, and that of firms affiliated with business group is lower than that in independent firms. At the same time, ownership changes over time within a firm, as Table 2 shows.

Business groups are prevalent in Korea. Of the firms used in this study, over 27% belong to large or medium business groups. The main purpose of examining the affiliation status with large business groups is not to explore whether a change in the ranking affects firm profitability, but to evaluate how large business groups perform compared to other firms. While the ranking of business groups varies each year, almost all groups remain in the largest 30 or largest 70 over the time of the study. I select the 70 largest business groups as follows. First, the selection of the 30 largest *chaebols* follows the KFTC classification in 1995 based on the size of their total assets. Using a classification based on the size of other years does not change the results. I then identify 40 additional *chaebols*. These *chaebols* have bank loan restrictions and an equity investment ceiling. Using debt size rather that asset size to select *chaebols* results in nearly the same choices. *Chaebol* equity investment was briefly deregulated between 1997 and 1998. In 1998, regulation was reintroduced, and will go into effect as of 2002. Roughly 12% of all observations belong to the top 70 *chaebols*. In the analysis, "Large 70 *chaebol* dummy" has a value of 1 when the firm is affiliated with one of the 70 largest *chaebols*, and 0 otherwise. I also use the top 30 *chaebols* instead of the top 70, to examine the rigorousness of the results. I include the names of the top 30 groups in the Appendix.

On average, 13% of a Korean firm's assets are not used for production. Instead, firms invest in financial securities, long-term deposits, loans, etc. Firms invest, on average, 4% of their assets in affiliated firms' financial securities. To test the relative efficiency of resource allocation among subsidiaries, financial investments in affiliated and unaffiliated firms are distinguished. "Investment-in-affiliated-firms" and "Investment-in-unaffiliated-firms" are the ratios of these investments over the firm's total assets.

Large firms may benefit from economies of scale, but their advantage may decrease beyond a certain threshold, so the log value of assets (and sales) is used for firm size. To control for capital structure, the analyses include an equity ratio, the firm's equity over its total assets. Other firm attributes are measured through market share, the advertisement over sales ratio, the advertisement over sales ratio, and the export over sales ratio.

<Insert Table 2 around here>

6. Empirical tests and results

This section examines how corporate governance affects firm profitability. In addition to corporate governance, firm profitability can depend on industry attributes and yearly effects, as well as firm attributes such as size, financial structure, market share, and business strategy. Controlling for other factors, I investigate the effects of ownership concentration, control-ownership disparity, and firm organization on firm performance.

The corporate governance systems of specific types of firms may differ. For example, private firms could have weaker corporate governance systems, since they receive less outside scrutiny. As private firms constitute 76% of the total observations, the effects of private firms could dominate the results. Similarly, corporate governance systems of firms affiliated with business groups could differ from those of independent firms. As discussed earlier, controlling shareholders of business group-affiliated firms face few threats to their control, and business groups may pursue joint maximization of the group-affiliated firms. I therefore perform the same tests on three sets of data: all sample firms, only publicly traded firms, and firms affiliated with business groups.

As the study uses a panel data set, I use the industry and time dummies. Schmalensee (1985) shows that industry effects strongly influence accounting profits. Include 281 industry dummies for 4-digit industries to control for unobserved industry-fixed effects. To control for unobserved macroeconomic effects, I use year dummies. Applying within-unit estimation while treating each 4-digit industry as unit, the industry mean of each variable is subtracted from the original equation specification. Each coefficient therefore measures the effect of each explanatory variable's deviation from the industry mean. While coefficients on industry dummies are not calculated, coefficients on time dummies are available upon request.

In addition to using industry dummies, I also conduct tests using firm dummies to control for unobserved firm-specific factors. With firm-fixed effects, we cannot examine the effects of business organization, because a firm's affiliation with top 70 *chaebols* (or top 30) does not change during the study period. After establishing that important results do not change regardless of whether firm dummies or industry dummies are used, I focus on the analysis with industry dummies. The tests show that the results still hold for the top 30 *chaebols* as well. (I have included the results for a few specifications when the 30 *chaebols* are used; other results are available upon request.)

6.1. Impact of controlling shareholders' ownership on firm profitability

Table 3 reports the basic results on how ownership concentration affects firm profitability. The dependent variables are ordinary income to assets and net income to assets. Beginning with ownership as the only explanatory variable, I add other explanatory variable one at a time. Panel A summarizes the results when firm-fixed effects are controlled, and Panel B reports the results when industry-fixed effects are controlled. Each column shows how the results change as an additional explanatory variable is added to the specification.

When firm and year dummies are included, ownership has a positive and significant effect on firm profitability, as shown in Panel A. In both performance measures, firm profitability was largely explained by changes in ownership. Over 70 % of the variance of ordinary income over assets of each firm over time can be explained by the changes of the ownership within the firm. Similarly, the R^2 of the specification when net income to assets is used also exceeds 63%. Including other explanatory variables such as firm size and financial structure does not change how ownership affects firm profitability. When firm dummies are included to control for firm-fixed effects however, the effects of affiliation with business groups cannot be examined. Therefore, after establishing the result that effects of ownership concentration hold even with firm dummies included, I use industry dummies in the rest of the analysis.

In Panel B, industry dummies are included in the specification instead of firm dummies. Still, the coefficient on ownership concentration is positive and significant. Since we use the within-unit estimation, the positive and significant coefficient on ownership concentration shows that when a firm's ownership increases compared to the industry mean, its relative performance compared to the industry mean also increases. The effect of affiliation with a large business group is negative and strong. Including other controlling variables does not change the results.

Both panels show that ownership concentration yields a positive and significant effect when all samples are used. These results suggest that controlling shareholders expropriate firm resources and lower firm profitability when their ownership is low.

<Insert Table 3 around here>

6.2. Yearly regression results

This section examines whether the basic regression results hold for individual years. Table 4 reports the results of the regression on how ownership concentration and business group affiliation affect firm performance each year, controlling for industry fixed effects. In all years except 1994, ownership concentration yields positive and significant effects. The ownership effect is not statistically significant in 1994. It should be noted that the GNP growth rate in 1994 was one of the highest in the 1990s, and the average return on equity in the corporate sector in 1994 exceeded the opportunity cost of capital as shown in Figure 1. The positive effect of ownership is highest in 1997, when the economic crisis hit the Korean economy. The results suggest that the ownership effects are related to the macroeconomic conditions.

These yearly estimation results imply that variation across firms for 1996 and for 1997 do not seem to be different in some systematic way than in earlier years, although average profitability in 1996 and in 1997 was much lower, as shown in Figure 1. The sudden drop in Figure 1 could have been caused in part by a large magnitude of ownership effects and the effect of *chaebol* affiliation. The magnitude of the effects of ownership concentration is greater in 1996 than in earlier years, and greatest in 1997. The results also shows a greater negative impact of being affiliated with large *chaebols* in 1996.

<Insert Table 4 around here>

6.3. Determinants of firm profitability

This section examines whether ownership and firm organization can affect firm performance, controlling for all other factors that affect firm profitability. These factors include firm attributes such as a firm's market share and its business strategy.

Table 5 summarizes the results on determinants of firm profitability. The dependent variables are ordinary income to assets and net income to assets. Panel A uses ownership concentration as an explanatory variable. Panel B uses the difference between control rights and ownership rights (control-ownership) as an explanatory variable. Other explanatory variables include various firm characteristics. Each panel shows the results when the same tests are conducted to (a) all sample firms, (b) only publicly traded firms, and (c) firms affiliated with business groups. Measuring firm profitability through ordinary income ratio over assets or net income over assets yields similar results in the three sets of data.

The results in Panel A show that the earlier results still hold. Adding more firm attributes does not change the effects of ownership concentration and firm organization. Firms with high ownership concentration outperform those with low ownership concentration. For a 1% increase in ownership, all else being equal, ordinary income ratio over assets and net income ratio over assets rose by 0.018 and 0.015 respectively, when all observations are used. As the average ordinary income ratio over assets was 1.2372% and net income ratio was 0.2478%, the effect was substantial. In publicly traded firms and in firms affiliated with business groups, high ownership concentration by controlling shareholders also increases firm profitability. In addition, independent firms outperformed firms affiliated with large *chaebols*. In all three sets of data, the negative impact of *chaebol* affiliation is large. For example, when all sample observations are used, a hypothetical independent firm with mean values from the data would have a positive net income to assets rate, 0.2478%, but a comparable firm in one of the 70 largest *chaebols* would show a loss, -3.0061% at the mean ownership concentration.

In Panel B, firms with a high control-ownership disparity show low profitability. While the three sets of data show all negative effects, the impacts of the difference between control rights and ownership rights on firm profitability are stronger and significant in regressions using publicly traded firms only and using firms affiliated with business groups. In publicly traded firms, a 1% increase in the difference between control rights and ownership rights lowers ordinary income ratio over assets by 0.020 and net income ratio over assets by 0.014, all else being equal. Similarly, in firms affiliated with business groups, the ordinary income to assets ratio is lowered by 0.0086. As before, *chaebol*-affiliated firms show lower profitability in all three sets of data.

In both Panel A and Panel B, other controlling variables also show significant results. A rise in the equity ratio increases profitability. This result has at least two possible explanations. First, severe conflicts can occur between equity holders and creditors when the equity ratio is low. Firms with a very low equity ratio might have taken non-profitable projects on average. Second, the debt disciplinary effect could have been small. The debt disciplinary effect requires free cash flows, and Korean firms did not have much free cash flow, as observed earlier.

Table 5 shows that the coefficients on the time dummies decline as time passes after the peak of 1994 when 1997 is used as a base year. Although other tables do not show the coefficients on time dummies, the overall directions remain the same.

<Insert Table 5 around here>

The positive effect of ownership concentration in Panel A and the negative effect of the control-ownership disparity in Panel B imply that conflicts among shareholders lower firm profitability. Contrary to the lack of significant effects on the changes in Tobin's Q studied in Lemmon and Lins (2002) or stock returns in Mitton (2002), these results suggest that firm performance suffered due to minority shareholder expropriation *before* the crisis. These results suggest that the effects of shareholder conflicts under a poor corporate governance system occur regardless of firm attributes.

6.4. Robustness tests

The results above are based on profitability measured in terms of income to assets ratios, and the tests use the top 70 *chaebol* classification. Table 6 reports the main results when we test the same specification with different profitability measures and with more narrowly defined large business groups. In Panel A, I measure firm profitability with the income to sales ratios. At the same time, the size of each firm is controlled by the log value of sales rather than assets. Using accounting income divided by sales does not change the main results. This suggests that the results are robust regardless of the choice of profitability measures.

Panel B shows the results when regression equations include, instead of the top 70 *chaebols*, the top 30 *chaebols* identified by the government in 1995 based on the size. The main results remain the same as before. Furthermore, compared to the results when the large 70 *chaebols* are used, the negative effects of the difference between control rights and ownership rights are stronger and significant. These results show that large business groups affect firm performance negatively, contradicting a recent finding by Khanna and Palepu (2000).

<Insert Table 6 around here>

6.5. Time-varying effects of ownership concentration

This section examines how the macroeconomic condition affects the impacts of controlling shareholders' ownership on firm profitability. A controlling shareholder would have more incentive to divert firm resources when the shareholder expects that the firm will suffer from financial distress. Since firms are more likely to face financial distress when the economy is in recession, controlling shareholders expropriate firm resources more when the economy is growing slowly.

The results summarized in Table 7 show that expropriation depends on the macroeconomic situation. Panel A reports the results when an interaction term between ownership and GNP growth rate of each year is included, and Panel B reports the results when the restriction on the same slope of ownership concentration over time is removed. Each year, the effect of controlling shareholders' ownership concentration can be different.

In Panel A, when all sample firms are used in the analysis, the negative coefficient on the interaction term between ownership and GNP growth rate shows that the effects of ownership concentration are small when the economy is growing fast and become large when the economy is growing slowly. Panel B shows that the coefficient on 1997 ownership concentration is the highest, that on 1993 is the second highest, and those on 1994 and 1995 are small. During the period in this study, the GNP growth rate was 5.5% in 1993, 8.3% in 1994, 8.9% in 1995, 6.8% in 1996, and 5.3% in 1997. The results in Panel B therefore are consistent with the result in Panel A that the coefficient on the interaction term between ownership concentration and GNP growth rate is negative. They are also consistent with earlier results in Table 7 when regression is conducted each year. These results also suggest that the controlling shareholders' expropriation problem is exacerbated during the downturn of the economy.

<Insert Table 7 around here>

6.6. Nonlinearity of ownership effects

The above analyses are based on the restriction that ownership concentration yields a linear effect on firm profitability. Using large U.S. firms, Morck, Shleifer, and Vishny (1988) show that firm value (measured in Tobin's Q and profit rate) first increases, then decreases and increases again as the management ownership increases. This section investigates whether ownership effects on profitability vary depending on the magnitude of ownership. Ownership's nonlinear effects are estimated in two specifications. One specification uses piecewise linear splines from 0-5%, 5-25%, and 25-100%, and the other tries to fit a cubic ownership concentration curve to the data. As shown in Morck, Shleifer, and Vishny (1988), the piecewise linear spline specification is calculated in the following manner. The "ownership concentration 0-5%" variable is the value of the controlling shareholders' ownership if it is less than 5%, and 5% otherwise. Likewise, the "5-25%" variable is the controlling shareholders' ownership minus 5% if it is

greater than 5% but less than 25%. It is 20% if it is greater than 25%, and 0 otherwise. Finally, ownership concentration above 25% is the controlling shareholders' ownership minus 25% if it is greater than 25%, and 0 otherwise.

The results are summarized in Table 8. Panel A tests for ownership's nonlinear effects using piecewise linear splines from 0-5%, 5-25% and 25-100%. In all three sets of data, the results show that profitability declines when ownership concentration is less than 5%, increases sharply between 5% to 25% of ownership, and increases gradually when ownership exceeds 25%. The results in Panel B show a cubic relation between ownership and firm profitability. In all three data sets, the cubic relations show that profitability generally increases as ownership increases. Profitability declines when ownership is extremely low or extremely high. The regression estimates a local minimum at 5% ownership and a maximum at 95% ownership.

<Insert Table 8 around here>

In both Panel A and Panel B, an increase in ownership at a lower level appears to be associated with a decrease in firm profitability. The entrenchment effect comes earlier than in the results in Morck, Shleifer, and Vishny. (1988). The difference may come from a poor corporate governance system in Korea. As discussed earlier, incumbent controlling shareholders are protected from outside takeovers due to government regulations, "shadow voting," and mandatory tender offers.

6.7. Expropriation in publicly traded firms

As discussed above, on average, 13% of a Korean firm's assets are not used for production but for financial securities, long-term deposits, loans, etc. Moreover, on average, 4% of their assets are invested in affiliated firms' financial securities. This section investigates how financial investments in affiliated and unaffiliated firms affect firm performance. It is worthy noting that there could be endogeneity issues because firms make investment decisions, which are used as an explanatory variable in the regressions. Future research therefore needs to find a good instrument variable.

Panel A of Table 9 reports the effects of financial investment in affiliated and unaffiliated firms on firm profitability. Panel B reports the results without the restriction that governance problems affect public and private firms in the same way. In both panels, investment in affiliated firms and investment in unaffiliated firms are measured through the ratios of these investments over the firm's total assets.

Panel A shows that financial investment in unaffiliated firms increases profitability, other things being equal. In contrast, financial investment in affiliated firms lowers profitability. Evaluated at the sample's mean value, investment in unaffiliated firms raised net income ratio by 0.056 at the margin. On the other hand, investment in affiliated firms lowered it by 0.026. This result suggests inefficiency of resource allocation among subsidiaries. Panel B summarizes the results when the magnitudes of these problems can vary for each type of firm. A firm's listing status affects overall firm profitability in three ways. The direct effect is measured through the coefficient of the "Public firm" dummy (1 for a public firm, 0 for a private firm). Indirect effects are measured through interaction terms with investment: "Public firm dummy * Investment in affiliated firms" and "Public firm dummy * Investment in unaffiliated firms." When all sample firms are analyzed, increasing controlling shareholder ownership raises firm profitability more for public firms than for private firms. A 1% increase in ownership would increase net income ratio by 0.0537 for public firms and by 0.0103 for private firms. In addition, financial investment in affiliated firms also shows a larger negative impact on profitability in publicly traded firms.

The negative effect of investment in affiliated firms implies that the internal capital markets in business groups were run inefficiently and lowered firm profitability. The results suggest that firm resources were wasted when they were transferred from a publicly traded subsidiary (whose controlling shareholders have low ownership) to another subsidiary. These results also suggest that conflicts of interests among shareholders are generally more serious in publicly traded firms than in privately held firms. Considering the legal independence of subsidiaries, these results are consistent with controlling shareholders' expropriation of firm resources through "tunneling", as discussed in Johnson, La Porta, Lopes-de-Silanies, and Shleifer (2000).

<Insert Table 9 around here>

6.8 Summary and discussion of results

The empirical analysis shows that the poor corporate governance system in Korea had contributed to poor profitability even before the crisis. Firms with lower controlling family ownership or higher differences between control rights and ownership rights showed lower performance. There also exists some evidence of nonlinearity of ownership effects on firm profitability. Morck, Shleifer, and Vishny (1988) show that as controlling ownership increases in U.S. firms, firm performance increases at first, then decreases and then increases again. McConnell and Servaes (1990) show a curvilinear relationship between Tobin's Q and insiders' ownership in U.S. firms. At low levels of ownership, the relation is positive. The Korean case shows that performance goes down first, then increases and decreases again. Even when the ownership concentration is small (below 5%), Korean firms already suffer low profitability. Such an inverse relationship between firm performance and low level of ownership may be related to the generally poor corporate governance system in Korea. Controlling shareholders could exercise their influence even with a low level of ownership concentration. Without much threat from outside, entrenched controlling shareholders and mangers might have engaged in value-destroying behavior with a small ownership stake.

In addition, Korean firms affiliated with business groups in the mid-1990s showed lower profitability than independent firms did. This contradicts Khanna and Palepu's (2000) results in their study of Indian conglomerates and Chang and Choi's (1988) results in their study of Korean firms. Differences in developmental stages of the sample firms in part explain the differences in the results. While this study uses Korean firms from 1993 to 1997, Khanna and Palepu (2000) examine financial performance of Indian firms in 1993, and Chang and Choi (1988) analyze Korean firms between 1975 and 1984. The samples of both studies are drawn from the early development stage of each country. In emerging markets or less developed economies, business groups are better able to use limited resources, through internal capital markets and intragroup trading, to overcome market imperfections. As the economy develops, the potential benefits of overcoming these market imperfections decreases while the cost of agency problems and conflicts of interest between controlling family shareholders and minority shareholders can increase.

Financial investment in affiliated firms also lowered profitability. Moreover, the negative effects of control-ownership disparity and internal capital market inefficiency were stronger in publicly traded firms than in privately held ones. These results hold for all three sets of data; all sample observations, public firms only, and firms affiliated with business groups. Together, these results suggest that conflicts of interest between the controlling shareholder and other shareholders reduce firm profitability.

7. Conclusion

Many argue that poor corporate governance was a major cause of the recent economic crises in emerging markets. While previous studies have shown that poor corporate governance lowered firm performance during the crisis (e.g., Mitton, 2002, Lemmon and Lins, 2002), they have not shown its effects in the years before the crisis. My work addresses this issue by showing how the corporate governance structure affected firm profitability before the crisis. Using detailed information on Korean firms during 1993-1997, a microanalysis of the determinants of firm profitability provides evidence that firms with higher control-ownership disparity showed lower profitability, all else being equal. The paper also shows some evidence of nonlinearity of ownership effects on firm profitability. In addition, firms whose controlling shareholder had more ownership outperformed firms whose controlling shareholder had less ownership. Independent firms outperformed firms affiliated with large business-groups. Moreover, moving resources to affiliated firms further lowered profitability. Such conflicts of interests among shareholders were more serious in publicly traded firms (whose controlling shareholders' ownership were generally small) than privately held firms. Together, these results suggest that controlling shareholders, especially at large *chaebols* and publicly traded firms, exploited the internal capital market for private gain at the expense of other shareholders.

These results suggest that Korea's weak corporate governance system offered few obstacles against controlling shareholder's expropriation of minority shareholders. Firm performance had been

deteriorating over time even before the crisis occurred. Weak corporate governance systems allowed poorly managed firms to stay in the market and resulted in inefficiency of resource allocation despite low firm profitability for many years. Chronic low firm profitability over time is an important issue since it implies that nonperforming loans will increase and weaken the financial sector. Consequently, it would be helpful to examine the overall profitability of the corporate sector in evaluating the soundness of the financial sector and predicting crises. Yet, we still need more studies to examine whether and how poor firm profitability would have increased the possibility of crisis. If further studies support these results, policies that improve a country's corporate governance system can support its aggregate economic growth and stability.

Appendix

Table 10 List of Top 30 business groups *(chaebols)*

This table shows the 30 largest *chaebols* identified each year by the Korea Fair Trade Commission based on the size of the total assets of firms that belong to the same business group.

(as of the end of the year)

Ranking	1993	1994	1995	1996	1997
1	Hyundai	Hyundai	Hyundai	Hyundai	Hyundai
2	Samsung	Daewoo	Samsung	Samsung	Samsung
3	Daewoo	Samsung	LG	LG	Daewoo
4	LG	LG	Daewoo	Daewoo	LG
5	SK	SK	SK	SK	SK
6	Hanjin	Hanjin	Ssangyong	Ssangyong	Hanjin
7	Ssangyong	Ssangyong	Hanjin	Hanjin	Ssangyong
8	Kia	Kia	Kia	Kia	Hanwha
9	Hanwha	Hanwha	Hanwha	Hanwha	Kumho
10	Lotte	Lotte	Lotte	Lotte	Dongah
11	Kumho	Kumho	Kumho	Kumho	Lotte
12	Daelim	Daelim	Doosan	Halla	Halla
13	Doosan	Doosan	Daelim	Dongah	Daelim
14	Dongah	Dongah	Hanbo	Doosan	Doosan
15	Hanil	Hyosung	Dongah	Daelim	Hansol
16	Hyosung	Hanil	Halla	Hansol	Hyosung
17	Dongkuk	Halla	Hyosung	Hyosung	Kohab
18	Sammi	Dongkuk	Dongkuk	Dongkuk	Kolon
19	Halla	Sammi	Jinro	Jinro	Dongkuk
20	Hanyang	Tongyang	Kolon	Kolon	Dongbu
21	Tongyang	Kolon	Tongyang	Kohab	Anam
22	Kolon	Jinro	Hansol	Dongbu	Jinro
23	Jinro	Kohap	Dongbu	Tongyang	Tongyang
24	Dongbu	Woosung	Kohab	Haitai	Haitai
25	Kohap	Dongbu	Haitai	New core	Shinho
26	Kukdong	Haitai	Sammi	Anam	Daesang
27	Woosung	Kukdong	Hanil	Hanil	New Core
28	Haitai	Hanbo	Kukdong	Keopyong	Keopyong
29	Byuksan	Daesang	New Core	Daesang	Kangwon
30	Daesang	Byuksan	Byucksan	Shinho	Saehan

Note: When a group changes its names, the latest name has been used.

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Fig. 1. Profitability of Korean firms from 1967 to 1997

Average ordinary income on equity and average borrowing interest rate of firms covered by the Bank of Korea's annual survey. The survey covers all large firms and uses a stratified random sampling for small firms.

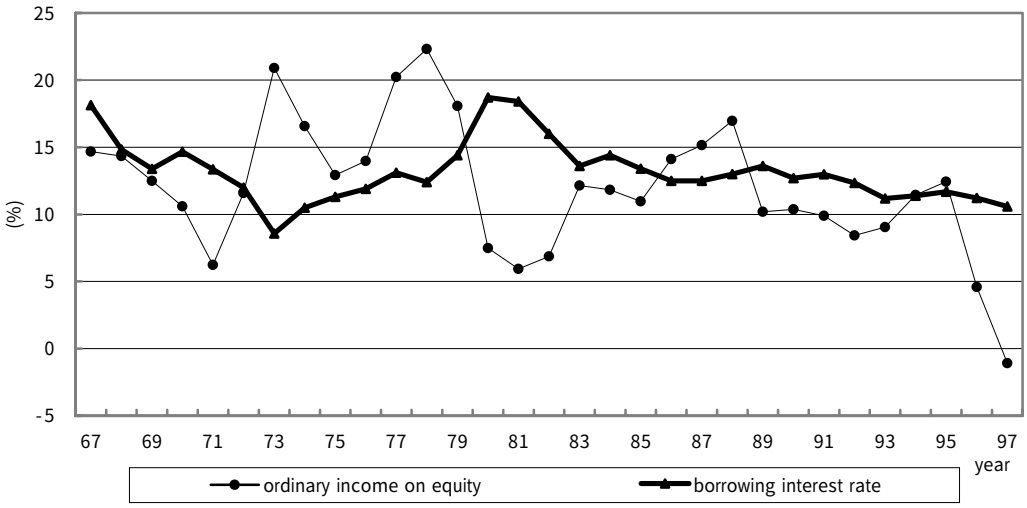

Table 1 Controlling shareholders' ownership stakes

Using the ownership information in the NICE data set, this table shows the largest individual shareholder's and family members' ownership and differences of control rights and ownership rights (control-ownership) of 5,829 firms during 1993-1997. All firms were subject to outside auditing and had assets exceeding 6 billion won in 1997. Of the total sample of 19,497 observations, 24% are publicly traded and 76% are privately held. Independent firms account for 73%, and group affiliated firms account for 27% of total observations. Top 70 large business group affiliated firms (*chaebols*) account for 12%. Panel A reports the simple mean and size-adjusted mean per firm over all years when using firm asset as weight. Panel B reports the average per firm each year.

Panel A:

		Ownership concentration			Difference between control rights and ownership rights		
Type of firms	Num. of obs.	Mean (%)	Standard deviation	Weighted Mean (%)	Mean (%)	Standard deviation	Weighted Mean (%)
All firms	19,497	45.19	34.61	19.65	20.97	33.37	22.25
Publicly traded firms	4,702	31.67	28.10	13.05	15.22	25.54	17.89
Privately held firms	14,796	49.49	35.37	38.02	22.80	35.50	34.36
Independent firms	14,184	51.19	33.35	41.63	19.23	30.74	16.67
Group affiliated firms	5,314	29.20	32.79	12.55	32.45	37.17	23.22
Large *chaebol* affiliated firms	2,385	17.12	26.97	9.91	43.52	38.49	24.16

Panel B:

	Ownership					Difference between control rights and ownership rights				
Type of firms	1993	1994	1995	1996	1997	1993	1994	1995	1996	1997
All firms	43.36	43.65	46.01	46.72	46.32	18.69	20.87	20.86	21.55	23.47
Publicly traded firms	33.48	31.74	32.78	31.31	26.57	13.69	15.02	15.28	15.95	17.33
Privately held firms	49.58	48.02	50.07	50.86	51.10	20.69	23.02	22.58	23.06	24.96
Independent firms	47.33	49.87	51.63	52.34	52.45	14.38	16.35	16.84	17.26	18.73
Group affiliated firms	29.17	29.22	31.31	30.82	21.75	28.52	31.38	31.40	33.69	42.45
Large 70 *chaebol* affiliated firms	17.23	17.32	18.64	17.26	15.37	38.09	42.12	43.87	38.31	49.63

Table 2 Summary statistics

The summary statistics show the time-series average of the cross-sectional statistics for 5,829 firms during 1993-1997 (total 19,497 observations). All firms were subject to outside auditing and had assets exceeding 6 billion won in 1997. Ownership stake is the sum of the largest individual shareholder's and family's ownership. The “Public firm” dummy has a value of 1 when the firm is listed in either the Korean Stock Exchange or the KOSDAQ (Korea Securities Dealers Automated Quotation).

Variables	All year		1993	1994	1995	1996	1997
	Mean	Std	Mean	Mean	Mean	Mean	Mean
Net income to assets (%)	0.2478	10.6112	1.0096	1.5540	0.4427	-0.5027	-1.7290
Ordinary income to assets (%)	1.2372	11.0496	2.0361	2.4466	1.4168	0.4058	-0.5094
Ownership stake (%)	45.1952	34.6140	43.3562	43.6535	46.0069	46.7204	46.3158
Difference between control rights And ownership rights(%)	20.9696	33.3652	18.6912	20.8716	20.8688	21.5564	23.4692
Log (Asset)	3.1782	1.1770	3.1413	3.2148	3.1705	3.1644	3.2103
Equity ratio (%)	19.4856	32.8244	21.1821	20.7130	19.1823	18.1209	18.0073
Market share (%)	4.5526	12.2631	4.8129	4.6188	4.5364	4.2550	4.5876
Export/sales (%)	7.1765	19.7142	8.6293	7.6260	6.8584	6.3458	6.2854
Advertisement/sales (%)	0.8232	3.2174	0.8244	0.8234	0.8212	0.8404	0.7980
Investment in unaffiliated firms over assets(%)	9.5445	7.9068	9.2477	9.2984	9.4227	9.8342	10.0214
Investment in affiliated firms over assets (%)	3.2616	6.4997	2.7192	3.1708	3.5401	3.7283	3.0071
Business group-affiliated firms	0.2725	0.4453	0.3051	0.3010	0.2767	0.2614	0.1999
Large 70 *chaebol* dummy	0.1223	0.3277	0.1381	0.1365	0.1225	0.1147	0.1068
Publicly traded firm dummy	0.2428	0.4278	0.2869	0.2685	0.2349	0.2118	0.1950
Number of observations	19,497		3,953	4,007	4,189	4,456	2,892

Table 3 Impact of ownership concentration on firm profitability

The dependent variables are ordinary income to assets and net income to assets. Panel A controls for firm and time-fixed effects, and Panel B controls for industry and time-fixed effects. Each column shows the results of within-unit estimation. All variables are measured as the deviation from the time-series mean of each variable, per firm in Panel A and per industry in Panel B. Large *chaebol* is a dummy variable that takes 1 when a firm belongs to the largest 70 business groups. T-statistics are in parentheses.

Panel A:

	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Ownership concentration	0.0139	0.0133	0.0166	0.0161	0.0186	0.0180
	(2.63)	(2.35)	(3.16)	(2.88)	(4.14)	(3.67)
Log (Assets)			3.9637	4.1161	1.9651	2.1624
			(15.15)	(14.81)	(8.74)	(8.80)
Equity ratio					0.2682	0.2622
					(71.50)	(63.95)
Firm dummies	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	19,497	19,497	19,497	19,497
R^2	0.7030	0.6365	0.7079	0.6423	0.7874	0.7247

Panel B:

	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Ownership concentration	0.0128	0.0095	0.0066	0.0043	0.0148	0.0128	0.0180	0.0153
	(5.44)	(4.21)	(2.69)	(1.81)	(5.94)	(5.31)	(7.37)	(6.47)
Large 70 *chaebol* dummy			-2.3167	-1.9574	-3.7379	-3.4183	-3.0995	-2.8973
			(-9.02)	(-7.90)	(-13.57)	(-12.88)	(-11.51)	(-11.09)
Log (Assets)					1.0927	1.1232	0.9429	1.0010
					(13.85)	(14.78)	(12.23)	(13.38)
Equity ratio$_{t-1}$							0.0729	0.0594
							(31.58)	(26.54)
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	19,497	19,497	19,497	19,497	19,497	19,497
R^2	0.1007	0.0947	0.1045	0.0976	0.1134	0.1077	0.1571	0.1393

Table 4 Yearly estimation of the impacts of ownership concentration on firm profitability

The dependent variables are ordinary income to assets and net income to assets. The other explanatory variables are firm characteristics, including the affiliation status to the large 70 business groups, firm size, and financial structure. In each regression, 4-digit industry dummies are included. Large 70 *chaebol* is a dummy variable that has a value of 1 when a firm belongs to the largest 70 business groups. T-statistics are in parentheses.

	1993		1994		1995		1996		1997	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Asset)	0.5002	0.6569	0.4319	0.3942	0.8335	0.8989	1.2885	1.2722	1.2331	1.4114
	(2.88)	(3.85)	(3.12)	(2.70)	(5.48)	(6.20)	(8.16)	(8.56)	(4.99)	(6.16)
Equity ratio$_{t-1}$	0.0047	0.0034	0.0760	0.0241	0.0921	0.0791	0.1097	0.1028	0.1591	0.1741
	(1.06)	(0.78)	(19.12)	(5.75)	(20.03)	(18.04)	(20.22)	(20.13)	(17.36)	(20.52)
Ownership concentration	0.0158	0.0119	0.0071	-0.0001	0.0118	0.0146	0.0209	0.0173	0.0480	0.0456
	(2.81)	(2.15)	(1.66)	(-0.03)	(2.49)	(3.24)	(4.14)	(3.65)	(6.05)	(6.20)
Large 70 *chaebol* dummy	-2.7577	-3.0489	-2.0985	-1.8918	-2.9028	-2.0098	-3.3187	-3.0606	-2.3838	-2.7783
	(-4.74)	(-5.33)	(-4.63)	(-3.96)	(-5.49)	(-3.98)	(-5.78)	(-5.66)	(-2.51)	(-3.15)
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
# of observations	3,953	3,953	4,007	4,007	4,189	4,189	4,456	4,456	2,892	2,892
R^2	0.1066	0.1098	0.2293	0.1199	0.2302	0.2137	0.2386	0.2344	0.3066	0.3510

Table 5 Determinants of firm profitability

This table shows two panels of results on determinants of profitability. The dependent variables are ordinary income to assets and net income to assets. Panel A uses ownership concentration as an explanatory variable. Panel B uses the difference between control rights and ownership rights (control–ownership) as an explanatory variable. The three pairs of columns in each panel show the results using data from (a) all sample firms, (b) only publicly traded firms, and (c) firms affiliated with business groups. Controlling for industry and time-fixed effects, within-unit estimation is used. All variables are measured as the deviation from the time-series industry mean of each variable. Large 70 *chaebol* is a dummy variable that has a value of 1 when a firm belongs to one of the largest 70 business groups. T-statistics are in parentheses.

Panel A:

	All sample firms		Publicly traded firms only		Business group affiliated firms	
	Ordinary income to assets	Net income to assets	Ordinary Income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log(Asset)	0.6108	0.7343	0.1321	0.2406	0.6036	0.8164
	(7.11)	(8.81)	(0.89)	(1.70)	(4.26)	(5.57)
Equity ratio$_{t-1}$	0.0723	0.0589	0.0272	0.0235	0.0865	0.0527
	(31.42)	(26.37)	(7.41)	(6.69)	(19.69)	(11.59)
Ownership concentration	0.0176	0.0151	0.0506	0.0465	0.0288	0.0213
	(7.23)	(6.39)	(9.87)	(9.48)	(5.46)	(3.90)
Large 70 *chaebol* Dummy	-3.2539	-3.0300	-1.3560	-1.2592	-0.4191	-0.7662
	(-12.11)	(-11.62)	(-3.54)	(-3.43)	(-1.19)	(-2.10)
Export/sales	0.0033	0.0075	0.0128	0.0113	0.0185	0.0180
	(0.80)	(1.88)	(2.16)	(1.99)	(2.40)	(2.25)
Advertisement/sales	-0.1739	-0.2117	-0.0341	-0.1670	-0.3942	-0.5096
	(-6.87)	(-8.62)	(-0.47)	(-2.39)	(-6.01)	(-7.50)
Market share in 4-digit industry	0.1166	0.0956	0.0683	0.0491	0.1071	0.0762
	(9.53)	(8.06)	(3.95)	(2.96)	(5.58)	(3.84)
1993 Year dummy	2.9301	3.0677	2.2524	2.2163	3.1592	3.5635
	(11.65)	(12.57)	(5.31)	(5.46)	(5.98)	(6.52)
1994 Year dummy	2.9949	3.3263	2.5072	2.3472	3.8991	4.3317
	(11.99)	(13.72)	(5.94)	(5.81)	(7.41)	(7.94)
1995 Year dummy	1.9971	2.2535	2.2572	2.2995	2.7728	3.1214
	(8.08)	(9.40)	(5.30)	(5.64)	(5.23)	(5.69)
1996 Year dummy	1.0126	1.3196	1.1658	0.9898	1.1422	1.3847
	(4.15)	(5.57)	(2.73)	(2.42)	(2.16)	(2.53)
Industry dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	4,702	4,702	5,314	5,314
R^2	0.1632	0.1458	0.3671	0.3160	0.2875	0.2146

Panel B:

	All sample firms (a)		Publicly traded firms only (b)		Business group affiliated firms (c)	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log(Asset)	0.4728	0.6163	-0.3219	-0.1671	0.4094	0.6794
	(5.64)	(7.58)	(-2.25)	(-1.22)	(2.92)	(4.68)
Equity ratio$_{t-1}$	0.0717	0.0583	0.0258	0.0222	0.0855	0.0520
	(31.11)	(26.09)	(6.95)	(6.26)	(19.43)	(11.43)
Difference between control rights and ownership rights	-0.0014	0.0003	-0.0204	-0.0140	-0.0086	-0.0048
	(-0.56)	(0.13)	(-3.96)	(-2.83)	(-1.90)	(-1.03)
Large 70 *chaebol* Dummy	-3.5456	-3.3184	1.5786	-1.5616	-0.6811	-0.9970
	(-13.01)	(-12.55)	(-3.99)	(-4.13)	(-1.90)	(-2.69)
Export/sales	0.0033	0.0075	0.0122	0.0108	0.0178	0.0173
	(0.80)	(1.87)	(2.04)	(1.89)	(2.30)	92.17)
Advertisement/sales	-0.1720	-0.2103	0.0121	-0.1435	-0.3794	-0.4980
	(-6.78)	(-8.55)	(-0.16)	(-2.04)	(-5.77)	(-7.33)
Market share in 4-digit industry	0.1184	0.0974	0.0805	0.0607	0.1117	0.0800
	(9.67)	(8.20)	(4.62)	(3.64)	(5.81)	(4.02)
1993 Year dummy	2.8634	3.0180	2.2279	2.2143	3.1332	3.5640
	(11.36)	(12.35)	(5.20)	(5.40)	(5.89)	(6.48)
1994 Year dummy	2.9491	3.2917	2.4691	2.3245	3.8975	4.3461
	(11.78)	(13.56)	(5.80)	(5.70)	(7.36)	(7.93)
1995 Year dummy	1.9796	2.2425	2.3312	2.3776	2.8269	3.1760
	(8.00)	(9.34)	(5.42)	(5.78)	(5.31)	(5.77)
1996 Year dummy	1.0031	1.3139	1.2326	1.0569	1.2006	1.4380
	(4.10)	(5.54)	(2.86)	(2.56)	(2.26)	(2.62)
Industry dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	4,702	4,702	5,314	5,314
R^2	0.1610	0.1440	0.3357	0.3037	0.2838	0.2124

Table 6 Robustness tests with different profitability measure and a narrow classification of large *chaebols*

In Panel A, profitability is measured through ordinary income to sales and net income to sales, and size is controlled by the log value of sales. In Panel B, large *chaebol* means the top 30 *chaebols* identified by the government in 1995. The three pairs of columns in each panel show the results data from (a) all sample firms, (b) only publicly traded firms, and (c) firms affiliated with business groups. Controlling for industry and time-fixed effects, within-unit estimation is used. All variables are measured as the deviation from the time-series industry mean of each variable. T-statistics are in parentheses.

Panel A:

	All sample firms				Publicly traded firms only				Business group affiliated firms only			
	Ordinary income to sales	Net income to sales	Ordinary income to sales	Net income to sales	Ordinary income to sales	Net income to sales	Ordinary income to sales	Net income to sales	Ordinary income to sales	Net income to sales	Ordinary income to sales	Net income to sales
Log (Sales)	0.1280	13.5506	0.1212	12.8907	0.0357	3.3364	0.0292	2.7610	0.1210	12.3869	0.1142	11.7132
	(30.89)	(31.49)	(29.83)	(30.55)	(13.76)	(12.28)	(11.35)	(10.25)	(11.09)	(12.12)	(10.45)	(11.44)
Equity ratio$_{t-1}$	0.0008	0.0545	0.0008	0.0510	0.0005	0.0499	0.0005	0.0466	0.0006	0.0013	0.0006	-0.0035
	(5.82)	(3.85)	(5.58)	(3.60)	(6.34)	(6.08)	(5.85)	(5.65)	(1.45)	(0.03)	(1.34)	(-0.09)
Ownership concentration	0.0011	0.1094			0.0010	0.0875			0.0014	0.1424		
	(7.82)	(7.38)			(8.99)	(7.81)			(2.82)	(3.07)		
Difference between control rights and ownership rights			-0.0004	-0.0281			-0.0006	-0.0473			-0.0003	-0.0248
			(-2.61)	(-1.89)			(-5.26)	(-4.12)			(-0.65)	(-0.62)
Large 70 *chaebol* dummy	-0.2239	-23.1761	-0.2388	-24.8605	-0.0538	-5.3144	-0.0581	-5.8104	-0.1414	-14.0521	-0.1591	-15.9292
	(-14.45)	(-14.40)	(-15.28)	(-15.32)	(-6.74)	(-6.35)	(-7.13)	(-6.82)	(-4.28)	(-4.54)	(-4.76)	(-5.09)
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
R-square	0.0900	0.0940	0.0874	0.0916	0.1648	0.1523	0.1551	0.1441	0.0892	0.1436	0.0879	0.1421

Panel B:

	All sample firms				Publicly traded firms only				Business group affiliated firms only			
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Asset)	0.8570	0.9320	0.7016	0.7996	0.3873	0.3796	-0.0448	0.0019	1.0005	1.1007	0.8199	0.9817
	(11.15)	(12.49)	(9.41)	(11.06)	(3.12)	(3.20)	(-0.37)	(0.02)	(8.09)	(8.60)	(6.61)	(7.65)
Equity ratio$_{t-1}$	0.0738	0.0603	0.0733	0.0598	0.0277	0.0241	0.0261	0.0227	0.0879	0.0541	0.0870	0.0535
	(31.99)	(26.92)	(31.71)	(26.67)	(7.51)	(6.84)	(7.01)	(6.38)	(19.91)	(11.85)	(19.66)	(11.70)
Ownership concentration	0.0196	0.0167			0.0531	0.0480			0.0292	0.0207		
	(8.08)	(7.10)			(10.40)	(9.83)			(5.55)	(3.79)		
Difference between control rights and ownership rights			-0.0049	-0.0028			-0.0227	-0.0155			-0.0098	-0.0053
			(-2.02)	(-1.18)			(-4.39)	(-3.13)			(-2.18)	(-1.14)
Large 30 *chaebol* dummy	-2.8850	-2.8294	-3.1313	-3.0765	-1.0510	-0.9741	-1.2111	-1.2360	-0.3741	-0.8984	-0.6352	-1.1228
	(-8.77)	(-8.87)	(-9.42)	(-9.55)	(-2.42)	(-2.35)	(-2.70)	(-2.88)	(-0.91)	(-2.11)	(-1.52)	(-2.60)
Industry dummies	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Time dummies	included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	19,497	19,497	4,702	4,702	4,702	4,702	5,314	5,314	5,314	5,314
R^2	0.1547	0.1373	0.1520	0.1351	0.3634	0.3123	0.3510	0.2992	0.2764	0.2020	0.2727	0.1999

Table 7 Time varying effects of ownership concentration

The dependent variables are ordinary income to assets and net income to assets. Panel A reports how the macroeconomic condition affects the effects of ownership concentration on firm profitability. Table B reports the results without the restriction that ownership concentration yields the same slope in each year. The other explanatory variables are firm characteristics. The three pairs of columns in each panel show the results using for data from (a) all sample firms, (b) only publicly traded firms, and (c) firms affiliated with business groups. Controlling for industry and time-fixed effects, within-unit estimation is used. All variables are measured as the deviation from the time-series industry mean of each variable. Large 70 *chaebol* is a dummy variable that has a value of 1 when a firm belongs to the largest 70 business groups. T-statistics are in parentheses.

Panel A:

	All sample firms		Publicly traded firms only		Business group affiliated firms	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log(Asset)	0.6163	0.7385	0.1345	0.2402	0.6040	0.8168
	(7.18)	(8.87)	(0.91)	(1.70)	(4.27)	(5.57)
Equity ratio$_{t-1}$	0.0721	0.0587	0.0272	0.0235	0.0864	0.0526
	(31.33)	(26.30)	(7.40)	(6.69)	(19.66)	(11.56)
Ownership concentration	0.0594	0.0472	0.0687	0.0435	0.0556	0.0482
	(5.75)	(4.70)	(3.24)	(2.14)	(2.48)	(2.08)
Ownership concentration	-0.0060	-0.0046	-0.0025	0.0004	-0.0037	-0.0037
* GNP growth rate	(-4.17)	(-3.30)	(-0.88)	(0.16)	(-1.23)	(-1.19)
Large 70 *chaebol* dummy	-3.2642	-3.0379	-1.3519	-1.2599	-0.4249	-0.7720
	(-12.15)	(-11.65)	(-3.53)	(-3.43)	(-1.21)	(-2.12)
Export/sales	0.0030	0.0073	0.0127	0.0113	0.0184	0.0178
	(0.74)	(1.82)	(2.14)	(1.99)	(2.39)	(2.23)
Advertisement/sales	-0.1740	-0.2118	-0.0357	-0.1667	-0.3947	-0.5101
	(-6.87)	(-8.62)	(-0.49)	(-2.39)	(-6.01)	(-7.51)
Market share in 4-digit industry	0.1167	0.0956	0.0683	0.0491	0.1072	0.0762
	(9.54)	(8.06)	(3.95)	(2.96)	(5.59)	(3.84)
Industry dummies	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	4,702	4,702	5,314	5,314
R^2	0.1640	0.1463	0.3672	0.3160	0.2877	0.2148

Panel B:

	All sample firms		Publicly traded firms only		Business group affiliated firms	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log(Asset)	0.6197	0.7425	0.1370	0.2441	0.5969	0.8088
	(7.22)	(8.91)	(0.93)	(1.73)	(4.21)	(5.52)
Equity ratio$_{t-1}$	0.0722	0.0588	0.0271	0.0234	0.0864	0.0526
	(31.37)	(26.34)	(7.37)	(6.64)	(19.66)	(11.56)
Ownership concentration in 93	0.0194	0.0145	0.0494	0.0376	0.0324	0.0226
	(3.88)	(3.00)	(5.66)	(4.50)	(3.33)	(2.24)
Ownership concentration in 94	0.0091	0.0064	0.0443	0.0462	0.0294	0.0201
	(1.88)	(1.36)	(5.06)	(5.51)	(3.13)	(2.06)
Ownership concentration in 95	0.0094	0.0111	0.0480	0.0449	0.0238	0.0188
	(2.00)	(2.44)	(5.05)	(4.93)	(2.49)	(1.90)
Ownership concentration in 96	0.0160	0.0132	0.0581	0.0579	0.0178	0.0089
	(3.53)	(2.99)	(5.83)	(6.06)	(1.86)	(0.90)
Ownership concentration in 97	0.0399	0.0352	0.0644	0.0543	0.0573	0.0576
	(7.30)	(6.64)	(4.38)	(3.87)	(3.87)	(3.76)
Large 70 *chaebol* dummy	-3.2777	-3.0537	-1.3486	-1.2576	-0.4367	-0.7875
	(-12.20)	(-11.71)	(-3.52)	(-3.43)	(-1.24)	(-2.16)
Export/sales	0.0030	0.0073	0.0126	0.0112	0.0182	0.0176
	(0.73)	(1.82)	(2.13)	(1.98)	(2.36)	(2.20)
Advertisement/sales	-0.1725	-0.2101	-0.0353	-0.1664	-0.3949	-0.5098
	(-6.81)	(-8.55)	(-0.48)	(-2.38)	(-6.02)	(-7.50)
Market share in 4-digit industry	0.1165	0.0955	0.0680	0.0486	0.1074	0.0764
	(9.53)	(8.05)	(3.93)	(2.93)	(5.60)	(3.85)
Industry dummies	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	4,702	4,702	5,314	5,314
R^2	0.1643	0.1467	0.3674	0.3165	0.2883	0.2158

Table 8 Non-linearity of ownership effects on profitability

The dependent variables are ordinary income to assets and net income to assets. Panel A tests for ownership's nonlinear effects using its linear, squared, and cubed terms as explanatory variables. Panel B tests for ownership's nonlinear effects using piecewise linear splines from 0-5%, 5-25%, and 25-100%, as in Morck, Shleifer, and Vishny (1988). The three pairs of columns in each panel show the results using data from (a) all sample firms, (b) only publicly traded firms, and (c) firms affiliated with business groups. Controlling for industry and time-fixed effects, within unit estimation is used. All variables are measured as the deviation from the time-series industry mean of each variable. Large 70 *chaebol* is a dummy variable that has avalue of 1 when a firm belongs to the largest 70 business groups. T-statistics are in parentheses.

Panel A:

	All sample firms		Publicly traded firms only		Business group affiliated firms only	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Assets)	0.6673	0.7934	0.1735	0.2804	0.6260	0.8507
	(7.73)	(9.48)	(1.17)	(1.98)	(4.38)	(5.75)
Equity ratio$_{t-1}$	0.0721	0.0587	0.0269	0.0234	0.0866	0.0529
	(31.39)	(26.33)	(7.31)	(6.65)	(19.70)	(11.62)
Ownership concentration 0 to 5%	-0.5311	-0.5522	-0.3440	-0.3459	-0.1529	-0.2107
	(-5.75)	(-6.16)	(-3.21)	(-3.37)	(-1.11)	(-1.48)
Ownership concentration 5 to 25%	0.1350	0.1332	0.1623	0.1360	0.0748	0.0641
	(5.53)	(5.63)	(5.65)	(4.94)	(1.92)	(1.59)
Ownership concentration above 25%	0.0174	0.0156	0.0390	0.0415	0.0266	0.0236
	(4.88)	(4.51)	(5.31)	(5.90)	(3.11)	(2.66)
Large 70 *chaebol* dummy	-3.3195	-3.1115	-1.3220	-1.3098	-0.4297	-0.8193
	(-12.16)	(-11.74)	(-3.40)	(-3.52)	(-1.21)	(-2.22)
Export/sales	0.0035	0.0077	0.0131	0.0115	0.0185	0.0178
	(0.85)	(1.93)	(2.22)	(2.03)	(2.39)	(2.23)
Advertisement/sales	-0.1772	-0.2152	-0.0480	-0.1758	-0.3975	-0.5110

	(-7.00)	(-8.76)	(-0.66)	(-2.52)	(-6.04)	(-7.50)
Market share in 4-digit industry	0.1185	0.0976	0.0678	0.0487	(5.62)	0.0774
	(9.70)	(8.23)	(3.92)	(2.94)		(3.89)
Industry dummies	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included
R^2	0.1648	0.1476	0.3694	0.3183	0.2877	0.2151

Panel B:

	All sample firms		Publicly traded firms only		Business group affiliated firms only	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Assets)	0.6618	0.7849	0.2193	0.3189	0.6405	0.8587
	(7.68)	(9.39)	(1.48)	(2.24)	(4.48)	(5.80)
Equity ratio$_{t-1}$	0.0721	0.0587	0.0269	0.0234	0.0865	0.0528
	(31.36)	(26.30)	(7.31)	(6.65)	(19.69)	(11.60)
Ownership concentration	-0.0809	-0.0857	-0.0116	-0.0348	-0.0241	-0.0489
	(-4.40)	(-4.80)	(-0.40)	(-1.25)	(-0.67)	(-1.31)
(Ownership concentration)^2	0.0030	0.0030	0.0027	0.0029	0.0020	0.0023
	(6.14)	(6.35)	(3.25)	(3.73)	(1.87)	(2.10)
(Ownership concentration) ^{3}	-0.00002	-0.00002	-0.00002	-0.00002	-0.00001	-0.00002
	(-6.37)	(-6.53)	(-3.78)	(-4.04)	(-2.03)	(-2.14)
Large 70 *chaebol* dummy	-3.3072	-3.1012	-1.3185	-1.3056	-0.3959	-0.7857
	(-12.11)	(-11.70)	(-3.39)	(-3.51)	(-1.11)	(-2.13)
Export/sales	0.0032	0.0074	0.0128	0.0112	0.0182	0.0175

	(0.79)	(1.86)	(2.17)	(1.98)	(2.36)	(2.19)
Advertisement/sales	-0.1755	-0.2134	-0.0366	-0.1657	-0.4010	-0.5136
	(-6.94)	(-8.69)	(-0.50)	(-2.38)	(-6.10)	(-7.54)
Market share in 4-digit industry	0.1169	0.0959	0.0630	0.0445	0.1066	0.0761
	(9.56)	(8.09)	(3.64)	(2.68)	(5.56)	(3.83)
Industry dummies	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included
# of observations	19,497	19,497	4,702	4,702	5,314	5,314
R^2	0.1651	0.1477	0.3700	0.3188	0.2881	0.2153

Table 9 Expropriation in publicly traded firms

The dependent variables are ordinary income to assets and net income to assets. Panel A shows that financial investment to affiliated firms affects firm profitability. Panel B shows that controlling shareholder expropriation is more serious in publicly traded firms than privately held firms. The public firm dummy and its interaction terms with financial investment to affiliated firms are included as explanatory variables. Controlling for industry and time-fixed effects, within unit estimation is used. All variables are measured as the deviation from the time-series industry mean of each variable. Large 70 *chaebol* is a dummy variable that has a value of 1 when a firm belongs to one of the largest 70 business groups. T-statistics are in parentheses.

Panel A

	All sample firms		Publicly traded firms only		Business group affiliated firms	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Assets)	0.7700	0.8847	0.1975	0.2808	0.7721	0.8716
	(9.66)	(11.48)	(1.48)	(2.20)	(5.92)	(6.54)
Equity ratio$_{t-1}$	0.0779	0.0642	0.0287	0.0251	0.0909	0.0568
	(33.64)	(28.65)	(7.85)	(7.18)	(20.23)	(12.38)
Ownership concentration	0.0192	0.0168	0.0488	0.0443	0.0297	0.0216
	(7.93)	(7.17)	(9.88)	(9.38)	(5.70)	(4.05)
Large *chaebol* dummy	-3.1891	-2.8755	-1.4610	-1.3195	-0.6687	-0.9485
	(-11.88)	(-11.08)	(-3.94)	(-3.73)	(-1.91)	(-2.66)
Investment/asset in	-0.0367	-0.0261	-0.0599	-0.0641	-0.0678	-0.0443
affiliated firms	(-2.99)	(-2.20)	(-2.61)	(-2.92)	(-2.88)	(-1.84)
Investment /asset in	0.0541	0.0560	0.0980	0.0760	0.0061	0.0441
unaffiliated firms	(5.42)	(5.81)	(5.22)	(4.24)	(0.31)	(2.17)
Export/sales	0.0033	0.0077	0.0138	0.0124	0.0189	0.0197
	(0.79)	(1.94)	(2.37)	(2.21)	(2.43)	(2.48)
Advertisement/sales	-0.1604	-0.1922	-0.0142	-0.1190	-0.3367	-0.4411
	(-6.43)	(-7.96)	(-0.22)	(-1.94)	(-5.45)	(-6.99)
Market share in 4-digit industry	0.0576	0.0381	0.0406	0.0322	0.0663	0.0576
	(7.07)	(4.84)	(3.15)	(2.61)	(4.59)	(3.91)
Industry dummies	Included	Included	Included	Included	Included	Included
Time dummies	Included	Included	Included	Included	Included	Included
R^2	0.1245	0.1122	0.3542	0.3043	0.2120	0.1556

Panel B:

	All sample firms		Business group affiliated firms	
	Ordinary income to assets	Net income to assets	Ordinary income to assets	Net income to assets
Log (Assets)	0.9574	1.0119	1.0139	1.0489
	(10.48)	(11.45)	(6.66)	(6.74)
Equity ratio$_{t-1}$	0.0782	0.0643	0.0908	0.0572
	(33.74)	(28.71)	(20.11)	(12.39)
Ownership concentration	0.0120	0.0103	0.0237	0.0151
	(4.66)	(4.14)	(3.92)	(2.44)
Ownership concentration* Public firm dummy	0.0473	0.0434	0.0197	0.0202
	(7.69)	(7.30)	(1.91)	(1.93)
Public firm dummy	-2.2156	-1.4266	-2.7186	-1.2427
	(-5.04)	(-3.35)	(-4.03)	(-1.80)
Large *chaebol* dummy	-3.0742	-2.7556	-0.8228	-1.0509
	(-11.42)	(-10.58)	(-2.31)	(-2.89)
Investment/assets in affiliated firms	-0.0154	-0.0040	-0.0521	-0.0152
	(-1.14)	(-0.30)	(-1.86)	(-0.53)
Investment/assets in unaffiliated firms	0.0460	0.0524	-0.0339	0.0349
	(4.20)	(4.95)	(-1.40)	(1.41)
Export/sales	0.0040	0.0085	0.0186	0.0198
	(0.97)	(2.14)	(2.39)	(2.49)
Advertisement/sales	-0.1632	-0.1942	-0.3436	-0.4450
	(-6.55)	(-8.06)	(-5.56)	(-7.05)
Market share in 4-digit industry	0.0572	0.0381	0.0651	0.0576
	(7.03)	(4.84)	(4.51)	(3.90)
Investment/assets in affiliated firms	-0.0762	-0.0928	-0.0334	-0.0818
* public firm dummy	(-2.45)	(-3.09)	(-0.67)	(-1.61)
Investment/assets in unaffiliated firms	0.0344	0.0045	0.1284	0.0348
*public firm dummy	(1.35)	(0.18)	(3.15)	(0.83)
Industry dummies	included	Included	Included	Included
Time dummies	included	Included	Included	included
# of observations	19,497	19,497	5,314	5,314
R^2	0.1278	0.1153	0.2151	0.1570