

# Transfer of Control and Ownership Structure in Family Firms

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This paper documents a novel channel of transfer of control in family firms. I provide evidence, from a natural experiment, that avoiding inheritance tax is the motivation behind intra-group mergers in Korea. Due to the tax reform that increased the personal inheritance tax by 25 percentage points, firms burdened by a high personal inheritance tax are likely to increase stock-for-stock intra-group merger activities during the post-tax-reform period. This result suggests that firms with heavy inheritance tax burdens acquire affiliates owned by heirs, who then convert private target shares into acquirer shares while avoiding the inheritance tax.

Keywords: succession tax, tax avoidance, intra-group merger, family firm, transfer of control, ownership structure

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## I. Introduction

In exchange for these financial contributions, prosecutors say, Ms. Choi colluded with Ms. Park to ensure government backing for several deals, most notably a controversial merger of two Samsung affiliates in 2015 that helped Mr. Lee consolidate his hold over Samsung Electronics. The merger changed Samsung's intricate cross-holding structure and, prosecutors said, allowed Mr. Lee to avoid a steep inheritance-tax bill as he sought to succeed his father at the top of the conglomerate. (*Wall Street Journal*, August 25, 2017)<sup>1</sup>

This anecdote illustrates how, in practice, family firms indirectly transfer control to heirs through intra-group mergers<sup>2</sup>. When controlling families transfer their control through direct ownership inheritance, heirs inherit the family ownership by paying an inheritance tax. This is what we generally expect when we talk about the transfer of control in family firms. However, heirs are exposed to ownership dilution risk due to heavy inheritance taxes when control is transferred through ownership inheritance. Thus, controlling families are incentivized to use tax-minimizing succession vehicles to ensure that the heirs maintain sufficient control over the entire business group. A common tax-saving strategy to avoid taxes during the transfer of control in business groups is for family firms with heavy inheritance tax burdens to acquire smaller affiliates owned by heirs. Then, heirs convert the target shares into acquirer shares. Through this stock-for-stock intra-group merger<sup>3</sup>, heirs can obtain large controlling stakes in a key strategic firm owned by the controlling family while avoiding the inheritance tax.

Family firms comprise more than 80% of firms worldwide<sup>4</sup>, and succession is the preeminent issue that determines their fate. Only 30% of family firms last into a second generation, 12%

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<sup>1</sup> Eun-Young Jeong, "Samsung Heir Lee Jae-yong Convicted of Bribery, Gets Five Years in Jail." *Wall Street Journal*, August 25, 2017.

<sup>2</sup> The intra-group merger between two Samsung group affiliates is detailed in Appendix B.

<sup>3</sup> Since heirs' shares are converted into acquirers' shares, any intra-group merger that uses cash as a method of payment should be irrelevant.

<sup>4</sup> Chase Peterson-Withorn, "New Report Reveals The 500 Largest Family-Owned Companies In The World." *Forbes*, April 20, 2015.

remain viable into a third, and 3% operate into a fourth generation or beyond<sup>5</sup>. Given its importance in family firms, succession has attracted attention in the recent literature<sup>6</sup> and has been studied from many angles. However, there is little detailed evidence on the effect of personal inheritance tax, and the implications of different control-transfer processes for family firms are understudied. I fill this gap by studying a particular channel of transfer of control: intra-group mergers.

I provide causal evidence, from a natural experiment, that avoiding inheritance tax is the motivation behind intra-group mergers. This natural experiment exploits Korea's major tax reform initiative undertaken in 1999, which suddenly increased the maximum personal inheritance tax rate by 25 percentage points during the post-tax-reform period. Given the raised inheritance tax burden, I use difference-in-differences (DiD) estimations to examine how firms responded by transferring control shares. Specifically, I compare how firms with high and low expected tax burdens prior to the 1999 tax reform transferred control shares via intra-group mergers in response to this personal tax shock. The findings enable us to understand the changes in controlling families' inheritance tax-saving benefit, the changes in the relevant transaction cost of undergoing an intra-group merger, and the way that the overall ownership structure of family firms has been rebalanced through this process.

The final data comprise 2,422 firm-year observations from the top 24 largest Korean chaebols<sup>7</sup> from 1997 to 2004 (sample years). I use Korean chaebol data because Korean chaebols have

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<sup>5</sup> Family Business Alliance. Retrieved June 2014, [http://www.fbagr.org/index.php?option=com\\_content&view=article&id=117&Itemid=75](http://www.fbagr.org/index.php?option=com_content&view=article&id=117&Itemid=75).

<sup>6</sup> Perez-Gonzalez (2006) and Bennedsen, Nielsen, Perez-Gonzalez, and Wolfenzon (2007) document that family CEOs perform worse than non-family CEOs. Mehrotra, Morck, Shim, and Wiwattanakantang (2013) also show that non-consanguineous-heir-run firms outperform heir-run and professional-manager-run firms. Bunkanwanicha, Fan, and Wiwattanakantang (2013) show that a network marriage between a controlling family member and a member of a prominent business or political family is followed by increasing stock prices.

<sup>7</sup> Family-owned large business conglomerates in Korea are generally called 'chaebols'.

reported highly detailed inter-firm ownership information among their affiliates with the Korean Fair Trade Commission since the mid-1990s. Public access to this type of information is limited in most countries but is available in South Korea<sup>8</sup>. However, the story in my paper is not limited to Korea. Any family firm with an inheritance tax has its own incentive to use tax-minimizing succession strategies.<sup>9</sup>

I first document a pattern of unusual surges in stock-for-stock intra-group mergers with high personal tax burdens. Next, using the 1999 personal tax reform, I estimate the causal impact of the expected inheritance tax burden on intra-group mergers. The results show that the difference in intra-group merger activities between firms with high and firms with low personal inheritance taxes is three times more likely to increase upon this personal inheritance tax shock. I also find that among firms with high tax burdens, stock-for-stock intra-group mergers are concentrated in 1) central firms<sup>10</sup>, 2) firms located in the upper layer<sup>11</sup> of the pyramid, and 3) firms within a circular ownership chain, i.e., firms where heirs can consolidate their indirect control over the entire business group. This result emphasizes that the ownership network of group affiliates determines

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<sup>8</sup> KFTC requires only select Korean chaebols to divulge their ownership status information. Due to limited access to ownership data, the sample cannot include smaller business groups.

<sup>9</sup> Prior literature shows that controlling families siphon resources out of member firms for their private benefit. Similar personal tax-saving effects implemented for the controlling family's benefit are likely to be observed in many alternative institutional contexts. For example, Asian casino king Stanley Ho implemented similar intra-group transactions to avoid the inheritance tax.

<sup>10</sup> These companies are connected to many other member firms in the web of ownership, so the controlling family can indirectly control affiliated firms through these key strategic firms in a pyramidal business group. Following Almeida et al. (2012), the centrality of firm  $i$  is measured as the average percentage difference in the control rights of the controlling family across all group member firms except the firm itself after excluding a specific firm  $I$  from the group. Herein, I refer to firms with a high value of centrality as central firms.

<sup>11</sup> The upper layer of the pyramid is an indicator that has a value of one if a firm's position is smaller than the average of all chaebol firms and zero otherwise. The position refers to the distance between the controlling family and a firm in a group. A value of one indicates that the firm is directly controlled by the founding family. In a simple pyramid structure with two firms, firm  $i$  in the upper layer (chain 1) has a position value of one, while firm  $j$  in the lower layer (chain 2) has a position value of two. In this case, the position of firm  $i$  can be measured by the weighted average of chain 1 and chain 2, whose importance is weighted by the cash flow the family receives, namely, the direct cash flow from firm  $i$  and the indirect cash flow from firm  $j$  through chain 2. Group firms that are directly owned by the controlling family have a low position value, while indirectly owned affiliates have a high position value. See Almeida et al. (2012) for more details on ownership metrics.

which firms with heavy inheritance tax burdens initiate intra-group mergers. I also find that this pattern is not relevant in regard to non-intra-group merger activities.

To further identify the causal linkage whereby heavy inheritance tax burdens lead to stock-for-stock intra-group merger activities in pyramidal business groups, I test whether a reduction in personal tax burdens decreases intra-group merger activities. I find that intra-group mergers are rarely pursued by firms that have heavy inheritance tax burdens and are indirectly owned by private foundations that are exempt from gift taxes. Finally, a difference-in-difference-in-differences (DiDiD) estimation of Korea's 1999 major tax reform confirms that unusual surges in stock-for-stock intra-group mergers occur primarily because firms aim to avoid the inheritance tax through intra-group mergers<sup>12</sup>. I also confirm that this sudden increase in intra-group mergers after the tax reform is not a consequence of the Asian financial crisis—that is, it is not attributed to the sudden shrinkage in the market value of Korea's capital market during the pre-crisis era or the post-crisis restructuring effect.

I then investigate the channel of ownership re-allocation by identifying the characteristics of target firms in relation to intra-group merger activities. I find that heirs of chaebol families receive large dividends from their private firms in which they already have large ownership stakes; these firms become the targets of intra-group mergers. Heirs can take these dividends because they have substantial voting rights with which they can determine the corporate policy in target merger firms. Since heirs only own their target firms that are merged with central firms, they prefer short-term wealth gains over long-term investment commitments. The same behavior is not necessarily seen in male relatives in the current chair's generation, for whom the succession process is officially over. Overall, these results suggest that to avoid inheritance tax burdens, heirs might first prefer to

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<sup>12</sup> An example of inheritance tax avoidance through intra-group mergers in pyramids is detailed in Appendix C.

own private firms where they can cash out corporate resources quickly and then try to reallocate their ownership to central firms through intra-group mergers.

While controlling-family heirs are likely to benefit from this reshuffling, the ownership network within the business group becomes further distorted as central firms expand their boundaries with additional circular shareholding links. Minority shareholders suffer losses from these tax-motivated mergers, which have few operational synergies. For instance, the two-day cumulative abnormal return drops 32.3% more when an intra-group merger is announced than when a non-intra-group merger is announced. Overall, this new piece of evidence supports the tunneling hypothesis.

This paper is related to several strands literature, including studies on the effect of taxes on firms. Early studies mainly emphasize the effects of corporate income taxes on the right-hand side of the balance sheet, such as capital structure (Modigliani and Miller 1958 and 1963, Miller 1988) or dividend policy (Bradford 1981, Auerbach 1979, King 1974). More recent studies on tax effects explore topics such as the effects of tax reforms on organizational forms (Desai and Hines 1999, Desai, Foley, and Hines 2004) or the effects of inheritance law on investment decisions (Ellul, Pagano, and Panunzi 2010, Tsoutsoura 2015). My paper connects these two recent works by more deeply exploring the ownership networks among group affiliates. The ownership networks are a key component of inheritance tax channels through which firms with heavy inheritance taxes initiate intra-group mergers, leading to the distortion of an ownership network of a business group.

The findings of this study also contribute to the literature on tunneling in emerging markets. Tunneling is more prevalent in emerging economies, where controlling shareholders can exercise their discretionary power to extract private benefits by transferring assets and profits out of firms (Johnson et al., 2000). Prior literature documents evidence of tunneling activities in business

groups under the pyramidal ownership structure by highlighting the existence of conflicts of interest between controlling shareholders and minority shareholders (Almeida and Wolfenzon, 2006a, 2006b; Bertrand, Mehta, and Mullainathan, 2002; Chang, 2003; Bae, Kang, and Kim, 2002). More recent studies introduce several forms of tunneling practices and their consequences (Jian and Wong 2010; Jiang et al. 2010; Cheung et al. 2006). In such cases, minority shareholders suffer losses from negative firm outcomes. In this paper, as another form of tunneling, we explore intra-group merger activities that aim at avoiding inheritance tax and bring about negative market consequences. Similar personal tax-saving efforts implemented for the controlling family's benefits are likely to be observed in many alternative institutional contexts.

This paper is organized as follows: in Section II, I introduce the institutional background of inheritance tax reform. Section III contains a description of the data and sample summary statistics. Section IV discusses the main results, and Section V concludes the paper.

## II. Institutional Background

Korea's inheritance tax laws and gift tax laws were first legislated in March and April of 1950, respectively. In November 1952, gift tax law was incorporated into inheritance tax law. In 1950, when the Inheritance Tax Act was first crafted, the system was progressive taxation, with 15 tax brackets and tax rates ranging from a minimum of 20% to a maximum of 90%. In the 1970s, the highest marginal tax rate remained high, at 75%; these high tax rates were met with strong resistance among taxpayers, resulting in tax evasion. Over time, as the Korean economy grew more sophisticated, the inheritance laws were amended. In the 1980s, tax brackets decreased and tax rates were cut, and then, in the 1990s, various types of tax allowances were increased to help reduce the tax burden. The government gradually reduced the inheritance and gift tax rates to 67%

in 1980 and finally to 40% in 1996, the lowest in history, while maintaining the business premium tax<sup>13</sup> rate at 10%. Then, in 1996, the name of the law was officially changed to the Inheritance Tax and Gift Tax Act. As shown in Table 1, the inheritance tax rate was capped at 55%, with 45% contributed by the inheritance tax and 10% by the business premium tax, in 1997-1999, right before the tax reform.

[Table 1 around here]

However, this overall trend of decreasing inheritance tax rates suddenly shifted after the 1997-1998 Asian financial crisis. Soon after the first repayment of the IMF Supplemental Reserve Facility (SRF) in December 1998, President Kim announced special tax reform initiatives on the nation's Independence Day, 15<sup>th</sup> August 1999, laying out policy guidelines to prevent the tax-free inheritance of wealth. The tax reform initiative, driven by the President himself, led to the adoption of a higher inheritance tax rate at the beginning of the year 2000.

Accordingly, the threshold of the tax bracket subject to the marginal tax rate was lowered from five billion KRW to three billion KRW, and a maximum inheritance tax rate of 80% (50% from the inheritance tax rate and 30% from the business premium tax rate) was put in place in 2000. This is one of the highest inheritance tax rates among OECD economies. In 2002, the government sought to remove tax loopholes to prevent high-net-worth individuals from engaging in irregular succession and donation of wealth; the government expanded the coverage of irregular succession practices to include recapitalization or capital reduction. It also streamlined the securities evaluation system, as the share of financial assets among total inherited or donated property was steadily increasing. In 2003, with a view to expand the scope of inheritance and gift taxes, the government shifted the tax regime from the negative system to the positive system.

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<sup>13</sup> The premium tax is imposed on the largest shareholders in addition to the inheritance tax. The inheritance tax law in Korea intends to impose more tax for shares with management rights.



[Figure 1 around here]

As indicated in Figure 1, the major tax reform undertaken in 1999 applies a new tax rate that is 25 percentage points higher than that of the pre-reform period. If firms had anticipated the move with enough time to prepare, family firms would have implemented business succession and family wealth inheritance before the tax reform to avoid the higher tax rates. However, with the tax reform in full swing and strong regulations in place in the wake of the financial crisis, the gap between the reform's announcement and implementation was only three and half months. I find only four cases in which the portion of family ownership decreased during this period. The results are robust after I exclude these firms, so the early inheritance of ownership immediately before this temporal shock is not a concern. Overall, this tax shock was an unexpected and inheritance tax-specific shock.

### III. Data

The main sample of our study consists of 2,422 firm-year observations from the 24 largest business groups (controlled by 16 chaebol families) from 1997 to 2004 according to the list based on the classification standards of the Korean Fair Trade Commission (KFTC, a Korean anti-trust authority)<sup>14</sup>. Since the mid-1990s, the KFTC has required leading Korean chaebols to report highly detailed ownership status information; public access to this sort of information is limited in most countries but is available in South Korea. This type of aggregated firm-level ownership data helps identify the extent of control concentration in each chaebol. However, KFTC ownership data are

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<sup>14</sup> The 24 family business groups include Samsung, CJ, Shinsaegae, Hansol, Hyundai, Hyundai Motors, Hyundai Heavy Industry, Hyundai Department Store, Hyundai Industry Development, KCC, LG, SK, Hanjin, Lotte, Kumho, Hanhwa, Doosan, Dongbu, Hyosung, Daelim, Kolon, Youngpoong, Dongyang, and Taihan Electric. The pan-Samsung groups (Samsung, CJ, Shinsaegae, and Hansol) share a family, as do the pan-Hyundai groups (Hyundai, Hyundai Motors, Hyundai Heavy Industry, Hyundai Department Store, Hyundai Industry Development, and KCC).

available for only a few select Korean chaebols of a certain size. Due to this limited access to ownership data, I focus on the top 24 largest Korean chaebols. I find that a chaebol family controls the entire group of firms with disproportionately small but key control stakes. In the sample, chaebol family members have direct ownership in only 533 (479 public and 54 private) out of the 2,422 firm-year observations, indicating the common exploitation of Korean chaebols' uniquely deep pyramidal structure. I retrieve M&A data from Thomson Reuters SDC Platinum and collect firms' financial and market data using Data Guide Pro, a database managed by the leading Korean financial data provider, FnGuide<sup>15</sup>. The total amount of assets controlled by these chaebols represents more than 56% of the nominal GDP of the Korean economy at the end of the sample year (778.4 trillion KRW).

To further convey their structures, I build family trees<sup>16</sup> for the 16 chaebol families using a publication by the Institute for Participatory Society, *The Chaebol of Korea: The Management Structure and Personal Network of Korean Chaebol* (2005)<sup>17</sup>. Information concerning an individual family member's ownership position is collected from the repository of Korea's corporate filings, DART (Data Analysis, Retrieval, and Transfer System), which is operated by the Financial Supervisory Service. Under Article 2 of the decree of the Act on External Audit of Stock Companies, any public or private company obligated to have an external audit is legally mandated to submit a complete annual report containing ownership information such as the

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<sup>15</sup> The information in this database is approximately equivalent to the information reported in CRSP and Compustat for U.S. firms.

<sup>16</sup> A family tree includes founders, their siblings, their spouses, and all direct and indirect (via marriage) descendants of the founders and their siblings and spouses. The generation of the founder is coded as generation one, the following generation as two and so on. I allocate a unique ID to each family member in the family tree and collect detailed information on birth order, gender, direct or indirect (via marriage) descendants, marital status, presence (dead or living), and personal background.

<sup>17</sup> This book covers the family trees of the 30 largest Korean chaebols based on their total assets in 2004.

chairperson's relatives (spouses, blood relatives within 3<sup>rd</sup> cousins and relatives by marriage within 1<sup>st</sup> cousins), and subsidiaries or foundations that are practically governed by the family.

[Table 2 around here]

Panel A of Table 2 summarizes the characteristics of the sample firms. The analysis is based on data compiled as of the year end during the sample period. *Succession Tax Burden* refers to the maximum expected tax payment if the ownership of the current chair's generation is passed to the next generation in a corresponding year<sup>18</sup>. The average succession tax burden for each firm is 2.3 billion KRW (1.93 million USD), and the maximal tax burden is 572 billion KRW (480 million USD)<sup>19</sup>. During the sample period, approximately 11% of chaebol firms initiate mergers, of which 26% are stock-for-stock intra-group transactions between affiliates in the same business group. All measures for mergers are based on the acquiring firms. The financial characteristics of sample firms are comparable to those observed in previous studies on Korean chaebol firms (Bae, Kang, and Kim. 2002; Almeida et al. 2012). Panel A also reports that 48% of the 2,422 firm-year observations in the sample are publicly listed firms, and the sample mean firm age is 24.57 years.

In Panel B of Table 2, I summarize ownership variables, such as *Centrality*, *Position*, *Loop*<sup>20</sup>, *Cash-flow Rights*, *Voting Rights*, and *Discrepancy*, to better understand the pyramidal structures of Korean business groups. I observe that the maximal centrality of a group is 45.33%, which suggests that a chaebol family's control across all group firms could decrease by that amount after I exclude one specific firm from the group. The average centrality of public firms (4.38) is 6.3 times higher than that of private firms (0.69), suggesting that highly central firms are public firms

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<sup>18</sup> Succession tax burden = Ownership fraction of current chair's generation × Total equity value × Tax rate in 10 billion KRW. Total equity value refers to market value for public companies and  $\text{Max} \left[ \left[ \frac{(\text{total asset} - \text{total debt}) \times 2 + \{(\text{NIt}-3) \times 1 + (\text{NIt}-2) \times 2 + (\text{NIt}-1) \times 3\}}{6} \right] / 10\% \right] / 5$  or total assets] for private companies, following Article 63-1 and 63-2 of the Inheritance Tax and Gift Tax Act. Tax rate refers to the sum of the inheritance tax rate and business premium tax rate imposed on the largest shareholders.

<sup>19</sup> The exchange rate at the end of 2004, 1USD = 1,192 KRW, is applied.

<sup>20</sup> Loop is an indicator that has a value of one if a firm is in a circular ownership chain and zero otherwise.

in pyramidal business groups. Public firms have, on average, a position 1.94 away from the controlling family, while the average position of private firms is 2.31. These average positions imply that public firms are more likely than private firms to be directly owned by the controlling family. In addition, 53% of public firms are inside circular ownership chains, whereas most private firms (79%) are outside these chains. These ownership metrics confirm that there is typically a highly concentrated control structure in chaebols (Almeida et al. 2012), where owning a small stake in one or two key central firms allows the owner of the stake to be the ultimate controller of the entire business group.

In Panel C of Table 2, I observe changes in ownership structures before and after the tax reform. Due to the 2001 amendment of the Monopoly Regulation and Fair Trade Act as part of regulatory reform initiatives that limited equity investment in group affiliates to 25%, centrality and circular ownership chains were reduced while position significantly increased during the post-tax reform period<sup>21</sup>. However, the ultimate cash-flow rights (17.85%), voting rights (63.18%), and discrepancy (45.34%) during the post-tax reform period are significantly higher than those (15.53%, 43.93%, and 28.40%, respectively) during the pre-tax reform period. These results imply that despite the equity investment regulation in place, controlling families increased their control over business groups via intra-group mergers, which contributed to a more distorted ownership structure that widened the discrepancy between cash-flow rights and voting rights.

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<sup>21</sup> The results of Panel C of Table 2 are mainly driven not by inheritance tax reform but by the regulatory reform of the Monopoly Regulation and Fair Trade Act (MRFTA) in South Korea. The MRFTA is beyond the scope of this paper, but Panel B-2 gives a comprehensive understanding of ownership structure changes in Korean chaebol firms during the sample period. The amendment of the MRFTA took effect at the beginning of 2001, a period that overlaps with the post-tax reform period. This revision set the ceiling on firms' shareholding in other group affiliates within large chaebol groups with total consolidated assets of 5 trillion KRW or higher. Affiliated firms under these large conglomerates were not allowed to invest in group affiliates' equity shares above a maximum limit of 25 percent of the investing firm's net assets. This regulatory reform had a strong effect on increasing the portion of controlling families' direct ownership over group affiliates as controlling families reduced their expanded indirect ownership through (circular) equity investments made during the pre-tax reform period. Consequently, this equity investment ceiling significantly reduced firms' centrality and circular ownership chains while increasing their position.

In Panel D of Table 2, I summarize the results of a univariate analysis of our main variables for the 2,422 sample family firms. The number of intra-group mergers is positively correlated with succession tax burden (0.08), centrality (0.28), and loop (0.07) but negatively related to position (-0.11). These results suggest that intra-group mergers are more likely to increase in firms with high succession tax burdens and central firms located in the upper layers of the pyramid within the circular ownership chains. These correlations are largely in line with the prediction of my hypothesis.

[Table 3 around here]

Table 3 shows equity ownership involvement of different family members. Panel A of Table 3 reports the equity ownership involvement of the current chair's generation; Panel B of Table 3 reports the equity ownership involvement of the following generation, that is, current chair + 1 generation. To avoid succession taxes during transfer of control in business groups, firms that have high tax burdens and are owned by the current chair's generation acquire the affiliates owned by the current chair + 1 generation. Thus, we anticipate that heirs convert target shares to acquirer shares while avoiding the inheritance tax. I report the statistics for the current chair's generation and those for the current chair + 1 generation separately since an ownership share of the current chair's generation, which is to be passed to the current chair + 1 generation, is only relevant as the measure of succession tax burden in acquiring firms. In addition, by distinguishing the ownership share of the current chair + 1 generation from that of the current chair's generation, we can better analyze the characteristics of firms targeted in stock-for-stock intra-group mergers. We predict that the heirs have high ownership stakes in those target firms.

In Table 3, the number of observations is 128 chaebol family years, and each chaebol family variable is computed as the arithmetic average across business groups. The analysis is based on

data compiled as of the year end during the sample period. I find that on average, 10.8 family members hold 62% of family ownership positions in the current chair's generation, while 7.06 family members hold 23% of the entire family ownership in the current chair+1 generation. For the current chair's generation, 7.26 male family members on average hold 53% of the total ownership held by family members, while 1.58 daughters hold just 5%. In-laws in the chair's generation rarely hold ownership positions. For the current chair+1 generation, a similar pattern of predominance of male heirs in the direct bloodline is observed. Variable definitions are detailed in Appendix A.

#### IV. Results

##### A. Succession Tax Burden and Intra-group Mergers

In Table 4, I test how the burden of the personal inheritance tax affects stock-for stock intra-group merger activities. As shown in Column 1 of Panel A, using the Tobit model, I regress each firm's *Number of Stock-for-Stock Intra-group Mergers*<sup>22</sup> on the *Succession Tax Burden* variable. I control for each firm's size (log of total assets), financial leverage (debt to equity ratio), and number of affiliates and then cluster the standard errors at the business group level since an intra-group merger takes place via group-level decisions. All estimates include industry (2-digit SIC) and year indicator variables<sup>23</sup>. The estimated effect of the personal inheritance tax burden is both economically and statistically significant. The results shown in Column 1 imply that for every 213

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<sup>22</sup> The argument in this study applies only to stock-for-stock intra-group mergers. I count the total number of intra-group mergers by excluding cash mergers. One may be concerned about intra-group mergers at non-market prices in chaebol groups. Since 24 out of 42 target firms in our sample are private, market prices are not fully observable.

<sup>23</sup> I cannot include both industry and firm fixed effects in Panel A due to collinearity. In Panel B, I show the result with firm fixed effects. All results in Panel A and Panel B are consistent with both firm and industry fixed effects. In addition, while Korean chaebols are now diversified, the central firms of each business group have grown specialized in specific industries under government initiatives since the centrally planned economic era of the 1960s. Including a group dummy in addition to industry fixed effects does not explain additional within-group variation.

billion KRW (177 million USD) increase in the personal inheritance tax of an affiliate, Korean chaebols initiate one additional intra-group merger ( $1=0.0470*21.3$ ). Column 2 of Panel A shows the results of an identification test of the underlying economic stories. I count the number of non-intra-group mergers, which are irrelevant to inheritance tax avoidance as heirs do not own the target firms of those mergers. I find that the estimated effect on non-intra-group mergers is negative (-0.0005) and statistically insignificant.

[Table 4 around here]

I expect that to maximize their control over the entire business group, heirs are incentivized to reallocate their ownership to the central firms located in the upper layer of the pyramid within circular ownership chains. In Columns 3 through 5 of Panel A, I extend the baseline model from Column 1 of Panel A to test the characteristics of acquirers. The right-hand-side (RHS) variable, *Succession Tax Burden*, is now decomposed into two, using the following dummy variables: (1) *High Centrality* versus *Low Centrality*, (2) *Upper Layer of Pyramid* versus *Lower Layer of Pyramid*, and (3) *Loop* versus *No Loop*. To facilitate the economic interpretation of our results, all explanatory variables are standardized to have a mean of zero and a standard deviation of one so that their point estimates directly represent their economic significance.

In Column 3 of Panel A, I find that an intra-group merger is mainly driven by central firms. *Succession Tax Burden*  $\times$  *High Centrality* (0.1346) is statistically significant at the 1% level, whereas the effect of the opposite case, *Succession Tax Burden*  $\times$  *Low Centrality* (-0.2538), is negatively significant at the 10% level. The coefficient equality test indicates that the difference between these two estimates is statistically significant at the 1% level with an *F-statistic* of 6.83. In Column 4 of Panel A, I further confirm that an intra-group merger is more likely to occur in firms directly owned by a controlling family. *Succession Tax Burden*  $\times$  *Upper Layer of Pyramid*

(0.1334) is statistically significant at the 1% level, whereas *Succession Tax Burden*  $\times$  *Lower Layer of Pyramid* (-0.0653) is not statistically significant. In Column 5 of Panel A, the results show the effect of the personal inheritance tax burden on the circular ownership structure. *Succession Tax Burden*  $\times$  *Loop* (0.1172) is statistically significant at the 1% level, and the estimate is significantly larger than the effect of the opposite case, *Inheritance Tax Burden*  $\times$  *No Loop*, at the 1% level with an *F-statistic* of 31.45. This result emphasizes that the ownership network of group affiliates determines which firms with heavy personal inheritance tax burdens initiate intra-group mergers.

One of the main concerns lies in the construction of a key independent variable, *Succession Tax Burden*, which is measured by multiplying the total equity value by the controlling shareholders' ownership and the succession tax rate. However, the total equity value can be affected by various factors, including firm-specific characteristics and macroeconomic conditions, and thus varies over time. This fluctuation in the total equity value is likely to affect the frequency of intra-group mergers. For example, during the Asian financial crisis, firms' total equity value dropped significantly, which motivated controlling shareholders to pass their ownership to heirs via intra-group mergers. In this case, the increased frequency of intra-group mergers can mainly be attributed to the change in the market value of equity during the crisis rather than to the change in inheritance tax rates. In Panel B, to minimize this concern, I repeat the analyses from Columns 1 to 5 in Panel A by employing the *Succession Tax Burden* variable measured based on the book value of equity, which is unaffected by changes in market conditions. All estimates include firm and year indicator variables<sup>24</sup>. In Panel B, I find a similarly significant increase in intra-group mergers with succession tax burdens measured based on the book value of equity.

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<sup>24</sup> I cannot include both industry and firm fixed effects in the regression due to collinearity. However, the results from Tables 4 to 6 are consistent with both firm and industry fixed effects.



Overall, the results in Table 4 reveal a pattern: a high inheritance tax burden leads to stock-for-stock intra-group mergers in pyramidal business groups; this implies that such unusual surges in intra-group mergers are motivated by a desire to avoid the inheritance tax through an alternative succession mechanism<sup>25</sup>.

## B. The Effect of Tax Reform on Intra-group Mergers

One concern about the baseline findings is whether there is a causal relationship between a high personal inheritance tax burden and stock-for-stock intra-group mergers. To investigate this issue, in Table 5, I examine the 1999 tax reform in Korea that applied a maximum inheritance tax rate of 80%, which is 25 percentage points higher than that in the pre-tax-reform period. Factoring in this exogenous event that raised the inheritance tax burden, I use DiD estimations to estimate the causal impact of the personal inheritance tax burden on the frequency of intra-group mergers. The pre-tax-reform period refers to 1997 through 1999, and the post-tax-reform period runs from 2000 through 2004, when the increased tax rate was applied. The treatment group, *High Succession Tax Burden*, is composed of firms whose succession burden is greater than that of the top 10% of directly owned chaebol firms during the pre-tax-reform period. I choose the top 10% of firms as a treatment group because they always remain firms with the top tax burden, ensuring that the treatment group and control group do not switch during the entire sample period. These high-tax-burden firms are the most tax burdened firms over the sample period, regardless of the change in the tax rate, the equity value, the ownership fraction of the current chair's generation, or the timing of the announcement of intra-group mergers. Only the ownership difference determines the

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<sup>25</sup> One may argue that the motivation for intra-group mergers may simply be an attempt to cement the power of the new heir rather than a deliberate attempt to circumvent tax law. However, substituting the succession tax burden variable with the ownership of the current chair's generation or the ownership of heirs does not reveal a significant correlation with intra-group mergers.

treatment and control groups. Thus, separating the treatment and control groups by degree of inheritance tax burden does not raise a selection bias issue. Figure 2 summarizes changes in the average number of stock-for-stock intra-group mergers around the 1999 inheritance tax reform in Korea. Figure 2 shows no notable difference between firms with a high tax burden and firms with a low tax burden before the tax reform. Then, high-tax-burden firms' engagement in stock-for-stock intra-group mergers becomes more pronounced right after the tax reform, while low-tax-burden firms' engagement remains stable even after the reform.

[Table 5 around here]

In Column 1 of Panel A, I regress each firm's *Number of Stock-for-Stock Intra-Group Mergers* on an interaction term, *High Succession Tax Burden*  $\times$  *Post*, and I find positive point estimates of 1.1615, significant at the 1% level. The coefficients imply that the difference in intra-group merger activities between firms with a high and firms with a low personal inheritance tax is 2.3 times ( $2.3=(1.1615+0.9150)/0.9150$ ) larger during the post-tax-reform period. These are economically significant effects that suggest that high-tax-burden firms expand their boundaries via initiating intra-group mergers during the post-tax-reform period because the tax-saving benefits from increased boundaries cover relevant transaction costs.

In Columns 2 through 4 of Panel A, I repeat the conditional analysis from Columns 3 through 5 of Table 4. Using this additional layer of differences, I run a difference-in-differences and decompose (DiD-D) regression. The RHS variable, *High Succession Tax Burden*  $\times$  *Post*, is now decomposed into two parts using the following dummy variables: (1) *High Centrality* versus *Low Centrality*, (2) *Upper Layer of Pyramid* versus *Lower Layer of Pyramid*, and (3) *Loop* versus *No Loop*. All DiD-D tests for centrality, layer position, and loop confirm the earlier findings shown in Columns 2 to 4 of Table 4; the DiD-D effect of *High Succession Tax Burden*  $\times$  *Post*  $\times$  *High*

*Centrality* (0.2120) is statistically significant at the 1% level. The economic magnitude of intra-group mergers is almost five times as large in *High Centrality* ( $4.9=0.2120/0.0433$ ) as in *Low Centrality* (*F-statistic* of 50.73). This result sharply identifies the effects of a personal inheritance tax burden on stock-for-stock intra-group mergers in Korean chaebols.

In Panel B, to minimize the concern that succession tax burden is measured by market value of equity, I repeat the analyses from Columns 1 to 4 in Panel A by using the *High Succession Tax Burden* variable measured based on the book value of equity, which is unaffected by changes in market conditions. Other empirical specifications, including firm fixed effects, remain the same as in Panel B of Table 4. The results in Panel B are in line with those of Panel A. However, the non-linear model does not capture the treatment effect when we interpret the interaction term in a DiD model. In Panel C, I repeat the analyses from Columns 1 to 4 in Panel A using a linear specification. The estimated marginal effects of the succession tax burden are smaller than those in Panel A because the probability that a firm initiates an intra-group merger is much lower than one. The findings in Panel B and Panel C together confirm that the 1999 tax reform, which exogenously increased the inheritance tax burden, resulted in significant intra-group mergers. This effect was likely causal.

### C. Private Foundations and Tax Burden Reduction

To further identify causal evidence that a high inheritance tax burden leads to intra-group mergers in pyramidal business groups, I test the alternative direction to see whether a reduction in the tax burden decreases stock-for-stock intra-group merger activities. The results are shown in Table 6. The inheritance tax burden is relieved through indirect shareholding by industry foundations (Thomsen 1999, Villalonga and Amit 2009). As charitable entities, private

foundations, which are often governed by heirs who serve as board members, are exempt from gift taxation. Thus, I expect that a firm owned by a private foundation has a reduced tax burden, resulting in decreased motivation for heirs to initiate intra-group mergers.

[Table 6 around here]

To examine the effects of private foundations, I employ DiDiD analysis. In Column 1 of Panel A in Table 6, I extend the DiD model of Table 5 by interacting the RHS variable, *High Succession Tax Burden*  $\times$  *Post*, with *Foundation* as a dummy variable. *Foundation* here is an indicator that has a value of one if a firm is owned by a private foundation and zero otherwise. The point estimate of the interaction term (-14.7926) implies that the incentive to initiate an intra-group merger drops by a net 97.3% ( $0.973 = -14.7926/15.2063$ ) when the firm is owned by a private foundation. The interaction effect is statistically significant at the 1% level.

In Columns 2 through 4 of Panel A, I repeat the same conditional analysis as in Columns 2 to 4 of Table 5. The RHS variable, *High Succession Tax Burden*  $\times$  *Post*  $\times$  *Foundation*, is now decomposed into two using the following dummy variables: (1) *High Centrality* versus *Low Centrality*, (2) *Upper Layer of Pyramid* versus *Lower Layer of Pyramid*, and (3) *Loop* versus *No Loop*. To facilitate the economic interpretation of our results, all explanatory variables are standardized to have a mean of zero and a standard deviation of one, so their point estimates directly represent their economic significance. The results of tests for centrality, layer position, and loop re-confirm the findings shown in Tables 4 and 5. An intra-group merger is less likely to occur in central firms that are located in the upper layer of the pyramid within circular ownership chains if the marginal benefit of tax avoidance is likely to decrease. In Column 2 of Panel A, the effect of *High Succession Tax Burden*  $\times$  *Post*  $\times$  *Foundation*  $\times$  *High Centrality* (-1.4421) is statistically significant at the 1% level, and its economic magnitude is more than twice ( $2.2 = -$

1.4421/-0.6427) as large as that of the opposite case (*F*-statistic of 538.10), i.e., *High Succession Tax Burden* × *Post* × *Foundation* × *Low Centrality*.

In Panel B, I repeat the analyses from Columns 1 to 4 in Panel A by deploying the *High Succession Tax Burden* variable measured based on the book value of equity. Other empirical specifications, including firm fixed effects, are the same as in Panel B of Table 4 and Panel B of Table 5. In Panel B of Table 6, the results support the causal evidence that a reduction in the tax burden via a private foundation decreases intra-group merger activities. However, the Tobit model does not capture the treatment effect when we interpret the interaction term in a DiDiD model. In Panel C, I repeat the analyses from Columns 1 to 4 in Panel A using an OLS model, and I find results similar to those of Panel A and Panel B. The causal evidence from Tables 5 and 6, taken together, highlights that intra-group mergers are primarily intended to avoid inheritance taxes in the process of ownership succession.

#### D. Target Firms

In Table 7, I investigate the channel of ownership re-allocation by identifying the characteristics of target firms in stock-for-stock intra-group mergers<sup>26</sup>. Heirs in the chair+1 generation initially cash out corporate resources from their private firms, the targets of intra-group mergers, in which they already have high ownership stakes. They can take advantage of this pecuniary benefit since they have a substantial degree of managerial discretion with which they can control the dividend policy of the target private firm. Thus, they prefer short-term wealth gains over long-term investment commitments. Eventually, to maximize their control, heirs in the chair+1 generation are willing to reallocate their funds to accumulate stakes in other strategically

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<sup>26</sup> Among the 42 target firms of stock-for-stock intra-group mergers, 24 are private and 18 are public.

important firms within the business group. This behavior, however, is not necessarily anticipated for male relatives in the current chair's generation who already have accumulated shares in those key firms.

[Table 7 around here]

Panel A of Table 7 provides the results of the analysis of private target firms. The ownership stake and managerial discretion on dividend policy are measured by the fraction of ownership held by members of the current chair+1 generation (C+1) or the current chair's generation (C) (Columns 1 and 2) and the voting rights (Column 3) of a controlling family. Short-term wealth gains are estimated by the dividend payout ratio (Column 4). I use the long-term R&D ratio (Column 5) as a proxy value for long-term investment commitments. I create an indicator for target private firms and test whether heirs pursue short-term pecuniary benefits in those private firms. Based on an OLS regression, other empirical specifications are the same as in the previous regression analyses.

In Columns 1 and 3, I find that target private firms have a positive correlation with the family ownership fraction in the current chair+1 generation (7.14141) and voting rights (20.37031), and those estimates are statistically significant at the 1% level. However, in Column 2, I find a negative, insignificant point estimate of -6.92086 for the ownership fraction in the current chair's generation. In Columns 4 and 5, target private firms have a positive point estimate (7.19319) with the dividend payout ratio but a negative point estimate (-11.04820) with the long-term R&D ratio. Those estimates are statistically significant at the 10% and 1% levels, respectively. This result implies that in target private firms where the current chair+1 generation's ownership (on average 7.2% higher than that in the rest of the chaebol firms) and voting rights (on average 20.4% higher than those in the rest of the chaebol firms) are highly concentrated, heirs benefit from dividends that

are 7.2% higher than the dividends of the rest of the chaebol firms while avoiding long-term investment commitments when an intra-group merger is anticipated.

However, the results for private target firms might not necessarily be echoed in public target firms, where relatively strong governance and protection for minority shareholders are in place. In Panel B of Table 7, I conduct a falsification test for verification by investigating public target firms, and I do not find results similar to those of Panel A. Together, the results shown in Table 7 and previous tables for acquirers underline that intra-group mergers help heirs consolidate control by reallocating their ownership to central firms from private target firms that have fallen into families' private safes.

#### E. Returns on Intra-group Merger Announcements

Finally, I provide evidence of tunneling by examining the stock market's response to stock-for-stock intra-group merger announcements during the sample period. If an intra-group merger is intended only to meet the controlling family's need to increase heirs' ownership stakes without paying the inheritance tax, the acquiring firm's investors will grow frustrated with the negative synergy gains and consequent losses from the merger. Minority shareholders will exit their stocks upon the announcement of a tax-motivated intra-group merger with no synergy value and sustained losses, while the controlling family relishes the profits from the merger.

[Table 8 around here]

The merger data I use to test the financial market's response to an intra-group merger are based on the announcement of the first merger that occurs in a firm in a given year. The event date is the day a firm initially announces an intra-group merger. For each event, I calculate the CAR over the 250-trading-day window using a market model. First, I regress returns on market returns to obtain estimates of the alpha and beta. Then, I identify the abnormal returns by subtracting alpha plus

beta times the market return from daily stock returns. Panel A of Table 8 reports the results of the univariate analysis. Panel A reports the median merger event CARs for given subsamples. In parentheses, I report the P-values for a signed-rank test for the median of the full sample in Panel A-1 and the post-crisis subsample in Panel A-2. Thus, in Panel A-2, I exclude the period of 1997 to 1998 to avoid any potential confounding factor, which is the recession triggered by the Asian financial crisis.

In Column 4 of Panel A-2 of Table 8, the variable  $CAR [0, 1]$  reports the mean cumulative abnormal return for the event day and the following day. The point estimates of *Stock-for-stock Intra-group Merger* and *Non-intra-group Merger* are -1.7461 and -1.1819 and are significant at the 5% and 10% levels, respectively. This result indicates that in response to the announcement of a stock-for-stock intra-group merger, the two-day cumulative abnormal return,  $CAR [0, 1]$ , drops 32.3% more than it does in response to the announcement of a non-intra-group merger. The difference test reports that the difference in  $CAR [0,1]$  between *Stock-for-stock Intra-group Merger* and *Non-intra-group Merger* is -0.5642, which is statistically significant at the 10% level. Overall, the results suggest that losses of minority shareholders are significant upon tax-motivated intra-group mergers. The four-day cumulative abnormal return,  $CAR [0, 3]$ , drops 52.8% more than the average for total mergers, and this trend weakens afterward. In Panel A-1 of Table 8, with the full sample, I find a result similar to that shown in Panel A-2, but I find a negatively significant result only for stock-for-stock intra-group mergers.

Panel B of Table 8 reports the results of a multivariate analysis for 41 firm-year observations in which stock-for-stock intra-group mergers are initiated. To further test whether CARs are a more negative response to mergers aiming for a reduction in inheritance taxes, I create an indicator, *High Chairman Age*, which has a value of one if the age of a controlling shareholder of a business



group is higher than average for all chaebol groups and zero otherwise. Based on an OLS regression, other empirical specifications are the same as in the previous regression analyses. In Columns 1 to 3, I find that high chairman age has a negative correlation with the variables *CAR*  $[0, 1]$ , *CAR*  $[0, 2]$ , and *CAR*  $[0, 3]$  (-3.1472, -3.5502, and -4.6933), and those estimates are statistically significant at the 1% level. These results indicate that in response to the announcement of a stock-for-stock intra-group merger, the two-day cumulative abnormal return of firms with a high chair age drops on average 3.15% points more than that of firms with a low chair age. This result is economically significant considering the two-day event window. However, one may argue that certain unobservable unique firm characteristics may be correlated with firm value, i.e., CARs. In Columns 4 to 6, I repeat the analyses from Columns 1 to 3 in Panel B by including the firm fixed effect, and I find similar significant results.

The results in Table 8 show that minority shareholders sustain losses from intra-group mergers with few operational synergies, particularly when the controlling family aims to avoid inheritance tax through these mergers. Overall, these findings represent a new piece of evidence for the tunneling hypothesis.

#### F. Robustness Test: Alternative Time Period

One of the important concerns is the implication of the Asian financial crisis, which led to (1) a sudden shrinkage in Korea's capital market<sup>27</sup> and (2) post-crisis restructuring. The KOSPI Index, after dropping to one third of its pre-crisis level during the crisis, was still recovering to the pre-crisis level until early 1999, when the average personal inheritance tax burden was reduced. If a chaebol heir suddenly inherited the ownership of a business group during the Asian financial crisis,

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<sup>27</sup> KOSPI Index: 651.22 (1996.12), 376.31(1997.12), 280.00 (1998.6), 562.45 (1998.12), 1,028.07 (1999.12).

during a time when the inheritance tax burden was somewhat relieved, an intra-group merger was therefore less likely to occur. Another concern about the crisis' distorted effect on the inheritance tax burden is that the market responses of individual firms to this macroeconomic shock may have varied greatly. To alleviate this concern, in Columns 1 through 3 of Table 9, I re-run my baseline analyses from the first columns of Tables 4, 5, and 6, excluding 1997-1998, the period of the Asian financial crisis. As shown in Table 9, the results are similar to those of the baseline regression, indicating that a sudden shrinkage in market value did not lead to a pattern of decreasing intra-group mergers during the pre-tax-reform period.

[Table 9 around here]

Another important concern is the post-crisis restructuring effect. Since the post-crisis period (1999-2001)<sup>28</sup>, when restructuring efforts were active, overlapped with the period of the post-tax-reform period (2000-2004), one may argue that these confounding factors have led to the result. If the rise in intra-group mergers during the post-tax-reform period is mainly driven by business group restructuring, the restructuring effect should be stronger early in the post-tax-reform period (2000-2001) than later in the period (2002-2004). To distinguish and separate the impact of these two different factors – the inheritance tax burden and business restructuring – on intra-group mergers, in Columns 4 and 5, I decompose the Post dummy into two: *Early Post* (2000-2001) vs *Late Post* (2002-2004). All explanatory variables are standardized to have a mean of zero and a standard deviation of one, so their point estimates directly represent their economic significance. In Column 4 of Panel A, the effect of *High Inheritance Tax Burden*  $\times$  *Post*  $\times$  *Late Post* (0.3103) is statistically significant at the 1% level, and its economic magnitude is significantly larger than

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<sup>28</sup> After the first repayment of the IMF Supplemental Reserve Facility (SRF) in December 1998, the Korean government led restructuring efforts to meet the requirements imposed by the IMF. The IMF-supported financial program was terminated in August 2001.

that of the opposite case (*F*-statistic of 8.09), i.e., *High Inheritance Tax Burden* × *Post* × *Early Post*. Column 5 also shows a result similar to the DiDiD estimations. The results are robust to the potential confounding factors, suggesting that restructuring efforts in the wake of the Asian financial crisis were not mainly in the form of mergers between group affiliates.

In Panel B, I conduct an additional robustness check. To further isolate the succession tax effect from the financial crisis-induced effect, in Columns 1 to 3 of Panel B, I replace year fixed effects with the annual average KOSPI Index. To further alleviate the omitted variable bias concern, in Columns 4 to 6 of Panel B, the regression includes additional controls, i.e., firm ownership structure (controlling shareholders' cash-flow rights and voting rights), growth opportunities (Tobin's *q*), performance (ROA), and merger-specific characteristics (private target indicator). As shown in Panel B, all results are consistent with the baseline results.

## V. Conclusion

Transfer of control is a tremendously important issue in any organization. In this paper, by identifying a novel channel of transfer of control in family firms, I attempt to understand how controlling families transfer control to heirs. Specifically, I discover that intra-group mergers are a channel of transfer of control in family firms, and this practice has been understudied in previous literature. This paper provides causal evidence that in practice, controlling families indirectly transfer control through intra-group mergers to avoid control-transfer taxes in family firms. Thus, this paper highlights a novel personal inheritance tax channel that reshapes firm boundaries: high-tax-burden firms initiate intra-group mergers during a post-tax-reform period because the tax-saving benefits from increased boundaries cover relevant transaction costs. The major costs of

undergoing intra-group mergers are the negative market response to tax-motivated intra-group mergers and the resulting distortions in ownership structure among group affiliates.

While the heirs of controlling families benefit from personal tax savings, minority shareholders suffer losses from these tax-motivated intra-group mergers, as these mergers create few operating synergies and thus cause investors to exit their stocks. This finding represents a new piece of evidence of tunneling caused by heavy inheritance tax burdens in a specific institutional setting. Prior literature shows that controlling families in business groups use both investment and financing decisions as instruments to siphon resources out of member firms for their private benefit (Bertrand et al. 2002, Bae, Kang, and Kim, 2002, and Baek, Kang, and Lee, 2006). Prior empirical evidence of tunneling in emerging markets suggests that similar distorted ownership allocation in pursuit of personal tax savings is likely to be observed in many alternative institutional contexts.

My work can be valuable to policy makers by raising new questions related to, for example, the optimal succession tax policy to prevent the cost of using tax-minimizing succession vehicles. This paper implies that a shock from a personal inheritance tax distorts the ownership structure among affiliates, which is unique evidence that a tax shock causes exogenous changes in ownership structure for a subset of family firms. Business groups with a distorted ownership structure may be more vulnerable to potential risk, ongoing growth, or managerial quality. Future studies might identify the costs of the distortions resulting from a personal tax shock on the ownership structure in family firms.

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Figure 1 – Tax Reform and the Maximum Succession Tax Rate

This figure summarizes the maximum succession tax rate and business premium tax rate in Korea before and after tax reforms. The full line represents the cap of the succession tax rate, and the gap between the full line and the dotted line represents the maximum business premium tax rate. The cap of the succession tax rate was as low as 45% from 1997-1999, with a constant 10% business premium tax. In 1999, right after the Asian financial crisis, the government undertook tax reform initiatives, laying out policy guidelines for “preventing tax-free inheritance of wealth,” and the major tax reform undertaken in 1999 applies a new tax rate that is 25 percentage points higher than that of the pre-reform period.

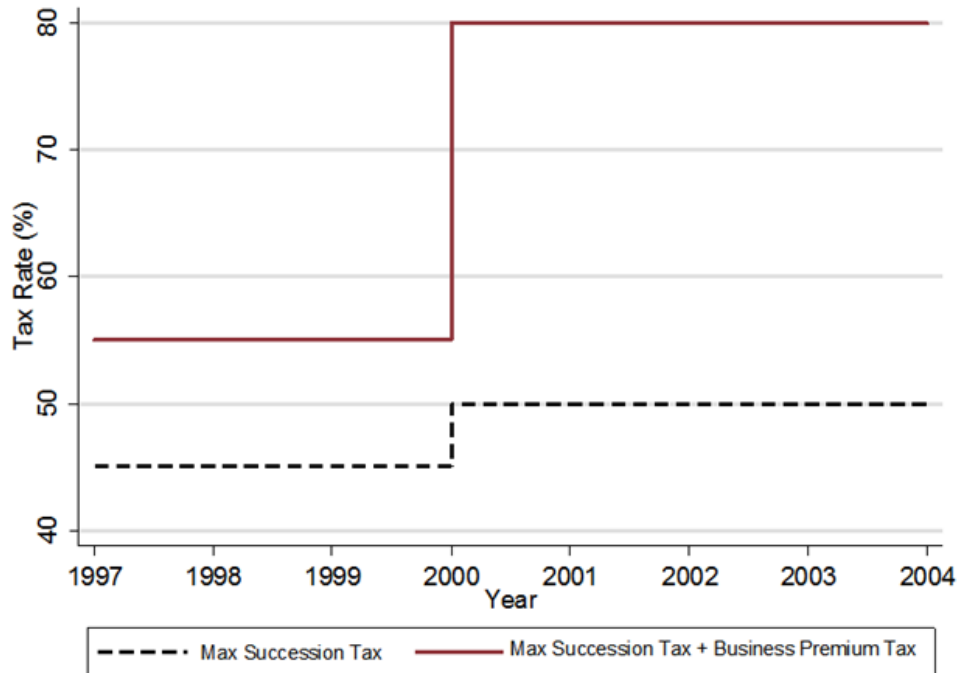


Figure 2 – Trends of Stock-for-Stock Intra-group Mergers

This figure summarizes chronological changes in the average number of stock-for-stock intra-group mergers around the 1999 inheritance tax reform in Korea. There is no notable difference between high and low tax burden firms before 1999. Then, the high tax burden firms suddenly engage more in stock-for-stock intra-group mergers right after the tax reform, while the low tax burden firms remain stable even after the reform.





Table 1 – Time-series Variation in the Succession Tax Rate

This table summarizes the maximum succession tax rate and business premium tax rate in Korea before and after tax reforms. In the 1970s, the highest marginal tax rate was 75%; these high tax rates brought about strong psychological resistance among taxpayers, resulting in tax evasion. To address this, the government gradually reduced the inheritance and gift tax rate to 67% in 1980 and, as shown in the table, finally to 40% in 1996, the lowest in history, while maintaining the business premium tax rate at 10%. The cap of the inheritance tax rate was 55%, with 45% from the inheritance tax rate and 10% from the business premium tax rate from 1997 to 1999, right before the tax reforms. Then, in 1999, after the Asian financial crisis, the government undertook tax reform initiatives, laying out policy guidelines for “preventing tax-free inheritance of wealth,” and, accordingly, in 2000 it began to apply a maximum succession tax rate of 80% percent, 50% of which comes from the succession tax rate and 30% from the business premium tax rate, which is the highest among OECD economies.

	1993~1995	1996	1997~1999	2000~2002	After 2003	
					SME	Chaebol
Cap of Succession Tax Rate	50%	40%	45%	50%	50%	50%
Business Premium Tax Rate (Largest shareholder < 50%)	10%	10%	10%	20%	10%	20%
Business Premium Tax Rate (Largest shareholder > 50%)	10%	10%	10%	30%	15%	30%
Total Succession Tax Rate	60%	50%	55%	80%	65%	80%

Table 2 – Summary Statistics

The sample consists of 2,422 firm-year observations from 1997 to 2004 of Korea's top 24 largest business groups, controlled by 16 chaebol families, designated by the Korean Fair Trade Commission (KFTC). Analysis is based on data compiled as of the year end of the corresponding year.

<i>Panel A: Financial Characteristics</i>						
	Number of firms	Mean	Std. Dev	Min	Median	Max
Succession Tax Burden	2,422	0.23	2.84	0	0	57.20
Number of Total Mergers	2,422	0.11	0.62	0	0	13.00
Number of Stock-for-stock Intra-group mergers	2,422	0.03	0.27	0	0	7.00
Total Merger Transactions	2,422	7.20	85.42	0	0	2903.41
Stock-for-Stock Intra-group Merger Transactions	2,422	3.98	75.77	0	0	2903.41
Log of Total Assets	2,422	12.42	2.04	7.43	12.34	18.33
Log of Sales	2,422	5.28	0.95	1.19	5.30	7.91
Leverage	2,422	3.31	9.59	0	1.63	279.46
ROA	2,422	0.06	0.09	-0.60	0.05	0.85
Payout Ratio	1,607	0.09	0.48	0	0	1.98
Cash Holding/Total Asset	1,607	0.06	0.08	0	0.04	0.76
Public firm (dummy)	2,422	0.48	0.50	0	0	1
Firm age	2,422	24.57	15.85	1	21	75

<i>Panel B: Ownership Structure</i>						
	Number of firms	Mean	Std. Dev	Min	Median	Max
Centrality (%)	1,667	2.66	5.61	0	0.00	45.33
Public	891	4.38	6.89	0	1.00	45.33
Private	776	0.69	2.42	0	0.00	20.13
Position	1,667	2.11	0.84	1	2.01	5.31
Public	891	1.94	0.82	1	1.98	5.31
Private	776	2.31	0.82	1	2.17	5.01
Loop	1,667	0.38	0.49	0	0	1
Public	891	0.53	0.50	0	1	1
Private	776	0.21	0.41	0	0	1

<i>Panel C: Ownership Structure Change</i>	Number of firms	Mean	Std. Dev	Min	Median	Max
Centrality (%)	1,667	2.66	5.61	0	0.00	45.33
Pre-tax-reform period	497	2.95	6.08	0	0.06	45.33
Post-tax-reform period	1,169	2.54	5.38	0	0.00	39.47
Difference (post-pre)		-0.41		t= -1.36 (p=0.17)		
Position	1,667	2.11	0.84	1	2.01	5.31
Pre-tax-reform period	497	2.01	0.84	1	2.00	5.31
Post-tax-reform period	1,169	2.16	0.84	1	2.03	5.05
Difference (post-pre)		0.15		t=3.34 (p=0.00)		
Loop	1,667	0.38	0.49	0	0	1
Pre-tax-reform period	497	0.47	0.50	0	0	1
Post-tax-reform period	1,169	0.34	0.47	0	0	1
Difference (post-pre)		-0.13		t=-5.28 (p=0.00)		
Cash-flow right (%)	1,667	17.20	17.46	0	11.75	100
Pre-tax-reform period	497	15.53	17.22	0	9.08	100
Post-tax-reform period	1,169	17.85	17.51	0	12.49	100
Difference (post-pre)		2.32		t=2.48 (p=0.01)		
Voting right (%)	1,667	57.46	30.27	0	50.43	100
Pre-tax-reform period	497	43.93	28.99	0	33.00	100
Post-tax-reform period	1,169	63.18	28.98	0	60.40	100
Difference (post-pre)		19.25		t=12.40 (p=0.00)		
Discrepancy (%)	1,667	40.26	28.77	0	36.84	100
Pre-tax-reform period	497	28.40	26.88	0	18.01	100
Post-tax-reform period	1,169	45.34	28.01	0	43.52	98.43
Difference (post-pre)		16.93		t=11.42 (p=0.00)		

<i>Panel D: Correlation</i>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Succession Tax Burden	1.00								
(2) Number of Intra-group Mergers	0.08	1.00							
(3) Centrality	0.23	0.28	1.00						
(4) Position	-0.13	-0.11	-0.36	1.00					
(5) Loop	0.08	0.07	0.17	-0.17	1.00				
(6) ROA	-0.01	0.04	-0.03	-0.07	-0.02	1.00			
(7) Log of total assets	0.17	0.23	0.45	-0.15	0.42	-0.10	1.00		
(8) Leverage	0.00	0.01	0.06	-0.03	0.08	-0.04	0.12	1.00	
(9) Payout ratio	0.03	0.00	0.05	0.02	0.05	0.05	0.04	-0.01	1.00

Table 3 – Family Involvement in Ownership

The sample consists of 2,422 firm-year observations from 1997 to 2004 of Korea's top 24 largest business groups, controlled by 16 chaebol families, designated by the Korean Fair Trade Commission (KFTC). The number of observations is 128 chaebol family-years, and each chaebol family variable is computed as the arithmetic average across business groups. Analysis is based on data compiled as of the year end during the sample period.

	N	Mean	Std. Dev	Min	Median	Max
<i>Panel A: Current chair generation</i>						
Total number of members with ownership in current chair generation	128	10.80	5.99	2	12	21
Number of male family members with ownership	128	7.26	4.27	1	7	15
Number of female family members with ownership	128	1.58	1.99	0	1	7
Number of married male members with ownership	128	1.13	1.68	0	0	6
Number of married female members with ownership	128	0.84	1.24	0	0	5
Total fraction of ownership by current chair generation	128	0.62	0.22	0.16	0.63	1.00
Fraction of family ownership held by male family members	128	0.53	0.27	0.001	0.53	1.00
Fraction of family ownership held by female family members	128	0.05	0.14	0	0	0.83
Fraction of family ownership held by married male members	128	0.03	0.08	0	0	0.57
Fraction of family ownership held by married female members	128	0.02	0.05	0	0	0.24
<i>Panel B: Current chair+1 generation</i>						
Total number of members with ownership in current chair+1 generation	128	7.06	8.66	0	4	26
Number of sons with ownership	128	4.38	5.67	0	2	19
Number of daughters with ownership	128	1.99	2.31	0	2	8
Number of sons-in-law with ownership	128	0.31	0.85	0	0	3
Number of daughters-in-law with ownership	128	0.38	1.46	0	0	6
Total fraction of ownership held by current chair+1 generation	128	0.23	0.26	0	0.07	0.84
Fraction of family ownership held by sons	128	0.20	0.25	0	0.01	0.73
Fraction of family ownership held by daughters	128	0.03	0.05	0	0.01	0.27
Fraction of family ownership held by sons in law	128	0.002	0.007	0	0	0.03
Fraction of family ownership held by daughters in law	128	0.001	0.003	0	0	0.01

Table 4 – Succession Tax Burden and Intra-group Mergers

Each column reports the coefficients from a Tobit regression with heteroscedasticity-robust standard errors. In Panel A, *Succession Tax Burden* is measured based on the market value of equity. In Panel B, *Succession Tax Burden* is measured based on the book value of equity. Standard errors are clustered at the business group level and reported in parentheses under the coefficient estimates. Coefficient Equality reports the F statistics for the coefficients of the decomposed variables, with the p-values in rounded brackets. In Columns 3 to 5, all explanatory variables are standardized, so their point estimates represent the economic magnitude of their effects. Controls include the *Log of total assets* (in millions of KRW), the *Leverage ratio*, and the *Number of group affiliates*. In Panel A, all estimates include industry (SIC-2 digit) and year indicator variables. In Panel B, all estimates include firm and year indicator variables. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Tobit (Market Value of Equity)	Dependent Variable: <i>Number of Stock-for-Stock Mergers</i>				
	(1)	(2)	(3)	(4)	(5)
Variables	Intra-group	Non-intra group	Intra-group Mergers		
<i>Succession Tax Burden</i>	0.0470*** [0.002]	-0.0005 [0.003]			
<i>Succession Tax Burden</i> × <i>High Centrality</i>			0.1346*** [0.009]		
<i>Succession Tax Burden</i> × <i>Low Centrality</i>			-0.2538* [0.154]		
<i>Succession Tax Burden</i> × <i>Upper Layer of Pyramid</i>				0.1334*** [0.009]	
<i>Succession Tax Burden</i> × <i>Lower Layer of Pyramid</i>				-0.0653*** [0.017]	
<i>Succession Tax Burden</i> × <i>Loop</i>					0.1172*** [0.009]
<i>Succession Tax Burden</i> × <i>No Loop</i>					0.0700*** [0.005]
Coefficient Equality (F-test)			6.83*** (0.01)	352.90*** (0.00)	31.45*** (0.00)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422	2,422

<i>Panel B: Tobit (Book Value of Equity)</i>		Dependent Variable: <i>Number of Stock-for-Stock Mergers</i>				
Variables	(1)	(2)	(3)	(4)	(5)	
	Intra-group	Non-intra group	Intra-group Mergers			
<i>Succession Tax Burden</i>	0.0213*** [0.002]	-0.2493*** [0.009]				
<i>Succession Tax Burden</i> × <i>High Centrality</i>			0.0631*** [0.007]			
<i>Succession Tax Burden</i> × <i>Low Centrality</i>			-270.8004*** [0.486]			
<i>Succession Tax Burden</i> × <i>Upper Layer of Pyramid</i>				0.0655*** [0.006]		
<i>Succession Tax Burden</i> × <i>Lower Layer of Pyramid</i>				-105.1979*** [0.742]		
<i>Succession Tax Burden</i> × <i>Loop</i>					0.0390*** [0.003]	
<i>Succession Tax Burden</i> × <i>No Loop</i>					-0.0265*** [0.003]	
Coefficient Equality (F-test)			3.0e+05*** (0.00)	19806.89*** (0.00)	3073.41*** (0.00)	
Firm Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Controls	Yes	Yes	Yes	Yes	Yes	
Observations	2,422	2,422	2,422	2,422	2,422	

Table 5 – The Effect of Tax Reform on Intra-group Mergers

Each column of Panel A and Panel B reports the coefficients from a Tobit regression. In Panel A, *Succession Tax Burden* is measured based on the market value of equity. In Panel B, *Succession Tax Burden* is measured based on the book value of equity. Each column of Panel C reports the coefficients from an OLS regression. Standard errors are clustered at the business group level and reported in parentheses under the coefficient estimates. Coefficient Equality reports the F statistics for the coefficients of the decomposed variables, with the p-values in rounded brackets. In Columns 2 to 4, all explanatory variables are standardized, so their point estimates represent the economic magnitude of their effects. Controls include the *Log of total assets* (in millions of KRW), the *Leverage ratio*, and the *Number of group affiliates*. All estimates in Panel A and Panel C include industry (SIC-2 digit) and year indicator variables. All estimates in Panel B include firm and year indicator variables. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Tobit (Market Value of Equity) Variables	Dependent Variable: <i>Number of Stock-for-Stock Intra-group Mergers</i>			
	(1)	(2)	(3)	(4)
<i>High Succession Tax Burden</i> × <i>Post</i>	1.1615*** [0.130]			
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>High Centrality</i>		0.2120*** [0.002]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Low Centrality</i>		0.0433* [0.024]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Upper Layer of Pyramid</i>			0.3014*** [0.004]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Lower Layer of Pyramid</i>			-0.0128 [0.025]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Loop</i>				0.1146*** [0.017]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>No Loop</i>				0.0784*** [0.011]
<i>High Succession Tax Burden</i>	0.9150*** [0.124]	0.1486*** [0.024]	0.1533*** [0.035]	0.1456*** [0.031]
<i>Post</i>	-1.8684*** [0.112]	-0.7982*** [0.043]	-0.8306*** [0.043]	-0.8506*** [0.041]
Coefficient Equality (F-test)		50.73*** (0.00)	196.57*** (0.00)	10.55*** (0.00)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422

<i>Panel B: Tobit (Book Value of Equity)</i>		Dependent Variable: <i>Number of Stock-for-Stock Intra-group Mergers</i>			
Variables	(1)	(2)	(3)	(4)	
<i>High Succession Tax Burden × Post</i>	0.1553*** [0.014]				
<i>High Succession Tax Burden × Post × High Centrality</i>		0.1472*** [0.006]			
<i>High Succession Tax Burden × Post × Low Centrality</i>		-0.0101*** [0.003]			
<i>High Succession Tax Burden × Post × Upper Layer of Pyramid</i>			0.1979*** [0.005]		
<i>High Succession Tax Burden × Post × Lower Layer of Pyramid</i>			-0.5693 [0.500]		
<i>High Succession Tax Burden × Post × Loop</i>				0.1171*** [0.012]	
<i>High Succession Tax Burden × Post × No Loop</i>				-0.0541*** [0.018]	
<i>High Succession Tax Burden</i>	12.2033*** [0.016]	0.0257*** [0.005]	-0.2013*** [0.012]	0.2044*** [0.038]	
<i>Post</i>	-0.7865*** [0.044]	-0.4957*** [0.039]	-0.5365*** [0.038]	-0.8800*** [0.038]	
Coefficient Equality (F-test)		4.60** (0.03)	2.31 (0.13)	275.04*** (0.00)	
Firm Fixed Effect	Yes	Yes	Yes	Yes	
Year Fixed Effect	Yes	Yes	Yes	Yes	
Controls	Yes	Yes	Yes	Yes	
Observations	2,422	2,422	2,422	2,422	



Panel C: OLS Variables	Dependent Variable: <i>Number of Stock-for-Stock Intra-group Mergers</i>			
	(1)	(2)	(3)	(4)
<i>High Succession Tax Burden × Post</i>	0.2345*** [0.067]			
<i>High Succession Tax Burden × Post × High Centrality</i>		0.0322*** [0.006]		
<i>High Succession Tax Burden × Post × Low Centrality</i>		0.0129* [0.007]		
<i>High Succession Tax Burden × Post × Upper Layer of Pyramid</i>			0.0343*** [0.006]	
<i>High Succession Tax Burden × Post × Lower Layer of Pyramid</i>			0.0098 [0.007]	
<i>High Succession Tax Burden × Post × Loop</i>				0.0236*** [0.007]
<i>High Succession Tax Burden × Post × No Loop</i>				0.0154*** [0.006]
<i>High Succession Tax Burden</i>	0.0052 [0.051]	0.0008 [0.008]	0.0008 [0.008]	0.0008 [0.008]
<i>Post</i>	-0.0220 [0.028]	-0.0097 [0.013]	-0.0099 [0.013]	-0.0101 [0.013]
Coefficient Equality (F-test)		6.34*** (0.01)	10.48*** (0.00)	1.12 (0.29)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422
R-squared	0.070	0.075	0.076	0.070

### Table 6 – Private Foundations and Tax Burden Reduction

Each column of Panel A and Panel B reports the coefficients from a Tobit regression. In Panel A, *Succession Tax Burden* is measured based on the market value of equity. In Panel B, *Succession Tax Burden* is measured based on the book value of equity. Each column of Panel C reports the coefficients from an OLS regression. Standard errors are clustered at the business group level and reported in parentheses under the coefficient estimates. Coefficient Equality reports the F statistics for the coefficients of the decomposed variables, with the p-values in rounded brackets. In Columns 2 to 4, all explanatory variables are standardized, so their point estimates represent the economic magnitude of their effects. Controls include the *Log of total assets* (in millions of KRW), the *Leverage ratio*, and the *Number of group affiliates*. All estimates in Panel A and Panel C include industry (SIC-2 digit) and year indicator variables. All estimates in Panel B include firm and year indicator variables. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

<i>Panel A: Tobit (Market Value of Equity)</i> Variables	Dependent Variable: <i>Number of Stock-for-Stock Intra-group Mergers</i>			
	(1)	(2)	(3)	(4)
<i>High Succession Tax Burden</i> × <i>Post</i>	15.2063*** [0.223]	1.9364*** [0.038]	1.8750*** [0.038]	1.8902*** [0.028]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i>	-14.7926*** [0.264]			
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>High Centrality</i>		-1.4421*** [0.037]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Low Centrality</i>		-0.6427*** [0.004]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Upper Layer of Pyramid</i>			-1.3628*** [0.036]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Lower Layer of Pyramid</i>			-0.6691*** [0.004]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Loop</i>				-1.3094*** [0.019]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>No Loop</i>				-0.8589*** [0.012]
<i>High Succession Tax Burden</i> × <i>Foundation</i>	13.2345*** [0.244]	1.9364*** [0.045]	1.8565*** [0.045]	1.8727*** [0.033]
<i>Post</i> × <i>Foundation</i>	0.0616 [0.116]	0.0210*** [0.041]	0.0203 [0.042]	0.0171 [0.026]
<i>High Succession Tax Burden</i>	0.8363*** [0.115]	0.3036*** [0.050]	0.2989*** [0.050]	0.2291*** [0.035]
<i>Post</i>	-1.7123*** [0.120]	-0.8023*** [0.050]	-0.7878*** [0.050]	-0.7763*** [0.051]
<i>Foundation</i>	-12.4226*** [0.221]	-2.1533*** [0.050]	-2.0750*** [0.049]	-2.0776*** [0.038]
Coefficient Equality (F-test)		538.10*** (0.00)	425.66*** (0.00)	1850.03*** (0.00)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422

Panel B: Tobit (Book Value of Equity) Variables	Dependent Variable: Number of Stock-for-Stock Intra-group Mergers			
	(1)	(2)	(3)	(4)
<i>High Succession Tax Burden × Post</i>	9.8363*** [0.075]	1.1937*** [0.010]	1.5650*** [0.010]	1.2484*** [0.008]
<i>High Succession Tax Burden × Post × Foundation</i>	-8.8031*** [0.082]			
<i>High Succession Tax Burden × Post × Foundation × High Centrality</i>		-0.7597*** [0.008]		
<i>High Succession Tax Burden × Post × Foundation × Low Centrality</i>		-0.7920 [0.625]		
<i>High Succession Tax Burden × Post × Foundation × Upper Layer of Pyramid</i>			-1.1637*** [0.009]	
<i>High Succession Tax Burden × Post × Foundation × Lower Layer of Pyramid</i>			-0.1688*** [0.004]	
<i>High Succession Tax Burden × Post × Foundation × Loop</i>				-0.5842*** [0.008]
<i>High Succession Tax Burden × Post × Foundation × No Loop</i>				-0.5487*** [0.005]
<i>High Succession Tax Burden × Foundation</i>	-2.7970*** [0.074]	-0.3373*** [0.010]	0.1300*** [0.008]	-0.8340*** [0.007]
<i>Post × Foundation</i>	-0.1525*** [0.049]	-0.0406*** [0.020]	0.1332*** [0.023]	-0.0407*** [0.020]
<i>High Succession Tax Burden</i>	1.5105*** [0.030]	0.4708*** [0.011]	0.0675*** [0.010]	0.6630*** [0.011]
<i>Post</i>	-0.8326*** [0.058]	-0.3874*** [0.051]	-0.4766*** [0.058]	-0.5021*** [0.050]
<i>Foundation</i>	1.0029*** [0.073]	0.0911*** [0.012]	0.0031*** [0.009]	0.3111*** [0.009]
Coefficient Equality (F-test)		0.00 (0.95)	58045.31*** (0.00)	13.28*** (0.00)
Firm Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422

Panel C: OLS Variables	Dependent Variable: <i>Number of Stock-for-Stock Intra-group Mergers</i>			
	(1)	(2)	(3)	(4)
<i>High Succession Tax Burden</i> × <i>Post</i>	0.5763*** [0.122]	0.0688*** [0.015]	0.0688*** [0.015]	0.0688*** [0.015]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i>	-0.5437*** [0.148]			
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>High Centrality</i>		-0.0466*** [0.014]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Low Centrality</i>		-0.0295*** [0.009]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Upper Layer of Pyramid</i>			-0.0445*** [0.013]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Lower Layer of Pyramid</i>			-0.0328*** [0.009]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Loop</i>				-0.0508*** [0.013]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>No Loop</i>				-0.0234* [0.009]
<i>High Succession Tax Burden</i> × <i>Foundation</i>	0.1051 [0.111]	0.0142 [0.015]	0.0142 [0.015]	0.0141 [0.015]
<i>Post</i> × <i>Foundation</i>	0.0856*** [0.033]	0.0238*** [0.009]	0.0239*** [0.009]	0.0238*** [0.009]
<i>High Succession Tax Burden</i>	0.0060 [0.027]	0.0021 [0.009]	0.0022 [0.009]	0.0022 [0.009]
<i>Post</i>	-0.0332 [0.029]	-0.0151 [0.013]	-0.0151 [0.013]	-0.0152 [0.013]
<i>Foundation</i>	-0.0633 [0.092]	-0.0100 [0.015]	-0.0100 [0.015]	-0.0100 [0.015]
Coefficient Equality (F-test)		3.50* (0.06)	1.80 (0.18)	11.14*** (0.00)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
Observations	2,422	2,422	2,422	2,422
R-squared	0.082	0.082	0.082	0.083

Table 7 – Characteristics of Target Firms

Each column reports coefficients from an OLS regression with heteroscedasticity-robust standard errors. Standard errors are clustered at the business group level. The standard errors are reported in parentheses under the coefficient estimates. Private Target Firms is an indicator that has value of one if the target firms in a stock-for-stock intra-group merger is not listed on the KOSPI or KOSDAQ exchange, and zero otherwise. Public Target Firms is an indicator that has value of one if the target firms in a stock-for-stock intra-group merger is listed on the KOSPI or KOSDAQ exchange, and zero otherwise. Among 42 target firms in stock-for-stock intra-group mergers, 24 firms are private, and 18 firms are public firms. Controls include the *Log of total assets* (in millions of KRW), the *Leverage ratio*, and the *Number of group affiliates*. All estimates include industry (SIC-2 digit) and year indicator variables. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

<i>Panel A: Private Target</i>		Dependent Variable				
Variables	<i>C+I gen. Ownership Fraction</i> (×100)	<i>C gen. Ownership Fraction</i> (×100)	<i>Voting Right</i> (×100)	<i>Payout Ratio</i> (×100)	<i>Long-term R&amp;D Ratio</i> (×100)	
	(1)	(2)	(3)	(4)	(5)	
<i>Private Target Firm</i>	9.7491** [4.261]	-6.5033 [7.138]	8.8526** [3.723]	7.0342* [3.961]	-12.0795*** [2.666]	
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Controls	Yes	Yes	Yes	Yes	Yes	
Observations	2,422	2,422	2,422	2,422	2,422	
R-squared	0.066	0.185	0.357	0.008	0.149	

<i>Panel B: Public Target</i>		Dependent Variable				
Variables	<i>C+I gen. Ownership Fraction</i> (×100)	<i>C gen. Ownership Fraction</i> (×100)	<i>Voting Right</i> (×100)	<i>Payout Ratio</i> (×100)	<i>Long-term R&amp;D Ratio</i> (×100)	
	(1)	(2)	(3)	(4)	(5)	
<i>Public Target Firm</i>	-1.0336 [0.630]	18.2104 [15.587]	-15.1685*** [2.547]	10.8313 [14.945]	23.8331* [11.623]	
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	
Controls	Yes	Yes	Yes	Yes	Yes	
Observations	2,422	2,422	2,422	2,422	2,422	
R-squared	0.032	0.188	0.358	0.008	0.153	

### Table 8 – Intra-group Merger Announcement Returns

Each column reports the median of merger event CARs expressed in percentage terms for given subsamples. Panel A reports the results of univariate analysis. In Panel A, the p-values for a simple signed-rank test (against a null hypothesis of zero median) are reported in parentheses under the coefficient estimates for stock-for-stock intra group mergers, non-intra-group mergers, and total mergers. Difference reports the difference in CARs between coefficients of stock-for-stock intra group mergers and non-intra-group mergers, with the p-values in parentheses. Panel B reports the results of multivariate analysis. In Panel B, the sample consists of 41 firm-year observations that have initiated the stock-for-stock intra-group mergers. Each column reports coefficients from an OLS regression with heteroscedasticity-robust standard errors. Standard errors are clustered at the business group level. The standard errors are reported in parentheses under the coefficient estimates. Controls include the Log of total assets (in millions of KRW), the Leverage ratio, and the Number of group affiliates. All estimates in Columns 1 to 3 of Panel B include industry (SIC-2 digit) and year indicator variables. All estimates in Columns 4 to 6 of Panel B include firm and year indicator variables. In Panel A and Panel B, for each event I calculate the CAR over the trading window using a market model. First, I regress returns on market returns to obtain estimates for the alpha and beta. Then, abnormal returns are obtained by subtracting alpha plus beta times market return from daily stock returns. Event date is the day a firm initially announces the intra-group merger. I only include the first announcement if a firm has multiple intra-group mergers in a given year. For example, the dependent variable  $CAR [0,1]$  reports cumulative abnormal return information for the event day and the following day. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

<i>Panel A-1: Univariate Analysis</i>	Dependent Variable					
	<i>CAR [-3,0]</i>	<i>CAR [-2,0]</i>	<i>CAR [-1,0]</i>	<i>CAR [0,1]</i>	<i>CAR [0,2]</i>	<i>CAR [0,3]</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A-1: Full sample</i>						
Stock-for-stock Intra-group Mergers (A)	0.8982 (0.38)	-0.1520 (0.93)	0.7358 (0.52)	-1.3981 (0.12)	-1.8925** (0.02)	-3.0121** (0.02)
Non-intra-group Mergers (B)	-0.5748 (0.74)	-0.1280 (0.50)	0.0629 (0.79)	-0.39930 (0.52)	-0.7833 (0.47)	-0.9272 (0.58)
Total Mergers	-0.1830 (0.84)	-0.0905 (0.80)	0.4059 (0.60)	-0.3939 (0.59)	-0.7964 (0.14)	-1.0657 (0.12)
Difference (A-B)	1.4730 (0.32)	-0.0240 (0.51)	0.6729 (0.62)	-0.9988 (0.29)	-1.1092 (0.26)	-2.08495* (0.07)
<i>Panel A-2: Post Asian Crisis</i>						
Stock-for-stock Intra-group Mergers (A)	0.6817 (0.74)	-0.4261 (0.48)	-0.6018 (0.39)	-1.7461** (0.01)	-1.5393** (0.03)	-2.7960** (0.02)
Non-intra-group Mergers (B)	-0.5192 (0.29)	-0.3342 (0.16)	-0.1990* (0.05)	-1.1819* (0.07)	-0.9992 (0.19)	-1.4570 (0.13)
Total Mergers	-0.2711 (0.41)	-0.2383 (0.18)	-0.0012 (0.11)	-1.3336** (0.01)	-1.2018** (0.03)	-1.8295*** (0.01)
Difference (A-B)	1.2009 (0.54)	-0.0919 (0.65)	-0.4028 (0.77)	-0.5642* (0.07)	-0.5401 (0.31)	-1.3390 (0.17)



Variables	Dependent Variable					
	<i>CAR</i> [0,1]	<i>CAR</i> [0,2]	<i>CAR</i> [0,3]	<i>CAR</i> [0,1]	<i>CAR</i> [0,2]	<i>CAR</i> [0,3]
	(1)	(2)	(3)	(4)	(5)	(6)
High Chairman Age (Indicator)	-3.1472*** [1.180]	-3.5502*** [1.316]	-4.6933*** [1.706]	-0.0363 [2.553]	-5.4371** [2.496]	-5.1554* [2.999]
Industry Fixed Effect	Yes	Yes	Yes	No	No	No
Firm Fixed Effect	No	No	No	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41	41	41	41	41	41
R-squared	0.4920	0.5022	0.4631	0.6668	0.7490	0.7574

### Table 9 – Robustness Test: Alternative Time Period

In Columns 1 to 3 of Panel A, I exclude the period of 1997-1998 to avoid the effects of sudden market shrinkage during the Asian financial crisis. In Columns 4 and 5, I exclude all mergers initiated by firms that are not owned by the current chair generation in order to test the post-crisis restructuring effect. In Columns 1 to 3 of Panel B, I replace year fixed effect with annual average KOSPI Index. In Columns 4 to 6 of Panel B, regression include additional controls, i.e., controlling shareholder's cash-flow right, voting right, Tobin's q, ROA, and private target indicator. Each column of Panel A and Panel B reports the coefficients from a Tobit regression. Errors are clustered at the business group level and reported in parentheses under the coefficient estimates. Controls include the *Log of total assets* (in millions of KRW), the *Leverage ratio*, and the *Number of group affiliates*. All estimates include industry (SIC-2 digit) and year indicator variables. \*\*\*, \*\*, and \* denote significance at the 1%, 5%, and 10% level, respectively.

Variables	Dependent Variable: <i>Number of Stock-for-Stock Inter-group Mergers</i>				
	(1)	(2)	(3)	(4)	(5)
	Market Shrinkage			Restructuring Effect	
<i>Succession Tax Burden</i>	0.4430*** [0.002]				
<i>High Succession Tax Burden</i> × <i>Post</i>		0.5285*** [0.115]	14.5499*** [0.255]		2.1437*** [0.052]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i>			-14.4672*** [0.213]		
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Early Post</i>				0.2350*** [0.014]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Late Post</i>				0.3103*** [0.037]	
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Early Post</i>					-1.9093*** [0.018]
<i>High Succession Tax Burden</i> × <i>Post</i> × <i>Foundation</i> × <i>Late Post</i>					-2.3258*** [0.045]
<i>High Succession Tax Burden</i> × <i>Foundation</i>			13.0492*** [0.279]		3.7541*** [0.065]
<i>Post</i> × <i>Foundation</i>			-0.3090*** [0.118]		3.8678*** [0.116]
<i>High Succession Tax Burden</i>		-1.8169*** [0.113]	1.1295*** [0.125]	-1.8818*** [0.065]	-4.5606*** [0.147]
<i>Post</i>		1.3977*** [0.181]	-1.5134*** [0.120]	0.0159 [0.052]	-2.2010*** [0.058]
<i>Foundation</i>			-11.8474*** [0.242]		-2.2569*** [0.067]
Coefficient Equality (F-test)				8.09*** (0.00)	216.79*** (0.00)
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	2,089	2,089	2,089	2,338	2,338

<i>Panel B: Robustness Check</i>		<i>Dependent Variable: Number of Stock-for-Stock Inter-group Mergers</i>					
<i>Variables</i>	(1)	(2)	(3)	(4)	(5)	(6)	
<i>Succession Tax Burden</i>	0.0347*** [0.002]			0.0373*** [0.003]			
<i>High Succession Tax Burden × Post</i>		0.98244*** [0.127]	15.1802*** [0.209]		1.2190*** [0.124]	15.4789*** [0.231]	
<i>High Succession Tax Burden × Post × Foundation</i>			-15.0954*** [0.239]			-14.9938*** [0.254]	
<i>High Succession Tax Burden × Foundation</i>			13.2507*** [0.218]			14.6387*** [0.241]	
<i>Post × Foundation</i>			0.2879*** [0.119]			0.1667 [0.107]	
<i>High Succession Tax Burden</i>			0.8373*** [0.117]			-0.3401*** [0.115]	
<i>Post</i>		0.4986*** [0.116]	0.4505*** [0.125]		-0.9288*** [0.100]	-1.0361*** [0.108]	
<i>Foundation</i>		1.2079*** [0.153]	-12.1590*** [0.204]		0.3328** [0.162]	-13.6628*** [0.230]	
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	
Year Fixed Effect	No	No	No	Yes	Yes	Yes	
KOSPI Index	Yes	Yes	Yes	No	No	No	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	
Additional Control	No	No	No	Yes	Yes	Yes	
Observations	2,422	2,422	2,422	1,667	1,667	1,667	

## Appendix A: Variable Definitions

### Variables Related to Succession Taxes

*Succession tax burden* – the maximum expected tax payment if the ownership of the current chair's generation is inherited by the next generation in a corresponding year; this is calculated as Ownership Fraction of Current Chair Generation  $\times$  Total Equity Value\*  $\times$  Tax Rate\*\* (in 10 billions of KRW).

\**Total equity value* – the market value for public companies and  $\text{Max} [[(\text{total asset} - \text{total debt}) \times 2 + \{(\text{NIt}-3) \times 1 + (\text{NIt}-2) \times 2 + (\text{NIt}-1) \times 3\} / 6] / 10\% / 5]$  or total asset] for private companies, following Articles 63-1 and 63-2 of the Inheritance Tax and Gift Tax Act.

\*\**Tax rate* – the sum of the inheritance tax rate and business premium tax rate imposed on the largest shareholders. The inheritance tax law in Korea intends to impose more tax for shares with management rights.

*Pre* – a year dummy that has a value of one before the tax reform (1997-1999), and zero otherwise.

*Post* – a year dummy that has a value of one after the tax reform (2000-2004), and zero otherwise.

*Early post* – a year dummy that has a value of one for the first two years after the tax reform (2000-2001), and zero otherwise.

*Late post* – a year dummy that has a value of one for the three years following the early post period (2002-2004), and zero otherwise.

*Foundation* – an indicator that has a value of one if a firm is owned by private foundations, and zero otherwise.

### Firm Characteristics Variables

*Number of stock-for-stock intra-group mergers* – the total number of mergers and acquisitions between two affiliates in a business group in a given year after excluding cash mergers.

*Stock-for-stock intra-group merger transactions* – the total amount of merger and acquisition transactions in millions of USD between two affiliates in a business group in a given year after excluding cash mergers.

*Number of total mergers* – the total number of M&A transactions in a given year.

*Total merger transactions* – the total amount of merger and acquisition transactions in millions of USD in a given year.

*Log of total assets* – the logarithm of total assets of each firm in millions of KRW.

*Log of sales* – the logarithm of total sales of each firm in millions of KRW.

*Leverage* – the debt ratio, calculated by total debt divided by total equity.

*ROA* – the ratio of earnings before interest and tax (EBIT) divided by total assets.

*Payout ratio* – the ratio of a firm's net dividends paid divided by its net income.

*Long-term R&D ratio* – the ratio of a firm's long-term research and development (R&D) investment divided by its total R&D investment. Long-term R&D expenses only include long-term R&D investments,

which are regarded as assets on the balance sheet, and exclude short-term R&D investments, which are regarded as expenses on the balance sheet.

*Public firm* – an indicator variable that equals one if a firm is listed on the KOSPI or KOSDAQ exchange, and zero otherwise

*Firm age* – the age of each firm in a business group in the corresponding year

### **Ownership Structure Variables**

*Centrality* – the average percentage difference in the control rights of the controlling family across all group member firms other than the firm itself, after excluding a specific firm *i* from the group. The key strategic member companies that the controlling family uses to set up and control new firms in a business group have a high value of centrality because those firms are connected to many other member firms in the web of ownership. See Almeida et al. (2012) for more details on ownership metrics.

*High centrality* – an indicator that has a value of one if a firm's centrality is greater than the average of all chaebol firms, and zero otherwise.

*Low centrality* – an indicator that has a value of one if a firm's centrality is lower than the average of all chaebol firms, and zero otherwise.

*Position* – the distance between the controlling family and a firm in a group. A value of one indicates that the firm is directly controlled by the founding family. In a simple pyramid structure with two firms, the firm *i* in the upper layer (chain 1) has a position value of one, while the firm *j* in the lower layer (chain 2) has a position value of two. In this case, the position of firm *i* can be measured by the weighted average of chain 1 and chain 2, whose importance is weighted by the cash flow the family receives – the direct cash flow from firm *i* and the indirect cash flow from firm *j* through chain 2. The group firms that are directly owned by the controlling family have a low position value, while indirectly owned affiliates have a high position value. See Almeida et al. (2012) for more details on ownership metrics.

*Upper layer of pyramid* – an indicator that has a value of one if a firm's position is smaller than the average of all chaebol firms, and zero otherwise.

*Lower layer of pyramid* – an indicator that has a value of one if a firm's position is greater than or equal to the average of all chaebol firms, and zero otherwise.

*Loop* – an indicator that has a value of one if a firm is in a circular ownership chain, and zero otherwise.

*No loop* – an indicator that has a value of one if a firm is not in a circular ownership chain, and zero otherwise.

*Cash-flow right* – the sum of direct and indirect equity ownership held by the founding family after excluding treasury stocks and cross shareholdings.

*Voting right* – the ratio of the maximum number of stocks that the founding family can use for voting divided by the total number of stocks outstanding. This includes direct and indirect voting shares held by the founding family, subsidiaries, senior managers in special relationships, and non-profit organizations.

*Discrepancy* – the difference between cash-flow rights and voting rights.

## Family Involvement Variables

*(Current chair's generation)*

*Total number of members with ownership* – the sum of the number of male, female, married male, and married female members with ownership of the group firms.

*Number of male [female, married male, and married female] family members with ownership* – the total number of male [female, married male, and married female] family members in the current chair's generation with ownership in at least one of the group firms.

*Total fraction of ownership held by current chair generation* – the ratio of the portion of ownership held by male, female, married male, and married female family members in the current chair and his/her siblings' generation divided by the entire portion of ownership held by family members.

*Fraction of family ownership held by male [female, married male, and married female] family members* – the ratio of ownership held by male [female, married male, and married female] family members in the current chair's generation divided by the entire ownership held by family members.

*(Current chair+1 generation)*

*Total number of members with ownership* – sum of the number of sons, daughters, sons-in-law, and daughters-in-law with ownership of the group firms.

*Number of sons [daughters, sons-in-law, and daughters-in-law] with ownership* – total number of sons [daughters, sons-in-law, and daughters-in-law] of the current chair and the chair's siblings with ownership in at least one of the group's firms.

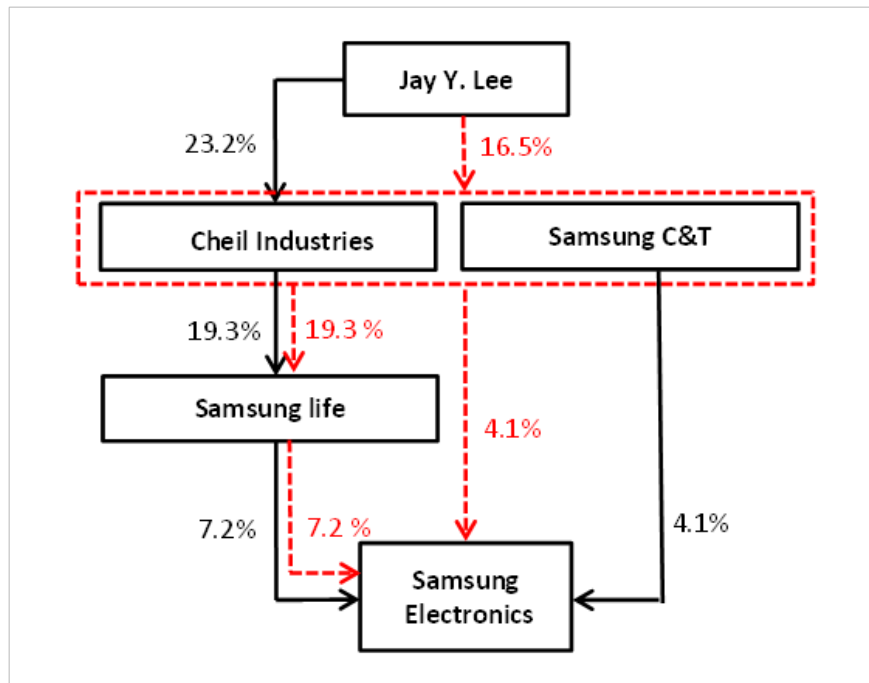
*Total fraction of ownership held by current chair+1 generation* – the ratio of the portion of ownership held by sons, daughters, sons-in-law, and daughters-in-law of the current chair and his/her siblings divided by the entire portion of ownership held by family members.

*Fraction of family ownership held by sons [daughters, sons-in-law, and daughters-in-law]* – the ratio of ownership held by sons [daughters, sons-in-law, and daughters-in-law] of the current chair and the chair's siblings divided by the entire ownership held by family members.

*High chairman age* – an indicator that has a value of one if the age of a controlling shareholder of a business group is higher than the average of all the chaebol groups', and zero otherwise.

## Appendix B: Merger Between Cheil Industries and Samsung C&T

The figure below shows how the intra-group merger of two Samsung affiliates, Cheil Industries and Samsung C&T, increases Jay Y. Lee's control over Samsung Electronics, the conglomerate's flagship unit, through indirect stake holdings, without Lee ever paying inheritance tax. The full lines represent the pre-merger ownership flow, while the dotted lines represent the post-merger ownership flow. The dotted box represents the new firm created from the intra-group merger. This figure originates from *Wall Street Journal*.<sup>29</sup>



An anecdote of an intra-group merger within the Samsung Group illustrates how intra-group mergers are used as a tax minimizing succession mechanism. The Lee family merged Samsung's de facto holding company, Cheil Industries, the textile firm, with Samsung C&T, the group's construction and trading arm, creating a new company with annual revenue of 31 billion USD.

<sup>29</sup> Min-Jeong Lee and Jonathan Cheng, "Samsung Heir Apparent Jay Y Consolidates Power with Merger." *Wall Street Journal*, May 26, 2015



Before the merger, the heir apparent, Jay Y. Lee, controlled Samsung Electronics, the group's crown jewel, mainly through Cheil Industries, in which he held a 23.2% stake<sup>30</sup>. Cheil Industries was instrumental to the Lee family's control over 70 Samsung affiliates in the group's unique circular shareholding structure. Among Cheil Industries' most valuable holdings was Samsung Life, which had a 7.2% stake in Samsung Electronics. Cheil Industries held a 19.3% stake in Samsung Life. After the intra-group merger, Jay Y. Lee became the largest shareholder in the newly created company, with a 16.5% stake. This merger allowed Jay Y. Lee to achieve an additional channel of control, albeit indirectly, over Samsung Electronics without paying an inordinate amount in inheritance tax, as Samsung C&T has a 4.1% stake in the company. Instead of intragroup merger, what if Mr. Lee tried to inherit his father's ownership stake in Samsung Electronics directly, he was expected to pay 2.8 billion dollars ( $=\$165 \text{ billion dollars (market value of Samsung Electronics at the end of 2014)} \times 3.4\% \text{ (chairman Lee's share)} \times 50\% \text{ (inheritance tax rate)}$ ) in inheritance tax.

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<sup>30</sup> Jay Y. Lee and Kun-Hee Lee directly owned shares of Samsung Electronics at 0.57% and 3.38%, respectively, before the merger between Cheil Industries and Samsung C&T.

## Appendix C: Inheritance Tax Avoidance through Intra-group merger in Pyramids

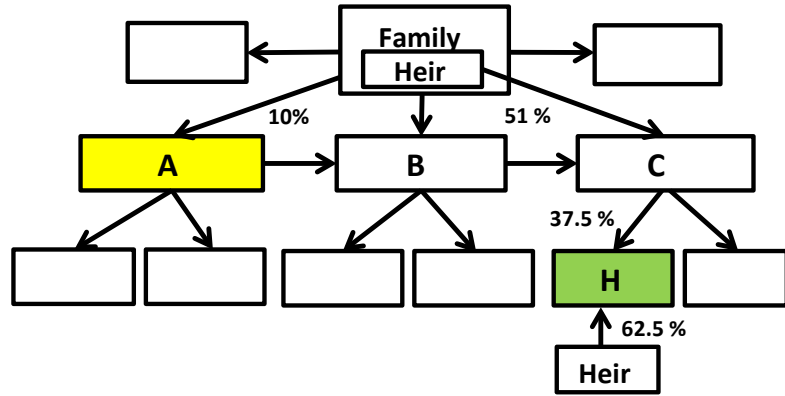
This figure shows an example of inheritance tax avoidance through stock-for-stock intra-group mergers in pyramid business groups. The full arrows represent the ownership flow of a business group, while dotted arrows represent the newly created post-merger ownership flow. The dotted box represents the new firm created from the intra-group merger. This figure, describing the pyramid structure, originates from Almeida et al. (2012).

In the following figure, the controlling family is the largest shareholder of Firm A, with a 10% stake. An heir of the business group owns Firm C with a 51% stake and Firm H with a 62.5% stake. Firm C owns Firm H with a 37.5% stake. The market value of Firm A is \$1 billion and that of private Firm H is \$112 million. The total inheritance tax rate of Firm A is 70%, composed of 50% from the inheritance tax rate and 20% from the business premium tax rate. In Scenario 1, the heir inherits 10% of Firm A's total stake after paying the \$70 million inheritance tax ( $\$1 \text{ billion} \times 10\% \times 70\%$ ) by selling their ownership in Firm H. In Scenario 2, Firm A merges with Firm H to create a new firm, Firm A', whose market value becomes \$1.112 billion. No tax is applied, as there are no gains from the merger. The heir owns Firm A' with a total 10% ownership stake, of which 6.3% ( $\$112 \text{ million} \times 62.5\% / \$1.112 \text{ billion} \times 100$ ) is directly owned and 3.7% ( $\$112 \text{ million} \times 37.5\% / \$1.112 \text{ billion} \times 100$ ) is an indirect ownership stake through Firm C. Firm H does not exist anymore, but the heir consolidates his power through additional circular-shareholding ( $A' \rightarrow B \rightarrow C \rightarrow A'$ ), while the controlling family maintains a 9% ownership stake ( $\$1 \text{ billion} \times 10\% / \$1.112 \text{ billion} \times 100$ ) in Firm A'. The heir who already has enough shares to control the entire business group avoids inheritance taxes because the heir does not need to inherit the 9% of remaining ownerships. The controlling family is also benefitted when they sell their remaining equity due to different tax rates between capital gain tax rate and inheritance tax rate.

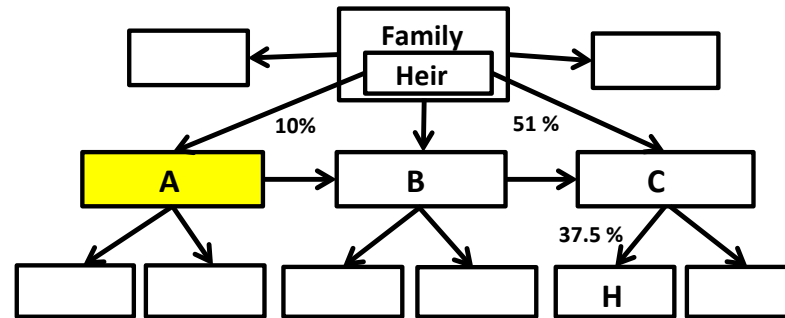
Direct Ownership

Central Firms  
Circular-shareholding  
Public Firms

Cash-generating  
Private firms



Scenario 1:  
ownership Inheritance



Scenario 2:  
Firm A merges with Firm H

