

Sabotage! Whistle-blowing Inside Family Firms During Succession Tournaments^{*}

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ABSTRACT

We document an unusual surge in fraud investigations for family firms with multiple sons who compete for leadership successions. Shareholders negatively react to the news, while such fraud investigations are concentrated in firms run by families with extensive internal conflicts, leading to strong whistle-blowing incentives inside the family (i.e., sabotage). Using the sudden death of a chairman as an exogenous shock that increases conflicts among potential heirs of the family firm, we find sharply increasing fraud investigations after the chair's death. Overall, our results shed new light on the significant spillover from family governance to corporate governance in family-run organizations.

Keywords: family firms, family governance, corporate fraud, succession tournaments, sibling rivalry

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INTRODUCTION

One of the distinguishing features of family firms in contrast to general shareholder companies is that these firms are run by family members. What role does the family itself play in these firms? Does it even matter? This paper focuses on a particular aspect – the impact of family governance on the corporate governance of family firms, especially around CEO successions. CEOs play key roles in shaping corporate policies, and thus the process of selecting the next company leader is one of the most important parts of corporate governance. The selection processes carry greater weight in family firms because only a limited set of human capital competes for leadership of the next generation due to significant bequest motives inside families. Despite the prevalence of family firms and their importance to the world economy (La Porta, Lopez-de-Silanes, and Shleifer 1999, among others), the succession processes of family firms are not well-understood. In addition, these processes do not seem economically efficient, because family firms' leadership selections often rely on relative performance rank inside the family and are heavily influenced by non-economic factors, such as sibling rivalry, family tradition, and culture. Whether and how such family governance could affect family firm governance is therefore an important research question (Bennedsen, Perez-Gonzalez, and Wolfenzon 2010; Bennedsen et al. 2015).¹⁾ Yet the question has not been rigorously examined in the literature. We fill the void in this paper.

Specifically, we examine how internal family dynamics, such as sibling competition and family (dis)harmony, could affect family firm governance within and outside the succession period. Taking the view that corporate fraud is a manifestation of poorly-functioning corporate governance, we investigate whether intense competition among the heirs of a controlling family during a succession period leads to increased (or decreased) fraud litigation. We further delve into how family structure and family culture profoundly affect such governance outcomes. By answering these questions jointly, we

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- 1) Bennedsen, Perez-Gonzalez, and Wolfenzon (2010); "[...] the future of family firm governance research seems intrinsically linked to family governance."
Bennedsen, Fan, Jian, and Yeh (2015); "Understanding how family dynamics and family governance mechanisms affect firm financing and governance decisions [...] is a promising research area."

aim to enhance our understanding of if and how family governance mechanisms affect corporate governance practices in family-run organizations.

Sibling competition during succession tournaments could have an ambiguous effect on corporate governance. The effect would depend on how competition inside the family is guided and regulated by senior family members. On the one hand, having competition in the succession process to identify the best candidate is appealing because it incentivizes contestants to exert more effort to win succession tournaments (Lazear and Rosen 1981; Nalebuff and Stiglitz 1983). On the other hand, excess competition among contestants, who are overly focused on their “relative” succession status, could result in censured behaviors (Lazear 1989; Konrad 2000; Chen 2003; Charness and Levine 2004; Charness, Masclet, and Villevall 2014; Lee, Shin, and Yun 2022). Contestants could sabotage their rivals rather than competing fairly. It is also possible that contestants may adopt excessively risky strategies to win the tournament, which could eventually breach regulatory guidelines. Such negative internal actions would result in negative value consequences to shareholders.²⁾ It is an empirical question which side among the two dominates – the bright side or the dark side of sibling competition in succession tournaments. How family tradition and culture influence the mode of succession tournaments is an additional important question to be empirically examined.

We test our key research questions using data on Korean family business groups known as chaebols. The Korean chaebol data have several advantages in addressing our research questions. First, in Korea, family governance plays a critical role in determining the pool of candidates who are eligible to be the next business group leader. Due to strong Confucian cultural influences, succession tournaments in Korean chaebols are primarily played out between male, direct bloodline heirs rather than female heirs or any external male family members who join the family through adoption or marriage. Moreover, the cultural influences often mean that senior family members play an important role, in that they set the

2) Sabotage could divert contestants’ value-improving efforts from their first-best level (Lazear, 1989; Chen, 2003, among others), causing negative value consequences. Lee, Shin, and Yun (2022) propose a risky, lazy trap among the heirs of Korean family business groups, which results in operational inefficiency.

succession game guidelines, and the eldest male heirs generally have initial advantages in the succession tournament. Second, the competition incentives among heirs of Korean chaebols are strong due to institutional characteristics. Controlling stakes within Korean chaebols are often interconnected by a web of cross-shareholding among member firms due to significant inheritance costs. This concentrated ownership structure in turn makes it very important to strategically control several key firms rather than just owning stakes in many firms within the business group. As a result, a tournament winner who inherits the controlling stakes in those key firms can control the whole business group, i.e., winner takes all. This creates strong tournament incentives for the heirs of Korean chaebols.

Using 1,299 firm-year observations of the 16 largest Korean chaebols from 2000 to 2004, we find an unusual surge in fraud investigations for chaebols with many sons during succession tournaments. The intensity of the fraud investigation is, on average, four times higher than that of fraud investigated outside the tournament period, and is statistically significant at the 5% level. The increasing fraud investigations during succession tournaments are driven by sons who are eligible to work in Korea, and who therefore could compete for the next generation's group leadership position. In contrast, we find no significant effects for senior male relatives in the same generation as the current chair, who do not directly participate in the succession tournaments. We also find negative shareholder reactions to the announcement of fraud investigations during succession tournaments. Our results, put together, highlight a potential dark side of sibling competition in family firms during leadership successions.

We show that these results are significantly influenced by family governance. The surge in fraud investigations during succession tournaments is concentrated in chaebols with internal conflicts, such as family feuds, and in chaebols that have a controlling family that contains half-brothers. Fraud investigation intensity during succession tournaments is more than seven times higher for chaebols with family disharmony than chaebols without such family feuds. We further find much weaker tournament effects for chaebols whose controlling families follow strict male-preference primogeniture, i.e., the tradition of a family appointing their first-born male child as the next group chairman.

We also provide relative evidence on two mutually non-

exclusive potential channels of chaebol fraud. The surge in fraud investigations during succession tournaments could be driven by an increase of fraud committed by succession contestants, by an increase in fraud reported by contestants' rivals in an attempt to sabotage their succession prospects, or by both. We narrowly define contestants' sabotaging actions as those that are related to revealing private information they know about their rivals' actions to those outside the family. We define contestants' spreading rumors and transmission of negative (or possibly even false) information about their rivals to the external media or regulators as a specific form of sabotage. With this definition of sabotage, fraud commission is defined as contestants' excessive risk taking that could directly damage their own performance if detected by regulators. We examine the relative extent to which each of the two channels explains our main findings.

We first examine the types of fraud investigations that occur during succession tournaments. We find that fraud committed by sons during succession tournaments results in minor penalties (i.e., correction orders), rather than severe fines or prosecution. These results suggest that fraud during chaebol succession tournaments may not be seriously intended by contestants to enhance their performance metrics, at least in the short-run. Rather, on a relative basis, the contestants' misdemeanors could be "over-detected" by other family insiders, particularly by their rivals, who are then willing to divulge such internal family information to the external media (or, eventually, to regulators) to win the tournaments. In contrast, other senior family members, including the current chairman (i.e., the contestants' father), would prefer to settle any internal conflicts without disclosing them to the public, due in part to the resulting severe public criticism of their failing family governance. Such increasing media attention could ultimately lead to significant regulatory intervention in their business practices (The Korea Times, June 11, 2016).³⁾

We test sons' and senior family members' varying incentives to reveal negative family information to the public. Using the amount of advertising purchased from major media companies by various family members, we define the following media control variables:

3) The Korea Times, "Lotte probe again ignites management succession feud," June 11, 2016.

public media control by (1) the whole family, (2) only sons in succession tournaments, and (3) senior family members in the current chair's generation, who supervise how the sons play their succession game. We first find that when the controlling family as a whole tightly controls mass media, no significant fraud litigation is observed during succession tournaments. This pattern is driven by the senior members' media control. In sharp contrast, we find that fraud litigation is significantly more likely when the sons tightly control the media. The results collectively suggest that succession contestants may use mass media to sabotage their rivals, while senior family members try to minimize the revelation of family information to the public.⁴⁾

We further investigate whether the positive relation between the number of succession contestants (i.e., the number of adult sons) and the surge in fraud investigation during succession tournaments is causal. In August 2003, the chairman of the Hyundai Group committed suicide during his fifth year in office. This suddenly re-opened the Hyundai succession tournament to his old rivals – his brothers. Using the data resulting from this event, we confirm that increased competition in the succession tournament (changes in the number of adult male succession contenders) leads to an increase in the number of fraud investigations. This effect is mostly concentrated in group entities controlled by promising contenders (the deceased chair's brothers), while no significant effect is observed in firms controlled by long-shot contenders (the deceased chair's uncles in the founder's generation) who are less likely to be directly involved in the suddenly re-open succession tournament. We find such effects are significant over a short time period – the three months following the chair's death. We also find that all Hyundai fraud cases were committed prior to the group chair's death, which is strong support for the fraud detection channel (sabotage), rather than the fraud commission channel (contestants' excessive risk-taking).

Our work significantly contributes to the literature on family firm governance by providing a novel insight into whether and how

4) One could argue that sons commit more fraud when they are closely connected to mass media because they enjoy lax monitoring by media companies. However, this possibility cannot explain why fraud is significantly more likely when senior family members have no significant connections to public media companies.

family structure and internal family dynamics affect firm governance during leadership successions. There have been many studies that examine succession's impact on a family firm's performance (Perez-Gonzalez 2006; Bennedsen et al. 2007; Mehrotra 2013). However, few studies have examined the effects of sibling rivalry inside the controlling family; Bertrand et al. (2008) study 586 firms in Thai business groups and document that sons "race to the bottom," tunneling resources out of group firms following a founder's death. Lee, Shin, and Yun (2022) focus on corporate risk-taking, one of the most widely studied corporate policies, as a specific channel that affects performance inefficiency. These studies highlight succession tournaments as an important background risk in family-run organizations, while none of them directly delves into the relation between family governance and corporate governance. Our paper contributes to the literature by directly examining this important link.⁵⁾

Our work also introduces aspects of promotion tournaments that are less explored by the corporate governance literature – i.e., sabotage. An extensive personnel economics literature highlights the existence of sabotaging actions by tournament contestants (Lazear 1989; Konrad 2000; Chen 2003; Charness and Levine 2004; Charness, Masclet, and Villeval 2014). However, investigation of sabotage's effect on corporate governance is sparse. We provide novel insights on the existence and corporate governance implications of these negative peer effects during family firm successions.

Our work also extends the competition and corporate governance literature in general. Many papers have studied whether and how external competition in product markets improves corporate governance and reduces managerial slack (Hart 1983; Scharfstein 1988; Kole and Lehn 1999; Shleifer 2004; Giroud and Mueller 2010; Wang and Winton 2016). We discuss these general competition effects on governance in the family firm context. We highlight a potential dark side of competition internal to the controlling family for firm governance. We further provide causal evidence on the negative sibling competition effects using a quasi-natural experiment based on the sudden death of a family firm chairman.

5) Studies on family firm fraud are also rare. Only a limited number of studies (Fan, Wong, and Zhang 2012, among others) exist, and they study earnings management in family firms instead of fraud litigation.

Last but not least, we also extend the literature on corporate fraud (Dyck, Morse, and Zingales 2010; Wang, Winton, and Yu 2010; Yu and Yu 2011).⁶⁾ Our work is closely related to that of Dyck, Morse, and Zingales (2010), who emphasize the channels of fraud detection for U.S. corporations. We introduce succession tournaments inside a family firm and demonstrate how within-family conflicts create whistle-blowing incentives among the firm's heirs. This internal whistle-blowing mechanism on corporate fraud is consistent with the findings of Dyck, Morse, and Zingales (2010), who emphasize the governance role played by employees and media. Our findings broaden our understanding of the potential channels for fraud in family-run organizations around the globe, as well as provide possible explanations for a puzzling phenomenon: why controlling family members divulge negative news about their own firms.

This paper is organized as follows: Section 2 provides background on relevant tournament theories and develops our main hypotheses. In Section 3, we describe our sample and key variables used in our regression analyses. We provide our main results in Section 4, and in Section 5, we conclude.

HYPOTHESES DEVELOPMENT

In this section, we develop the main hypotheses that we test using Korean chaebol data. For cultural reasons, we assume that succession tournaments in Korean chaebols occur exclusively among sons in the generation that immediately follows the current chair's generation (Lee, Shin, and Yun 2022). We describe the potential tournament behaviors of these direct bloodline male contestants in the chair+1 generation as follows:

H1: Competition in succession tournaments improves family firm governance. As the succession competition intensifies, fewer fraudulent activities are observed in family firms.

6) Dyck, Morse, and Zingales (2010) emphasize the role played by inside employees and public media as potential fraud detection channels. Wang, Winton, and Yu (2010) explicitly model fraud commission and fraud detection channels when analyzing corporate fraud intensity. Yu and Yu (2011) also demonstrate how fraud detection intensity reduces when a firm establishes strong political connections to regulators.

Lazear and Rosen (1981) and Nalebuff and Stiglitz (1983) show that when the cost of risk borne by agents is not significant (e.g., risk-neutral agents) and the Informativeness Principle (Holmstrom 1979) holds for agents' hidden actions, setting the prize wedge high enough to incentivize the agents to work hard will achieve the full-information first-best outcome. In this case, agents provide their first-best positive self-efforts, which enhance tournament outcomes. In this case, succession tournaments enhance family firm governance and consequently lead to enhancement of the firm's value.

As a sharp contrast to H1, we can consider the following alternative hypothesis:

H2: Competition in succession tournaments exacerbates problems in family firm governance. As the competition of succession tournament intensifies, more fraud is observed in family firms.

This alternative hypothesis is derived from the following two distinct groups of tournament theories; (1) tournaments with sabotage (Lazear 1989; Chen, 2003, among others) and (2) theories on a risky, lazy trap tournament equilibrium (Hvide 2002; Lee, Shin, and Yun 2022, among others). The first theories on sabotage highlight agents' non-cooperative actions toward rivals, which adversely affect the rivals' performance. The second group of theories, however, does not assume such indirect performance consequences. They rather focus on risky strategies directly employed by the contestants themselves. If their strategies are excessively risky, they could violate formal regulatory guidelines. In this case, agents' negative self-actions damage their performance directly. These two mutually non-exclusive sub-hypotheses to H2 are summarized:

H2a (Sabotage): In the severe competition of succession tournaments, sons are more likely to detect their rivals' misdemeanors. Ex post penalty on fraud would be minor.

H2b (Excessive risk-taking): Sons commit fraud to win the tournaments; this fraud is caught by regulators. There will be a severe ex post penalty on this fraud.

Hereafter, **H2a (Sabotage)** and **H2b (Excessive risk-taking)** will be referred to as the fraud detection channel and the fraud

commission channel, respectively. Sabotage diverts contestants' value-improving efforts from their first-best level, and therefore causes efficiency losses in the tournament outcome (Lazear 1989; Chen 2003). In the excessive risk-taking case, either severe regulatory penalties or the expected outcome of a risky, lazy trap equilibrium (Hvide 2003; Lee, Shin, and Yun 2022), where contestants do not work hard and take excessive risks to win the tournament, could imply operational inefficiency during succession tournaments.

DATA

Our sample period is from 2000 to 2004. We construct family trees for Korean chaebol families from a publication entitled *The Chaebol of Korea: The Management Structure and Personal Network of Korean Chaebol*. This publication covers the family trees of the controlling families of the top 30 Korean chaebols in terms of total assets as of 2004. We could merge 16 of these chaebols with the annual list of large business groups compiled by the Korea Fair Trade Commission (KFTC, a Korean anti-trust authority) during the 2000-2004 time period. Our sample includes only family-run business groups in Korea from 2000 to 2004. The total assets managed by the chaebols in our sample account for approximately 56% of the nominal GDP of the Korean economy in the year 2004 (KRW 778.4 trillion).

We construct a family tree following the approach used by Lee, Shin, and Yun (2022). A family tree starts with the founder's parents' generation, followed by the generation of the founders, their siblings, and their spouses, and then the generations of all their blood and marriage descendants. The founder's parents' generation is coded as generation zero, and, from there, each of the following generations is coded as generation one, two, and so on (e.g., the founder's generation is coded as generation one). We assign a unique ID to each family member and collect detailed information on their birth order, gender, marital status, blood or marriage descendants, and half-brothers. Using these family trees, we define the sons and nephews of the current chair as the potential contestants in the chaebol's succession tournaments.⁷⁾ This group

7) Ex ante, we cannot rule out a possibility that the current chairman unexpectedly

of contestants is referred to as sons in the current chair+1 (c+1) generation. Family members who are younger than 15 years in a given year are excluded from this group, as they are legally ineligible to work in Korea. Using relevant marital data that we manually collect from numerous Korean news articles, we extend our family trees backward from 2004 to 2000.

We next obtain fraud-related data. Fraud cases are associated with internal transactions, collusion, and unfair trade practices, which are based on the KFTC's decisions on law violations.⁸⁾ To prevent illegal internal transactions, a firm is required to acquire its board's approval and disclose the board's decision before an internal transaction takes place. These prerequisite disclosure data were obtained from the KIND database operated by Korea Exchange. Data concerning tax evasion, accounting, and disclosure fraud were collected from the DART database managed by the Financial Supervisory Service in Korea. These data include only the cases in which a surcharge was imposed.

Finally, we merge our family trees and corporate fraud data with firm-level accounting and market data from Data Guide Pro, a database managed by FnGuide, the leading Korean financial data provider. Our financial data cover 1,299 firm-year observations (489 for public firms and 810 for private firms) from 16 large business groups designated by the KFTC as chaebols, from 2000 to 2004. The appendix provides definitions of the variables used in our study.

Table 1. Chaebol Summary Statistics

Panel A: Family	N	Mean	Std. Dev	Min	Median	Max
Family size	80	58.6	30.9	15	60	143
Number of generation	80	3.1	0.6	2	3	4
Current chair generation	80	1.9	0.7	1	2	3
Current chair tenure (years)	80	12.1	10.7	0	7	38
Number of male family members	80	29.4	14.5	7	31	69
Number of female family members	80	26.6	15.4	7	24	74

dies and is replaced with his/her siblings. Doosan is a case in which the current chair's nephew inherited the business group rather than his son.

- 8) The information on the KFTC's decision rules is publicly available on its web page (<http://ftc.go.kr/policy/main/policyMain.jsp>).

Number of sons (c+1 generation)	80	6.9	4.1	0	7	15
Number of daughters (c+1 generation)	80	5.5	4.4	0	4	16
Number of sons in law (c+1 generation)	80	2.6	3.7	0	1	11
Number of daughters in law (c+1 generation)	80	2.1	3.0	0	0	9
Founder dead	80	0.8	0.4	0	1	1
Panel B: Firm	N	Mean	Std. Dev	Min	Median	Max
Log of total assets	1299	12.70	2.11	7.43	12.60	17.65
Log of sales	1299	12.45	2.23	2.73	12.50	17.58
Leverage	1299	2.55	4.63	-16.68	1.59	28.19
ROA	1225	0.07	0.10	-0.60	0.06	0.85
Dividend paid/Total asset	1299	0.01	0.02	0	0	0.12
Cash flow/Total asset	1299	0.07	0.11	0	0.03	0.77
Public firm (dummy)	1299	0.38	0.48	0	0	1
Log of advertisement expense	1130	5.89	3.19	-3.96	5.73	14.27
Firm age	1297	20.76	15.32	0	18	72

The sample consists of Korea's top 16 large business groups (chaebols) designated by the Korean Fair Trade Commission (KFTC) in 2000 to 2004. Each chaebol family variable is computed as the arithmetic average across firms in a business group. The sample comprises 1,299 firm-year observations of firms that are legally required to submit a comprehensive summary report of their financial performance (equivalent to 10-K filings in the U.S.) to the KFTC. Analyses are based on data compiled as of the year end during the sample period.

Panel A: Family size refers to the founder's siblings and their descendants, and the founder's parents. Family members who are younger than 15 years as of each year during the sample period are excluded. The number of generations refers to the distance between the founder (generation 1) and the most recent generation that is included in family size. The current chair's generation refers to the generation to which the current chairman of a business group belongs. Current chair tenure refers to the number of years the current chair of each business group has held the chairmanship. The number of male [female] family members refers to the total number of direct and indirect male [female] family members in a business group. The number of sons [daughters, sons-in-law, and daughters-in-law] in the current chair+1 generation (c+1 generation) refers to the total number of sons [daughters, sons-in-law, and daughters-in-law] of the current chair and the chair's siblings. Founder dead is an indicator variable that equals one if the founder is dead as of each sample year, and zero otherwise.

Panel B: Log of total assets refers to the logarithm of a firm's total assets in millions of KRW. Log of sales refers to the logarithm of a firm's total sales in

millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. ROA refers to the ratio of a firm's earnings before interest and tax (EBIT) divided by its total assets. Public firm is an indicator variable that equals one if a firm is listed on the KOSPI or KOSDAQ exchange, and zero otherwise. Log of advertisement expense refers to the logarithm of total advertisement expense of each firm in millions of KRW. Firm age is the age of a firm in a business group.

Table 1 gives an overview of the 16 large Korean business groups, their controlling families, and their financial characteristics during the sample period of five years. In panel A of table 1, we observe that the controlling families have an average of 58.6 members; because of the variation in the number of family generations, there is substantial cross-sectional variation in family size. The majority of the current chairs belong to the second generation, and the average current chair tenure is 12.1 years. The maximum tenure of a group chair is 38 years in our sample. The average numbers of males and females in a chaebol family are 29.4 and 26.6, respectively. The family members in the current chair+1 (c+1) generation include the current chair's children and their spouses, as well as the current chair's siblings. In the (c+1) generation, there are on average 6.9 sons, 5.5 daughters, 2.6 sons-in-law, and 2.1 daughters-in-law. Founders are alive for 20% of the chaebols in our sample.

Panel B of table 1 summarizes the financial characteristics of our sample firms. The analysis is based on data compiled as of the year end during the sample period. The financial characteristics of our sample firms are similar to those observed in the existing studies on Korean chaebols (Bae et al. 2002; Almeida et al. 2011, among others). ROA, payout ratio, and cash flow to asset ratio are 7%, 1%, and 7%, respectively. Thirty-eight percent of our observations are for publicly listed firms, and the average firm age is 20.76 years.

Table 2. Fraud Summary Statistics

	Corporate fraud					
	Internal transaction	Collusion	Tax Evasion	Unfair Trade	Accounting/ Disclosure	Total number of fraud
2000	16	13	1	0	0	30
2001	29	19	0	0	0	48
2002	2	15	1	0	0	18

2003	11	9	0	1	0	21
2004	1	13	8	0	1	23
Total	59	69	10	1	1	140

Panel B:	Types of investigation			
	Correction Order	Fine Imposition	Prosecution	Total
Succession Tournament	5 (21.7%)	15 (65.2%)	3 (13.1%)	23
Non-succession Tournament	11(9.4%)	80 (68.4%)	26 (22.2%)	117
All periods	16 (11.4%)	95 (67.9%)	29 (20.7%)	140

Table 2 reports corporate fraud cases filed against all 1,299 firm-year observations from 2000 to 2004. Panel A shows the number of corporate fraud cases each year. Types of corporate fraud include internal transaction, collusion, unfair trade, tax evasion, and accounting & disclosure fraud. Fraud-related data concerning internal transactions, collusion, and unfair trade practices are collected from the Korean Fair Trade Commission (KFTC). The KFTC decision criteria on legal violations are publicly available on the authority’s web page. Data concerning tax evasion and accounting & disclosure fraud are collected from the DART database managed by the Financial Supervisory Service in Korea. Tax evasion and accounting & disclosure fraud cases only include those in which surcharges were imposed. Embezzlement and breach of trust data became available only after 2004 in the DART database, so they are omitted from our fraud sample. Panel B categorizes corporate fraud by the three types of enforcement measures taken – correction order, fine imposition, and prosecution. Succession Tournament includes business group-years within the 5 years [-5, -1] prior to an upcoming succession. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship transfers within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman’s sudden death on Aug 4th, 2003. All other periods are regarded as Non-succession Tournament.

Table 2 summarizes our corporate fraud sample. Panel A illustrates the number of corporate fraud cases filed against our sample firms in each year. Fraud filings are somewhat evenly distributed over our 5-year sample period. Among a total of 140 fraud cases, collusion accounts for the highest number of corporate fraud (69 cases), followed by unfair internal transaction (59 cases).

Tax evasion was intensively cracked down on and disclosed in 2004. Embezzlement and breach of trust data were not included in our sample because they are available only after 2004, when the data were officially required to be disclosed in the DART system.⁹⁾ Although not reported in table 2, for 113 fraud cases out of a total of 140 cases, we find that fraud cases are filed with a 460-day (≈ 15.33 months) delay on average from the dates when they were committed.

Panel B of table 2 further categorizes corporate fraud into three types according to their ex-post settlement outcomes (correction order, fine imposition, and prosecution, in order from lowest to highest severity). We compare the settlement types for fraud investigated during succession tournament and non-succession tournament periods, respectively. A succession tournament period refers to business group-years within 5 years $[-5, -1]$ of upcoming successions. We further include within the tournament period business group-years when the tenure of the current chair is longer than the 95th percentile of our sample (35 years).¹⁰⁾ Panel B shows that the incidence of corporate fraud that results in a correction order is 2.3 times higher during succession tournaments (21.7%) than in non-succession tournament periods (9.4%). This implies that the types of fraud investigated amid succession battles are more likely to be relatively minor offenses than those investigated outside the succession periods. The proportion of other types of fraud varies little between succession tournament and non-tournament periods.

Table 3. Correlation

Panel A: All periods	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Number of fraud	1.00								
(2) Number of sons (c+1 generation)	0.05	1.00							
(3) Number of sons (c generation)	-0.02	-0.20	1.00						

9) This is a couple of years after independent board system was introduced in 2001.

10) This 95% of the current chair's tenure corresponds to the average chair's age of 70.5 years. A succession within the same generation due to within-family agreement by brothers is not considered a succession tournament.

(4) Number of sons (below age 15)	-0.07	-0.26	0.08	1.00					
(5) Group age	0.00	0.15	-0.08	0.23	1.00				
(6) Log of total assets	0.08	-0.01	0.09	0.09	0.05	1.00			
(7) Log total sales	0.08	-0.04	0.10	0.10	0.07	0.87	1.00		
(8) Leverage	0.00	-0.07	0.08	0.01	-0.14	0.20	0.15	1.00	
(9) ROA	-0.01	-0.04	-0.01	0.06	0.00	-0.11	0.05	-0.15	1.00

Panel B: Succession Tournament	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Number of fraud	1.00								
(2) Number of sons (c+1 generation)	0.14	1.00							
(3) Number of sons (c generation)	-0.12	-0.66	1.00						
(4) Number of sons (below age 15)	-0.10	-0.71	0.89	1.00					
(5) Group age	0.06	0.57	0.18	-0.14	1.00				
(6) Log of total assets	0.07	0.04	0.01	0.07	-0.01	1.00			
(7) Log total sales	0.08	0.05	0.00	0.05	0.01	0.80	1.00		
(8) Leverage	-0.04	-0.27	0.23	0.27	-0.14	0.15	-0.02	1.00	
(9) ROA	-0.01	-0.08	0.04	-0.04	0.01	-0.17	0.09	-0.11	1.00

Panel C: Non-succession Tournament	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Number of fraud	1.00								
(2) Number of sons (c+1 generation)	0.03	1.00							

(3) Number of sons (c generation)	0.00	-0.16	1.00						
(4) Number of sons (below age 15)	-0.07	-0.12	-0.06	1.00					
(5) Group age	0.00	0.17	-0.10	0.25	1.00				
(6) Log of total assets	0.08	-0.04	0.10	0.11	0.06	1.00			
(7) Log total sales	0.08	-0.05	0.13	0.12	0.08	0.89	1.00		
(8) Leverage	0.01	-0.02	0.06	-0.04	-0.14	0.21	0.18	1.00	
(9) ROA	-0.01	-0.05	-0.02	0.08	-0.01	-0.09	0.06	-0.16	1.00

Table 3 reports correlations among the main variables summarized in the previous tables for all 1,299 firm-year observations from 2000 to 2004. Panel A shows correlations for all periods, and Panels B and C report correlations for Succession Tournament periods and Non-succession Tournament periods, respectively. Succession Tournament includes business group-years within the 5 years [-5, -1] prior to an upcoming succession. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship transfers within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman's sudden death on Aug 4th, 2003. All other periods are regarded as Non-succession Tournament. Number of fraud cases refers to the sum of the total number of corporate fraud cases, including internal transaction, collusion, tax evasion, unfair trade, accounting, and disclosure fraud. Number of sons (c+1 generation) refers to the total number of sons of the current chair and his/her siblings. Number of sons (c generation) refers to the total number of brothers of the current chair, including the chairman himself. Number of sons (below age 15) refers to the total number of sons of the current chair and the chair's siblings who are younger than 15; these sons are excluded from the sample since in Korea they are not legally eligible to work. Group age refers to the number of years a business group has existed in the corresponding sample year. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. ROA refers to the ratio of a firm's earnings before interest and tax (EBIT) divided by its total assets.

Finally, table 3 summarizes the correlations among our main variables. The number of sons (c+1 generation) is more positively correlated with the number of fraud cases during succession tournaments (0.14 in panel B) than non-succession periods (0.03

in panel C). The correlation coefficients for the number of sons (c generation) and the number of sons (below age 15) are negative or close to zero in all panels. These univariate results are largely consistent with our H2, which predicts a potential dark side of sibling rivalry during succession tournaments.

RESULTS

Succession Tournaments Among Sons and Corporate Fraud

In table 4, we test our main hypotheses H1 (or H2) to see whether succession tournaments among sons induce decreased (or increased) numbers of fraud investigations for family firms. In columns 1 and 2 of table 4, we regress each firm’s total number of fraud filings, measured by Log (1+number of fraud), on the interaction term [Number of Sons (c+1 generation) × Succession Tournament], while we control for the standalone terms in the same regression. In column 2, we additionally control for the natural logarithms of total sales and leverage; we do not control for them in column 1. All models control for year fixed effects, and standard errors are clustered at the business group level.

Table 4. Succession Tournaments Among Sons and Corporate Fraud

Dependent Variable: Log (1+ number of fraud)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	C+1 generation	Under age		C generation		
Number of sons × Succession Tournament	0.00478** [0.002]	0.00436** [0.002]	-0.00586 [0.009]	-0.00494 [0.008]	-0.00203** [0.001]	-0.00184** [0.001]
Number of sons	0.00104 [0.001]	0.00125 [0.001]	-0.00665** [0.003]	-0.00771*** [0.002]	0.00015 [0.000]	-0.00001 [0.000]
Succession Tournament	-0.05134** [0.021]	-0.04744** [0.020]	0.00872 [0.014]	0.00732 [0.012]	0.03290** [0.013]	0.03061** [0.013]
Log total sales		0.00427** [0.002]		0.00464** [0.002]		0.00426** [0.002]
Leverage		-0.00005 [0.000]		-0.00021 [0.000]		-0.00010 [0.000]

Constant	0.01984 [0.015]	-0.03549 [0.022]	0.03625*** [0.010]	-0.02015 [0.020]	0.02648** [0.012]	-0.02511 [0.016]
Observations	1,299	1,299	1,299	1,299	1,299	1,299
R-squared	0.011	0.018	0.011	0.019	0.009	0.015

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. The dependent variable is Log (1+number of fraud), which refers to the logarithm of one plus the total number of corporate fraud cases, including internal transaction, collusion, tax evasion, unfair trade, accounting, and disclosure fraud, in each sample year. Columns (1) and (2) use the number of sons in the current chair+1 generation as an explanatory variable; this refers to the total number of sons of the current chair and the chair's siblings. Columns (3) and (4) use the number of sons in the current chair+1 generation who are younger than 15 as an explanatory variable. Columns (5) and (6) use the number of males in the current chair's generation as an explanatory variable; this refers to the number of brothers of the current chair, plus the chairman himself. Succession Tournament is an indicator that has a value of one for business group-years within the 5 years [-5, -1] prior to an upcoming succession, and zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship is transferred within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is included in the period of succession tournament after the Hyundai chairman's sudden death on Aug 4th, 2003. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. All models include annual year dummy variables. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

We find positive and statistically significant point estimates for Number of Sons (c+1 generation) $\times$ Succession Tournament of 0.00478 and 0.00436 in columns 1 and 2, respectively. In both columns, these point estimates are statistically significant at the 5% level. In terms of economic significance, these results indicate that the number of fraud filings against the firms of a chaebol that is controlled by a family with many sons surge during succession tournaments by a net of 4.6 times ($= 0.00478/0.00104$ in column1) and 3.5 times ($= 0.00436/0.00125$ in column2).

In columns 3 to 6, we conduct several falsification tests for

identification. We define the set of succession contestants using family members who are not eligible for or less likely to engage in succession tournaments; (1) sons below age 15, who are not legally allowed to work in Korea (columns 3 and 4) and (2) male relatives in the current chair's generation whose succession tournaments are de facto over during our sample period (columns 5 and 6). We find that the presence of these males reduces, rather than increases, corporate fraud during succession periods. For example, in column 3, where we include the number of sons younger than 15, sons' effects on fraud during succession tournaments are negative (-0.00568). In column 5, similar negative effects (-0.00203) are observed for bloodline male relatives in the current chair's generation. In columns 4 and 6, where we further control for the log of total sales and leverage in the same regressions, we obtain consistent results both economically and statistically. These results in columns 3 to 6 suggest that our baseline results in columns 1 and 2 are likely to be driven by those who actively engage in succession tournaments.

Financial Market Reactions to Fraud Announcements

We examine stock market reactions to the news of increasing fraud investigations during succession tournaments. As explained in Section 2, these increasing fraud investigations may be induced by either sabotage (H2a) or excessive risk-taking (H2b) by agents during succession tournaments, or both. When these underlying channels are signaled to the market via fraud announcements, we expect negative value reactions by shareholders. Shareholders could view internal sabotage as an indication of reduced positive efforts by the sons in the succession tournaments. They may also view the negative self-actions as sons' direct value-reducing activities when they are caught by regulators.

We use the first announced fraud in each year to minimize any confounding effect. After identifying 66 clean fraud investigation announcements, we apply a standard event study methodology to estimate cumulative abnormal returns (CARs) over three different event windows; (1) [-1,1], (2) [-2,2], and (3) [-3,3]. For each event window, we use regression specifications that are similar to our baseline regressions. We run the regressions with (columns 2, 4, 6) and without (columns 1, 3, 5) controlling for log total sales and leverage.

Table 5. Fraud Announcement Returns

Dependent Variables:	CAR [-1,1]		CAR [-2,2]		CAR [-3,3]	
	(1)	(2)	(3)	(4)	(5)	(6)
Number of sons × Succession Tournament	-0.02975 [0.168]	-0.14837 [0.187]	-0.61678* [0.296]	-0.70765** [0.314]	-0.60699 [0.658]	-0.79419 [0.612]
Number of sons (c+1 generation)	-0.22972 [0.235]	-0.15793 [0.195]	-0.16945 [0.401]	-0.09816 [0.322]	-0.28448 [0.583]	-0.20985 [0.511]
Succession Tournament	2.97315 [2.098]	4.16559** [1.854]	9.14262** [3.431]	10.05198*** [3.053]	9.03907 [6.929]	10.93050* [6.092]
Log total sales		-0.66853* [0.352]		-0.54665 [0.399]		-0.97307* [0.480]
Leverage		0.17295 [0.202]		0.17672 [0.289]		0.16803 [0.347]
Constant	2.29709 [2.581]	10.83087 [6.289]	2.25876 [3.660]	9.00617 [6.226]	3.60213 [4.838]	16.57034* [7.970]
Observations	66	66	66	66	66	66
R-squared	0.082	0.128	0.099	0.123	0.075	0.105

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. For each event we calculate the CAR over the 250 day estimate window using a market model. First, we regress returns on market returns to obtain estimates for alpha and beta. Then we obtain abnormal return by subtracting alpha plus beta times market return from daily stock returns. We only include the first fraud announcement date as an event date if a firm has multiple fraud filings in a given year. In Columns (1) and (2), the dependent variable CAR [-1, 1] indicates the cumulative abnormal return for three days around event dates – the event day and the preceding and following day. In Columns (3) and (4), the dependent variable CAR [-2, 2] reports the cumulative abnormal return for five days around event dates. In Columns (5) and (6), the dependent variable CAR [-3, 3] reports the cumulative abnormal return for seven days around event dates. Succession Tournament is an indicator that has a value of one for business group-years within the 5 years [-5, -1] prior to

an upcoming succession, and zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship is transferred within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman's sudden death on Aug 4th, 2003. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

The results are reported in table 5. First, in columns 3 and 4, where we measure $CAR[-2,2]$ (cumulative abnormal return over five days around each event), we find the coefficient on the interaction term (Number of Sons (c+1 generation) $\times$ Succession Tournament) is -0.61678 (column 3) and -0.70765 (column 4). These are statistically significant at the 10% and 5% levels, respectively. The coefficients imply that $CAR [-2, 2]$ drops by a net of 3.6% ($=0.61678/0.16945$ in column 3) and 7.2% ($=0.70765/0.09816$ in column 4) upon the announcement of a fraud investigation during a succession tournament for a chaebol with many sons in the chair+1 generation. These are economically significant effects.

In columns 1 and 2 (5 and 6) of the same table, we conduct similar analyses using a different event window: $CAR [-1, 1]$ ($CAR [-3, 3]$). The results consistently show shareholders' negative reactions to news of fraud investigations during succession tournaments for chaebols with many sons. However, the results using alternative event windows are statistically insignificant.

Overall, our results in table 5 show that shareholders of a family firm tend to view news of a fraud investigation during a succession period negatively, particularly when the succession processes are driven by many sons in competition for the next group chairman position.

Family Governance and Corporate Fraud

To examine the effect of family governance on the surge in fraud investigations during succession tournaments, we extend our baseline model from columns 1 and 2 of table 4. The interaction term (Number of Sons (c+1 generation) $\times$ Succession Tournament) is

now decomposed into two using the following three different dummy variables: (1) Family feud vs No family Feud, (2) Half-brothers vs No half-brothers, and (3) First son chair vs No first son chair. To facilitate the ease of 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.

Table 6. Family Governance and Corporate Fraud

Variables	Dependent Variable: Log (1+ number of fraud)					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of sons × Succession Tournament × Family feud	0.02082***	0.01910***				
	[0.006]	[0.006]				
Number of sons × Succession Tournament × No family feud	0.00281**	0.00271**				
	[0.001]	[0.001]				
Number of sons × Succession Tournament × Half brothers			0.00938***	0.00770***		
			[0.002]	[0.002]		
Number of sons × Succession Tournament × No half brothers			-0.00418*	-0.00425*		
			[0.002]	[0.002]		
Number of sons × Succession Tournament × First son chair					0.01638	0.01390
					[0.009]	[0.008]
Number of sons × Succession Tournament × No first son chair					0.01972*	0.01723*
					[0.009]	[0.009]
Number of sons (c+1 generation)	0.00339	0.00411	0.00343	0.00416	0.00337	0.00408

Dependent Variable: Log (1+ number of fraud)						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]	[0.004]
Succession	-0.01832***	-0.01703***	-0.00325	-0.00206	-0.02169*	-0.01879*
Tournament						
	[0.005]	[0.005]	[0.003]	[0.003]	[0.012]	[0.010]
Log total sales		0.00954**		0.00939**		0.00950**
		[0.004]		[0.004]		[0.004]
Leverage		-0.00023		-0.00036		-0.00027
		[0.002]		[0.002]		[0.002]
Constant	0.02991***	0.02928***	0.03036***	0.02967***	0.02965***	0.02904***
	[0.010]	[0.010]	[0.010]	[0.009]	[0.009]	[0.009]
Observations	1,299	1,299	1,299	1,299	1,299	1,299
R-squared	0.011	0.018	0.012	0.018	0.011	0.018

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. All explanatory variables are standardized, so their point estimates represent the economic magnitude of their effects. The dependent variable is Log (1+number of fraud), which refers to the logarithm of one plus the total number of corporate fraud cases, including internal transaction, collusion, tax evasion, unfair trade, accounting, and disclosure fraud, in each sample year. Succession Tournament is an indicator that has a value of one for business group-years within the 5 years [-5, -1] prior to an upcoming succession, and zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship is transferred within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman's sudden death on Aug 4th, 2003. Family feud is an indicator that has a value of one if a group has a news release about family disputes over ownership or management positions in 2000-2004, and is zero otherwise. No family feud is an indicator that has a value of one if a group has no news release about family disputes over ownership or management positions in 2000-2004, and is zero otherwise. Half-brothers is an indicator that has a value of one if the founder of a business group has children with different mothers, and is zero otherwise. No half-brothers is an indicator that has a value of one if the founder of a business group does not have children with different mothers, and is zero otherwise. First son chair is an indicator that has a value of one if the current chairman of a business group is the first son, and is zero otherwise. No first son chair is an indicator that has a value of one if the current chairman of a business group is not the first son, and is zero otherwise. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated

as a firm's total debt divided by its total equity. All models include annual year dummy variables. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

In columns 1 and 2 of table 6, the interaction term (Number of Sons (c+1 generation) $\times$ Succession Tournament) is now decomposed into (1) Number of Sons (c+1 generation) $\times$ Succession Tournament $\times$ Family feud and (2) Number of Sons (c+1 generation) $\times$ Succession Tournament $\times$ No family feud. Family feud is an indicator variable that has a value of one if a business group has a news release about family disputes over ownership or a management position during our sample period. No family feud is an indicator that a group has no news release regarding such internal disputes. In column 1, we find that corporate fraud is more likely in a chaebol controlled by a family with known internal conflicts during succession tournaments. The effect of Number of Sons (c+1 generation) $\times$ Succession Tournament $\times$ Family feud (0.02082) is statistically significant at the 1% level, and its economic magnitude is more than seven times ($7.4=0.02082/0.00281$) larger than the effect of the opposite case, i.e., Number of Sons (c+1 generation) $\times$ Succession Tournament $\times$ No family feud. In column 2, we show that the result is robust to additionally controlling for the log of total assets and leverage.

In columns 3 and 4, we further confirm that the surge in fraud investigations during succession tournaments is mainly driven by chaebols with half-brothers in their family tree. The existence of half-brothers in the family could indicate a potential mediation failure by senior family members, including mothers, on internal feuds. We show that this failure by family governance to mitigate internal family tensions could make fraud investigations significantly more likely during succession tournaments.

Consistent with this notion of family governance, in columns 5 and 6, we show insignificant succession tournament effects when strong male-preference primogeniture is present. When a family has a strong tradition of appointing their first-born male child as the next group chairman, within-family promotion tournaments are less likely and sibling competition decreases, leading to the insignificant tournament effects we find in columns 5 and 6.

Overall, our results in table 7 show that internal family dynamics and family governance issues significantly spill over to corporate

governance in family firms. Sibling competition more adversely affects corporate governance during succession tournaments when the controlling family has weak internal controls, and so cannot adequately mitigate within-family conflicts.

Types of Fraud

To identify the relative extent to which each of the two channels, fraud detection and fraud commission, explain the increase in fraud investigations during chaebol succession tournaments, we examine the resolutions of the fraud cases against our sample firms. If fraud commission underlies our baseline findings, observed fraud cases during succession tournaments are more likely to be intended by contestants and consequently to end with serious ex post penalties. We decompose fraud cases in our sample into three different types using their ex post settlement outcomes: (1) fraud that results in a correction order, (2) fraud that results in a fine, and (3) prosecuted fraud. The first type of fraud is a more minor offense, while the latter two types are associated with severe ex post penalties, and thus are more likely to be intended by contestants.

Table 7. Types of Fraud Investigation

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Correction Order		Fine Imposition		Prosecution	
Number of sons × Succession Tournament	0.00393*** [0.001]	0.00387*** [0.001]	0.00082 [0.001]	0.00048 [0.001]	0.00003 [0.000]	0.00001 [0.000]
Number of sons (c+1 generation)	-0.00033 [0.001]	-0.00029 [0.001]	0.00148* [0.001]	0.00166* [0.001]	-0.00012 [0.000]	-0.00012 [0.000]
Succession Tournament	-0.03723*** [0.012]	-0.03672*** [0.012]	-0.01365 [0.013]	-0.01044 [0.012]	-0.00047 [0.001]	-0.00028 [0.001]
Log total sales		0.00066 [0.001]		0.00358*** [0.001]		0.00004 [0.000]
Leverage		0.00003 [0.000]		-0.00001 [0.000]		-0.00006 [0.000]

Constant	0.00578 [0.005]	-0.00281 [0.008]	0.01310 [0.011]	-0.03333* [0.019]	0.00097 [0.001]	0.00065 [0.001]
Observations	1,299	1,299	1,299	1,299	1,299	1,299
R-squared	0.010	0.010	0.010	0.016	0.004	0.004

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. For Columns (1) and (2), the dependent variable is administrative order, which refers to the logarithm of one plus the total number of corporate fraud cases that end with a correction order. For Columns (3) and (4), fine imposition refers to the logarithm of one plus the total number of corporate fraud cases where surcharges are imposed. For Columns (5) and (6), prosecution refers to the logarithm of one plus the total number of corporate fraud cases which are examined by prosecution. Succession Tournament is an indicator that has a value of one for business group- years within the 5 years [-5, -1] prior to an upcoming succession, and zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship is transferred within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman's sudden death on Aug 4th, 2003. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. All models include annual year dummy variables. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

In columns 1 and 2 of table 7, we first consider minor fraud cases that result in the imposition of a correction on the left-hand-side (LHS) of our baseline regressions, which are used in the first two columns of table 4. We find similar patterns of an unusual surge in fraud investigations during succession tournaments in these minor fraud cases. The point estimates for the interaction term (Number of Sons (c+1 generation) $\times$ Succession Tournament) are 0.00393 (column 1) and 0.00387 (column 2). They are both statistically significant at the 1% level.

However, in columns 3 to 6 of table 7, we do not find a significant increase in investigations during succession periods for the other types of fraud, those that result in more serious ex post penalties. There we use litigation that results in the impositions of a fine (columns 3 and 4) and litigation that is followed by prosecution

(columns 5 and 6) and find that the effects of sibling competition during succession tournaments are insignificant, both statistically and economically.

Our results in table 7 highlight that the type of fraud that increases during succession tournaments is the type that is not seriously intended by contestants, based on their settlement outcomes. If sons in a succession tournament try to manipulate their short-term performance metrics through accounting fraud or slush funds, their actions are likely to be severely penalized by regulators *ex post*. Our table 7 results, however, suggest that such cases are relatively rare during succession tournaments, which supports the other possibility: sons' misdemeanors could be "overly detected" by their rivals in the succession tournament.

Family Information, Media Control, and Corporate Fraud

Succession contestants have strong incentives to transmit negative (or possibly even false) information about their rivals to the external media (or directly to regulators) to win the tournament. However, senior family members, such as their father (i.e., the current chair), their mother, and their uncles, who supervise the juniors as they play their succession game, could have starkly different opinions about the revelation of family-specific information to the public. When negative information inside a family business is leaked to the public, it can trigger investigation by regulators. These investigations could result in substantial damage to their family's reputation and business prospects. We test sons' and senior family members' varying incentives to reveal negative family information to the media and interpret the results to identify the underlying fraud mechanism; in other words, we investigate the relative extent to which fraud detection and fraud commission explain the increase in fraud litigation during succession tournaments.

We define the strength of connections between each family member and mass media companies using media spending by firms that are directly controlled by the family member. We define three media control variables: media spending by (1) the whole family, (2) sons in succession tournaments, and (3) senior family members in the current chair's generation, who monitor rather than participate in succession tournaments. We then decompose Number of Sons ($c+1$ generation) $\times$ Succession Tournament into high and low media

control cases using each of the three media control variables. We standardize all explanatory variables to have a mean of zero and a standard deviation of one in this regression.

Table 8. Family Information, Media Control, and Corporate Fraud

Variables	Dependent Variable: Log (1+ number of fraud)					
	(1)	(2)	(3)	(4)	(5)	(6)
Number of sons × Succession Tournament × High media control	0.01117 [0.007]	0.00926 [0.006]				
Number of sons × Succession Tournament × Low media control	0.01961** [0.009]	0.01716* [0.008]				
Number of sons × Succession Tournament × High media control by sons			0.01806** [0.008]	0.01634* [0.008]		
Number of sons × Succession Tournament × Low media control by sons			0.00879*** [0.002]	0.00827*** [0.002]		
Number of sons × Succession Tournament × High media control by seniors					0.00939 [0.006]	0.00715 [0.005]
Number of sons × Succession Tournament × Low media control by seniors					0.01767** [0.008]	0.01514** [0.007]
Number of sons (c+1 generation)	0.00352 [0.004]	0.00422 [0.004]	0.00352 [0.004]	0.00422 [0.004]	0.00352 [0.004]	0.00423 [0.004]
Succession Tournament	-0.01969* [0.010]	-0.01709* [0.009]	-0.01732** [0.007]	-0.01592** [0.007]	-0.01714* [0.009]	-0.01431* [0.008]
Log total sales		0.00952** [0.004]		0.00950** [0.004]		0.00958** [0.004]

Dependent Variable: Log (1+ number of fraud)						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Leverage		-0.00021 [0.002]		-0.00012 [0.002]		-0.00017 [0.002]
Constant	0.02913*** [0.009]	0.02846*** [0.009]	0.02914*** [0.009]	0.02852*** [0.009]	0.02901*** [0.009]	0.02831*** [0.009]
Observations	1,299	1,299	1,299	1,299	1,299	1,299
R-squared	0.011	0.018	0.012	0.019	0.011	0.018

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. All explanatory variables are standardized, so their point estimates represent the economic magnitude of their effects. The dependent variable is Log (1+number of fraud cases), which refers to the logarithm of one plus the total number of corporate fraud cases, including internal transaction, collusion, tax evasion, unfair trade, accounting, and disclosure fraud, in each sample year. Succession Tournament is an indicator that has a value of one for business group-years within the 5 years [-5, -1] prior to an upcoming succession, and is zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship transfers within a single generation by agreement among brothers is not considered to cause a succession tournament. Hyundai group is considered to be in a succession tournament period after the Hyundai chairman's sudden death on Aug 4th, 2003. High Media control is an indicator that has a value of one if the sum of advertisement expense in a chaebol group is greater than that of the average of all chaebols, and is zero otherwise. Low media control is an indicator that has a value of one if the sum of advertisement expense in a chaebol group is lower than that of the average of all chaebols, and is zero otherwise. High media control by sons is an indicator that has a value of one if the total advertisement expenditure of firms controlled by sons in the c+1 generation in a chaebol is greater than the sample average, and is zero otherwise. Low media control by sons is an indicator that has a value of one if the total advertisement expenditure of firms controlled by sons in the c+1 generation in a chaebol is less than the sample average, and is zero otherwise. High media control by seniors is an indicator that has a value of one if the total advertisement expenditure by firms controlled by family members in the generation of or above the current chair of a chaebol is greater than the sample average, and is zero otherwise. Low media control by seniors is an indicator that has a value of one if the total advertisement expenditure by firms controlled by family members in the generation of or above the current chair of a chaebol is less than the sample average, and is zero otherwise. Log of sales refers to the logarithm of a firm's total sales in millions of KRW. Leverage refers to a debt ratio calculated as a firm's total debt divided by its total equity. All models

include annual year dummy variables. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

In columns 1 and 2 of table 8, we decompose Number of Sons (c+1 generation) $\times$ Succession Tournament into high and low media control by the whole family. There we find that chaebols that purchase large amounts of advertising from the major public media companies have fewer fraud cases during succession tournaments. The high media control effect (0.01117) is statistically insignificant, and its economic magnitude is 56.9% ($=0.01117/0.01961 \times 100$) of the low media control effect (0.01961); that is statistically significant at the 5% level.

These general effects of high media control are driven by senior family members, i.e., the current chair and other family members in the older generations. In columns 5 and 6 of table 8, we find that corporate fraud is less likely when these senior members strongly control potential family information leakage to the public media. In sharp contrast, in columns 3 and 4 of the same table, where we consider the advertisement expenses of firms controlled by sons in succession tournaments, we find completely opposite results. Fraud is significantly more likely when sons in tournaments tightly control the media through advertising expenditure. Fraud litigation is almost twice ($2.05=0.01806/0.00879$) as likely during succession tournaments when sons are closely connected to major media companies. When they are not connected to the media, we find that fraud investigations are much less likely.

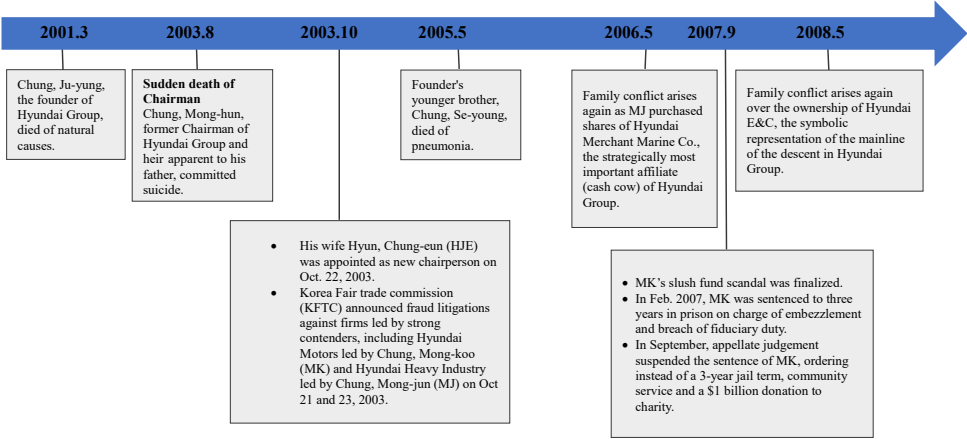
In summary, these results in table 8 collectively suggest that sons do divulge their family's private information to the public using mass media. At the same time, we confirm that senior family members prefer to minimize such disclosures using their own media connections. These results are more consistent with H2a (Sabotage), which states that chaebol fraud tends to be made known to the public through sons' efforts to sabotage their rivals. Senior members, who are out of the succession tournament, have few incentives to commit fraud, so observed fraud is likely to be committed by junior family members. At the same time, a significant increase in fraud cases when seniors have loose media control suggests that sabotage of rivals, rather than excessive risk-taking by heirs, is more likely to explain our baseline findings. However, it should be noted that these

two channels are not mutually exclusive; one explanation cannot completely rule out the other potential explanation.

Nature Experiment: The Sudden Death of the Hyundai Chairman

One concern about our baseline findings is whether the results are causal. To investigate this issue, we examine Hyundai Group’s case: how corporate fraud levels have changed around the sudden death of its group chairman. Chung, Mong-hun, who became the chairman of the Hyundai Group in 1998, committed suicide on August 4, 2003. With his sudden death, succession tournaments resumed among Mong-hun’s brothers, i.e., the current chair-generation (c-generation) male relatives. Using this exogenous increase in the number of male contestants in Hyundai’s succession tournament, we estimate the causal impact of the succession battle on fraud investigations using difference in difference in differences (DiDiD) estimations.¹¹⁾

Figure 1. Timeline of Conflicts Among Family Members of Hyundai Group



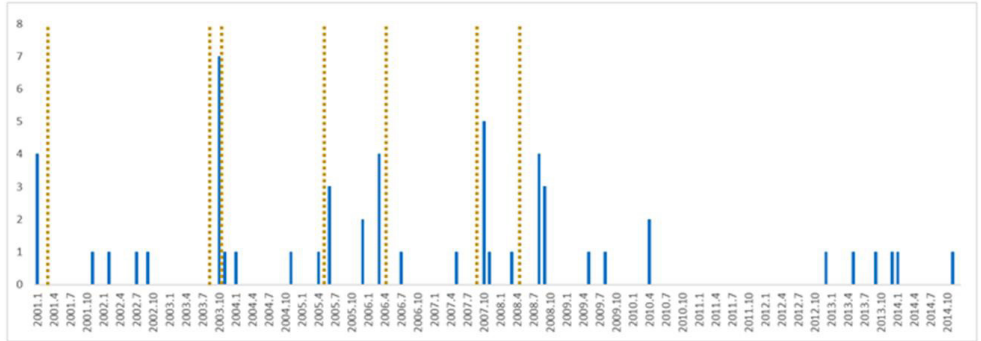
This figure shows a chronological timeline of family conflicts or events indicative of such conflicts among family members of Hyundai Group from

11) For convenience, we denote it as a DiDiD, but this is not strictly accurate. To be technically exact, we decompose our DiD estimate into two parts, one associated with strong contenders, the other with weak ones. We do this decomposition to isolate any common effects of the chairman’s sudden death on all Hyundai affiliates.

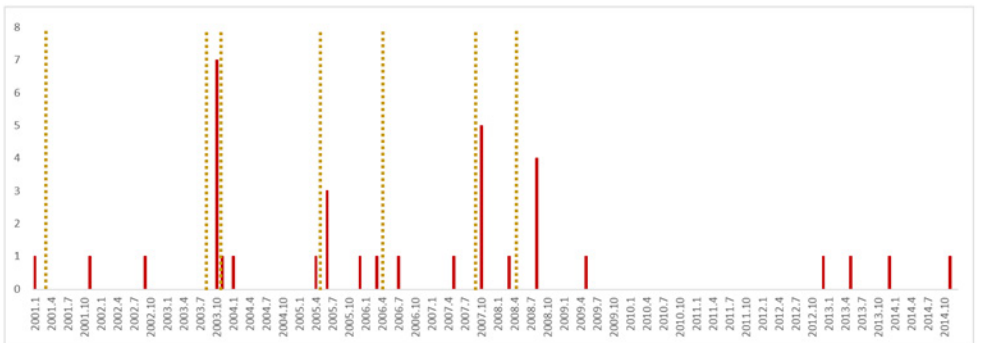
January 2001 to December 2014. This timeline of conflict corresponds to the dotted lines displayed in Figure 2.

Figure 2. Monthly Fraud Investigations of Hyundai Group

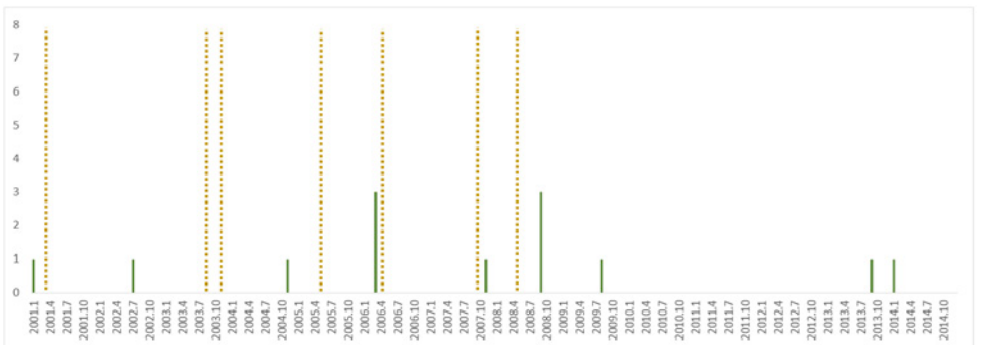
A. Total Fraud



B. Fraud Committed by Strong Contenders



C. Fraud Committed by Weak Contenders



The figures show the chronicle of Hyundai group's monthly fraud investigations from January 2001 to December 2014. Panel A shows the total number of monthly fraud cases that are filed against all Hyundai affiliates, and Panels B and C show the number of monthly fraud cases that are filed against Hyundai affiliates controlled by strong and weak succession contenders, respectively. Strong contenders refer to sons in the current chair's generation in Hyundai Group, whereas weak contenders refer to sons in the current chair-1 generation. Dotted lines indicate times when conflicts among family members of Hyundai Group or events indicative of possible conflict, such as the chairman's death, took place. Monthly fraud investigations spike around the events of conflicts among family members of Hyundai Group. The detailed explanation of the timeline of conflicts is summarized in Figure 1.

Figure 1 provides the details of the Hyundai Group event timeline, and figure 2 depicts the number of fraud investigations of the Hyundai Group around the event time. We plot the number of fraud filings against Hyundai affiliates in each month from January 2001 to December 2014. The biggest spike in the number of Hyundai fraud cases is found in October 2003, when the family tension about who would be the next group chairman reached its maximum after Mong-hun's death (panel A of figure 2). The spike is driven by the Hyundai firms controlled by the dead chair's brothers (panel B of figure 2).

On October 22, 2003, Mong-hun's wife, Hyun, Chung-eun, became the interim chair of the Hyundai Group without internal support from the senior family members of Hyundai (Kyunghyang Weekly, April 8 2008)¹²⁾. The dead chair's uncles are known to indirectly support Mong-hun's brothers as the formal successor of the Hyundai Group. During this time of deep family troubles, the KFTC announced fraud investigations on Oct 21 and 23, 2003, respectively against Hyundai Motors led by Chung, Mong-koo, and Hyundai Heavy Industry led by Chung, Mong-jun – the two brothers of the dead chairman, who compete for the next generation Hyundai leadership position. Mong-koo and Mong-jun had also been strong rivals of Mong-hun for the Hyundai chairman position (Asiaweek, June 16, 2000).¹³⁾ Following Mong-hun's death, they were again considered potential official leaders of the Hyundai Group.

With this background, we conduct our causal estimations. The dependent variable of our regression model is the change in the firm's number of fraud cases, measured by the 3-month difference of

12) Deuk-jin Cho, "Hyundai Must Be Inherited by the Chung Family," *Kyunghyang Weekly*, April 8 2008.

13) Laxmi Nakarmi, "Of Father and Sons." *Asiaweek*, June 16 2000.

the logarithm of one plus the sum of the total number of corporate fraud filings before and after the chairman's death.¹⁴⁾ We use such a short event window because fraud detection is more likely to be a short-run channel relative to the fraud commission channel, where fraud must first be committed then later investigated by regulators. In fact, all the fraud cases used in this test have a gap between commission and filing dates of more than three months, so our results in this test are unlikely to be driven by the fraud commission channel. We exclude from our test the firms that were under the direct control of the dead chairman to eliminate any direct performance effect caused by the chair's sudden death. We cluster standard errors at the business group level.

Table 9. Natural Experiment: The Sudden Death of Group Chairman

Variables	Dependent Variable: $\Delta \text{Log}(1 + \text{number of fraud})$								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of New Sons in Tournament (add c-generation)	0.00538 ***	0.00552 ***							
	[0.000]	[0.000]							
Number of New Sons in Tournament (add c)			0.00783 ***						
× Strong contender			[0.000]						
Number of New Sons in Tournament (add c)			-0.00018						
× Weak contender									
			[0.000]						
Number of New Sons In Tournament (swap c+1 with c generation)				0.00911 ***	0.00934 ***				

14) Our results hold for various other alternative test windows around the chair's sudden death; [-6 months, +6 months], [-1 year, +1 year], and [-2 years, +2 years].

Dependent Variable: $\Delta \text{Log} (1 + \text{number of fraud})$									
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				[0.000]	[0.000]				
Number of New Sons in Tournament (swap c) × Strong contender						0.01325 ***			
						[0.000]			
Number of New Sons in Tournament (swap c) × Weak contender						-0.00031			
						[0.000]			
Hyundai Event							0.11846 ***	0.12142 ***	
							[0.006]	[0.006]	
Hyundai Event × Strong contender									0.17229 ***
									[0.006]
Hyundai Event × Weak contender									-0.00403
									[0.003]
$\Delta \text{Log total}$ sales		-0.01328	-0.01075		-0.01328	-0.01075		-0.01328	-0.01075
		[0.012]	[0.011]		[0.012]	[0.011]		[0.012]	[0.011]
$\Delta \text{Leverage}$		-0.00002	-0.00002		-0.00002	-0.00002		-0.00002	-0.00002
		[0.000]	[0.000]		[0.000]	[0.000]		[0.000]	[0.000]
Constant	0.01195* [0.006]	0.01400 [0.008]	0.01351 [0.008]	0.01195* [0.006]	0.01400 [0.008]	0.01351 [0.008]	0.01195* [0.006]	0.01400 [0.008]	0.01351 [0.008]
Observations	267	267	267	267	267	267	267	267	267
R-squared	0.068	0.072	0.109	0.068	0.072	0.109	0.068	0.072	0.109

Each column reports coefficients from an OLS regression with heteroscedasticity-robust standard errors. Standard errors are clustered at the business group level and reported in parentheses under the coefficient estimates. The dependent variable of our regression is the change in the number of fraud cases, which refers to the three-month difference of the natural logarithm of one plus the total number of corporate fraud filings before and after the Hyundai chairman's sudden death on Aug 4th, 2003. Columns (1) and (2) use Number of New Sons in Tournament (add c-generation) as an explanatory variable;

this is the total number of sons in the current chair's generation for Hyundai Group and is zero for all other groups. In Column (3), Number of New Sons in Tournament (add c-generation) is interacted with the Strong Contender and Weak Contender dummies. Strong Contender is an indicator that has a value of one for firms controlled by sons in the current chair's generation in Hyundai Group, and is zero otherwise. Weak Contender is an indicator that has a value of one for firms controlled by sons in the current chair-1 generation, and is zero otherwise. Columns (4) and (5) use Number of New Sons in Tournament (swap c+1 with c generation) as an explanatory variable; this is the difference of the total number of sons in the current chair's generation and the current chair+1 generation for Hyundai Group, and is zero for all other groups. In Column (6), we interact Number of New Sons in Tournament (swap c+1 with c generation) with the Strong Contender and Weak Contender dummies. In Columns (7) and (8), Hyundai Event is an indicator that has a value of one for Hyundai Group firms and is zero otherwise. In Column (9), Hyundai Event is interacted with the Strong Contender and Weak Contender dummies. We control for Δ Log total sales and Δ Leverage, which refer to the difference of the 1-year average logarithm of a firm's total sales (in KRW millions) and leverage (in KRW millions) before and after the chairman's death in 2003. ***, **, and* denote significance at the 1%, 5%, and 10% level, respectively.

In columns 1 and 2 of table 9, we assume that the male bloodline relatives of the dead chair's generation (c generation) return to the succession tournament, and compete with sons in the c+1 generation, who were already participating in the tournament before the chair's death. The Number of New Sons in Tournament (add c-generation) variable, therefore, has a value of zero for all other groups, whereas for Hyundai Group, the variable is the number of sons in the c-generation, i.e., Mong-hun's brothers. We test whether this increasing number of sons in the exogenously re-opened succession tournament leads to sharply increasing corporate fraud. In column 1, we find 0.00538 as a point estimate of Number of New Sons in Tournament (add c-generation), which indicates a 0.538% increase in fraud for every marginal increase in the number of new contestants in the resumed succession tournament. In column 2, we additionally control for the change in average log sales and leverage before and after Mong-hun's death, and find that our results are virtually the same with these additional controls.¹⁵⁾

To show that the results in the first two columns are not driven by

15) Changes in total sales and leverage refer to the difference of the 1-year average logarithm of a firm's total sales (in KRW millions) and leverage in 2002 and 2003.

a common confounder on all Hyundai affiliated entities, namely, the increasing business risk of the Hyundai Group caused by the chair's sudden death, in column 3, we divide Hyundai group affiliates into two: (1) firms controlled by the brothers of Chung, Mong-hun (c-generation), and (2) firms controlled by Mong-hun's uncles (the c-1 generation). When Chung, Mong-hun, was named group chairman, his brothers were strong competitors, and for them, Mong-hun's death was a second chance to be a formal successor of the Hyundai Group, with a fairly high probability of winning the succession game. However, the (c-1) generation males, who were in the same generation as the group's founder, Chung, Ju-young, were least likely to engage in the succession tournament following Mong-hun's sudden death. They act as regents, rather than as contestants in the tournaments.

Using this additional difference, we decompose our difference in differences (DiD) effects into (1) Number of New Sons in Tournament (add c) $\times$ Strong Contender and (2) Number of New Sons in Tournament (add c) $\times$ Weak Contender. Strong Contender is a dummy for the Hyundai firms controlled by Mong-hun's brothers (c-generation), whereas Weak Contender indicates the Hyundai firms controlled by Mong-hun's uncles (c-1 generation). This within-Hyundai-Group analysis shows that the increased number of contestants in the succession tournament results in increased fraud investigations, particularly for the firms managed by Mong-hun's brothers. This triple difference effect of Number of New Sons in Tournament (add c) $\times$ Strong Contender (0.00783) is statistically significant at the 1% level, whereas we find an insignificant change in the number of fraud investigations for Hyundai-affiliated firms managed by Mong-hun's uncles (-0.00018). These results sharply capture the effects of succession tournaments on corporate fraud outcomes.

In columns 4 to 6 in table 9, we repeat the same analysis under an alternative assumption: that sons in the c+1 generation are fully excluded when their uncles are back in the tournament. We swap sons in the c+1 generation with their uncles in the c-generation, and thus the difference in the numbers of sons in the c and c+1 generations defines the exogenous change in the number of contestants in the succession tournaments. Both difference in differences (DiD) (columns 4 and 5) and triple difference (column 6) tests confirm our earlier results, reported in columns 1 to 3. In

columns 7 to 9, we use a Hyundai Event indicator as an alternative explanatory variable and re-run our DiD and DiDiD analyses. Our results are robust with this alternative indicator as well.

Overall, our findings in table 9 suggest that exogenously increasing family tension triggered by the sudden death of the Hyundai Group chairman results in a significant increase in fraud investigations, particularly for the group affiliates controlled by the dead chair's brothers. This causal effect is identified just over three months following the sudden death of the Hyundai chairman, indicating that the trend is more likely to be induced by increased fraud detection arising from the sons' sabotaging actions, rather than from an actual increase in fraud committed by the brothers over the short time period. The fraud cases used in our causal test were not committed during this short time interval, which further supports our conclusion that sabotage is the potential underlying channel of the increase in Hyundai Group fraud cases.

CONCLUSION

We study whether and how family governance issues spill over to corporate governance in family firms. This is an important question, given that family firms comprise a large portion of the world economy, and their succession processes are heavily influenced by internal family governance. We test whether sibling competition during a succession tournament in a family firm results in improved corporate governance or an increase in governance failure, measured by the incidence of corporate fraud.

Based on various tournament theories, we hypothesize two mutually exclusive corporate governance outcomes, the bright side and the dark side of sibling competition during succession processes. Then we further hypothesize two potential channels of the dark side of internal family conflicts: (1) contestants revealing their rivals' minor offenses to the public (as a form of sabotage) or (2) contestants' direct, negative efforts, such as highly risky strategies intended to win the tournament in a myopic way, which would be very costly to their shareholders if their actions were caught by regulators. We test the relative extent to which each of these two mutually non-exclusive channels is associated with our findings.

Using five years of data on Korean family business groups, where

succession processes are heavily influenced by family governance and are also likely to be a kind of tournament due to the prevailing deep pyramidal control structures, we show increased fraud investigations during succession tournaments; this increased level of fraud disappears outside tournament periods. This shows the potential dark side of sibling competition during succession tournaments. These effects are evident for families whose internal governance cannot adequately control family feuds, and also for the cases where senior family members fail to control potential tattletales inside the family. Fraud cases investigated during succession tournaments are likely to be minor offenses rather than those that are more serious and thus settled with heavy ex post penalties. We find that shareholders react negatively to announcements of fraud investigations during succession tournaments, when negative private actions by sons in are revealed to the public. Using the sudden death of a business group chairman as an exogenous shock that increases family conflicts about succession processes, we show causal evidence on our main findings.

Our study emphasizes the importance of family governance to the corporate governance of family firms. These family aspects of family firm governance are underexplored in the existing literature. By showing evidence of governance spillover from the controlling family to the firm, our research directs the family firm literature to pay more attention to family-specific factors, as they are important background risks in family firm operations. Information on how family governance is intertwined with the institutional characteristics of a firm would help broaden our understanding of how social, institutional, and cultural environments affect business practices through families. Given the prevalence of family firms around the world, this important macro-to-micro connection should be thoroughly examined.

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APPENDIX

Variable Definitions

Fraud related variables

Log (1+number of fraud)	The logarithm of one plus the total number of corporate fraud cases that are related to internal transaction, collusion, unfair trade, tax evasion, accounting, and disclosure fraud in each sample year. Corporate fraud is categorized by three types of ex-post measures – correction order, fine imposition, and prosecution, in order from lowest to highest severity.
Correction order	The logarithm of one plus the total number of corporate fraud cases in which a correction order is imposed.
Fine imposition	The logarithm of one plus the total number of corporate fraud cases in which a surcharge is imposed.
Prosecution	The logarithm of one plus the total number of corporate fraud cases that are examined by prosecution.
Succession Tournament	An indicator that has a value of one for business group-years within the 5 years [-5, -1] prior to an upcoming succession, and is zero otherwise. Business groups that, in a given year, have a current chairman whose tenure is longer than that of 95% of the group of chairmen are considered to be in a succession tournament period. A succession in which chairmanship transfers within a single generation by agreement among brothers is not considered to cause a succession tournament.
Non-succession Tournament	All business group-years that are not included in Succession Tournament.
Family feud	An indicator that has a value of one if a group has a news release about family disputes over ownership or management positions in 2000-2004, and is zero otherwise.
No family feud	An indicator that has a value of one if a group has no news releases about family disputes over ownership or management positions in 2000-2004, and is zero otherwise.

Half brother	An indicator that has a value of one if the founder of a business group has sons by different mothers, and is zero otherwise. The sons must be included in the family tree; hidden sons are not included.
No half brother	An indicator that has a value of one if the founder of a business group does not have sons by different mothers, and is zero otherwise.
First son chair	An indicator that has a value of one if the current chairman of a business group is the first son in the family, and is zero otherwise.
No first son chair	An indicator that has a value of one if the current chairman of a business group is not the first son in the family, and is zero otherwise.
High media control	An indicator that has value one if sum of advertisement expense in a chaebol group is greater than that of average chaebols, zero otherwise.
Low media control	An indicator that has value one if sum of advertisement expense in a chaebol group is lower than that of average chaebols, zero otherwise.
High media control by sons	An indicator that has value one if sum of advertisement expense spent by firms controlled by sons in c+1 generation in a chaebol group is greater than average, zero otherwise. We include firms where sons' ownership dominates other family members'.
Low media control by sons	An indicator that has value one if sum of advertisement expense spent by firms controlled by sons in c+1 generation in a chaebol group is less than average, zero otherwise.
High media control by seniors	An indicator that has value one if sum of advertisement expense spent by firms controlled by family members in current chair or upper generation in a chaebol group is greater than average, zero otherwise.
Low media control by seniors	An indicator that has value one if sum of advertisement expense spent by firms controlled by family members in current chair or upper generation in a chaebol group is less than average, zero otherwise.

Family characteristics variables

Family size	The total number of direct and indirect descendants of the parents of the founder of each business group and the founder's parents themselves. Family size includes the founder's siblings, the descendants of the founder's siblings, and their spouses. Family members who are younger than 15 years in a given year are excluded.
Number of generation	The number of generations in the family. The founder's generation is the first, and then each successive generation is counted, up to the most recent generation that is included in family size. The generation of founder's parents (generation 0) is excluded.
Current chair generation	The generation that the current chairman of each business group belongs to.
Current chair tenure	The years that the current chairman of each business group has been officially appointed as the group's chairman in corresponding year.
Number of male family members	The total number of direct and indirect (married in) male family members who are included in family size.
Number of female family members	The total number of direct and indirect (married in) female family members who are included in family size.
Number of sons [daughters, sons-in-law, and daughters-in-law] (c+1 generation)	The total number of sons [daughters, sons-in-law, and daughters-in-law] of the current chair and chair's siblings.
Number of sons (c generation)	Total number of the current chair and the chair's brothers.
Sons below age 15	Sons of the current chair and the chair's siblings whose age is below 15. Those sons are excluded from sample since in Korea they are not legally eligible to work.
Number of New Sons in Tournament (add c-generation)	The total number of sons added in tournament after the Hyundai chairman's sudden death on Aug 4 th , 2003. Hyundai Group equals to the total number of sons in the current chair's generation and zero for all other groups.

Number of New Sons in Tournament (swap c+1 with c-generation)	The total number of sons swapped from c+1 to c generation in tournament after the Hyundai chairman's sudden death on Aug 4 th , 2003. Hyundai Group equals to the difference of the total number of sons in the current chair generation and the current chair+1 generation and zero for all other groups.
Hyundai Event	An indicator that has a value of one for Hyundai Group firms, zero otherwise.
Founder dead	An indicator variable that equals one if the founder is dead in a given year, and zero otherwise.

Firm and group characteristics variables

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.
Log of advertisement expense	The logarithm of total advertisement expense of each firm in millions of KRW.
Leverage	The debt ratio calculated by total debt divided by total equity.
Δ Log total sales	The difference of the one-year average logarithm of a firm's total sales (in KRW millions) before and after the chairman's death in 2003.
Δ leverage	The difference of the one-year average logarithm of a firm's leverage (in KRW millions) before and after the chairman's death in 2003.
ROA	The ratio of earnings before interest and tax (EBIT) divided by total assets
Group age	Age of a business group in the corresponding year.
Firm age	Age of each firm in a business group in the corresponding year.
Public firm	An indicator variable that equals one if a firm is listed on the KOSPI or KOSDAQ exchange, and is zero otherwise.
Strong Contender	An indicator that has a value of one for firms controlled by sons in the current chair's generation in Hyundai Group, and is zero otherwise.
Weak Contender	An indicator that has a value of one for firms controlled by sons in the current chair-1 generation in Hyundai Group, and is zero otherwise.