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What Determines the Ownership Structure of Business Conglomerates?: On the Cash Flow Rights of Korea's Chaebol

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Abstract

We examine a number of firm- and group-level factors that shape the ownership structure of business conglomerates, which can include both public and non-public firms. Using an exclusive set of 1997-2002 data on the intra-group shareholdings of 46 of Korea's largest conglomerates, or chaebols, we show that the contribution of individual firms to group control and profitability are important determinants of ownership structure in Korea's chaebol: the controlling shareholder's cash flow rights in a group-affiliated firm increases with the firm's contribution to group control and profitability. We also find that the level of disparity between voting and cash flow rights is significantly higher than the levels previously reported in the literature on Korean firms, which makes use of only public firms, indicating that non-public firms play a substantial role in increasing the disparity.

Keywords: ownership structure, business conglomerate, chaebol, voting rights, cash flow rights, disparity

JEL Classifications: G32, G34

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1. Introduction

Empirical research on corporate ownership is dominated by papers that treat ownership as given. Early papers that study the link between corporate ownership and firm value treat ownership as exogenous (Fama and Jensen, 1983 and Morck et al., 1988). Even recent works that study the disparity between voting and cash flow rights and their implications on other variables treat the disparity as given (LLSV, 2002, Claessens et al., 2002, Mitton, 2002, Fan and Wong, 2002, Joh, 2003, Haw et al., 2003, Lins, 2003, Lemmon and Lins, 2003, and Baek et al., 2004).

This pattern of research is surprising given that scholars knew early on that corporate ownership can be endogenously determined. For example, Demsetz and Lehn (1985) see the structure of corporate ownership as an equilibrium outcome influenced by various cost advantages and disadvantages. They suggest a number of factors that determine ownership structure, providing empirical support gleaned from a sample of 511 U.S. corporations in the second half of 1970s. The primary factors they highlight are a firm's size, a firm's risk, regulation, and amenities.

Acknowledging the endogenous nature of corporate ownership, a couple of recent works study corporate ownership in a simultaneous regression framework. For example, using the 1991 Fortune 500 firms, Cho (1998) examines the relationship among ownership structure, investment, and corporate value using two-stage least squares (2SLS). He finds that investment affects corporate value, which in turn affects ownership structure. He also finds that corporate value affects ownership structure, but not vice versa. Another example is Chang (2003), who investigates the relationship between ownership structure and firm performance using the same 2SLS framework. Using a sample of group-affiliated public firms in Korea during 1986-96, he finds that performance determines ownership, but not vice versa.

Despite such efforts, research on the determinants of corporate ownership is still limited, and this paper hopes to fill the gap by studying the ownership structure of large business conglomerates in Korea – also known as the *chaebol*. A number of factors make Korea a particularly interesting country to study. First, Korea is dominated by *chaebol* groups, which makes Korea an attractive place to study the ownership structure of 'business conglomerates.' In fact, in a typical *chaebol* group, there is a great deal of intra-group shareholdings among the affiliated firms, and such shareholdings separate voting rights from cash flow rights.[1] Such separation between the two allows us to study the determinants of disparity, which is often defined as voting rights minus cash flow rights. Second, in case of *chaebols*, there exists a natural person who is the common controlling shareholder for multiple companies. This makes Korea an interesting country to study how the ownership structures of group-affiliated companies are shaped to maximize the controlling shareholder's interest. Third, many papers have already shown that disparity has a material implication on firm value, profitability, and share return in Korea (Joh, 2003, Baek et al., 2004, and Black, Jang, and Kim, 2004). This further makes our study on Korean *chaebols* relevant.

In this paper, we make use of a unique dataset from the *Korea Fair Trade Commission* (KFTC) that contains comprehensive and detailed information on the intra-group shareholdings of 46 large business conglomerates over a six-year period (1997-2002). Using this dataset, we show that the ownership structures of group-affiliated firms are influenced by the firms' contribution to their respective group's control and profitability. Specifically, we show that the controlling shareholders of *chaebol* groups tend to increase their cash flow rights in firms that have higher contribution to group control and in firms

[1] Among the three sources of separation between the cash flow right and the voting right suggested by Bebchuk et al. (2000), intra-group shareholding and pyramidal ownership structure are the two main sources in Korea. Dual class shares are not permitted.

[2] Joh (2003) is an exception, which includes non-public firms in her data. But, the data set is not from KFTC, but of her own construction, which is likely to be incomplete and prone to measurement errors.

that have higher profitability.

This study makes a number of contributions to the existing literature. First, it studies the ownership structure of unlisted non-public firms as well as public firms. Given the difficulty of obtaining ownership data of unlisted firms, previous research solely focused on public firms (Demsetz, 1998, Cho, 1998, and Chang, 2003).[2] This can be problematic when one is studying the ownership structure of the *chaebol,* which often include many non-public firms. It should also be noted that, in Korea, non-listed firms in which the controlling shareholder possesses a high direct ownership stake often serve as the *de facto* holding company for the group. Also, by omitting the control chains containing a non-listed company, the measures of voting and cash flow rights of a listed company may also be biased. In fact, our measure of disparity turns out to be significantly higher than those reported in the existing literature, which makes use of only public firms.

Second, we adopt the KFTC's highly flexible concept of "control." This allows us to more accurately measure the true extent of control. According to the KFTC's definition, share ownership, whether direct or indirect, is not a necessary condition for a person (or a company) to wield control over firms. In addition to share ownership, other indicators of control, such as the power to appointment directors, make personnel exchanges, conduct transactions above a normal range, or using similar trademarks across firms in the group, are taken into account when identifying which firms are under the controlling shareholder's influence. Overly restrictive condition of share ownership can result in a downward bias of the voting right measure.

Third, we introduce an algorithm for computing the cash flow rights of firms that share a common controlling shareholder. Using an ($n \times n$) matrix of intra-group shareholdings and an ($n \times 1$) vector of controlling shareholders' direct ownership, we can compute the cash flow rights of a common controlling shareholder for all the n-affiliated firms simultaneously.

Fourth, we study the *group control motivation* of a controlling shareholder and its implications on the controlling shareholder's ownership pattern. We emphasize in this paper that concern over group control is particularly important when examining the ownership structure of a business conglomerate. To test this, we propose an algorithm that allows us to measure how much contribution each company makes to group control.

This paper is organized as follows. Section 2 describes the data. Section 3 explains how voting rights, cash flow rights, and the disparity are computed. Section 4 discusses hypotheses and methodology. Empirical results are discussed in Section 5. Section 6 is the conclusion.

2. Ownership Data

2.1. Source

In this paper, we make use of a unique dataset exclusively obtained from KFTC that contains detailed information on the intra-group shareholdings of 46 large business conglomerates over a six-year period (1997 – 2002). For each of the firms in the 46 large business conglomerates, we have data on the number of shares (common and preferred) held by the controlling shareholder and by his *related parities. Related parties* include relatives, senior managers of the firm, affiliated not-for-profit organizations, and affiliated firms. In our data set, such information is available even for non-listed companies. *Table 1* shows the intra-group shareholding matrix of Samsung Group in 2002.

KFTC compiles such a database to monitor and enforce compliance of its regulations by large business conglomerates. Each year in April, KFTC announces the top 30

business conglomerates, known as *chaebol*, in terms of their total asset size, and imposes regulations, including equity investment ceilings, bans on cross-shareholdings, and restrictions on related-party transactions.[3] The regulations are explained in greater detail in *Appendix 3*.

2.2. Main Features

This dataset has a number of nice features that cannot be found in the datasets used in the existing literature. First, it contains data on non-listed firms, as well as listed firms. This is an important feature in two ways: it allows us to measure the disparity of 'non-listed' firms and also allows us to correctly measure the disparity of 'listed' firms.

To measure the precise voting and cash flow rights, one needs the ownership data of each and every firm in the control chain. But this was not possible in the existing literature since no ownership information was available for non-listed firms (see Claessens et al., 2000; LLSV, 2002; and Lins, 2003).[4] Such lack of information is a concern in that it may result in downward-biased measures of listed companies' voting and cash flow rights by unduly omitting the chain containing a non-listed company. Suppose a controlling shareholder holds a 25% share in firm *A*, which is listed, and a 51% share in firm *B*, which is not listed. Furthermore, suppose that firm *B* holds a 25% share in firm *A*. If we include firm *B* in our computation, its control over firm A's voting rights would be 50% (= 25%+25%) and the cash flow rights would be 37.8% (= 25%+51%×25%). However, if we exclude firm *B* from our computation, the voting and cash flow rights would be equally 25%, which is heavily downward biased.[5] This problem is completely eliminated in our

[3] In 2002, KFTC changed the way it designates large business conglomerates. Instead of ranking them based on asset size (e.g. top 30), it now uses asset size thresholds (e.g. above 5 trillion won).

[4] Even for the listed firms, these studies use ownership data only for a subset of companies, ranging from a half to three-quarters of all listed firms in terms of market capitalization.

[5] In this example, the disparity measure, which is defined by voting rights minus cash flow rights, is also

study because we have complete ownership data even for non-listed firms.

Second, we use a highly flexible concept of *"control"* in this study, thus allowing us to measure control in line with reality. In most of the studies on voting-cash flow disparity, a person can become a controlling shareholder only if he owns company shares, whether directly or indirectly. But, we believe this can be an overly restrictive condition, which again results in a downward bias of the voting right measure.[6] Suppose a person makes a significant donation to a not-for-profit organization (NPO), sits on its board, and thus controls the voting rights on the company shares held by the NPO. If such cases, the company shares held by this NPO should be included in the computation of this person's voting rights. Yet this is not how voting rights are computed in the existing studies.

In this study, we adopt the concept of *related parties* and *de facto control* officially used by the KTFC, thus allowing the concept of control to be flexible enough to incorporate the example given above. As such, we define control over voting rights as the total sum of direct share ownerships held by the controlling shareholder and its related parties, which includes not just spouse/relatives, but also not-for-profit organizations and firms under the *de facto* control of the controlling shareholder. Also, the controlling shareholder is defined to be a person who, alone or with its *related parties*, has *de facto* control of the company. This is in contrast with the definitions used in other studies that are somewhat *ad hoc* and fail to capture the actual extent of control.[7] Detailed definitions of *related parties* and *de facto control* are provided in the next section and in *Appendix 2*.

One might be concerned that the concept of *de facto* control is overly subjective and the decision to classify a firm to be *de facto* controlled can be arbitrary. Such criticism,

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downward-biased.

[6] It will also result in a downward-bias of the disparity measure. One exception would be Lins (2003). See *Appendix 2* for detailed explanation of how Lins (2003) computes voting rights. Note, however, that his concept of control is still far more restrictive than ours.

[7] For example, Claessens et al. (2000) defines control rights as the sum of the weakest links in the chains of voting rights.

however, is unfounded, for no firm subject to the KFTC regulation petitioned against the KFTC's decision. When a firm is designated as a firm *de facto* controlled by the controlling shareholder, it will be subject to serious regulations, which can be binding and sometimes costly.[8] So a manger of this company would have all the reasons to find justifications not to be classified as a firm under *de facto* control. Nevertheless, no company petitioned the KFTC's decision, which implies that the KFTC designations were made based on reality, not arbitrarily.

Our dataset has other minor improvements over those used in the existing literature. For example, we consider even those shareholders who own less than 5% of shares outstanding. Existing studies use datasets that contain information only on block shareholders holding more than 5% of outstanding shares. Another improvement is that we distinguish individual family members when identifying the controlling shareholder, and use a clear definition of the term "relatives." A relative is classified as a party with a blood relationship of eight degrees or less (four or less if he/she has a blood relationship with the controlling shareholder's spouse) to the controlling shareholder.

2.3. Sample Selection

Our dataset contains data on 65 conglomerates. We eliminated the 18 conglomerates controlled by a state-owned enterprise, where the controlling shareholder is a company and not a natural person, or by a newly privatized firm.[9,10] This means that we only

[8] See *Appendix 3* for the detailed regulations.

[9] These conglomerates have only a small number of affiliated firms, which makes the disparity measure close to zero throughout the sample period, and thus makes it inappropriate to study the determinants of disparity, one of this paper's main topics.

[10] 18 large business conglomerates, the controlling shareholder of which is not a natural person: Daewoo Electronics, Daewoo Motors, Daewoo Shipbuilding & Marine Engineering, Hanaro Telecom, Hyundai Oil, KARICO, KEPCO, Kia, KOGAS, Korea Highway Corporation, Korea Land Corporation, Korea National Housing Corporation, KOWACO, KT, KT&G, MBC, POSCO, S-Oil. We also drop Kohap group in year

investigate those conglomerates controlled by an individual, in line with the concept of *chaebol*, and thus focus on the decision of a controlling shareholder as an individual We do not include the Lotte Group, since KFTC does not have its complete intra-group shareholding information. This is because the affiliated firms of Lotte Group are established not only in Korea, but also in Japan, and KFTC does not have ownership data for the firms located in Japan. Thus, we use 46 business conglomerates. The total number of firm-years is 5,202 (see *Table 4* for summary statistics).

2.4. Other Variables

To test the hypotheses in this paper, we merge the ownership data with other firm-level variables, which we obtained from the National Information and Credit Evaluation, Inc. (NICE). Since disparity is used as a dependent variable in our regression analyses, we make sure that other firm-level variables are measured prior to the disparity variable. As such, they are measured during or on the last day of the fiscal year, which ends before April. When the fiscal year changes during the sample year, we keep only those years that cover twelve full months. *Table 3* shows the list of variables along with their definitions. *Table 4* provides some summary statistics for each variable.

3. Computation of Voting Rights and Cash Flow Rights

3.1. Controlling Shareholder

2001, the year of which its controlling shareholder is no longer a natural person.

[11] Suppose firm *A* holds 10% of firm *B*'s total outstanding common shares, which includes treasury stocks. If the fraction of treasury stocks is 5% out of the total outstanding common shares, the adjusted fraction of voting right is (0.1)/(1-0.05)=0.105 (10.5%).

The first step in computing voting-cash flow disparity is to identify the controlling shareholder and the firms under his *de facto control*. In this study, following the method adopted by KFTC, a controlling shareholder is defined as a person who, alone or with his *related parties*, has *de facto control* of the company. Here we explain in detail the concepts of *related parties* and *de facto control*.

Related parties include (i) relatives, (ii) not-for-profit organizations where the controlling shareholder, alone or with *related parities*, contributed 30% of total donations, (iv) not-for-profit organizations where the controlling shareholder, directly or through related parities, has a controlling influence over the appointment of directors or business activities, (v) any company whose business is controlled *de facto* by the controlling shareholder, and (vi) agents of the controlling shareholder or his related parties, including senior managers.

The controlling shareholder has *de facto control* of a particular company if any of the following conditions are met: (i) the controlling shareholder, alone or with his *related parities*, owns 30% of voting shares issued and is the largest shareholder, (ii) the controlling shareholder appoints the representative director or at least half of the directors, (iii) the controlling shareholder directly or through *related parties* has a controlling influence over corporate strategy decisions, (iv) the company concerned and the company controlled *de facto* have a personnel exchange system in place, (v) the company and the controlling shareholder or its *related parties* conduct transactions of funds, assets, goods, services, or debt guarantees above a normal level, (vi) the company can be reasonably considered under social norms to be an affiliate of the business group controlled by the controlling shareholder (e.g. using similar trademarks). More detailed definitions of *related parties* and *de facto* control are outlined in *Appendix 2*.

3.2. Control Over Voting Rights

In this paper, control over voting rights (hereafter voting rights) is defined as the sum of direct share ownership held by the controlling shareholder and its *related parties.* Assume that d_i is the direct share ownership held by the controlling shareholder in firm *i.* Assume also that r_i is the direct share ownership held by the *related parties,* including relatives, not-for-profit organizations, and senior managers under the controlling shareholders' influence. Lastly, assume that s_{ij} is the direct share ownership in firm *i* held by firm *j,* which is under the controlling shareholders influence. Then, a voting right for firm *i* can be defined by equation (1).

$$vr_i = d_i + r_i + \sum_{j=1}^{n} s_{ij} \tag{1}$$

n is the number of for-profit-firms under the controlling shareholder's influence. When computing the fraction of shares, we use common shares only, and also adjust for treasury stocks, which do not have any voting rights, in accordance with the *Commercial Code.*[11]

Two points should be mentioned here. First, we want to differentiate between the concept of *control* and *control over voting rights.* The concept of control, as explained earlier, takes into account not only share ownership, but also other routes of control, such as the appointment of directors, personnel exchange, abnormal transaction levels, and so on. Control over voting rights, on the other hand, considers only share ownership. Thus, it is a narrower concept. Although the controlling shareholder *controls de facto* all the affiliated firms in the sample, it does not mean he has 100% control over the votes. When computing disparity, we use the concept of voting rights. Otherwise, disparity would be always "1 – cash flow rights."

Second, our measure does not give special treatment to voting rights over 50 percent. It is true that once a controlling shareholder holds more than 50 percent of the votes, he

would be able to block or pass any resolution item at the shareholders' meeting. And some might suggest that we should therefore grant special treatment to voting rights over 50 percent. However, we have decided against this on two grounds. First, depending upon the ownership structure of outside shareholders and how quickly they can coordinate, the threshold can be below 50 percent. Second, such information cannot be known *ex ante*.

3.3. Cash-Flow Rights

Cash-flow rights are defined as sum of the products of ownership stakes held by the controlling shareholder and his family members along the voting right chain. Assume that f_i is the direct share ownership held by the controlling shareholder's family members in firm *i*. Family members include spouse and relatives that are within certain degrees of kinship.[12] Shares held by senior mangers or not-for-profit organizations are excluded from the computation of cash-flow rights. Thus, cash flow rights in firm *i* can be computed by equation (2).[13]

$$cfr_i = d_i + f_i + \sum_{j=1}^{n} s_{ij}(d_j + f_j) + \sum_{j=1}^{n} s_{ij} \sum_{k=1}^{n} s_{jk}(d_k + f_k) + \cdots \qquad (2)$$

The first two terms are direct ownerships levels of the controlling shareholder and his family members. The subsequent terms are the indirect ownership levels of the controlling shareholder and his family members through affiliated for-profit firms. To be specific, the third term is indirect ownership in firm *i* through firm *j* (*j* can take values from 1 to *n*). The fourth term is indirect ownership in firm *i* through firm *k* and firm *j* (*k*

[12] See *Appendix 2* for detailed explanation of relatives.

[13] The cash-flow rights algorithm is taken from Kim (2000).

can also take values from 1 to n).

To simplify, we can express the cash-flow rights of all for-profit firms in matrix form. Let d and f be ($n\times1$) vectors of direct ownerships held by the controlling shareholder and his family members. Let S be ($n\times n$) matrix of share ownership of for-profit firms in other for-profit firms.[14] Then, equation (3) computes the cash-flow rights of all for-profit firms under the controlling shareholder's influence.

$$cfr = (d + f) + S(d + f) + S^2(d + f) + S^3(d + f) + \cdots \quad (3)$$

Equation (3) can be further simplified by using an inverse matrix.

$$cfr = (I - S)^{-1}(d + f) \quad (4)$$

3.4. Disparity

In this paper we use the difference between voting and cash flow rights as our measure of disparity. Though there are studies that use the ratio, instead of the difference between the two, or the difference scaled by voting rights,[15] but there are two reasons why we prefer the simple difference. First, in our regression specification examining the disparity between voting and cash flow rights, we include voting rights on the right-hand side, which makes it unnecessary to scale the difference by voting rights. Second, since we do not necessarily require our voting or cash flow rights to be non-zero, it is sometimes impossible to divide by voting rights or cash flow rights. (Note that in our study, a

[14] Elements in the diagonal are zero, since fractions of shares are already adjusted for treasury stocks.

[15] LLSV (1999) and Joh (2003) use [voting rights – cash-flow rights]; Claessens et al. (2000) and Mitton (2002) use [cash-flow rights / voting rights]; Lins (2003) uses [voting rights / cash-flow rights]; and Fan and Wong (2002) and Haw et al. (2003) use [voting rights – cash-flow rights]/[voting rights].

controlling shareholder does not necessarily have to own company shares, whether directly or indirectly, to become a controlling shareholder.) As for group-level disparity, it can be easily computed by a weighted average of firm-level disparities. Book equity values are used as weights. We treat firms with negative book equity as missing values.

Table 2 shows the voting rights, cash-flow rights, and the disparity of each firm in Samsung Group as of April 2002. For simplicity of presentation, of the 63 firms in our sample classified by the KFTC as a Samsung Group affiliate, we show only the 27 major firms that appear in the 2002 Samsung Group Annual Report. The firms are ranked in terms of their degree of disparity. One can see that there is a plenty of variance in the disparity measure across firms, ranging from 8% to 97.6%. Samsung Electronics, the largest company in Korea, has a disparity of 11.7%. The controlling shareholder, Mr. Kun-Hee Lee, has cash flow rights of 5.3% and voting rights of 17.0%. On the other hand, Samsung Card, which experienced a business failure in 2003 and was acquired by Samsung Life Insurance, has a disparity of 84.8%. While the controlling shareholder, Mr. Kun-Hee Lee, has a cash-flow right of only 3.6%, he controls 88.4% of the voting rights.

4. Hypotheses and Methodologies

In this paper, we try to identify a number of factors that influence firm-level disparity. We focus mainly on three factors: profitability, risk and contribution to group control. We hypothesize that the controlling shareholder would increase his disparity in a firm with low profitability or high risk, and increase her cash flow rights (or direct ownership) in a firm that heavily contributes to group control.

The intuition is simple. If a firm demonstrates poor prospects by showing low

profitability or high risk, the controlling shareholder may change the ownership structure of the firm to minimize any further loss.[16] That is, he may sell her direct ownership stake to an affiliated firm that he also controls. This will increase the ailing company's disparity. Furthermore, if possible, he may try to sell the stake at a price higher than its true value. If the controlling shareholder's cash flow rights are relatively low in the acquiring firm, there will be an illegal transfer of wealth from outside minority shareholders to the controlling shareholder.

Disparity can increase even when the controlling shareholder does not sell any of her directly owned shares to the affiliated firms. Often, poorly performing firms need injections of new equity capital. But if a controlling shareholder is not confident of the firm's survival prospects, he would not participate in purchasing the newly issued shares. Instead, he would instruct other affiliated firms under his control to participate. This would dilute his equity stake while increasing the equity stakes of other affiliated firms.

It is not hard to find actual cases of such phenomena in Korea. In 1998, SK Securities was at the brink of liquidation after several consecutive years of negative income, largely attributable to a US$200 million loss in 1997 from its trades in Indonesian derivatives. To rescue SK Securities, affiliated firms within the SK Group, several affiliates, including SK Trading and SK Energy Sales, injected new equity capital into the firm. This increased the equity stake of affiliated firms, but decreased that of the Choi family, the controlling shareholder.

We also attempt to provide empirical evidence that a controlling shareholder would tend to hold greater cash flow rights (or direct ownership) in firms that are essential in the control chain of a group and that allow him to wield *de facto* control over the whole

[16] With regard to firm risk, one may suggest an opposite hypothesis. According to Demsetz and Lehn (1985), firm-specific uncertainty increases the monitoring cost of managerial performance, which thus increases the benefit of higher ownership concentration.

group.[17] In any conglomerate, some firms will have relatively large cash flow or hold voting rights in other affiliates, whether directly or indirectly. If the controlling shareholder loses control over the companies, she may lose control over the entire group, or at least a significant portion of it. To prevent this from happening, the controlling shareholder has a strong incentive to hold greater *cash flow rights* (or direct ownership) in such companies.

Anecdotal evidence of this *group control incentive* by the controlling shareholder can be easily found in Korea. On one occasion, a *chaebol* group eagerly requested the government to allow financial institutions to vote on shares issued by their industrial affiliates. On another, a *chaebol* group chairman was prosecuted for malfeasance when he masterminded a series of equity transactions among the affiliated firms that would have strengthened his group control.

To investigate whether a firm's choice of disparity (or cash flow rights) varies according to its profitability, risk, and contribution to group control, we run pooled *OLS* regressions with fixed year and group effects as well as year-by-year regressions.

4.1. Measures of Profitability, Risk and Contribution to Group Control

In our basic model, we measured firm profitability by (EBIT / Asset). For this reason, we eliminate firms with no accounting data from our sample.[18] To check for robustness, we try alternative measures of firm profitability: (Ordinary income / Assets) and (Net income / Assets). Ordinary income is an income statement item unique to Korea; it is defined as earnings before taxes and extraordinary items, but after interest payments.

[17] Alternatively, the controlling shareholder would change the group ownership structure so that it increases the degree of group control contribution of a firm in which he has a high level of cash flow rights (or direct ownership).

[18] That is, firms not subject to the *Act on External Audit of Stock Companies*, i.e. those that are not required to receive an external audit, are dropped from the sample.

We also try a three-year average in addition to a single-year measure of profitability. A greater coefficient on the three-year average indicates that the controlling shareholder responds with a lag to changes in profitability.

On the other hand, firm risk is measured by *beta*, which is estimated from a market model where the KOSPI return is used as a proxy for market return. KOSPI is a value-weighted market index comprising all of the listed companies in the Korea Stock Exchange (KSE). For each year, we estimate the model using data during the past three-years with a monthly frequency. Note that *beta* is replaced by a missing value if the underlying regression uses less than 20 observations. When we use *beta* as our measure of firm risk, firms not listed in KSE are dropped from the sample. One advantage of using *beta* as our measure of risk is that it assumes that the controlling shareholder of a business group holds a well-diversified portfolio of companies, which is in fact true in the case of Korea.

The greatest challenge in testing our last hypothesis (contribution to group control and the choice of cash flow rights) is finding an objective algorithm to measure how each firm is important in the group control chain. This task can be done by making use of our unique intra-group shareholding matrix. Here we quantify the contribution to group control of firm *j* by the amount of additional cash flow rights the controlling shareholder would gain in other companies by having company *j* under his control as a fraction of company j's book equity value. Let this measure be named *contribution index* 1 (or "*con1*"). Equation (5) shows the formula of firm j's c*ontribution index* 1:

$$con1_j = \frac{\sum_{i=1, i\neq j}^{n} E_i cfr_i - \sum_{i=1, i\neq j}^{n} E_i cfr_i^{-j}}{E_j} \qquad (5)$$

E_i is firm *i*'s book value of equity. cfr_i is the cash flow rights computed for firm *i* when all affiliated firms of each *chaebol* group are included in the group-ownership structure. This

means that cfr_i is the cash flow rights computed for firm *i* when firm *j* is included in the group-ownership structure. On the other hand, cfr_i^{-j} is the cash flow rights computed for firm *i* when firm *j* is excluded from the group-ownership structure. E_j is the book value of equity of firm *j*. The first term in the numerator measures the total cash flow rights the controlling shareholder would receive from other companies *i* ($i \neq j$) when firm *j* is included in the *chaebol* group. On the other hand, the second term in the numerator captures the total cash flow rights the controlling shareholder would receive from other companies *i* ($i \neq j$) if firm *j* *were* excluded from the *chaebol* group. We divide the difference by the company's book equity value to control for a size effect, since larger firms could have greater contributions to group control.

Contribution to group control can also be measured using the voting rights difference, instead of the cash flow rights difference. That is, the amount of additional voting rights the controlling shareholder would gain in other companies by having company *j* under his control as a fraction of the company's book equity value. Let this measure be named *contribution index* 2 (or "*con2*"). Equation (6) shows the formula for firm j's *contribution index* 2:

$$con2_j = \frac{\sum_{i=1, j\neq i}^{n} E_i vr_i - \sum_{i=1, i\neq j}^{n} E_i vr_i^{-j}}{E_j} \qquad (6)$$

The indices can have a value equal to zero. This happens when firm *j* does not have any equity investment in other affiliated firms.[19] It should also be noted that the indices have

[19] *Contribution index 1* (computed by cash flow rights) can be zero for another reason. Say a controlling shareholder controls company *A* without holding any of its shares directly, while company *A* exclusively owns company *B*. Also assume company *B* has equity stakes in companies *C* and *D*. In such a situation, the *contribution index 1* for company *B* is zero (since the controlling shareholder has no share of company *A*), while the *contribution index 2* for company *B* is positive (since company B holds equity stakes in companies *C* and *D*).

no upper bounds. If there is no restriction on leverage or the length of the equity investment chain, the indices can be well above "1."

4.2. Control Variables

Besides voting rights, a number of other control variables are used in this paper. At the firm level, we include years-of-operation, a public company dummy, firm size (book equity value), a financial institution dummy, and leverage (debt-to-asset ratio). At the group level, we add group size, number of affiliated firms within the group, and a dummy variable that identifies groups with a financial institution. *Table 3* provides definitions for each of these control variables.

Years-of-operation can be negatively (positively) related to disparity (or cash flow rights).[20] One explanation for this is that old firms tend to have large outside shareholders, thus lowering their level of voting rights and, consequently, the degree of disparity. Another explanation is that controlling shareholders have an incentive to establish new firms as a subsidiary of an existing company, since by doing so they can reduce the risk of entering a new business. Since it is a subsidiary with no (or little) direct ownership, it will have a high level of disparity. Similar logic can also be applied to the **public companies dummy** and **firm size** (book equity value). By using book equity

[20] In this paper, we use different left-hand side variables, depending upon which determinant we are examining. When we examine firm profitability or risk, disparity is our dependent variable (with voting right as an additional control variable). But, when contribution to control is our variable of interest, we put cash flow right on the left-hand side (without controlling for voting right). Two points should be noted here. First, when we control for voting rights in the right-hand side, the coefficient on our variable of interest (e.g. profitability or risk) will have the same absolute value (with opposite sign), regardless of which left-hand side variable (e.g. disparity or cash-flow right) we use. This is because, when the level of voting right is controlled (thus, fixed), an increase in disparity is exactly offset by a decrease in cash flow rights. Second, when examining contribution to control, we do not put voting rights on the right-hand side. This is because we are interested in the absolute level of cash-flow rights, not in the relative magnitude of cash-flow rights to voting rights.

value as a proxy for firm size, we retain as many observations as possible.

Financial institutions may have a greater degree of disparity in Korea. In the past, many *chaebol*-controlled financial institutions were used as a lending vehicle to support other industrial firms within the *chaebol* group. They were not regarded as a separate profit-making entity. Thus, controlling shareholders had an incentive to keep the level of disparity, in such financial institutions, high. Otherwise, their losses would be transferred to the controlling shareholder.

Leverage (the debt-to-asset ratio) can be either positively or negatively related to disparity. A controlling shareholder may want to lower his direct ownership in highly levered firms, where the risk to equity holders is high. Thus, there is a positive relationship with the disparity. Conversely, leverage may also be negatively related to disparity. Notice that there are two ways for a controlling shareholder to externally finance a project without diluting his voting rights in the firm. One is issuing debt and the other is issuing equity to affiliated firms. If a firm is highly leveraged, it means that the controlling shareholder has been relying less on the latter method, thus resulting in a lower disparity.

Group size is the sum of each affiliated firm's book equity value. Again, book equity is used so as to maximize the number of observations in the sample. We conjecture that firm-level disparity will increase with group size, for if there is a large-sized affiliated firm within the group, there will be a greater amount of equity investment in other affiliated firms. Similar logic can be applied to the **number of affiliated firms**. The greater the number of affiliated firms, the greater the amount of equity investment to other affiliated firms, thus increasing firm-level disparity. Firms that are part of a *chaebol* **group that includes a financial institution** may also have a higher degree of firm-level disparity.

[21] As can be seen in Appendix 3 (Regulation of Large Business Conglomerates in Korea), financial institutions are not subject to the 25% upper ceiling on equity investment.

This is because a financial institution is an efficient vehicle for a controlling shareholder to strengthen his control over the group. There are two reasons for this. First, a financial institution is usually highly leveraged, and thus only a small amount of capital is required to acquire a controlling stake. Second, financial institutions can use their creditors' money to finance its equity investment in other affiliated firms.[21]

4.3. Econometric Issues

There are two major challenges when estimating *OLS* regressions of firm-level disparity on its determinants. One is the issue of reverse causality. That is, disparity can cause firm profitability (risk), rather than the other way around. For example, Joh (2003) demonstrates that Korean firms with a high disparity between voting and cash-flow rights tended to have low profitability during the pre-crisis period (1993-1997).[22] Black, Jang, and Kim (2004) also show that firms with high disparity tended to have low market values, as measured by Tobin's *q*, in 2001.

As a partial remedy to this problem, we make sure that our profitability measure is pre-determined. A three-year average of past profitability is used to make the righthand-side variable pre-determined. Even when a single-year measure is used, we compute profitability during the fiscal year, which ends before April, the month in which disparity is measured.

In particular, the causality issue between group control and the controlling shareholder's cash flow right (or direct ownership) is less problematic. Even if there is a reverse causality issue – the controlling shareholder increasing the level of group control contribution of a firm in which he has high cash flow rights – the ownership structure

[22] One potential underlying cause could be illegal value transfers (also known as tunneling) from companies with high disparity to those with low disparity.

must still be endogenously determined by the group control motivation.

The other econometric challenge is Korea-specific. As can be seen in *Appendix 3*, the KFTC regulations changed during the sample period, and this could have influenced the share ownership behavior by the controlling shareholders. Among the five regulations listed, two ("ban on new debt guarantees" and "board approval and disclosure of related parity transactions") are not directly related to share ownership. Of the remaining three, two other regulations ("ban on cross-shareholdings" and "no voting rights for financial institutions on shares issued by affiliated firms") changed only in the very last year of our sample. Thus, the only regulation of concern to us is the "upper ceiling on equity investment."

Until February 1998, a 25% upper ceiling was applied to all the firms within the top 30 *chaebols*, except for financial institutions. One of the major reasons to impose such a regulation was to limit equity investment among affiliated firms, and thus reduce disparity between voting and cash-flow rights. In February 1998, however, this regulation was unexpectedly lifted in the name of facilitating the corporate restructuring of crisis-hit *chaebol* firms. Then, in April 2001, the regulation was restored, and in January 2002 additional moderate changes were made.[23]

Given this information, once can identify a period that is not contaminated by government regulation: a period between February 1998 and March 2001. Since disparity is measured each year in April, yearly regressions in 1999 and 2000 should be free from any regulatory influence. Yearly regressions in 1998 and 2001, however, would be partly contaminated. With regard to the 1998 regression, firms were subject to regulation during a 10-month period from April 1997 and January 1998. In case of the 2001 regression, it may be influenced because the bill to restore the upper ceiling on equity

[23] The legislation to restore the regulation passed in December 1999 and a 15-month grace period was allowed.

investment was passed in December 1999, and firms knew that the regulation would be binding from April 2001. Thus, the controlling shareholder must have changed her shareholdings from the second half of 2000 at the latest to comply with the regulation soon to be effective. To see if our results are robust to such regulatory changes, we run year-by-year regressions and see if the coefficients are greater in year 1999 and 2000.

However, it should also be noted here that the upper ceiling on equity investment tends to weaken, not strengthen, the link between our proposed determinants and disparity. This means that the coefficients we obtain are downward biased in sample years other than 1999 and 2000. Thus, any control of the regulation effect, will strengthen, not weaken, the coefficients.

5. Results

5.1. Summary Statistics

Panel A of *Table 4* reports summary statistics of each variable used in this paper. The median voting rights measure is 74.59 percent, while the median cash flow rights measure is only 12.95 percent. The median disparity is 45.04 percent. *Table 4* also shows that the levels of voting rights, cash flow rights, and disparity are higher for private firms. For example, the median disparity is 50.69 percent for private firms, but only 27.83 percent for public firms.

Another important result from *Panel A* is that the median values of both *contribution indices 1 and 2* are zero. In fact, more than half of 4,114 firm-years have zero contribution indices. This led us to run two sets of regressions, one including such firms with zero

contribution index values, and another excluding them. Also, as can be seen in *Panel A*, the maximum values of winsorized *contribution indices* 1 and 2 are 3.45 and 3.57, respectively. These actual contribution index figures are consistent with reality. The firms with the highest *contribution index 1* in each group in 2002 are Samsung Everland (Samsung Group), LG Corp (LG Group), and SK C&C (SK Group), and each of these firms is commonly regarded by the investment community in Korea as the *de facto* holding company of their respective groups. This strongly suggests that our measure is reliable.[24]

Panel A also shows that 31.91 percent of the firms in our sample are firms either listed on the Korea Stock Exchange (KSE) or registered on the KOSDAQ stock market. Financial institutions comprised 12.9 percent of our sample. The median number of affiliates for each *chaebol* group was 29 (=*exp* (3.3673)).

Panel B of *Table 4* compares the level of disparity with the existing literature. The first column computes disparity as a difference between voting and cash flow rights. The second column calculates disparity as a ratio of voting over cash flow rights. Two observations can be made. First, the figures computed in previous studies are generally lower than those computed in this paper. For example, Claessens et al. (2000) and Joh (2003) report that the average difference between voting and cash flow rights in Korea are only 4 percent and 23 percent, respectively.[25] Claessens (2000), Chang (2003), and Lemmon and Lins (2003) also report that average cash flow rights leverages – voting rights over cash flow rights – in Korea are only 1.27, 1.47, and 2.37, respectively.[26] In contrast,

[24] In eight out of top 10 *chaebol* groups, the firm with the highest *index 1* is identical to the firm with the highest *index 2*, which further makes our measure reliable.

[25] Joh (2003), which includes private firms in the sample, reports that the average level of disparity is 23.47 percent in 1997. This figure is much lower than what we have. The difference comes from two sources: First, Joh's data includes not only *chaebol*-affiliated firms but non-affiliated firms as well. Second, Joh (2003) uses a database not from KFTC, but of her own construction, which can thus be incomplete.

[26] Chang (2003) originally computes fraction of inside ownership (equivalent to voting rights) and family portion (equivalent to cash flow rights over voting rights). Average inside ownership and family portion are 29.9 percent and 68 percent, respectively. Inverse of family portion gives the cash flow rights leverage.

our mean figures are 47 percent for the difference between the voting and cash flow rights, and 3.19 for the ratio of voting over cash flow rights. Second, even when comparing for a restricted sample of public *chaebol* firms, one can see that our figure of 3.25 is significantly greater than the figure of 1.47 computed by Chang (2003). Such a difference can be due to two factors: (i) incorporating every control chains that involve unlisted firms and (ii) using a flexible concept of control. Detailed explanations of our dataset and the concept of control can be found in Section *2B* and Section *3A*, respectively.

5.2. Profitability, Risk, and Choice of Disparity

Panels A and *B of Table 5* report the *OLS* regression results of voting-cash flow rights disparity on profitability with additional control variables. Profitability is measured as EBIT over assets. In *Panel A*, we use a single-year measure, while in *Panel B* we use a three-year average. Extreme values of (EBIT / Asset) are winsorized. That is, as for observations outside the 1st and the 99th percentiles, the (EBIT / Asset) values are replaced by the 1st and the 99th percentile values.

Equation (5) in *Panel A*, which uses a full set of control variables, including group and year dummies, shows that the coefficient on profitability is statistically significant and has the expected sign. The *t*-value is 3.42. The magnitude of the coefficient, however, is not economically large. A one-standard deviation increase in profitability decreases disparity by 1.4 percentage points (= 0.1063 × 0.1310 = 0.0139).[27] When we use a three-year average, rather than a single-year measure of profitability, the coefficient and the *t*-value increase. As can be seen in *Panel B of Equation (5)*, the *t*-value is now 4.43, and a one-standard deviation increase in profitability decreases disparity by 1.7 percentage points (= 0.0989 ×

[27] A change of profitability, from worst to best, decreases disparity by 10 percentage points.

0.1747 = 0.0173).[28]

From *Table 5*, one can also see that the coefficient size and sign on profitability is robust to the control variables we include. For *Equations (1)* to *(5)*, the coefficients on profitability remain stable, lying within a certain range. Most of the control variables have the expected signs. The coefficient on voting rights is positive and highly significant. Leverage has a negative coefficient when group or year dummies are included. As already mentioned, one possible explanation is the substitution effect between equity issued to affiliated firms and debt. A one standard deviation increase in leverage decreases disparity by 1.7 percentage points (= 0.0660 × 0.216 = 0.0173). *Table 5* also shows that even when the level of voting rights is controlled for, years-of-operation and disparity are negatively correlated. This can happen when new firms are established as subsidiaries of an existing company, and in this way, the controlling shareholder can minimize the risk of entering a new business. A one-standard deviation increase in years-of-operation decreases disparity by 4 percentage points (= 0.0437 × 0.9308 = 0.0406).

Group-level variables turn out to be significant when group dummies are not included. Group size, group with financial institution dummy, and number of affiliates are significant at 1%, 5%, and 10% levels, respectively. Disparity increase by 7.16 percentage points with a one-standard deviation increase in group size (= 0.0277 × 2.5839 = 0.0716). Disparity increases by 1.74 percentage points with a one-standard deviation increase in the number of affiliates (= 0.0221 × 0.7871 = 0.0174). Lastly, disparity increases by 4.61 percentage points when a *chaebol* group acquires or establishes a financial institution.

In *Table 6*, we conduct robustness checks. We estimate *equation (5)* in *Table 5* with three different measures of profitability (EBIT, ordinary income, and net income) for each year in the sample period (1997-2002). In *Panel A*, we use a one-year measure of

[28] A change of profitability, from worst to best, decreases disparity by 13.4 percentage points.

profitability and in *Panel B* we use a three-year average. The cells are shaded if the coefficient on profitability is significant at the 5% level. Three observations can be made. First, the coefficient on profitability tends to be largest when net income is used. The last column in *Panel A* shows that the coefficients are -0.1310 for the EBIT/Asset measure, -0.1739 for OI/Assets, and -0.1919 for NI/Assets. Second, the coefficient on profitability tends to be greater when we use the three-year average. The coefficients on NI/Assets are -0.1919 when a single-year measure is used (last column in *Panel A*), and -0.2402 when a three-year average is used (last column in *Panel B*). This indicates that the controlling shareholders tend to respond to profitability with a lag. Third, as expected, the coefficients tend to be larger in 1999 and 2000, when the upper ceiling on equity investment was absent. In 1999, the coefficient on a single-year OI/Assets reaches -0.3692. This means that a one-standard deviation increase in OI/Assets decreases the level of disparity by 4.7 percentage points (= 0.1279 × 0.3692 = 0.0472).[29]

Notice that in *Tables 5* and *6*, we do not include industry dummies in our regressions. When we did include 4-digit industry dummies, the results of which we do not report here, the coefficient on profitability and its *t*-value slightly increased. We also tried a regression model using the first differences to verify that our result is not entirely from cross-sectional variations. The results show that our main finding is still preserved. The coefficient on the first difference of profitability and its t-value turn out to be -0.0734 and -1.84, respectively. This finding is actually very surprising given that our disparity variable changes very slowly over time.

Table 7 reports *OLS* regression results of disparity on firm volatility with control variables. *Beta* is used as our measure of volatility. We use the same set of control

[29] This figure is similar to that estimated by Chang (2003), which shows that a one standard deviation increase in profitability increases family portion of inside ownership by 5 percentage points.

[30] A one-standard deviation increase in the index translates into a 9.84 percentage point increase in the cash flow right.

variables as in *Table 6* and *7*. The table shows that the coefficients on *beta* are not significant for most of the specifications. Although the coefficient is negative and significant at the 5% level in *equation (2)*, the magnitude is economically meaningless. A one-standard deviation increase in *beta* decreases the level of disparity by 0.7 percentage points (= 0.463 × 0.015 = 0.007). In year-by-year regressions, the result of which we do not report here, we find that the weak link between firm risk and disparity remains intact. Also, our result remains the same even when a three-year average *beta* is used, instead of a single-year measure.

One possible explanation can be the *control potential argument* suggested by Demsetz and Lehn (1985), which predicts that firms with high volatility tend to have high ownership concentration. According to this argument, there is a certain wealth gain achievable through more effective monitoring of managerial performance by a firm's owner. This is particularly so when the market for corporate control does not exist, as is the case in Korea. When a firm operates in an uncertain environment, it becomes more costly to monitor managerial performance. Under this situation, greater ownership concentration becomes an effective substitute to market for corporate control. This *substitution effect* may have offset the *risk minimization effect*, which we originally had in mind.

5.3. Contribution to Group Control and Choice of Cash Flow Right

In *Table 8 Panel A*, contribution to group control indices are grouped in quintiles. Before grouping into quintiles, observations are dropped if the index values are zero. For each quintile, we show the level of cash flow rights. The last column shows the results of difference-in-mean tests we conduct between the 1st and the 5th quintiles. When using *contribution index* 1, the 1st quintile (small index value) shows average cash flow rights of 8

percent, while the 5th quintile (large index value) shows average cash flow rights of 47 percent. The difference between the two, 38 percent, is statistically significant at the 1 percent level. When *contribution index* 2 is used, the difference is somewhat smaller. The 1st quintile (small index) shows average cash flow rights of 17 percent, while the 5th quintile (large index) shows average cash flow rights of 30 percent. The difference of 13 percentage points is statistically significant at the 1 percent level.

Panels B and C show *OLS* regression results of cash flow right on *contribution indices 1 and 2* with control variables. *Panel B* uses cash flow right to compute the contribution index, while *Panel C* uses voting right to compute the index. We use the same set of control variables as in the previous regressions, except that we replace voting right with profitability. We include profitability in the regression since we know from *Tables 5* and *6* that profitability is a non-trivial factor determining the level of disparity (or equivalently the cash-flow right). We exclude voting right since here we are not interested in the relative disparity between cash flow rights and voting rights. In this subsection, instead we are interested in the absolute level of cash flow rights.

The tables show that our measures of contribution are not only statistically significant, but also economically meaningful. In *Panel B equation (5)*, the coefficient on *contribution index 1* is 0.1683 and statistically significant at 1 percent level. A one-standard deviation increase in the index increase cash flow right by 7.11 percentage points (= 0.4227 × 0.1683 = 0.07114). It should also be noted that the coefficient on profitability also remains to be significant. The impact of *contribution index 2*, however, turns out to be relatively modest. In *Panel C equation (5)*, the coefficient on *contribution index 2* is 0.0689 and statistically significant at 1 percent level. A one-standard deviation increase in the index increase cash flow right by 3.55 percentage points (= 0.5159 × 0.0689 = 0.0355). These results do not change when we drop observations with zero index values.

Table 9 conducts some robustness checks. It reports *OLS* regressions results for *Table 8*,

equation (5) for each year during the sample period (1997-2002). The coefficients on *contribution indices 1* and *2* are always positive and significant at 1% level. An interesting observation is that the coefficient on *contribution index 1* peaks in 1997 at 0.2328 and gradually decreases.[30] On the other hand, the coefficient on *contribution index 2* increases over time and peaks in 2002 at 0.0930.[31] One possible explanation may be that, in recent years, controlling shareholders in Korea are increasingly less concerned about *total cash flow rights* (index 1), but more concerned about *direct voting rights* (index 2) in other companies. This explanation is consistent with the recent changes in the Korean capital market. One key change is the significant growth of foreign ownership during the sample period.[32] Consequently, concerns over potential hostile takeovers or institutional shareholder activism may have triggered the controlling shareholders to tighten their group control by increasing their cash flow rights in companies with high levels of *index 2*.

5.4. Sub-Sample Results: *Listed versus Non-Listed*

In *Table 10, OLS* regressions of cash flow rights are estimated with all three determinants of our interest: profitability, risk, and contribution to group control. To preserve sample size and to make comparison between listed and non-listed firms possible, we use the 5-year standard deviation of (EBIT / Assets) as our measure of risk instead of *beta*. *Equation (1)* shows the result for our full sample and *equations (2) and (3)* show results for sub-samples of non-listed firms and listed firms, respectively. Voting right is included in all three equations as an extra control variable. Public company dummy is naturally dropped in *equations (2) and (3).*

As can be seen from *equation (1),* when all three determinants are in the regression

[31] A one-standard deviation increase in the index translates into a 4.8 percentage point increase in the cash flow right.

[32] Foreign ownership in *KSE* was above 40 percent as of January 2004.

equation, contribution to group control and profitability remain to be statistically significant, while risk is not significant. The coefficient on profitability is slightly higher than that found in *Table 5 equation (5)* and the coefficient on *Contribution Index 1* is slightly lower than that found in *Table 8 Panel B Equation (5).*

Comparison between equations (2) and (3) gives us three observations. First, profitability explains cash flow right in non-listed firms, but not in listed firms. This is intuitive given that the ownership structure of public firms is more difficult to change than that of private firms. Second, firm risk has explanatory power neither in the public firms nor in the private firms. Third, contribution to group control has strong explanatory power in both types of firms, but the coefficient is stronger in case of listed firms. The coefficients are 0.1752 in public firms and 0.1238 in private firms. One explanation is that the threat of hostile acquisition is present in public firm, but absent in private firms. Thus, given everything else equal, there exists a stronger control motive in public firms.

6. Concluding Remarks

Many believe that corporate ownership structure evolves slowly over time. However, most academic works also treat ownership as exogenous as if they do not support such view. But, when it comes to group-affiliated firms with a common controlling shareholder, the reality can be different. In this paper, we provide empirical evidence that the ownership structure of a business conglomerate can be deliberately shaped by its controlling shareholder. By using an exclusive data set of 46 *chaebol* groups on their intra-group shareholdings in Korea during 1997-2002, we find that controlling shareholders concentrate their cash flow rights in firms that serve as *de facto* holding companies – those with the greatest contribution to group control – and those with high profitability.

The strong group control motive by the controlling shareholder found in this paper

has a number of implications. First, it suggests that the controlling shareholders of *chaebol* groups see group-affiliated firms, including financial institutions, not only as profit-making entities, but also as means to control other group-affiliated firms. Such motive can be especially strong in case of financial institutions, which are able to control many other firms with only a small amount of book equity. Second, our finding implies that there still might be significant private gains from group control. Otherwise, the controlling shareholder would not structure ownership in a way that maximizes his group control. This is consistent with the recent finding by Dyck and Zingales (2004), which reports premiums from controlling block transactions. According to this paper, the median value of block premium in Korea is 17 percent, which is above the 39-country mean of 11 percent. Recent corporate governance scandals in Korean *chaebols* also show that the controlling shareholders even engage in illegal transactions to preserve their group control, which further supports our reasoning that private gains can be significant.

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Appendix 1:
Computation of Disparity: Distinctions from the Existing Literature

	Claessens et al. (2000)	LLSV (2002)	Lins (2003)	This Paper
Non-listed companies	Ownership data not available	Ownership data not available	Ownership data not available	Ownership data available for all non-listed firms under the controlling shareholder's influence
Listed companies	Ownership data available for only three-quarters of listed firms in each country by market capitalization	Ownership data available for only largest 20 firms in each country by market capitalization	Ownership data available for only half of listed firms in each country by market capitalization	Ownership data available for all listed firms under the controlling shareholder's influence
Financial institutions	Included in the sample	Dropped from the sample	Dropped from the sample	Included in the sample
Shareholders	Only block holders with equity stakes at or above a 5% threshold are considered	-	Only block holders with equity stakes at or above a 5% threshold are considered	All shareholders are considered regardless of the size of its equity stake
Distinction among individual family members	No distinction made	-	-	No distinction made
Not-for-profit organizations	Considered as shareholders	Considered as shareholders	Considered as shareholders	Considered as shareholders
Controlling Shareholder	A shareholder that ultimately owns the direct block holding; if there are multiple ultimate owners, the one with the largest control rights is chosen (defined below)	A shareholder with the largest control right among those with at least 10% control right (defined below)	A shareholder that ultimately owns the direct block holding, and is a member of the management group (mangers and their families of the company concerned)	A person who, alone or with related parties, has *de facto* control of the company (also known as the *same person* in the *Monopoly Regulation and Fair Trade Act*)
Related Parties	Not considered	Not considered	Companies managed by the members of the management group	Spouse and relatives; not-for-profit organizations where the *same person*, alone or with related parties, contributed 30% of its total

				donation; not-for-profit organizations where the *same person*, directly or through its related parities, has a controlling influence over the appointment of directors or its business activities; any company whose business is *de facto* controlled by the *same person*; agents of the *same person* or its related parities
De facto controlled companies	Not considered	Not considered	Not considered	See *Appendix 2*
Voting Rights	Sum of the weakest links in the chains of voting rights	Controlling shareholder's direct and indirect voting rights in the firm; indirect voting right over the firm concerned is *x* percent if a sequence of firms leading to this firm forms a control chain (e.g. each of which has control over the next one), and the last firm in the chain directly controls *x* percent of the voting rights	Sum of direct block holdings ultimately held by the management group and its related parities	Sum of direct ownership held by the controlling shareholder and its related parties
Cash-flow rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights	Sum of the products of the ownership stakes held by the management group along the chains of voting rights	Sum of the products of the ownership stakes held by the controlling shareholder along the chains of voting rights
Disparity Formula	Cash-flow Rights / Voting Rights	Voting Rights – Cash-flow Rights	Voting Rights / Cash-flow Rights	Voting Rights – Cash-flow Rights

Appendix 2:
The Concept of *Related Parties* and *de Facto* Control

Business Conglomerates

According to the *Monopoly Regulation and Fair Trade Act*, a business conglomerate is a group of companies whose businesses are controlled *de facto* by the *same person* pursuant to the standards prescribed by the *Presidential Decree*.[33]

There can be two different types of business conglomerates:

(a) Where the *same person* is a company, a business conglomerate is a group composed of said company and one or more companies over which the *same person* holds *de facto* control; and
(b) Where the *same person* is not a company, a business conglomerate is a group composed of two or more companies controlled *de facto* by the *same person*.

The Concept of Control

The *Presidential Decree* defines companies whose businesses are controlled *de facto* by the *same person* in the following two ways:

(a) A company where the *same person*, alone or with its related parities, owns 30% of voting shares issued, and where the *same person* is the largest shareholder. *Related parities* can refer to the following:

    ① Spouse and relatives (if the relative has a blood relationship, the degree of kinship must be eight or less; if the relative has a blood relationship with the spouse, the degree of kinship must be four or less)
    ② Not-for-profit organization where the *same person*, alone or with its *related parities*, contributed 30% of its total donation. The *same person* must be the largest donor, or either the *same person* or anyone among the *related parities* must be the founder.
    ③ Not-for-profit organization where the *same person*, directly or through his *related parties*, has a controlling influence over the appointment of directors or its business activities.
    ④ Any company whose business is controlled *de facto* by the *same person* according to (a) and (b).
    ⑤ Any agent of the *same person* or its *related parties*.

(b) The *same person* is considered to have *de facto* control of the following companies even

[33] KFTC does not officially use the term *chaebol*. Instead, they use the term business conglomerates.

without any share ownership.

① A company whose representative director or at least half of whose directors are appointed or can be appointed by the *same person* via a contract with the major shareholders or by a mutual agreement.[34]

② A company where the *same person*, directly or through its *related parities*, has a controlling influence over its major decisions such as organizational change or new business entry, or its business decisions.

③ A company that participates in any of the following personnel exchanges with a company that is controlled *de facto* by the *same person* (includes the *same person* if it is a company):

i. A company, the director of which has a joint appointment at a company that is controlled *de facto* by the *same person*.

ii. A company, the director or the employee of which was previously employed by a company controlled *de facto* by the *same person*, later employed by the company concerned, and lastly returned to the same company he/she was previously employed or to another company controlled *de facto* by the *same person*.

iii. A company in which the director or employee of which was previously employed by the company concerned, later employed by the company controlled *de facto* by the *same person*, and lastly returned to the company concerned or to its affiliated company.

④ A company that has transactions of funds, assets, goods, services, or debt guarantees with the *same person* or with its *related parties* above a normal range; a company that can be recognized as an affiliated company of the business group controlled by the *same person* according to social norms (e.g. using similar trademarks).

[34] A representative director refers to senior directors including the CEO.

Appendix 3:
Regulation on Large Business Conglomerates in Korea

Since 1987, the Korea Fair Trade Commission (KFTC) has been categorizing, each year in April, certain large business conglomerates to be subject to a number of restrictions, which we explain in the table below. From 1987 to 2001, KFTC designated the top 30 conglomerates in terms of their total asset size. Since 2002, KFTC changed the way it designates the conglomerates. Instead of using asset size ranks, it uses asset size thresholds. That is, KFTC regulations are imposed only when the total asset size of a conglomerate is above certain asset size thresholds (e.g. 2 trillion or 5 trillion Korean won). Following is the list of regulations imposed on each of the affiliated firms comprising the large business conglomerates designated by the KFTC. Dates are effective dates, not the dates on which the relevant bills were passed.

Regulations	Description
Ban on cross-shareholdings	Affiliated firms in the designated large business conglomerates cannot have cross shareholdings with other affiliated firms in the same conglomerate (cross-shareholding refers to firm A holding shares of firm B, and firm B holding shares of firm A; circular shareholding is allowed) ▪ (April 1987-March 1991) Applied to all the firms in top 30 conglomerates, with the exception of financial institutions ▪ (April 1991-March 2002) Applied to all the firms in top 30 conglomerates, including financial institutions ▪ (April 2002-Present) Applied to all the firms in conglomerates above 2 trillion won
Upper ceiling on equity investment	Affiliated firms in the designated large business conglomerates can make equity investments in other domestic companies in amounts only up to 25% of net assets (= assets – book equity invested by other affiliates) ▪ (April 1987-March 1990) 40% upper ceiling applied to all the firms in the top 30 conglomerates ▪ (April 1990-Dec.1994) 40% upper ceiling applied to all the firms in the top 30 conglomerates, with the exception of financial institutions ▪ (Dec.1994-Feb.1998) 25% upper ceiling applied to all the firms in the top 30 conglomerates, with the exception of financial institutions ▪ (Feb.1998-March 2001) No upper ceiling (regulation lifted to facilitate corporate restructuring) ▪ (April 2001-Jan 2002) 25% upper ceiling applied to all the firms in top 30 conglomerates, with the exception of financial institutions (exemptions allowed on certain conditions) ▪ (Jan 2002-Present) Limit voting rights on shares above the 25% upper ceiling applied to all the firms in conglomerates above 5 trillion won, with the exception of financial institutions

	(exemptions allowed on a variety of reasons)
Ban on new debt guarantees	Affiliated firms in the designated large business conglomerates cannot provide any new debt guarantees to domestic affiliates ▪ (April 1993-March 1996) Debt guarantee cannot be more than 200% of book equity (if above the upper ceiling should reduce it by March 1996) ▪ (April 1997-March 1999) Debt guarantee cannot be more than 100% of book equity (if above the upper ceiling, should be reduced by March 1998) ▪ (April 1999-Present) Ban on new debt guarantees
No voting rights for financial institutions on shares issued by affiliated firms	Financial institutions in the designated large business conglomerates cannot exercise their voting rights on shares issued by their affiliated firms ▪ (April 1993-Jan.2002) Applied to all the financial institutions in top 30 business conglomerates ▪ (Jan.2002-Present) Voting rights of financial institutions allowed up to 30% of shares issued by an affiliated public firm on voting items such as revision of AOI, appointment/removal of directors, and mergers(the controlling shareholder cannot directly or indirectly exercise his/her voting rights above 30%)
Board approval and disclosure of related party transactions	Related party transactions above 10 billion won or 10% of book equity should be approved by the board and be disclosed to the public ▪ (April 2000-March 2001) Applied to all the firms in top 10 business conglomerates ▪ (April 2001-March 2002) Applied to all the firms in top 30 business conglomerates ▪ (April 2002-Present) Applied to all the firms in business conglomerates above 2 trillion won

Table 1: Intra-Group Shareholding Matrix of Samsung Group in 2002

The complex intra-group shareholding structure of Samsung Group can be effectively presented in a matrix format. For the convenience of presentation, among the 63 firms classified by KFTC as Samsung affiliates, we show in this table only the 27 major firms that appear in the 2002 Samsung Group Annual Report. The fractions of shares are computed out of total outstanding common shares, including treasury stocks.

	Same Person	Relatives	NPO	Managers	Sub-Total	Treasury Stocks	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
[1] Samsung Corporation	1.42	0.01	0.23	0.18	0.42	1.96	-	-	-	4.66	-	-	-	-	-	-
[2] Cheil Industries	-	-	2.58	0.33	2.91	4.97	-	-	-	-	-	-	-	-	-	-
[3] Samsung Electronics	2.00	1.55	0.08	0.64	2.27	4.23	3.87	-	-	-	-	-	-	-	-	-
[4] Samsung SDI	-	0.00	0.74	0.29	1.03	2.55	-	-	20.01	-	-	-	-	-	-	-
[5] Samsung Corning	-	-	-	0.00	0.00	-	-	-	48.36	-	-	-	-	-	-	-
[6] Samsung Electro-Mechanics	-	0.12	-	0.84	0.96	0.50	-	-	23.69	-	-	-	-	-	-	-
[7] Samsung Petrochemical	-	-	-	-	0.00	-	10.00	16.39	9.93	-	-	-	-	-	-	-
[8] Samsung Heavy Industries	-	-	-	0.02	0.02	-	-	0.42	17.62	-	-	2.39	-	-	-	0.13
[9] The Shilla Hotels & Resorts	-	-	-	0.08	0.08	3.06	-	-	5.11	-	-	-	-	-	-	-
[10] Samsung Engineering	-	-	-	0.28	0.28	0.03	-	13.10	-	5.09	-	-	-	-	-	-
[11] Cheil Communications	-	-	-	0.20	0.20	8.26	12.64	-	2.61	-	-	-	-	-	-	-
[12] Samsung Lions	2.50	-	-	-	0.00	-	7.50	15.00	27.50	-	-	12.50	-	-	-	-
[13] Samsung Atofina	0.44	-	-	0.18	0.18	2.44	37.45	0.85	3.78	10.32	-	10.19	-	-	-	-
[14] Samsung Economic Research Institute	-	-	-	-	0.00	-	1.00	1.00	29.80	28.60	-	23.80	-	1.00	-	-
[15] Samsung Fine Chemicals	-	-	-	0.25	0.25	-	5.59	3.16	8.39	11.49	-	0.26	-	-	2.24	0.85
[16] Samsung Corning Precision Glass	-	-	-	-	0.00	-	-	-	42.57	-	-	-	-	-	-	-
[17] S1	-	-	-	0.01	0.01	0.07	-	-	-	11.03	-	-	-	-	-	-
[18] Samsung Everland	3.72	50.77	0.88	-	51.65	-	1.48	4.00	-	4.00	-	4.00	-	-	-	-
[19] Samsung SDS	-	22.82	-	6.78	29.60	-	17.96	-	21.27	-	-	8.29	-	-	-	-
[20] Samsung Techwin	-	-	-	0.03	0.03	12.75	3.85	0.10	22.93	-	-	-	-	-	-	-
[21] Samsung Life Insurance	4.54	4.68	4.68	2.50	11.86	-	-	-	-	-	-	0.60	-	-	-	-
[22] Samsung Fire & Marine Insurance	0.31	-	3.58	0.05	3.63	8.47	-	-	-	-	-	-	-	-	-	-
[23] Samsung Card	-	0.10	-	-	0.10	-	9.44	-	58.59	-	-	22.31	-	-	-	-
[24] Samsung Securities	0.10	0.01	0.29	0.46	0.76	3.63	0.27	-	-	-	-	-	-	-	-	-
[25] Samsung Investment Trust Management	-	17.95	-	0.38	18.33	-	-	-	-	-	-	-	-	3.89	-	-
[26] Samsung Venture Investment	-	-	-	-	0.00	-	-	-	16.33	16.33	-	17.00	-	17.00	-	-
[27] Samsung Networks	-	23.26	-	6.29	29.55	-	19.47	-	23.07	-	-	8.99	-	-	-	-

	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]	[24]	[25]	[26]	[27]
[1] Samsung Corporation	-	-	-	-	-	-	-	-	-	-	4.81	-	-	0.00	0.01	-	-
[2] Cheil Industries	-	-	-	-	-	-	-	-	-	-	0.01	-	4.00	0.00	-	-	-
[3] Samsung Electronics	-	-	-	-	-	-	-	-	-	-	6.94	1.21	-	0.02	-	-	-
[4] Samsung SDI	-	-	-	-	-	-	-	-	-	-	0.02	-	-	0.00	0.17	-	-
[5] Samsung Corning	-	-	-	-	-	-	-	-	-	-	1.00	-	-	-	-	-	-
[6] Samsung Electro-Mechanics	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00	0.05	-	-
[7] Samsung Petrochemical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[8] Samsung Heavy Industries	0.13	-	-	-	-	-	-	0.13	-	0.07	3.91	-	-	0.00	-	-	-
[9] The Shilla Hotels & Resorts	-	-	-	-	-	-	-	-	-	-	7.30	-	0.52	3.06	-	-	-
[10] Samsung Engineering	-	-	-	-	-	-	-	1.07	-	-	-	-		-	-	-	-
[11] Cheil Communications	-	-	-	-	-	-	-	-	-	-	-	-	3.04	-	-	-	-
[12] Samsung Lions	3.00	-	-	-	-	-	-	2.00	-	-	-	-	-	-	-	-	-
[13] Samsung Atofina	0.32	-	-	-	3.45	-	-	-	-	25.6	-	-	-	-	-	-	-
[14] Samsung Economic Research Institute	-	-	-	-	-	-	-	-	-	-	14.8	-	-	-	-	-	-
[15] Samsung Fine Chemicals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[16] Samsung Corning Precision Glass	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[17] S1	-	-	-	-	-	-	-	-	-	-	5.34	0.97	-	1.32	-	-	-
[18] Samsung Everland	-	-	-	-	-	-	-	-	-	-	-	-	14.0	-	-	-	-
[19] Samsung SDS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[20] Samsung Techwin	-	-	-	-	-	-	-	0.28	-	-	1.21	-	-	1.76	-	-	-
[21] Samsung Life Insurance	-	-	-	-	0.47	-	-	19.3	0.35	-	-	-	-	-	-	-	-
[22] Samsung Fire & Marine Insurance	-	-	-	-	-	-	-	-	-	-	9.89	-	3.15	0.00	-	-	-
[23] Samsung Card	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[24] Samsung Securities	-	-	-	-	-	-	-	-	-	-	11.5	5.47	2.62	-	-	-	-
[25] Samsung Investment Trust Management	-	-	-	-	-	-	-	-	-	-	3.56	1.19	-	65.4	-	-	-
[26] Samsung Venture Investment	-	-	-	-	-	-	-	-	-	16.7	-	-	-	16.7	-	-	-
[27] Samsung Networks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: "-" indicates zero shares, whereas "0.00" stands for small positive figures below 1/500 (figures above 1/500 are rounded to be 0.01).

Table 2: Firm-Level Disparity of Samsung Group in 2002

Among the 63 firms classified by the Fair Trade Commission as affiliated firms, we only show in this table the 27 major firms that appear in the 2002 Samsung Group Annual Report.

Rank	Name	Control Right	Cash-Flow Right	Disparity
1	Cheil Industries	0.082	0.002	0.080
2	Samsung Corporation	0.115	0.025	0.090
3	Samsung Electronics	0.170	0.053	0.117
4	The Shilla Hotels & Resorts	0.174	0.019	0.155
5	Samsung Fire & Marine Insurance	0.202	0.027	0.175
6	Samsung Life Insurance	0.380	0.201	0.179
7	S1 Corporation	0.206	0.013	0.192
8	Cheil Communications	0.202	0.006	0.195
9	Samsung Securities	0.227	0.028	0.199
10	Samsung Engineering	0.213	0.008	0.206
11	Samsung SDI	0.218	0.011	0.207
12	Samsung Heavy Industries	0.248	0.018	0.230
13	Samsung Electro-Mechanics	0.248	0.014	0.234
14	Samsung Techwin	0.346	0.020	0.325
15	Samsung Fine Chemicals	0.353	0.009	0.344
16	Samsung Petrochemical	0.363	0.008	0.355
17	Samsung Everland	0.945	0.557	0.388
18	Samsung Corning Precision Glass	0.426	0.023	0.403
19	Samsung Corning	0.494	0.027	0.466
20	Samsung SDS	0.771	0.245	0.526
21	Samsung Networks	0.811	0.251	0.560
22	Samsung Lions	0.700	0.055	0.645
23	Samsung Investment Trust Management	0.924	0.206	0.718
24	Samsung Card	0.884	0.036	0.848
25	Samsung Atofina	0.949	0.025	0.925
26	Samsung Economic Research Institute	1.000	0.053	0.947
27	Samsung Venture Investment	1.000	0.024	0.976

Table 3: Definition of Other Variables

All accounting measures are from the National Information and Credit Evaluation, Inc. (NICE). Since disparity is used as a dependent variable in our regression analyses, we make sure that other firm-level variables are measured prior to the disparity variable. As such, they are measured during or on the last day of the fiscal year, which ends before April. When the fiscal year changes during the sample year, we only keep those years which cover a full 12 months.

Variable Name	Definition
EBIT / Assets	EBIT divided by book value of assets (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values.
OI / Assets	Ordinary income divided by book value of asset (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values. Ordinary income is earnings before taxes and extraordinary items.
NI / Assets	Net income divided by book value of assets (measured at previous fiscal year end), winsorized at the 1st and the 99th percentile values.
Beta	*Beta* is estimated from a market model where the KOSPI return is used as a proxy for market return. KOSPI is a value-weighted market index comprising all the listed companies on the Korea Stock Exchange (KSE). For each year, we estimate *Beta* using monthly data over the past three-years. Note that *Beta* is replaced by a missing value if the underlying regression uses less than 20 observations. *Beta* is winsorized at the 1st and the 99th percentile values.
SD (EBIT / Assets)	Standard deviation of (EBIT / Assets) over the past 5-year period. It is winsorized at the 1st and the 99th percentile values.
Contribution Index 1	Amount of additional *cash flow rights* a controlling shareholder would gain in other companies by having company *j* under her control as a fraction of the company *j*'s book equity value. See Section 4-*A*, Equation (5). The index is winsorized at the 1st and the 99th percentile values.
Contribution Index 2	Amount of additional *voting right* a controlling shareholder would gain in other companies by having company *j* under her control as a fraction of the company *j*'s book equity value. See Section 4-*A*, Equation (6). The index is winsorized at the 1st and the 99th percentile values.
Leverage	Book value of debt divided by the book value of assets. This measure is first winsorized at the 1st and the 99th percentile values, and then *ln*[(debt / asset)+1] is computed. "1" is added since there "0" values, even after winsorization.
Years of Operation	Number of years since the company's establishment. This measure is logged.
Public Company	1 if the company is listed either in KSE or KOSDAQ; 0 otherwise
Firm Size	Book value asset minus book value of debt (unit: billion won). Negative book values are treated as missing values. This measure

	is logged after adding "1." This is to make this measure non-negative after taking the log.
Financial Institution	1 if the company is a financial institution; 0 otherwise
Group Size	Book value of equity summed across all affiliated firms (unit: billion won). This measure is logged after adding "1." This is to make this measure non-negative after taking the log.
Number of Affiliates	Number of firms controlled by a *chaebol* the company is affiliated to. This measure is logged.
Group with Fin. Inst.	1 if the company is affiliated to a group with a financial institution; 0 otherwise

Table 4: Summary Statistics

Panel A: Summary Statistics

Variable Name	# of Obs.	Mean	Median	Std. Dev.	Min	Max
Voting Right (All)	5,202	0.6830	0.7459	0.3079	0.0000	1.0000
Cash Flow Right (All)	5,202	0.2144	0.1295	0.2436	0.0000	1.0000
Disparity (All)	5,202	0.4685	0.4504	0.3121	0.0000	1.0000
Voting Right (Private)	3,542	0.7591	0.9000	0.2816	0.0000	1.0000
Cash Flow Right (Private)	3,542	0.2398	0.1405	0.2690	0.0000	1.0000
Disparity (Private)	3,542	0.5192	0.5069	0.3109	0.0000	1.0000
Voting Right (Public)	1,660	0.5206	0.4779	0.2986	0.0000	1.0000
Cash Flow Right (Public)	1,660	0.1603	0.1121	0.1653	0.0000	1.0000
Disparity (Public)	1,660	0.3603	0.2783	0.2862	0.0000	1.0000
1yr (EBIT / Asset)	3,743	0.0476	0.0497	0.1091	-0.3394	0.4288
1yr (OI / Asset)	3,771	0.0065	0.0124	0.1332	-0.5350	0.4292
1yr (NI / Asset)	3,772	-0.0070	0.0084	0.1301	-0.5884	0.3595
3yr (EBIT / Asset)	4,088	0.0458	0.0493	0.1009	-0.3394	0.4288
3yr (OI / Asset)	4,121	0.0070	0.0122	0.1193	-0.5350	0.4292
3yr (NI / Asset)	4,123	-0.0062	0.0075	0.1131	-0.5884	0.3595
1yr *Beta*	796	1.0761	1.0470	0.4436	-0.0345	2.2510
3yr *Beta*	895	1.0480	1.0337	0.3826	-0.0345	2.2428
5yr *SD*(EBIT / Asset)	3,818	0.0615	0.0360	0.0794	0.0022	0.5330
Contribution Index 1	4,114	0.0971	0.0000	0.4227	0.0000	3.4467
Contribution Index 2	4,114	0.1982	0.0000	0.5159	0.0000	3.5684
Leverage	4,158	0.5392	0.5511	0.2221	0.0000	3.4568
Years of Operation	3,745	2.6921	2.7726	0.8373	0.6931	4.4188
Public Company	5,202	0.3191	0.0000	0.4662	0.0000	1.0000
Firm Size	4,466	2.6644	2.4925	2.3359	0.0000	10.0987
Financial Institution	5,202	0.1292	0.0000	0.3354	0.0000	1.0000
Group Size	5,202	7.1837	7.6057	2.6817	0.0013	10.9098
Number of Affiliates	5,202	3.4428	3.3673	0.5846	1.7918	4.4543
Group with Fin. Inst.	5,202	0.9208	1.0000	0.2701	0.0000	1.0000

Panel B: Comparison with the Existing Literature (Using Average Figures)

	Voting Right – Cash Flow Right	Voting Right / Cash Flow Right	Coverage	Period
This Paper (All)	0.47	3.19	All Chaebols Firms	1997-2002
This Paper (Private)	0.52	3.17	Private Chaebol Firms	1997-2002
This Paper (Public)	0.36	3.25	Public Chaebol Firms	1997-2002
Claessens et al. (2000)	0.04	1.27	211 Korean Public Firms	1997
Chang (2003)	-	1.47	Public Chaebol Firms	1986-1996
Lemmon and Lins (2003)	-	2.37	188 Korean Public Firms	1997
Joh (2003)	0.23	-	All Korean Firms	1997

Table 5: Disparity and Profitability

OLS regressions of disparity on profitability (measured as EBIT over assets) with additional control variables are shown in *Panel A* and *B*. The extreme values of (EBIT / Assets) are winsorized. That is, as for the observations outside the 1st and the 99th percentiles, the (EBIT / Assets) values are replaced by the 1st and the 99th percentile values. In *Panel A*, we use one-year past (EBIT / Asset) and, in *Panel B*, we use three-year average of past (EBIT / Asset). *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

Panel A: One-Year Profitability

	Disparity				
	(1)	(2)	(3)	(4)	(5)
1yr (EBIT / Assets)	-0.1224***	-0.1009***	-0.1314***	-0.1426***	-0.1310***
	(3.41)	(3.26)	(3.44)	(3.46)	(3.42)
Voting Rights	0.7037***	0.7570***	0.7251***	0.6825***	0.7254***
	(62.69)	(78.44)	(52.92)	(46.71)	(52.74)
Leverage			-0.0662**	-0.0180	-0.0660**
			(2.54)	(0.63)	(2.53)
Years of Operation			-0.0434***	-0.0458***	-0.0437***
			(6.61)	(7.09)	(6.62)
Public Company			-0.0040	0.0051	-0.0040
			(0.50)	(0.58)	(0.50)
Firm Size			0.0037	0.0005	0.0039
			(1.50)	(0.20)	(1.54)
Financial Institution			0.0133	0.0121	0.0136
			(1.52)	(1.23)	(1.55)
Group Size				0.0277***	-0.0054
				(5.57)	(0.56)
Number of Affiliates				0.0221*	0.0232
				(1.89)	(0.70)
Group w / Fin. Inst.				0.0461**	-0.0269
				(2.34)	(0.69)
Group Dummies	No	Yes	Yes	No	Yes
Year Dummies	No	Yes	Yes	No	Yes
Observations	3743	3743	2715	2715	2715
Adjusted R-squared	0.5160	0.6632	0.6778	0.5937	0.6776

Panel B: Three-Year Profitability

	Disparity				
	(1)	(2)	(3)	(4)	(5)
3yr (EBIT / Asset)	-0.1634***	-0.1241***	-0.1750***	-0.1941***	-0.1747***
	(4.26)	(4.03)	(4.44)	(4.36)	(4.43)
Voting Right	0.7022***	0.7601***	0.7281***	0.6854***	0.7285***
	(65.92)	(82.87)	(54.25)	(47.90)	(54.10)
Leverage			-0.0686***	-0.0186	-0.0682***
			(2.69)	(0.66)	(2.67)
Years of Operation			-0.0414***	-0.0442***	-0.0418***
			(6.35)	(6.86)	(6.38)
Public Company			-0.0057	0.0035	-0.0058
			(0.72)	(0.40)	(0.73)
Firm Size			0.0034	0.0001	0.0037
			(1.42)	(0.03)	(1.50)
Financial Institution			0.0084	0.0065	0.0088
			(0.97)	(0.66)	(1.01)
Group Size				0.0270***	-0.0081
				(5.45)	(0.84)
Number of Affiliates				0.0233**	0.0293
				(2.01)	(0.90)
Group w / Fin. Inst.				0.0472**	-0.0299
				(2.41)	(0.77)
Group Dummies	No	Yes	Yes	No	Yes
Year Dummies	No	Yes	Yes	No	Yes
Observations	4088	4088	2776	2776	2776
Adjusted R-squared	0.5114	0.6666	0.6806	0.5969	0.6804

Table 6: Disparity and Profitability: Robustness Check

OLS regression of *Table 6 equation (5)* is estimated with three different measures of profitability (EBIT, ordinary income, and net income) for each year in the sample period. In *Panel A*, we use a one-year measure of profitability, and in *Panel B* we use a three-year average. The cells are shaded if the profitability coefficient is significant at the 5% level. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

Panel A: One-Year Profitability

	Disparity							
	1996	1997	1998	1999	2000	2001	2002	All Years
EBIT / Asset	-0.1413	-0.2831**	0.0665	-0.1340	-0.2782***	-0.1859**	-0.0475	-0.1310***
	(1.10)	(1.97)	(0.65)	(1.17)	(3.40)	(2.47)	(0.57)	(3.42)
Obs.	376	469	433	385	326	336	382	2715
Adj. R^2	0.6902	0.6441	0.6167	0.6651	0.7159	0.7540	0.7212	0.6776
OI / Asset	0.0017	-0.2895**	-0.0996	-0.3692***	-0.2613***	-0.2146***	-0.0239	-0.1739***
	(0.02)	(2.23)	(0.97)	(3.97)	(2.97)	(2.65)	(0.35)	(4.92)
Obs.	378	473	439	391	328	337	382	2736
Adj. R^2	0.6859	0.6506	0.6078	0.6805	0.7185	0.7564	0.7210	0.6791
NI / Asset	-0.0528	-0.3124**	-0.1785**	-0.3235***	-0.2197**	-0.2346***	-0.0196	-0.1919***
	(0.45)	(2.23)	(2.04)	(3.95)	(2.35)	(2.64)	(0.25)	(5.50)
Obs.	378	474	439	391	328	337	382	2737
Adj. R^2	0.6862	0.6372	0.6106	0.6778	0.7145	0.7559	0.7209	0.6771

Panel B: Three-Year Profitability

	Disparity							
	1996	1997	1998	1999	2000	2001	2002	All Years
EBIT / Asset	-0.0930	-0.3616***	0.0248	-0.1182	-0.2921***	-0.2694***	-0.1909**	-0.1747***
	(0.95)	(2.71)	(0.22)	(1.10)	(2.66)	(3.05)	(2.20)	(4.43)
Obs.	386	488	444	395	334	339	382	2776
Adj. R^2	0.6925	0.6454	0.6236	0.6673	0.7159	0.7596	0.7254	0.6804
OI / Asset	0.0260	-0.2244**	-0.0450	-0.3564***	-0.3295***	-0.2771***	-0.1277	-0.1970***
	(0.25)	(2.00)	(0.48)	(3.81)	(3.24)	(3.18)	(1.50)	(5.36)
Obs.	387	493	451	402	336	341	382	2800
Adj. R^2	0.6919	0.6478	0.6172	0.6795	0.7217	0.7613	0.7235	0.6822
NI / Asset	-0.0436	-0.2808**	-0.1254	-0.3627***	-0.3592***	-0.3224***	-0.1185	-0.2402***
	(0.39)	(2.32)	(1.36)	(4.03)	(3.25)	(3.28)	(1.19)	(6.18)
Obs.	387	494	451	402	336	341	382	2801
Adj. R^2	0.6919	0.6361	0.6184	0.6799	0.7209	0.7616	0.7227	0.6808

Table 7: Disparity and Volatility (*Beta*)

OLS regressions of volatility (measured by *beta*) with additional control variables are shown in this table. *Betas* are estimated using a market model with KOSPI return as the market return, and with monthly frequency. KOSPI is a value-weighted market index comprising all the listed companies in the Korea Stock Exchange (KSE). The sample includes only those companies listed in KSE. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

	Disparity				
	(1)	(2)	(3)	(4)	(5)
Beta	0.0110	-0.0153**	-0.0110	0.0080	-0.0126
	(1.26)	(2.34)	(1.45)	(0.88)	(1.63)
Voting Right	0.6323***	0.8124***	0.7809***	0.6017***	0.7837***
	(21.48)	(34.73)	(31.73)	(21.61)	(32.15)
Leverage			-0.0412	-0.0135	-0.0445
			(1.02)	(0.33)	(1.09)
Years of Operation			-0.0469***	-0.0629***	-0.0481***
			(4.75)	(6.12)	(4.86)
Firm Size			-0.0044*	-0.0112***	-0.0034
			(1.67)	(3.73)	(1.27)
Financial Institution			-0.0107	-0.0215**	-0.0095
			(1.29)	(2.07)	(1.11)
Group Size				0.0320***	-0.0181**
				(6.11)	(2.09)
Number of Affiliates				0.0109	0.0290
				(0.91)	(0.87)
Group w/ Fin. Inst.				0.0202	-0.0107
				(1.06)	(0.29)
Group Dummies	No	Yes	Yes	No	Yes
Year Dummies	No	Yes	Yes	No	Yes
Observations	790	790	729	729	729
Adjusted R-squared	0.4760	0.7193	0.7313	0.5875	0.7315

Table 8: Contribution to Group Control and Cash Flow Rights

In *Panel A*, contribution to group control indices are grouped in quintiles. Before being grouped into quintiles, observations are dropped if the index values are zero. For each quintile, we show the level of cash flow rights. In the last column, we conduct difference-in-mean tests between the 1st and the 5th quintiles. In *Panel B* and *C*, *OLS* regressions of cash flow right on contribution index with additional control variables are shown in this table. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

Panel A: Difference-in-Mean Test

	*Q*1 (Small)	*Q*2	*Q*3	*Q*4	*Q*5 (Large)	*Q*5 – *Q*1
Contribution Index 1	0.08	0.13	0.19	0.22	0.47	0.384***
Contribution Index 2	0.17	0.19	0.18	0.23	0.30	0.127***

Panel B: Contribution Index 1 (Using Cash Flow Rights)

	Cash Flow Right				
	(1)	(2)	(3)	(4)	(5)
Contribution Index 1	0.1706***	0.1312***	0.1686***	0.1876***	0.1683***
	(15.19)	(13.44)	(11.44)	(11.42)	(11.42)
Leverage			0.0905***	0.0015	0.0903***
			(2.98)	(0.04)	(2.98)
Profitability			0.1251***	0.1418***	0.1232***
			(2.90)	(3.02)	(2.85)
Years of Operation			0.0152**	0.0160**	0.0158**
			(2.19)	(2.34)	(2.27)
Public Company			-0.0110	-0.0213**	-0.0105
			(1.21)	(2.14)	(1.15)
Firm Size			-0.0204***	-0.0207***	-0.0208***
			(7.79)	(7.19)	(7.88)
Financial Institution			-0.0100	-0.0071	-0.0105
			(1.02)	(0.66)	(1.07)
Group Size				-0.0103*	0.0144
				(1.79)	(1.36)
Number of Affiliates				-0.0440***	-0.0195
				(3.34)	(0.57)
Group w/ Fin. Inst.				-0.0198	0.0129
				(0.91)	(0.28)
Group Dummies	No	Yes	Yes	No	Yes
Year Dummies	No	Yes	Yes	No	Yes
Observations	4114	4114	2262	2262	2262
Adjusted R-squared	0.0927	0.3299	0.3874	0.2226	0.3870

Panel C: Contribution Index 2 (Using Voting Rights)

	Cash Flow Right				
	(1)	(2)	(3)	(4)	(5)
Contribution Index 2	0.0684***	0.0563***	0.0693***	0.0736***	0.0689***
	(7.72)	(7.54)	(6.45)	(6.19)	(6.39)
Leverage			0.1011***	-0.0024	0.1009***
			(3.21)	(0.07)	(3.20)
Profitability			0.1321***	0.1537***	0.1302***
			(2.94)	(3.17)	(2.89)
Years of Operation			0.0133*	0.0166**	0.0140*
			(1.82)	(2.31)	(1.90)
Public Company			-0.0195**	-0.0310***	-0.0189*
			(2.03)	(2.92)	(1.96)
Firm Size			-0.0219***	-0.0227***	-0.0223***
			(7.89)	(7.44)	(7.97)
Financial Institution			-0.0121	-0.0079	-0.0125
			(1.22)	(0.71)	(1.26)
Group Size				-0.0076	0.0147
				(1.27)	(1.36)
Number of Affiliates				-0.0550***	-0.0112
				(3.99)	(0.31)
Group w/ Fin. Inst.				-0.0116	0.0160
				(0.49)	(0.35)
Group Dummies	No	Yes	Yes	No	Yes
Year Dummies	No	Yes	Yes	No	Yes
Observations	4114	4114	2262	2262	2262
Adjusted R-squared	0.0220	0.2938	0.3278	0.1413	0.3274

Table 9: Contribution Index and Cash Flow Right: Robustness Check

OLS regression of *Table 9 Panel B Equation (5)* and *Panel C Equation (5)* are estimated for each year in the sample period. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

	Cash Flow Right						
	1997	1998	1999	2000	2001	2002	All Years
Panel B, eq. (5)	0.2328***	0.2024***	0.1935***	0.1420***	0.1450***	0.1297***	0.1683***
	(4.70)	(5.08)	(4.43)	(5.36)	(5.24)	(5.88)	(11.42)
Obs.	461	401	368	317	329	378	2262
Adj. R^2	0.2923	0.3554	0.3542	0.3728	0.5666	0.5003	0.3870
Panel C, eq. (5)	0.0238	0.0791**	0.0832***	0.0880***	0.0821***	0.0930***	0.0689***
	(1.04)	(2.36)	(2.77)	(3.67)	(3.26)	(4.61)	(6.39)
Obs.	461	401	368	317	329	378	2262
Adj. R^2	0.1966	0.2916	0.2976	0.3265	0.5136	0.4763	0.3274

Table 10: Sub-Sample Results: Listed versus Non-Listed

OLS regressions are estimated with all three determinants of our interest: profitability, risk, and contribution to group control. In columns (2) and (3), we run the same equation for non-listed firms and listed firms. *t*-values, based on White's heteroskedasticity-consistent standard errors, are reported in parentheses. *, **, and ***, indicate significance at 10, 5, and 1% levels, respectively.

	Cash Flow Right		
	(1)	(2)	(3)
	All Firms	Non-listed Firms	Listed Firms
1yr (EBIT / Asset)	0.1356***	0.1669**	0.0539
	(3.01)	(2.47)	(0.97)
5yr *SD*(EBIT / Asset)	0.1320	0.2023	-0.0009
	(1.61)	(1.54)	(0.01)
Contribution Index 1	0.1462***	0.1238***	0.1752***
	(11.02)	(9.36)	(4.39)
Voting Rights	0.2747***	0.3281***	0.2149***
	(18.56)	(13.98)	(12.49)
Leverage	0.0509**	0.0955***	-0.0184
	(2.47)	(3.31)	(0.66)
Years of Operation	0.0019***	0.0014**	0.0022***
	(5.66)	(2.02)	(7.17)
Public Company	0.0002	-	-
	(0.03)	-	-
Firm Size	0.0000***	0.0000	0.0000
	(2.58)	(0.29)	(0.69)
Financial Institution	-0.0174*	-0.0174	-0.0020
	(1.67)	(0.94)	(0.18)
Group Size	-0.0000***	-0.0000***	-0.0000*
	(3.45)	(2.83)	(1.89)
Number of Affiliates	0.0017**	0.0014	0.0020***
	(2.34)	(0.83)	(3.15)
Group w / Fin. Inst.	0.0149	0.0263	-0.0040
	(0.38)	(0.50)	(0.09)
Group Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Observations	2117	939	1178
Adjusted R-squared	0.7085	0.5855	0.8242

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