

**SELECTION OR TUNNELING? AN EXPLANATION FOR  
THE AGENCY PROBLEMS IN CHAEBOL FIRMS \***

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To investigate agency problems between controlling families and minority shareholders in Korean business groups (chaebols), this paper analyzes the impact of the ownership structure of chaebol bidders on merger decisions through an examination of merger announcement returns. First, we discover that merger announcement returns for chaebol bidders are lower compared to non-chaebol bidders. Additionally, we find a positive correlation between the cash flow rights of the controlling family and announcement returns, while the discrepancy between voting and cash flow rights shows a negative correlation with announcement returns. Further investigation into the relationship between firms' value and cash flow rights yields evidence supporting the selection hypothesis rather than the tunneling hypothesis. Lastly, the merger announcement leads to a decrease in the overall value of the group. In conclusion, agency problems indeed exist within chaebol firms, and the sorting of firms into different positions emerges as a significant mechanism.

*Keywords:* Chaebol, Business Groups, Selection, Tunneling, Agency Problem, Mergers and Acquisitions

*JEL Classification:* G32, G34

## 1. INTRODUCTION

Although firms belonging to a business group may benefit from the internal capital market in times of credit constraints (Almeida et al., 2015) or in countries where the

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external capital market is not well developed, the literature generally finds that the agency problems between the controlling shareholders and minority shareholders reduce the value of these firms. The value destruction is mainly attributed to the wedge (hereafter, wedge) between the controlling shareholders' cash flow rights and voting rights that is created by pyramidal structures and cross-shareholdings among group firms, which are common structures within business groups (Claessens et al., 2002; Bae et al., 2002; Bertrand et al., 2002; Joh, 2003; Baek et al., 2004; Baek et al., 2006). This wedge allows controlling shareholders to maintain control over all firms in the group without owning a majority of equity ownerships, and thus provides an incentive to expropriate firm resources at the expense of minority shareholders.

The purpose of this study is to examine the causal relationship between the ownership structure of business groups and the value of group firms in Korea. Korea presents an interesting case for examining the relationship due to three key aspects. First, the wedge is substantial in many firms, particularly pronounced in Korean business groups (hereafter, chaebols) and chaebol-affiliated firms (hereafter, chaebol firms). Chaebols are identified an individual controlling shareholder (hereafter, family) who ultimately influences the corporate decision making of chaebol firms. Second, the unique feature of the Korean data is that chaebol firms are mandated by the Korean Fair Trade Commission (KFTC) to report the comprehensive ownership structure data, which allows us to more accurately assess cash flow rights and voting rights. Third, we specifically analyze the impact of the merger announcements by chaebol firms on their firm values. Since merger events are announced to the public immediately after the merger decisions are made, we can accurately estimate the value of the merger transactions to the bidder firm and examine the stock price responses on the announcement day. In addition, we examine the effects of the cash flow rights and voting rights of the controlling family on the merger announcement returns.

In general, two difficulties arise in studying the causal effects of the wedge between the controlling shareholders' cash flow rights and voting rights on firm value. First, the cash flow rights and voting rights are difficult to compute due to the complex ownership structure of business groups and/or the lack of detailed data on ownership structure. To mitigate the inaccuracy in computing cash flow rights and voting rights, we take advantage of the detailed ownership dataset for chaebols and employ the ultimate cash flow rights and the critical control threshold provided by Almeida et al. (2011) as measures of cash flow rights and voting rights, respectively. Second and more importantly, the ownership structure arises endogenously rather than being determined exogenously. Therefore, even if one finds a negative relationship between the wedge and firm value, there are at least two explanations: tunneling and selection (Almeida and Wolfenzon, 2006). Tunneling refers to the transfer of resources of a group firm in which the controlling shareholder has low cash flow rights to other group member firms in which the controlling shareholder has high cash flow rights. That is, the value of group firms is determined by the ownership structure. In contrast, the selection hypothesis predicts the opposite causality: the ownership structure is determined by the value of group firms. Specifically, it states that the controlling shareholder considers the value of

group firms in selecting their positions in the group structure. Under the selection hypothesis, the negative association between the cash flow rights of the controlling shareholder and the value of group firms arises without a transfer of resources among group firms. These two possibilities suggest that it could be misleading to draw a causal relationship from a cross-sectional or time-series association between firm value and ownership structure.

To establish an association between the ownership structure and firm value, we first examine how a pre-determined ownership structure of a chaebol affects the value of chaebol firms on the merger announcement. If agency problems between families and minority shareholders exist in chaebol firms, then the NPV of a merger investment by a bidder firm in which the family has high cash flow rights would be higher than that of a bidder firm in which the family has low cash flow rights because the cash flow rights of the family align the value of a firm to their wealth. In addition, these mergers will generally be lower NPV investments than those of non-chaebol bidders. The empirical results are consistent with the existence of agency problems between controlling families and minority shareholders. Comparing the merger announcement returns of chaebol and non-chaebol bidders, we observe significantly lower returns for chaebol bidders, who exhibit insignificantly negative returns, while non-chaebol bidders show positive returns.

In addition, to examine the effects of the cash flow rights and voting rights of the family on merger decisions, we employ the ultimate cash flow rights and the critical control threshold and further analyze their relationship with merger announcement returns. We find that the effect of the family's voting (cash flow) rights on merger announcement returns is negative (positive). In addition, the larger the wedge, the lower the merger announcement return is. These results are consistent with the two distinct traditional explanations for the effect of managerial ownership on firm value: interest-alignment effects and management-entrenchment effects. The former emphasizes the cash flow rights of a manager and claims the positive effects of managerial ownership on firm value. In contrast, the latter focuses on the voting rights of a manager and argues that managerial ownership has a negative effect on firm value.

To address the possibility that the same effects exist in non-chaebol firms, we examine the effects of ownership structure on the merger announcement returns for non-chaebol firms. We find the positive (negative) relationship between controlling ownership and the merger announcement returns for non-chaebol (chaebol) bidders. These results again suggest the existence of agency problems in chaebol firms. Subsequently, we separate controlling ownership into equity by the largest shareholder and affiliated firms; the former entails both cash flow and voting rights, while the latter pertains solely to voting rights. We find that the effect of affiliated firms' ownership is negative, whereas the effect of the largest shareholder's ownership is positive for chaebol firms. For non-chaebol firms, however, both rights have positive effects on merger announcement returns. These results confirm that the largest shareholder's voting rights have different effects in chaebol firms and non-chaebol firms, whereas cash flow rights have the same interest-alignment effect.

The aforementioned findings can be explained by both tunneling and selection

hypothesis. The tunneling hypothesis predicts that resources will be transferred out of the new firm, i.e., the bidder plus the target, after the merger if the family's cash flow rights in the bidder firm are low, resulting in a lower merger announcement return. That is, the value of the new group firm will be determined by the ownership structure of the bidder firm. In contrast, the selection hypothesis predicts that the family chooses group firms in which they have higher (lower) cash flow rights to conduct value-enhancing (-destroying) mergers. Specifically, if the target is overpriced (underpriced), then the family will choose a firm in which they have low (high) cash flow rights to do the merger. To pursue this value-destroying merger, however, the family has to raise enough voting rights, which would create a large wedge. Thus, firm value determines the ownership structure.

To distinguish between the tunneling and the selection hypotheses as explanations for the negative association between voting rights (wedge) and merger announcement returns, we examine the stock price responses of other member firms (hereafter, non-bidder group firms) in the same chaebol group to the merger announcements of a bidder firm. Although both hypotheses predict the same result for bidder firms, they have different predictions for non-bidder group firms. If the investors' anticipation of the tunneling activities drives the result, then the value of the non-bidder group firms that are expected to benefit (be worse off) from the tunneling activity will rise (decline) upon the merger announcement of the bidder firm. Therefore, the value of non-bidder group firms in which the family has high (low) cash flow rights will increase (decrease). In contrast, the selection hypothesis predicts that the value of non-bidder group firms would not be particularly affected by a bidder firm's merger announcement other than through the equity ownership they have in the bidder firm.

The empirical results do not support tunneling hypothesis. First, we find that the stock price responses of non-bidder group firms are not explained by the ownership structure of a chaebol. In addition, we analyze the change in the wealth of the controlling family and find that the family's wealth does not increase through their equity ownership in non-bidder group firms. Although the change in the family's wealth is not statistically significant, it increases from the enhanced value of bidder firms rather than non-bidder group firms. This result is contrary to what the tunneling hypothesis predicts: the controlling family's wealth increases from the enhanced value of the non-bidder group firms in which they have high cash flow rights.

Lastly, we examine the possibility that a controlling family pursues a merger to increase the aggregate value of the group rather than to increase their private benefit with the agency problem arising in choosing the bidder firm that pays the cost of the merger investment. If this is the case, the merger decision itself is efficient from the entire business group's perspective despite the agency motives in choosing the bidder firm. To examine this possibility, we analyze the change in the aggregate value of public group firms upon a merger announcement of a bidder firm and find that the value of the group decreases, albeit statistically insignificantly. The mergers conducted by chaebols do not appear to be efficient managerial decisions, suggesting that agency motives may have driven them.

Our research adds to the current academic literature in several areas. The first strand of the literature relates to the studies of international corporate governance of chaebol firms. It is well documented that chaebols are pyramidal and cross-shareholdings structured with a wide wedge between voting and cash flow rights. Chaebol firms allocate internal capital through equity investments and intra-group loans (Shin and Park, 1999; Baek et al., 2006; Lee et al., 2009; Almeida et al., 2015; Choi and Suh 2023), which is different from the practices of US conglomerates but can be found in other countries such as Chile, India, and Japan (Gopalan et al., 2007; Buchuk et al., 2014; Ushijima, 2016). The larger wedge increases the value destroying related-party transactions and decreases the payout ratio (Kang et al., 2014; Kwon and Han, 2020).

Another strand of the literature studies on the tunneling activities of business groups. A number of studies find a negative relationship between the two and attribute the negative effect of families' ownership on firm value to tunneling incentives (Bae et al., 2002; Bertrand et al., 2002; Joh, 2003; Baek et al., 2006; Cheung et al., 2006; Jiang et al., 2010; Bae et al., 2012; Paligorova and Xu, 2012). Bae et al. (2002) and Bae and Kim (2021) find a negative relationship between families' ownership and merger announcement returns in Korea, which they attribute to tunneling activities. For Indian firms, Bertrand et al. (2002) also find that the owners of business groups expropriate minority shareholders by tunneling resources primarily via the non-operating components of profit. Most studies on business groups take their ownership structures as exogenously given and examine the relationship between the controlling family's ownership and firm value or profitability. However, under selection hypothesis, the ownership structure arises endogenously. By identifying another possible mechanism through which the agency problems between the controlling family and minority shareholders arise, this study suggests that attributing the entirety of the negative effect of the controlling family's voting rights to tunneling would be misleading.

The remainder of this paper is organized as follows. Section 2 reviews the selection hypothesis. Section 3 introduces the measures for cash flow rights and voting rights employed in this study. Section 4 describes the data and presents summary statistics. Section 5 presents the results of the empirical analysis that examines the relationship between ownership structure and merger performance. Section 6 examines whether the results found in Section 5 can be explained by the selection or tunneling hypothesis, and Section 7 examines the impact of chaebol firms' mergers on the aggregate value of the whole group (on the value of the group-affiliated firms). Section 8 concludes the paper.

## 2. SELECTION HYPOTHESIS

The relationship between business groups and ownership structure has been dealt with in a number of studies. Many studies have presented evidence of the negative relationship between firm value and control family's ownership (or wedge), and this

negative relationship traditionally has been explained by tunneling hypothesis. Meanwhile, Almeida and Wolfenzon (2006) suggest another explanation for the relationship, selection hypothesis.

Tunneling refers to the transfer of resources of a group firm in which the controlling shareholder has low cash flow rights to other group member firms in which the controlling shareholder has high cash flow rights. As a result, the value of the firm in which the controlling shareholder has low (high) cash flow rights would be low (high). That is, the ownership structure determines the value of group firms. In contrast, the selection hypothesis predicts the opposite causality: the value of group firms determines the ownership structure. Specifically, it states that the controlling shareholder considers the value of group firms in selecting their positions in the group structure. According to the model provided by Almeida and Wolfenzon (2006), the controlling family chooses a pyramidal structure (direct ownership structure) when acquiring firms with lower (higher) pledgeability and net present value. Therefore, firms of lower (higher) value result in a larger (smaller) wedge. Under the selection hypothesis, the negative association between the cash flow rights of the controlling shareholder and the value of group firms arises without a transfer of resources among group firms.

This study is directly related to Almeida and Wolfenzon (2006)'s selection theory of the ownership structures of business groups. In their model, the ownership structure of a business group arises endogenously as the controlling family chooses the optimal ownership structure of a new firm that is to be added to the group. Specifically, they can choose either a pyramidal structure, whereby the family uses the equity of an existing group firm to finance the investment in the new firm, or a direct ownership structure, whereby the investment is paid for with the family's personal wealth. The theory generates predictions regarding the characteristics of new firms that are added as a pyramidal structure and those that are directly owned by the controlling family. For example, firms that have cash flows and/or assets that are difficult to pledge to outside investors are more likely to be placed in a pyramidal structure because the family can use group equity to finance the acquisition when the family is financially constrained. In addition, firms with lower net present values should be placed in a pyramid. In contrast, a family will prefer direct ownership when the NPV of the new firm is higher because the family must share the NPV of the new firm with minority shareholders under a pyramidal structure.

Almeida et al. (2011) empirically examine Almeida and Wolfenzon's (2006) selection theory. To distinguish between the selection and tunneling explanations, they examine chaebol firms' acquisition of new firms into a chaebol group. Throughout the study, they provide evidence that is consistent with the selection of firms into different positions in the chaebol. Specifically, they find that chaebols use pyramidal structure when the controlling family uses well-established group firms to acquire firms with low pledgeable income and high acquisition premiums, whereas families directly acquire firms with high pledgeable income and low acquisition premiums. Our study differs from their study in that we study merger events in which the target firms do not survive and become merged into the bidder firms; Almeida et al. (2011) use acquisition events in

which the target firm survives as an entity separate from the acquiring firm. Studying merger events has certain advantages over studying acquisition events for Korean firms. First, it allows for more accurate estimation of the value of the merger transactions to the bidder firm because merger events are announced to the public immediately after the merger decisions are made, and thus, allow for examination of the stock price response on the announcement day. Announcements of acquisition events are not made immediately to the public in Korea and, moreover, the exact date of an acquisition event is unavailable even post-acquisition because it generally takes several steps.

Therefore, the value of the acquisition to the bidder firm cannot be estimated using the stock price response of the bidder firm. For this reason, Almeida et al. (2011) use the book value of the target firm's equity as a fair price for acquisition and compare it to the amount paid for the acquisition by the acquiring firm to compute the NPV of an acquisition. However, this method could be misleading because the book value of equity does not necessarily equal the market value of equity and the synergy between the two firms could influence the fair price of the acquisition. Another benefit of using merger events is that it enables examination of the stock price responses of non-bidder group firms to the merger announcement of the bidder firm, and thus, presents a better test for the tunneling hypothesis. Furthermore, the overall change in the aggregate value of the public chaebol firms can be examined; thus, whether the merger is an efficient investment business decision from the perspective of the entire business group can be examined as well.

### 3. MEASURES FOR CASH FLOW RIGHTS, VOTING RIGHTS, AND WEDGE

To examine the impact of agency problems between controlling families and minority shareholders on merger announcement returns, this study employs three metrics of chaebol firms' ownership structure. The main variables of interest in this study are the measures for cash flow rights, voting rights, and wedge. Specifically, we adopt the ultimate cash flow rights and the critical control threshold by Almeida et al. (2011) as the measures for cash flow rights and voting rights, respectively. The wedge is calculated as voting rights minus cash flow rights, following prior studies (Joh, 2003; Kim and Yi, 2006).

Chaebols, large business groups, are controlled by families that hold equity stakes in the chaebol firms either directly or indirectly through other affiliated firms in the group. The ownership structure of chaebols is complex, involving pyramidal structures and cross-shareholding loops, which poses challenges to the accurate calculation of cash flow rights and voting rights for chaebol firms. To address the problems of commonly used measures for cash flow rights and voting rights, Almeida et al. (2011) introduce the ultimate cash flow rights and the critical control threshold as measures for cash flow rights and voting rights, respectively. The KFTC requires chaebols to report their complete ownership structure, including the status of affiliate shareholders and persons with special interests. These measures take advantage of a comprehensive ownership

dataset specific to chaebols, which allows for more accurate assessments to measure cash flow rights and voting rights.

The ultimate cash flow rights, our measure for cash flow rights, are calculated using the matrix of inter-corporate holdings, along with the vector of the direct family holdings in each firm. This measure represents the fraction of dividends originally paid by firm A that ultimately reaches the owner family. The calculation method has the advantage of being able to accommodate any group structure, regardless of its complexity. Studies often use the sum of direct and indirect holdings, but this becomes difficult to calculate when cross-shareholdings exist. The ultimate cash flow rights take into account both direct and indirect dividends received by the family and include the detailed shareholdings of both the largest shareholder and his or her family members and relatives. Hence, the ultimate cash flow rights provide a fairly accurate representation of the controlling family's cash flow rights.

Measuring voting rights in complex business groups is challenging because it remains unclear how much control the family ultimately has over votes held by intermediate firms. Studies use various measures for voting rights. For example, La Porta et al. (1999) investigate the ultimate voting rights by tracing the ownership chain to identify the firm with the most voting rights. They consider a firm to have a controlling shareholder if a shareholder's combined direct and indirect voting rights exceed 20 percent. Claessens et al. (2000) introduce the weakest link, a measure for voting rights which has been widely used in the studies (Faccio et al., 2001; Faccio and Lang, 2002; Claessens et al., 2002). Since a family usually has several chains through which it can control the votes in a group-affiliated firm, the weakest link aggregates all the control rights that give rise to the ultimate voting rights of the existing chains. As well documented by Almeida et al. (2011), the weakest link has several drawbacks. First, the intuition for adding the minimums across all chains that are used to control a firm is unclear. Second, this measure can exceed above 100% when there are multiple chains leading to one firm. Lastly, the weakest link is not well defined for firms that belong to cross-shareholding loops, which is a common structure in chaebol firms.

To the best of our knowledge, no studies on chaebols use the weakest link. Bae et al. (2002) define controlling ownership as the sum of equity ownership by the largest shareholder and affiliated firms to examine the merger announcement returns of group-affiliated firms. Meanwhile, the KFTC defines voting rights as internal equity divided by the proportion of non-treasury shares ( $100\% - \text{percentage of treasury shares}$ ), while the internal equity is defined as the sum of the equity ownership by the controlling shareholder, relatives, non-profit affiliated firms, corporate officials, and other group firms. However, this method assumes that all shares of the non-bidder chaebol firms in the bidder firm have voting rights, while the portion that is not controlled by the family should not be counted as voting rights. Hence, this method lacks internal consistency and is unrealistic.

The critical control threshold provides a viable alternative for the complex ownership structure of chaebols, indicating the maximum control threshold for which the firm belongs to the set of chaebol firms controlled by the family. The higher the



critical control threshold, the more likely it is that the firm is a chaebol firm. This measure is equivalent to the weakest link in the absence of cross-shareholdings and multiple links. In calculating voting rights, we include the shareholdings of corporate officers because they commonly align with the family's decisions while remaining in the firm, which is likely under family control.

## 4. DATA AND SUMMARY STATISTICS

### 4.1. Data

Our sample consists of non-financial bidder firms listed on the Korea Exchange during the period from 2000 to 2008. We obtain financial and stock market data from KIS-VALUE by the National Information and Credit Evaluation Inc. To identify a sample of bidder firms, we use merger announcement reports from the Financial Supervisory Service's Data Analysis, Retrieval and Transfer system (DART), which provides all the disclosure information of listed firms in Korea. Out of 537 bidder firms, we eliminate 127 cases in which the bidder firm owns all the shares of the target firm prior to the merger and 5 cases in which more than two mergers by one bidder firm are announced on the same day. Firms with missing values for relevant information are excluded. Of the 382 final samples, 45 are chaebol bidders and 337 are non-chaebol bidders. Since we focus more on measuring merger announcement returns, we carefully select the merger announcement date as the first date out of two event dates: the date of media coverage of the merger and the date of the merger announcement on DART. If the event occurs after the market closes, we consider the following business date as the announcement date.

The definition of chaebols in this study follows that of the KFTC. The KFTC first classifies business groups and then applies additional criteria to select chaebols. A firm is classified as a member of a business group if either the ownership of the controlling shareholder and related persons, such as relatives and other affiliated firms in the same business group, is more than 30 percent, excluding preferred shares, or the controlling shareholder exercises controlling influence over it. Among classified groups, if the aggregate value of the total assets for all group firms exceeds certain criteria, the business group is designated as a chaebol. From 1987 to 2001, the 30 largest business groups were selected as chaebols, while since 2002, the KFTC provides a size cutoff as a criterion for chaebols each year (Almeida et al., 2011). The KFTC requires chaebols to report their complete ownership structure, including the status of affiliate shareholders and persons with special interests, and the financial status of group companies as of the beginning of April of each year. We use the detailed ownership data from the KFTC from 1999 to 2006. Lastly, the ownership data of the largest shareholder and affiliated firms for non-chaebol firms are obtained from merger announcement reports on the DART.

#### 4.2. Summary Statistics

Table 1 presents the sample distribution. Panel A shows the annual distribution of merger announcements for both chaebol and non-chaebol firms. Among the 382 cases of merger announcements, 45 involve chaebol bidders, while 337 are attributed to non-chaebol bidders. The data show an upward trend in the number of merger announcements over time. Panel B shows the industrial relatedness of the mergers. A merger is classified as a related merger if the industry of the bidder and that of the target are in the same industry category otherwise it is classified as unrelated. Of the 382 mergers in our dataset, 149 (39.01%) involve firms in related industries, while the remaining 233 (60.99%) are mergers between firms in different industries.

**Table 1.** Sample Distribution of Merger Announcements by Year and By Industry Relatedness

<b>Panel A: Distribution of merger announcements for chaebols and non-chaebol firms by year</b>			
Year	Chaebol	Non-chaebol	Total
2000	6	12	18 (4.71%)
2001	7	26	33 (8.64%)
2002	6	17	23 (6.02%)
2003	2	21	23 (6.02%)
2004	4	29	33 (8.64%)
2005	3	41	44 (11.52%)
2006	5	55	60 (15.71%)
2007	9	66	75 (19.63%)
2008	3	70	73 (19.11%)
	45 (11.78%)	337 (88.22%)	382 (100%)
<b>Panel B: Industrial relatedness</b>			
Relatedness	Chaebol	Non-chaebol	Total
Related mergers	15	134	149 (39.01%)
Unrelated mergers	30	203	233 (60.99%)
Total	45 (11.78%)	337 (88.22%)	382 (100%)

*Note:* This table shows the sample distribution. Panel A presents the annual distribution of merger announcements for chaebols and non-chaebol firms during the period from 2000 to 2008. The merger announcements are collected from the Financial Supervisory Service's Data Analysis, Retrieval and Transfer system (DART). Panel B shows the industrial relatedness of the mergers. A merger is classified as a related merger if the industry of the bidder and that of the target are in the same industry category otherwise it is classified as unrelated.

**Table 2.** Characteristics of Chaebol and non-Chaebol Bidders

	Chaebol	Non-chaebol	Difference
Asset	3,075 [2,916]	128 [454]	2,948*** (6.77)
Debt	1,841 [1,744]	69 [287]	1,772*** (6.81)
Book value of equity	1,235 [1,448]	59 [191]	1,176*** (5.44)
Market value of equity	5,039 [16,441]	717 [4,629]	4,322*** (3.85)
Debt ratio	2.12 [1.63]	1.02 [22.74]	1.10 (0.87)
ROE	0.11 [0.15]	0.11 [1.83]	0.00 (0.03)
Foreign ownership (%)	11.82 [14.84]	3.67 [9.36]	8.15*** (3.59)
Controlling ownership (%)	24.86 [19.28]	24.28 [16.08]	0.57 (0.17)
Equity ownership by the largest shareholder (%)	4.18 [6.31]	12.67 [13.78]	-8.49*** (-6.49)
Equity ownership by affiliated firms (%)	20.67 [19.51]	11.61 [16.35]	9.06** (2.68)
Observations	45	337	

*Note:* This table presents characteristics of chaebol and non-chaebol bidders during the period from 2000 to 2008. Firm characteristics include total assets (Asset), the total liabilities (Debt), the book value of equity (Book value of equity), the market value of equity (Market value of equity), the ratio of the book value of debt to the book value of equity (Debt ratio), the ratio of the net income to the book value of equity (ROE), the equity ownership by foreign investors (Foreign ownership), equity ownership by controlling shareholders (Controlling ownership), equity ownership by the largest shareholder (Equity ownership by the largest shareholder), and equity ownership by affiliated firms (Equity ownership by affiliated firms). The accounting variables are values from the most recent financial statements at the time of the merger announcement. Market value of equity is the value on the last trading day before the merger announcement, and Foreign ownership is the value at the end of the month before the merger announcement. Asset, Debt, Book value of equity, and Market value of equity are measured in billions of Korean Won, and ownership variables are measured in percent. Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2 shows characteristics of chaebol and non-chaebol bidders, including the total assets (Asset), the total liabilities (Debt), the book value of equity (Book value of equity), the market value of equity (Market value of equity), the ratio of the book value of debt

to the book value of equity (Debt ratio), the ratio of the net income to the book value of equity (ROE), the equity ownership by foreign investors (Foreign ownership), equity ownership by controlling shareholders (Controlling ownership), equity ownership by the largest shareholder (Equity ownership by the largest shareholder), and equity ownership by affiliated firms (Equity ownership by affiliated firms). The accounting variables are values from the most recent financial statements at the time of the merger announcement. Market value of equity is the value on the last trading day before the merger announcement, and Foreign ownership is the value at the end of the month before the merger announcement. Asset, Debt, Book value of equity, and Market value of equity are measured in billions of Korean Won, and ownership variables are measured in percent.

Foreign ownership is included in the analysis because it tends to be associated with better corporate governance (Haggard et al., 2003). Most variables exhibit significantly larger values for chaebol bidders compared to non-chaebol bidders, with the exceptions of debt ratio and ROE. These observations are consistent with previous studies on chaebol firms, which show the substantial size difference between publicly listed chaebol and non-chaebol firms, as well as the propensity of chaebol firms to use higher debt through cross-guarantees.

## 5. EMPIRICAL RESULTS

### 5.1. Merger Announcement Returns of Chaebol Firms and Non-Chaebol Firms

To examine whether chaebol bidders, on average, make undesirable merger decisions, we conduct a comparative analysis of stock price reactions to the merger announcements for chaebol and non-chaebol bidders through an event study. If agency problems between the controlling family and the minority shareholders cause chaebol firms to engage in merger activities that are less desirable for minority shareholders, we expect abnormal returns for chaebol bidders to be lower than those for non-chaebol bidders. Daily abnormal stock returns (AR) are calculated from the market model using 200 trading days of return data, starting 220 days before and ending 21 days before the merger announcement. We define the cumulative abnormal return (CAR) of firm  $i$  between any two dates  $t_1$  and  $t_2$  with the merger announcement date set as  $t = 0$ , as follows:

$$CAR_i(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{i,t}. \quad (1)$$

Table 3 shows the average CAR values for various windows around the merger announcement dates. Consistent with previous studies on mergers of Korean firms,

significantly positive abnormal returns around the announcement dates are most pronounced for the mergers involving non-chaebol bidders. For example, the average  $CAR(-1, +1)$  for non-chaebol bidders is 2.63%, while that for chaebol bidders is -0.95%. The average  $CAR(-2, +2)$  for non-chaebol bidders is positive and statistically significant at the 5% level. Conversely, the average  $CAR(-2, +2)$  for chaebol bidders is insignificant. The differences in  $CAR(-1, +1)$  and  $CAR(-2, +2)$  for chaebol bidders and non-chaebol bidders are statistically significant at the 5% and 10% levels, respectively. For longer observation windows, the statistical significance of the CAR for non-chaebol bidders disappears. The average CARs for non-chaebol bidders are positive (around 3%) over all five observation windows. However, the average CARs for chaebol bidders remain below 0.5% in all cases. In the remainder of the paper, we define  $CAR(-1, +1)$  as the merger announcement returns.

**Table 3.** Average Cumulative Abnormal Returns around Merger Announcement Dates

	$CAR(-1, +1)$	$CAR(-2, +2)$	$CAR(-3, +3)$	$CAR(-4, +4)$	$CAR(-5, +5)$
All bidder	2.02* (1.68)	3.38** (2.21)	3.52 (1.38)	2.91 (0.82)	3.21 (0.80)
Chaebol bidders	-0.95 (-0.93)	0.19 (0.17)	0.40 (0.39)	0.01 (0.00)	0.45 (0.37)
Non-chaebol bidders	2.63** (2.23)	3.81** (2.22)	2.84 (0.77)	3.20 (0.79)	3.10 (0.63)
Difference	-3.58** (-2.30)	-3.62* (-1.77)	-2.44 (-0.64)	-3.20 (-0.76)	-2.64 (-0.52)

*Note:* This table shows the average cumulative abnormal returns ( $CAR$ ) around merger announcement dates. Daily abnormal stock returns are calculated from the market model using 200 trading days of return data, starting 220 days before and ending 21 days before the merger announcement.  $CAR(t_1, t_2)$ , denotes the sum of the daily abnormal returns from  $t_1$  to  $t_2$ , with the merger announcement date set as  $t = 0$ . The numbers are in % and t-statistics are in parentheses. The numbers are in %. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

## 5.2. Effects of Chaebol Merger Announcements

The empirical results in the previous section suggest that mergers involving chaebol firms are comparatively less efficient than those involving non-chaebol firms. In this section, we focus on the mergers of chaebol firms and investigate the influence of cash flow rights, voting rights, and the wedge between these rights on merger announcement returns. Specifically, we use the ultimate cash flow rights and the critical control threshold by Almeida et al. (2011) as the measures for cash flow rights and voting rights. In addition, we include the internal equity, which is often used as a proxy for voting rights in studies on chaebols. Finally, we examine whether the size of the wedge has an impact on the merger announcement returns.

**Table 4.** Effects of Cash Flow Rights, Voting Rights and the Wedge between the Two Rights

<b>Panel A: Summary statistics</b>				
	Cash flow rights	Voting rights		Wedge
		CCT	Internal equity	
Mean	21.41	31.21		9.80
StDev	[14.71]	[13.09]		[9.40]
Mean	21.41		38.71	17.29
StDev	[14.71]		[15.65]	[15.32]
<b>Panel B: Effects of voting rights and cash flow rights</b>				
Variables		(1)		(2)
Cash flow rights		0.23**		0.14
		(2.31)		(1.65)
CCT		-0.24**		
		(-2.10)		
Internal equity				-0.01
				(-0.17)
Ln Asset		0.75		1.56***
		(1.55)		(3.88)
Debt ratio		0.02		0.00
		(1.85)		(0.35)
ROE		1.06		-2.94
		(0.39)		(-0.88)
Foreign ownership		-0.11		-0.30***
		(-1.01)		(-3.73)
Relative size		0.00		0.00
		(0.99)		(0.09)
KOSPI		-0.16		0.99
		(-0.06)		(0.29)
Industry relatedness		2.55		1.30
		(1.41)		(0.55)
Public target		-5.04**		-3.84
		(-2.31)		(-1.41)
Adjusted R <sup>2</sup>		0.59		0.64
Observations		33		33

*Note:* This table presents the summary statistics of the metrics related to cash flow rights, voting rights, and the wedge between these rights, and the regression results of the merger announcement returns,  $CAR(-1, +1)$ , of chaebol bidders on cash flow rights, voting rights and the wedge between these rights during the period from 2000 to 2006. The ultimate cash flow rights is used for the measure for cash flow rights, and both the critical control threshold (CCT) and the internal equity are used as measures for voting rights. The wedge denotes voting rights minus cash flow rights. The control variables include the logarithm of total assets (*LnAsset*), the ratio of the book value of debt to the book value of equity (*Debt ratio*), the ratio of the net income to the book value of equity (*ROE*), the equity ownership by foreign investors (*Foreign ownership*), the ratio of bidder's book value of equity to target's book value of equity (*Relative size*), and three indicator variables. The market indicator (*KOSPI*) is a binary variable that takes the value of one if a bidder is listed on the KOSPI market and a value of zero if the bidder is listed on the KOSDAQ market. The second indicator variable (*Industry relatedness*) is assigned a value of one for mergers in which the bidder and the target are in the same industry and zero otherwise. The last indicator variable (*Public target*) takes the value of one if the target is a public firm and zero otherwise. Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 4.** Effects of Cash Flow Rights, Voting Rights and the Wedge between the Two Rights (con't)

<b>Panel C: Effects of wedge</b>		
Variables	(1)	(2)
Wedge (CCT)	-0.24** (-2.41)	
Wedge (Internal equity)		-0.08 (-1.16)
Ln Asset	0.76 (1.63)	1.39*** (3.65)
Debt ratio	0.02* (1.89)	0.00 (0.27)
ROE	1.01 (0.4)	-1.92 (-0.59)
Foreign ownership	-0.11 (-1.04)	-0.35*** (-4.81)
Relative size	0.00 (1.03)	0.00 (0.42)
KOSPI	-0.13 (-0.05)	0.38 (0.11)
Industry relatedness	2.55 (1.44)	1.74 (0.74)
Public target	-5.00** (-2.45)	-4.99* (-1.95)
Adjusted R <sup>2</sup>	0.59	0.62
Observations	33	33

*Note:* This table presents the summary statistics of the metrics related to cash flow rights, voting rights, and the wedge between these rights, and the regression results of the merger announcement returns,  $CAR(-1, +1)$ , of chaebol bidders on cash flow rights, voting rights and the wedge between these rights during the period from 2000 to 2006. The ultimate cash flow rights is used for the measure for cash flow rights, and both the critical control threshold (CCT) and the internal equity are used as measures for voting rights. The wedge denotes voting rights minus cash flow rights. The control variables include the logarithm of total assets (*LnAsset*), the ratio of the book value of debt to the book value of equity (*Debt ratio*), the ratio of the net income to the book value of equity (*ROE*), the equity ownership by foreign investors (*Foreign ownership*), the ratio of bidder's book value of equity to target's book value of equity (*Relative size*), and three indicator variables. The market indicator (*KOSPI*) is a binary variable that takes the value of one if a bidder is listed on the KOSPI market and a value of zero if the bidder is listed on the KOSDAQ market. The second indicator variable (*Industry relatedness*) is assigned a value of one for mergers in which the bidder and the target are in the same industry and zero otherwise. The last indicator variable (*Public target*) takes the value of one if the target is a public firm and zero otherwise. Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4 in panel A displays the mean and standard deviation of the metrics related to cash flow rights, voting rights, and the wedge between these rights. Given the unavailability of detailed ownership structure data in 2007 and 2008 timeframe, our study relies on 33 samples of chaebol bidders from the period 2000 to 2006. The sample includes both public and private chaebol member firms. The first column shows statistics for cash flow rights as measured by the ultimate cash flow rights with a mean value of approximately 21.41%. The following columns show statistics for two measures of voting rights: the critical control threshold (CCT) and the internal equity. In particular, the internal equity method assumes that all equity ownerships of group firms are under family control, which causes the value of the internal equity to exceed the value of the critical control threshold. The mean CCT is approximately 31.21%, while the mean internal equity is approximately 38.71%. The wedge is calculated using two different measures of voting rights. To test the effects of voting rights and cash flow rights on the merger announcement returns, we utilize the following regression model.

$$\begin{aligned} CAR_i(-1, +1) = & \alpha + \beta_1 \times \text{Cash flow rights}_i + \beta_2 \times \text{Voting rights}_i \\ & + \gamma \times X_i + \varepsilon_i, \end{aligned} \quad (2)$$

where the dependent variable,  $CAR(-1, +1)$ , is the merger announcement returns for firm  $i$ . The dependent variables include the cash flow rights and voting rights for firm  $i$  and  $X_i$ , which is a set of control variables. We use the ultimate cash flow rights as the measure for cash flow rights, and both the critical control threshold and the internal equity as measures for voting rights. The controls ( $X_i$ ) include the logarithm of total assets ( $\ln Asset$ ), the ratio of the book value of debt to the book value of equity ( $Debt\ ratio$ ), the ratio of the net income to the book value of equity ( $ROE$ ), the equity ownership by foreign investors ( $Foreign\ ownership$ ), the ratio of bidder's book value of equity to target's book value of equity ( $Relative\ size$ ), and three indicator variables. The market indicator ( $KOSPI$ ) is a binary variable that takes the value of one if a bidder is listed on the KOSPI market and a value of zero if the bidder is listed on the KOSDAQ market. The second indicator variable ( $Industry\ relatedness$ ) is assigned a value of one for mergers in which the bidder and the target are in the same industry and zero otherwise. The last indicator variable ( $Public\ target$ ) takes the value of one if the target is a public firm and zero otherwise.

The regression results of the merger announcement returns,  $CAR(-1, +1)$ , of chaebol bidders on cash flow rights and voting rights are shown in Panel B. In Column (1) of Panel B, where the critical control threshold is used, the coefficient on cash flow rights is positive and statistically significant at the 5% level, and the coefficient on voting rights is negative and statistically significant at the 5% level. This finding means that a one standard deviation increase in the ultimate cash flow rights leads to a 3.44% ( $0.23 \times 14.71\%$ ) higher merger announcement return, while a one standard deviation increase in the critical control threshold leads to a 3.13% ( $-0.24 \times 13.09\%$ ) lower merger announcement return. This result confirms the expectation that cash flow rights enhance



interest-alignment effects, while voting rights accentuate management entrenchment effects. For comparison, in Column (2) of Panel B we also report the results of a regression using internal equity as a proxy for voting rights. In this case, however, such results are not observable. The coefficients on cash flow rights and voting rights are statistically insignificant, although their directions are the same as in the previous results. This result underscores the potential for misleading results when the analysis is based on the imprecise measure.

Next, we define the wedge as voting rights minus cash flow rights and examine the relationship between the size of the wedge and the merger announcement returns. Since a larger wedge size implies smaller interest-alignment effects relative to management entrenchment effects, the merger announcement return is expected to be lower for a bidder firm with a larger wedge size. The following regression model is used for our analysis.

$$CAR_i(-1, +1) = \alpha + \beta \times Wedge_i + \gamma \times X_i + \varepsilon_i. \quad (3)$$

Panel C reports the results of regressions of the merger announcement returns on the two measures of the wedge. Consistent with the expectation that a larger wedge causes more severe agency problems, the coefficient on the wedge is significantly negative when the critical control threshold is used as a proxy for voting rights. For comparison, we calculate the wedge using the internal equity in Column (2) and find that the coefficient on the wedge is still negative, but economically and statistically insignificant.

### 5.3. Comparison between Chaebol and Non-chaebol Merger Announcements

In this section, we examine the possibility that the same effects exist within non-chaebol firms: cash flow rights of the largest shareholder are positively associated with firm value, while voting rights are negatively associated with firm value. To examine this possibility, we compare the effect of the merger announcement returns of chaebol and non-chaebol control firms. However, for non-chaebol firms, the ultimate cash flow rights and the critical control threshold are not available due to the lack of comprehensive ownership data. As an alternative measure, following Bae et al. (2002), we use a simplified voting rights measure, the controlling ownership (*Controlling ownership*), which is defined as the sum of the equity ownership of the largest shareholder (*Ownership<sub>LS</sub>*) and the equity ownership of affiliated firms (*Ownership<sub>AF</sub>*). All other variables are the same as those in Equation (3). Bae et al. (2002) find a negative (positive) effect of controlling ownership for chaebol (non-chaebol) bidders with the merger events from 1981 to 1997.

The regression results of the merger announcement returns on the controlling ownership are presented in Table 5. Looking at the results for the chaebol bidders in the first column, the coefficient on the controlling ownership is negative (-0.15) and statistically significant at the 1% level, which is consistent with the results Bae et al. (2002). The higher the controlling ownerships, the lower the merger announcement

returns for chaebol bidders. However, the result for the non-chaebol bidders shows the positive coefficient estimate which is statistically significant at the 10% level. Hence, the effects of the controlling ownerships on the merger announcement returns are not the same for chaebol and non-chaebol bidders.

**Table 5.** Effects of Controlling Ownership

<b>Panel A: Effects of controlling ownership</b>		
Variables	Chaebol bidders	Non-chaebol bidders
Controlling ownership	-0.15*** (-2.77)	0.13* (1.86)
LnAsset	4.66 (1.07)	-1.60 (-0.55)
Debt ratio	0.02** (2.28)	-0.00 (-1.35)
ROE	1.35 (0.49)	-0.06 (-0.48)
Foreign ownership	-0.14 (-1.21)	0.03 (0.24)
Relative size	-0.00 (-0.92)	-0.00 (-0.15)
KOSPI	5.76 (1.59)	3.04 (1.04)
Industry relatedness	0.33 (0.20)	3.38 (1.33)
Public target	-3.41** (-2.16)	-0.45 (-0.08)
Adjusted R <sup>2</sup>	0.45	0.03
Observations	45	337

*Note:* This table presents the regression results of the merger announcement returns,  $CAR(-1, +1)$ , of chaebol and non-bidders on controlling ownership during the period from 2000 to 2008. The controlling ownership (*Controlling ownership*) denotes the sum of the equity ownership of the largest shareholder ( $Ownership_{LS}$ ) and the equity ownership of affiliated firms ( $Ownership_{AF}$ ). The control variables include the logarithm of total assets ( $LnAsset$ ), the ratio of the book value of debt to the book value of equity (*Debt ratio*), the ratio of the net income to the book value of equity (*ROE*), the equity ownership by foreign investors (*Foreign ownership*), the ratio of bidder's book value of equity to target's book value of equity (*Relative size*), and three indicator variables. The market indicator (*KOSPI*) is a binary variable that takes the value of one if a bidder is listed on the KOSPI market and a value of zero if the bidder is listed on the KOSDAQ market. The second indicator variable (*Industry relatedness*) is assigned a value of one for mergers in which the bidder and the target are in the same industry and zero otherwise. The last indicator variable (*Public target*) takes the value of one if the target is a public firm and zero otherwise. Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 5.** Effects of Controlling Ownership (con't)

<b>Panel B: Effects of the equity ownership by the largest shareholder and affiliated firms</b>		
Variables	Chaebol bidders	Non-chaebol bidders
Ownership <sub>LS</sub>	0.04 (0.29)	0.12 (1.37)
Ownership <sub>AF</sub>	-0.13** (-2.34)	0.15 (1.55)
Ln Asset	0.66 (1.52)	0.09 (0.01)
Debt ratio	0.02** (2.60)	-0.00 (-1.25)
ROE	1.57 (0.59)	-0.05 (-0.46)
Foreign ownership	-0.15 (-1.33)	0.02 (0.17)
Relative size	-0.00 (-1.44)	-0.00 (-0.18)
KOSPI	6.45* (1.83)	2.98 (0.99)
Industry relatedness	0.93 (0.56)	3.47 (1.35)
Public target	3.95** (-2.53)	-1.30 (-0.44)
Adjusted R2	0.51	0.03
Observations	45	337

*Note:* This table presents the regression results of the merger announcement returns,  $CAR(-1, +1)$ , of chaebol and non-bidders on controlling ownership during the period from 2000 to 2008. The controlling ownership (*Controlling ownership*) denotes the sum of the equity ownership of the largest shareholder (*Ownership<sub>LS</sub>*) and the equity ownership of affiliated firms (*Ownership<sub>AF</sub>*). The control variables include the logarithm of total assets (*LnAsset*), the ratio of the book value of debt to the book value of equity (*Debt ratio*), the ratio of the net income to the book value of equity (*ROE*), the equity ownership by foreign investors (*Foreign ownership*), the ratio of bidder's book value of equity to target's book value of equity (*Relative size*), and three indicator variables. The market indicator (*KOSPI*) is a binary variable that takes the value of one if a bidder is listed on the KOSPI market and a value of zero if the bidder is listed on the KOSDAQ market. The second indicator variable (*Industry relatedness*) is assigned a value of one for mergers in which the bidder and the target are in the same industry and zero otherwise. The last indicator variable (*Public target*) takes the value of one if the target is a public firm and zero otherwise. Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Next, we examine whether the ownership of the largest shareholder or the affiliated firms affect the merger announcement returns in the same or different way. In the

previous regression, we assume that the equity ownership of the largest shareholder and affiliated firms affect the controlling shareholder's incentive in the same direction. However, they are likely to play different roles in managerial decisions because the equity ownership of the largest shareholder is associated with both cash flow rights and voting rights, while the equity ownership of affiliated firms is associated with voting rights only. For example, the largest shareholder may acquire a negative NPV target to benefit the controlling family at the expense of group-affiliated firms. We decompose the controlling ownership into the two ownership variables, the equity ownership of the largest shareholder and the equity ownership of affiliated firms. The regression results are presented in Panel B of Table 5. In the regression of chaebol bidders, presented in the first column, the coefficient on equity ownership of the largest shareholder is positive but not statistically significant, while the coefficient on the equity ownership of affiliated firms is negative and significant at the 5% level. In the regression of non-chaebol bidders, both coefficients are positive, but are not statistically significant. For chaebol bidders, the effect of equity ownership of the largest shareholder on announcement returns is different from that of affiliated firms because the interests of the largest shareholder may differ from those of affiliated firms. The results confirm that the voting rights of largest shareholder have different effects in chaebol firms and non-chaebol firms, while cash flow rights have the same incentive-alignment effect.

## 6. TUNNELING OR SELECTION?

In the previous section, we observed the relationship between the ownership structure and the merger announcement returns. In this section, we test whether the relationship can be explained by the tunneling or selection hypothesis. In tunneling, the controlling family transfers resources from a bidder firm, where its cash flow rights are low, to other group member firms, non-bidder group firms, where its cash flow rights are high, after the merger. Under the tunneling hypothesis, investors expect a transfer of resources from a bidder firm. Thus, even if the merger itself presents a positive NPV investment, the stock price of the bidder firm will not necessarily rise upon the merger announcement. However, the values of the non-bidder group firms are expected to rise along with the wealth of the controlling family.

Selection refers to the controlling family's strategic choice of the optimal ownership structure for a new firm. Under the selection hypothesis, the negative relationship between the controlling shareholder's cash flow rights and the value of the group firms can arise even in the absence of a transfer of resources among the group firms. If the merger is a negative NPV investment, the family will choose for a group member firm with low cash flow rights but sufficiently high voting rights to be the bidder. Conversely, for a positive NPV investment, the family will prefer a group member firm with high cash flow rights to be the bidder. If selection does occur, the impact of the merger announcement on the values of the non-bidder group firms will not be particularly affected, except through their equity ownerships in the bidder firm.

**Table 6.** Tunneling or Selection

Variables	(1)	(2)	(3)	(4)	(5)	(6)
$CF_{\text{Non-bidder}}$	0.00 (0.03)					
$Wealth_{\text{Non-bidder}}$		0.00 (0.23)				
$CF_{\text{Diff}}$			0.00 (0.16)			
$Wealth_{\text{Diff}}$				0.00 (-0.39)		
$CF_{\text{Dummy}}$					0.02 (0.31)	
$Wealth_{\text{Dummy}}$						0.02 (0.35)
Ln Asset	0.03 (1.10)	0.03 (1.11)	0.03 (1.09)	0.03 (1.10)	0.02 (1.05)	0.02 (0.99)
Debt ratio	0.00 (-0.04)	0.00 (-0.06)	0.00 (-0.04)	0.00 (-0.03)	0.00 (-0.03)	0.00 (-0.03)
ROE	-0.02 (-0.39)	-0.02 (-0.38)	-0.02 (-0.40)	-0.02 (-0.34)	-0.02 (-0.37)	-0.02 (-0.39)
Foreign ownership	0.00 (0.11)	0.00 (0.15)	0.00 (0.12)	0.00 (0.14)	0.00 (0.14)	0.00 (0.11)
Relative size	0.00 (0.20)	0.00 (0.25)	0.00 (0.23)	0.00 (0.25)	0.00 (0.23)	0.00 (0.14)
$IR_{B \text{ and } N}$	0.04 (0.52)	0.05 (0.58)	0.04 (0.51)	0.04 (0.50)	0.04 (0.52)	0.04 (0.50)
$IR_{N \text{ and } T}$	-0.02 (-0.19)	-0.02 (-0.20)	-0.02 (-0.20)	-0.02 (-0.16)	-0.02 (-0.20)	-0.02 (-0.20)
$IR_{B \text{ and } T}$	0.03 (0.45)	0.03 (0.43)	0.03 (0.48)	0.03 (0.49)	0.03 (0.49)	0.04 (0.53)
Adjusted $R^2$	0.01	0.01	0.01	0.01	0.01	0.01
Observations	127	127	127	127	127	127

*Note:* This table presents the regression results of the merger announcement returns,  $CAR(-1, +1)$ , of non-bidder group firms on variables related to the ownership structure during the period from 2000 to 2008. The variables include the family's cash flow rights in the non-bidder group firms ( $CF_{\text{non-bidder}}$ ), the wealth invested in the non-bidder group firm ( $Wealth_{\text{non-bidder}}$ ), the difference in cash flow rights in the bidder firm and the non-bidder group firm ( $CF_{\text{Diff}}$ ), the difference in the amount of wealth invested in the bidder firm and the non-bidder group firm ( $Wealth_{\text{Diff}}$ ), the cash flow rights indicator variable ( $CF_{\text{Dummy}}$ ), the wealth indicator variable ( $Wealth_{\text{Dummy}}$ ), the logarithm of total assets ( $Ln \text{ Asset}$ ), the ratio of the book value of debt to the book value of equity ( $Debt \text{ ratio}$ ), the ratio of the net income to the book value of equity ( $ROE$ ), the equity ownership by foreign investors ( $Foreign \text{ ownership}$ ), and the ratio of bidder's book value of equity to target's book value of equity ( $Relative \text{ size}$ ), the industry relatedness between the bidder firm and the non-bidder group firm ( $IR_{B \text{ and } N}$ ), the industry relatedness between the non-bidder group firm and the target firm ( $IR_{N \text{ and } T}$ ), and the industry relatedness between the bidder firm and the target firm ( $IR_{B \text{ and } T}$ ). Standard deviations are in square brackets and t-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

To explore the two hypotheses, we test whether the merger announcement returns of the non-bidder group firms on the bidder firm's merger announcement can be explained by the ownership structure of the chaebol. In calculating the merger announcement return,  $CAR(-1, +1)$ , we carefully eliminate the mechanical change in the market value of the non-bidder group firms due to their equity ownerships (both direct and indirect) in the bidder firm. We include six independent variables related to the ownership structure in the analysis. The first variable is the family's cash flow rights in the non-bidder group firm ( $CF_{non-bidder}$ ). We include the family's wealth invested in the non-bidder group firm ( $Wealth_{non-bidder}$ ), because the controlling family may care more about its absolute wealth than the fraction of the firm's value that its wealth represents. To examine the effect of a family's cash flow rights and wealth in the non-bidder group firms relative to those in the bidder firm, we include the difference in the family's cash flow rights in the bidder firm and the non-bidder group firm ( $CF_{Diff}$ ) and the difference in the amount of the family's wealth invested in the bidder firm and the non-bidder group firm ( $Wealth_{Diff}$ ). The cash flow rights indicator variable ( $CF_{Dummy}$ ) is assigned a value of one if the family's cash flow rights in the firm are larger than those in the bidder firm and a value of zero otherwise. The wealth indicator variable ( $Wealth_{Dummy}$ ) takes the value of one if the family's wealth is invested more in the firm than in the bidder firm and a value of zero otherwise. Among the control variables, we redefine the industry relatedness variable into the three indicator variables. The three variables are the industry relatedness between the bidder firm and the non-bidder group firm ( $IR_{B \text{ and } N}$ ), the industry relatedness between the non-bidder group firm and the target firm ( $IR_{N \text{ and } T}$ ), and the industry relatedness between the bidder firm and the target firm ( $IR_{B \text{ and } T}$ ). If both firms belong to the same industry, the industry relatedness variable is assigned a value of one; otherwise, it has a value of zero.

Table 6 presents the regression results using the six ownership structure variables. None of the coefficients are statistically or economically significant, indicating that the merger announcement has no discernible effect on the values of the non-bidder group firms. The results are consistent with the selection hypothesis. In conclusion, the empirical results seem to challenge the tunneling hypothesis, and lend greater credence to the selection hypothesis.

## 7. EFFECTS OF THE MERGER ON AGGREGATE VALUE OF THE WHOLE GROUP

In this section, we examine the possibility that a controlling family pursues a merger because it is expected to increase the aggregate value of the group rather than to increase its private benefit. The agency problem arises when choosing the bidder firm that will bear the cost of the merger. For example, a family decides to merge with the target firm potentially benefiting all firms in the group. Nevertheless, the family chooses a group member firm in which it has low cash flow rights to be the bidder and pay for the cost.

In this case, despite the agency problem between the controlling family and the minority shareholders, the merger decision is efficient from the group's perspective. In fact, maximizing the aggregate value of the group firms could be an appropriate goal for group managers. If this is the case, the consequences of chaebol bidders' mergers for the economy are quite different from when a family pursues value-destroying mergers for private gain, such as to satisfy empire-building motives.

To examine this possibility, we calculate the merger announcement returns of chaebol non-bidder group firms. Panel A of Table 7 reports the average CARs of chaebol non-bidder group firms. Most of the average CAR values have insignificant negative values with the exception of  $CAR(-2, +2)$ , which has a positive value. The results imply that, on average, the merger activities of bidder firms do not significantly affect the value of non-bidder group firms; any potential impact tends to be negative.

**Table 7.** Effects on the Aggregate Value of Group Firms and The Family's Wealth

<b>Panel A: Average CARs of chaebol non-bidder firms</b>				
$CAR(-1, +1)$	$CAR(-2, +2)$	$CAR(-3, +3)$	$CAR(-4, +4)$	$CAR(-5, +5)$
-0.42	0.24	-0.26	-0.878	-3.57
(-1.22)	(0.54)	(-0.51)	(-1.13)	(-1.50)
<b>Panel B: Average value-weighted and family's wealth-weighted <math>CAR(-1,+1)</math> of chaebol firms</b>				
	Bidder firms	Non-bidder firms	Total	
Value-weighted CAR	-0.29	-0.40	-0.70	
	(-0.05)	(-0.08)	(-0.07)	
Family's wealth-weighted CAR	0.65	-0.27	0.38	
	(0.14)	(-0.06)	(0.02)	

*Note:* The average CAR of chaebol non-bidder group firms are presented in Panel A. Daily abnormal stock returns are calculated from the market model using 200 trading days of return data, starting 220 days before and ending 21 days before the merger announcement.  $CAR(t_1, t_2)$ , denotes the sum of the daily abnormal returns from  $t_1$  to  $t_2$ , with the merger announcement date set as  $t = 0$ . The average value-weighted and family's wealth-weighted  $CAR(-1, +1)$  of chaebol firms are presented in Panel B. The numbers are in % and t-statistics are in parentheses. The numbers are in %. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

We further analyze the change in the aggregate value of group firms upon the merger announcement of a bidder firm by computing the average value-weighted and family's wealth-weighted  $CAR(-1,+1)$  of chaebol firms. Panel B of Table 7 presents the results. The first column shows the value-weighted CAR of bidder firms, weighted by their individual value within the group. The second column shows the value-weighted CAR of non-bidder group firms, represented as the CAR multiplied by their respective value weight in the group. The weight is the ratio of the firm's market value to the sum of all

group firms' market values at the beginning of the day before the merger announcement ( $t = -1$ ). Although none of the results are statistically significant, it appears that the value of both the bidder firm (-0.29%) and the non-bidder group firms (-0.40%) decline on the announcement of the merger, resulting in 0.69% of the aggregate value loss. On average, the value of non-bidder group firms doesn't seem to be significantly affected by the merger of bidder firms; if there is an effect, it tends to be negative. Consequently, it doesn't seem that the ultimate goal of the controlling family is to maximize the total value of the group. These findings suggest that the controlling family doesn't engage in mergers to increase the aggregate value of the group firms.

Looking at the second row, we repeat the same analysis using the family's wealth instead of a group's market value. That is, in calculating the weight, we replace the market value of each group firm with the family's wealth invested in each group firm. The family's wealth increases by 0.38% around the merger announcement of the bidder firm, although this value is not statistically significant. This result suggests that although the value of a group decreases on average, the wealth of the controlling family does not decrease as a result of a merger. Moreover, this increase in value comes from the increased value of bidder firms rather than non-bidder group firms. This result is contrary to what the tunneling hypothesis predicts: the controlling family's wealth increases from the enhanced value of the non-bidder group firms in which they have high cash flow rights. In conclusion, it does not appear that the controlling family engages in mergers to increase the aggregate value of the group firms.

## 8. CONCLUSION

This study is not intended to exclude tunneling as a possible mechanism for agency problems between the controlling family and minority shareholders of chaebols or other business groups. There could be circumstances where tunneling activities occur, especially once the group structure is determined. In addition, there could be other mechanisms through which controlling families pursue private benefits. However, this study contributes to the literature by providing empirical evidence that the design of the group structure is one mechanism through which agency problems arise. Specifically, we examine the effects of controlling family's cash flow rights and voting rights in a bidder firm on merger announcement returns. In doing so, we employ the measures for cash flow rights and voting rights provided by Almeida et al. (2011), which take care of the problems of previous measures. Through empirical analysis, we find that the merger announcement returns of chaebol firms are, on average, lower than those of non-chaebol firms and that the wedge between controlling shareholders' voting rights and cash flow rights negatively affects merger announcement returns, suggesting the existence of agency problems between the family and minority shareholders. To distinguish between the tunneling and selection explanations, we examine the merger announcement returns of non-bidder group firms and conclude that selection of firms into different positions,



rather than tunneling, appears to be an important mechanism. Lastly, we provide evidence that chaebol firms' mergers are not motivated by value maximization of group value, suggesting that these mergers are driven by agency motives.

Although business groups controlled by families are not pervasive in the U.S., this study has an important implication for the parent-subsidiary structure with minority shareholders in the subsidiary firm. Because the shareholders of the parent firm have an incentive to have the subsidiary take the low NPV projects, the value of subsidiary may be lower as firms in a pyramidal ownership structure. This scenario will be more prevalent when the equity ownership of the parent firm in the subsidiary firm is far from 100% because the wedge between cash flow rights and voting rights of the parent firm will be larger. Such selection will cause a discount of subsidiary firms with larger wedges. It is of interest to examine if selection exists in U.S. firms, for example, when merging with or acquiring firms.

## REFERENCES

- Almeida, H., C.S. Kim and H.B. Kim (2015), "Internal Capital Markets in Business Groups: Evidence from the Asian Financial Crisis," *Journal of Finance*, 70(6), 2539-2586.
- Almeida, H., S.Y. Park, M. Subrahmanyam and D. Wolfenzon (2011), "The Structure and Formation of Business Groups: Evidence from Korean Chaebols," *Journal of Financial Economics*, 99(2), 447-475.
- Almeida, H. and D. Wolfenzon (2006), "A Theory of Pyramidal Ownership and Family Business Groups," *Journal of Finance*, 61(6), 2637-2681.
- Bae, K.H., J.S. Bae, J. K. Kang and W.L. Liu (2012), "Do Controlling Shareholders' Expropriation Incentives Imply a Link between Corporate Governance and Firm Value? Theory and Evidence," *Journal of Financial Economics*, 105(2), 412-435.
- Bae, K.H., J.K. Kang and J.M. Kim (2002), "Tunneling or Value Added? Evidence from Mergers by Korean Business Groups," *Journal of Finance*, 57(6), 2695-2740.
- Bae, K.H. and K. Kim (2021), "Value-Destroying Mergers: Evidence from Korean Business Groups," *Asia-Pacific Journal of Financial Studies*, 50(6), 589-622.
- Baek, J., J. Kang and I. Lee (2006), "Business Groups and Tunneling: Evidence from Private Securities Offerings by Korean Chaebols," *Journal of Finance*, 61(5), 2415-2449.
- Baek, J., J. Kang and K. Park (2004), "Corporate Governance and Firm Value: Evidence from the Korean Financial Crisis," *Journal of Financial Economics*, 71, 265-313.
- Bertrand, M., P. Mehta and S. Mullainathan (2002), "Ferretting out Tunneling: An

- Application to Indian Business Groups,” *Quarterly Journal of Economics*, 117(1), 121–148.
- Buchuk, D., B. Larrain, F. Muñoz and F. Urzúa (2014), “The Internal Capital Markets of Business Groups: Evidence from Intra-Group Loans,” *Journal of Financial Economics*, 112(2), 190-212.
- Cheung, Y.L., P.R. Rau and A. Stouraitis (2006), “Tunneling, Propping, and Expropriation: Evidence from Connected Party Transactions in Hong Kong,” *Journal of Financial Economics*, 82(2), 343-386.
- Choi, H. and J. Suh, (2023), “The Role of Parent Firms in Business Groups’ Internal Capital Markets,” *Journal of Business Finance and Accounting*, 50(3-4), 820-857.
- Claessens, S., S. Djankov, J.P. Fan and L.H. Lang (2002), “Disentangling the Incentive and Entrenchment Effects of Large Shareholdings,” *Journal of Finance*, 57(6), 2741-2771.
- Claessens, S., S. Djankov and L.H. Lang, (2000), “The Separation of Ownership and Control in East Asian Corporations,” *Journal of Financial Economics*, 58(1-2), 81-112.
- Faccio, M., L.H. Lang and L. Young (2001), “Dividends and Expropriation,” *American Economic Review*, 91(1), 54-78.
- Faccio, M. and L.H. Lang (2002), “The Ultimate Ownership of Western European Corporations,” *Journal of Financial Economics*, 65(3), 365-395.
- Gopalan, R., V. Nanda and A. Seru (2007), “Affiliated Firms and Financial Support: Evidence from Indian Business Groups,” *Journal of Financial Economics*, 86(3), 759-795.
- Haggard, S., W.H. Lim and E.S. Kim (2003), *Economic Crisis and Corporate Restructuring in Korea: Reforming the Chaebol*, Cambridge: Cambridge University Press.
- Jiang, G., C.M. Lee and H. Yue (2010), “Tunneling Through Intercorporate Loans: The China Experience,” *Journal of Financial Economics*, 98(1), 1-20.
- Joh, S.W. (2003), “Corporate Governance and Firm Profitability: Evidence from Korea Before the Economic Crisis,” *Journal of Financial Economics*, 68(2), 287-322.
- Kang, M., H.Y. Lee, M.G. Lee and J.C. Park (2014), “The Association between Related-Party Transactions and Control-Ownership Wedge: Evidence from Korea,” *Pacific-Basin Finance Journal*, 29, 272-296.
- Kim, J.B. and C.H. Yi (2006), “Ownership Structure, Business Group Affiliation, Listing Status, and Earnings Management: Evidence from Korea,” *Contemporary Accounting Research*, 23(2), 427-464.
- Kwon, Y. and S.H. Han (2020), “Controlling Shareholders’ Preference in Business Groups: Evidence from Korea,” *Emerging Markets Finance and Trade*, 56(4), 940-959.
- La Porta, R., F. Lopez-de-Silanes and A. Shleifer (1999), “Corporate Ownership around the World,” *Journal of Finance*, 54(2), 471-517.
- Lee, S., K. Park and H.H. Shin (2009), “Disappearing Internal Capital Markets: Evidence

- from Diversified Business Groups in Korea,” *Journal of Banking and Finance*, 33(2), 326-334.
- Paligorova, T. and Z. Xu (2012), “Complex Ownership and Capital Structure,” *Journal of Corporate Finance*, 18(4), 701-716.
- Shin, H.H. and Y.S. Park (1999), “Financing Constraints and Internal Capital Markets: Evidence from Korean Chaebols,” *Journal of Corporate Finance*, 5(2), 169-191.
- Ushijima, T. (2016), “Diversification, Organization, and Value of the Firm,” *Financial Management*, 45(2), 467-499.

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