

When Heirs Become Major Shareholders^{*}

Evidence on Tunneling and Succession through Related-Party Transactions

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Abstract

In family firms, the succession of controlling equity stake to next generation is an issue of paramount importance. This, however, can be a major challenge in the presence of heavy inheritance or gift tax burden (high tax rate and absence of tax-saving vehicles, such as trusts or foundations) and in the absence of dual-class equity. Such regulatory environment may lead families to seek alternative ways of succession. As for families controlling business groups, one way of doing so is making use of related-party transactions among member firms. By favoring firms where the heir holds significant equity stake, the family can tunnel corporate resources to the heir. Eventually, the firm can grow large enough to acquire controlling equity stakes in other firms within the group. In this paper, we investigate this possibility using Korean chaebol firms during a sample period of 2000-2009. We identify firms where heirs become a major shareholder (treatment group) and compare them against their year-industry-size-matched firms (control group) before and after the ownership change. Difference-in-differences test with firm fixed effects reveal that treatment group firms experience greater related-party transactions, benefit from them in terms of earnings, pay out more dividends, and become more important in controlling other firms in the group.

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1. Introduction

In family firms, the succession of controlling equity stake to next generation is an issue of paramount importance. A successful succession allows the family to preserve its control for another generation. Depending upon who succeeds the equity stake, it will also greatly influence the decision on who will be the next CEO. One can say that ‘managerial’ succession is of secondary importance compared to ‘ownership’ succession.

In the existing finance literature, there is a growing body of research on family firm performance (McConaughy et al., 1998; Anderson and Reeb, 2003; Maury, 2006; Villalonga and Amit, 2006; Miller et al., 2007; Andres, 2008; Anderson, Duru, and Reeb, 2009; Li and Srinivasan, 2011; Lins, Volpin, and Wagner, 2013), the management succession of family firms (Smith and Amoako-Adu, 1999; Pérez-González, 2006; Bennedson et al., 2007; Bertrand et al., 2008; Cucculelli and Micucci, 2008, Mehrotra et al., 2013) and the control-enhancing mechanisms family firms use (La Porta, López de Silanes, and Shleifer, 1999; Claessens, Djankov, and Lang, 2000; Nenova, 2001; Faccio and Lang, 2000; Villalonga and Amit, 2009; Gompers, Ishii, and Metrick, 2010).

But surprisingly, papers on the succession of family ownership are scant. One exception is Ellul, Pagano, and Panunzi (2010) that investigates how the permissiveness of inheritance law (i.e., the largest share of the estate that can be bequeathed to a single child) can influence investment in family firms. In this paper, we approach the inheritance issue from a different angle. We investigate whether in a country setting with strict inheritance law family-controlled business groups engage in related-party transactions to favor firms where the heir holds significant equity stake. We also investigate whether such favored firms become more important in controlling other firms in the group. In this paper, related-party transaction is recognized not only as a tunneling tool, but also as a succession apparatus.

Handing over controlling equity stake from one generation to another generally faces two challenges. One is the risk of dilution and the other is the risk of taxation. If a family firm repeatedly relies on external equity financing, the equity stake later generations inherit may not be large enough to warrant control over the firm (Helwege, Pirinsky, and Stulz, 2007). In certain

jurisdictions, this challenge is resolved with the use of dual-class equity or voting agreements (Villalonga and Amit, 2009). Descendants that hold shares with multiple voting rights or that entered contract with shareholders ceding their voting power can be free from the risk of dilution.

The risk of taxation is another major challenge. Although some jurisdictions have abolished inheritance tax, many still retain it.⁴ In the U.S. the tax rate is as high as 35%. Also, even if abolished, capital gains tax may still apply upon the transfer of wealth. Gift tax also has been abolished in recent years, and even if it exists, many deductions and exemptions apply. Nevertheless, there are nontrivial number of jurisdictions that still retain it. In certain jurisdictions, this challenge of taxation is resolved with the use of trusts or private foundations that receive shares as donation (Thomsen, 1999; Villalonga and Amit, 2009). As charitable entities, they are exempt from taxation, but still governed by family members who serve as trustees or board of directors.

What if dual-class equity is prohibited by law, voting agreement counterparties are hard to find, and trusts or private foundations are heavily regulated? Founding family would have a strong incentive to seek alternative ways of handing over controlling equity stake to their descendants. One alternative is forming a business group and letting the heir own a controlling equity stake in a firm or multiple firms that control others. The business group can have a pyramidal structure, but this is not necessary. Cross- or circular-shareholdings can also serve the same purpose. But, there is a critical problem with this scheme. The heir may not have enough wealth in the beginning to acquire a controlling equity stake in the firm that controls others.

There are two possible solutions to this. One is making the holding company or the *de facto* holding company (in case the group does not have a pyramidal structure) issue new shares privately to the heir at a heavily discounted price, so that the heir can acquire controlling equity stake in the holding company with low financial burden.⁵ This, however, is not possible for publicly-traded companies, where preemptive rights of existing shareholders are typically well protected. Even for privately-traded ones, tax implications will prevent the use of such scheme.

⁴ Some jurisdictions use the term estate tax instead of inheritance tax.

⁵ Same purpose can be served with a convertible bond or a bond with warrant with heavily discounted conversion ratio or exercise price.

An alternative solution is tunneling corporate wealth from one firm to another through related-party transactions. That is, setting up a privately-traded firm, where the heir is a major shareholder, and instructing other firms to purchase goods and services from that firm. Increased sales and earnings of this firm will increase its asset size. Eventually, the firm can grow large enough to acquire controlling equity stakes in other firms within the group. The firm may also pay out dividends so that the heir can directly acquire shares in other firms. Thus, family ownership can be in the hands of the heir without paying any gift or inheritance tax to the government.

This possibility implies that any serious research on the succession of family ownership must also consider changes in intra-group ownership structure and related-party transactions among member firms. In this paper, we attempt to do this by studying a country – Korea – that perfectly matches the setting we initially considered. That is, a country where the inheritance/gift tax rate is 50 percent (if greater than three billion Korean won, which is approximately three million US dollars), dual-class equity is prohibited by law, voting agreement counterparties are hard to find, and trusts or private foundations are heavily regulated.

Anecdotal evidence of family ownership succession through tunneling abounds among Korean chaebols – family-controlled business groups in Korea. An exemplary case is Hanwha S&C, an integrated IT service firm of Hanwha group (also see Figure 1). Originally, it was wholly owned by Kim Seung-youn (33.3%), the group chairman of Hanwha group, and Hanwha Corp (67.7%). But, by 2007, the shares of Hanwha S&C was sold to the chairman's three sons, each owning 50%, 25%, and 25%.⁶ Since then, Hanwha S&C's sales to member firms soared from 117 billion Korean won (approximately, 117 million US dollars) in 2007 to 319 billion

⁶ In May 2010, the shareholders of Hanwha Corp. filed a derivative suit against the directors of Hanwha Corp. for selling Hanwha S&C shares below the DCF value. In this civil charge, the shareholders asked for a compensation of 45 billion Korean won (approximately, 45 million US dollars). In October 2013, Seoul Central District Court ordered the directors to pay back to the company 8.9 billion Korean won, which is well below the originally estimated damage. At the time of this writing, the case is at the appellate court. In a separate criminal case (embezzlement), Chairman Kim was sentenced a three-year prison with a five-year suspension (finalized in February 2014). But, he was acquitted from the charge of selling Hanwha S&C shares below the DCF value. These results indicate how difficult it is to prevent tunneling with *ex post* legal remedies.

Korean won in 2010. Its earnings (EBIT) also jumped from 11 billion Korean won in 2007 to 24 billion Korean won in 2010. This improved financial strength enabled Hanwha S&C to acquire shares in other member firms. As of 2012, it holds shares of Hancomm (70%), Hanwha Corporation (2.2%), Hanwha Total Energy (100%), Hanwha General Insurance (0.37%), Yeosu Cogeneration System (100%), Hanwha Solar Energy (20%), and Human Power (100%). Prior to 2007, Hancomm was the only firm, in which Hanwha S&C held shares.

To test our predictions using Korean chaebols during the sample period of 2000-2009, we identify firms where heirs become a major shareholder (treatment group) and compare them against their year-industry-size-matched firms (control group) before and after the ownership change. Difference-in-differences test with firm fixed effects reveal a number of results consistent with our predictions. First, related-party transactions increase in treatment group firms after the treatment. Second, earnings increase with related-party transactions in treatment group firms after the treatment. Third, dividend payout increase with related-party transactions in treatment group firms after the treatment. Fourth, importance in group control increases with related-party transactions in treatment group firms after the treatment. We measure the importance in group control by marginal contribution to group control used in Kim, Lim, and Sung (2007). Further analyses reveal that our results are driven by related-party sales to member firms rather than related-party purchases from them.

We also conduct a number of falsification tests. First, we run similar difference-in-differences regressions using treatment group firms where ‘non-heirs’ become a major shareholder. We do not find any increase in related-party transactions in these firms after the treatment. Second, we run similar difference-in-differences regressions where counterparties of the original treatment group firms (i.e., firms where heir become a major shareholder) are used as our new treatment group. Again, we do not find any increase in earnings, dividend payouts, or control over other firms in these new treatment group firms after the treatment.

Our paper contributes to the existing literature in three ways. First, we investigate and shed light on an important aspect of family firms underexplored in the existing literature: the ‘succession of family ownership.’ We show that in a country setting with strict inheritance law family-controlled business groups may engage in related-party transactions to favor firms where the heir holds a significant equity stake. We also show that such favored firms become more

important in controlling other firms in the group. In this paper, related-party transaction is recognized not only as a tunneling tool, but also as a succession apparatus.

Second, we contribute to family firm performance studies, which became popular since Anderson and Reeb (2003). We contribute to this area of study by highlighting the importance of related-party transactions when assessing performance, especially when family firms are parts of a business group. More remotely, our study is also related to the studies on managerial ownership and firm performance (Morck, Shleifer, and Vishny, 1988). Again, in a business group setting, the relationship between ownership and performance cannot be assessed without considering related-party transactions.

Third, we add to the literature on business group tunneling (Bae, Kang, and Kim, 2002; Bertrand, Mehta, and Mullainathan, 2002; Cheung, Rau, and Stouraitis, 2006; Baek, Kang, and Lee, 2006). We report empirical evidence that related-party transactions between member firms can be used as a tunneling vehicle benefiting founding family members at the expense of outside minority shareholders. Our evidence on tunneling, however, is indirect in nature like in any other tunneling papers.

This paper is organized as follows. Section 2 and 3 explain our research design, data, and key variables. Section 4 reports our empirical results, and Section 5 concludes.

2. Research Design

In this paper, our aim is to quantify the effect of ownership change on firm's related-party transactions, earnings, dividend payouts, and its control over other firms. An obvious challenge to this is the endogeneity of ownership change. To address this, difference-in-differences (*DiD*) or instrumental variable (*IV*) approach making use of an exogenous shock to ownership change is in order. But, unfortunately, we do not have such a shock in our sample – Korean chaebol firms during 2000-2009.

So, we take a second-best approach of using covariate-matched control group firms. First, we identify firm-years that experienced a major increase in heir's ownership. We label this set of firms as the treatment group. Second, for each treatment group firm, we identify its match among firms that did not experience any major change in family ownership during our sample period and

that is from another chaebol group.⁷ We use three matching covariates: year, industry, and firm's asset size. Given the dominance of manufacturing firms in Korea, we use 4-digit Korea SIC code for manufacturing and 2-digit for others. We label this set of firms as the control group, and expect that the use of matching firms will significantly lower the risk of self-selection bias. Third, by conducting difference-in-differences test, we compare these two groups of firms before and after the treatment.

It is worth noting that matching by industry effectively rules out the alternative hypothesis that heirs deliberately increase ownership in firms with greater industry prospects and such choice subsequently results in the firm's higher earnings, dividend payouts, or stronger control over other firms. Industry matching also reduces the risk of breaching the parallel trends assumption, which is the key identifying assumption for the consistency of the DiD estimator. In the absence of treatment (i.e., major increase in heir's ownership), the average change in the response variable (e.g., related-party transactions, earnings, or dividend payouts) would have been the same for both the treatment and control group firms in the same industry.

More specifically, we run the following regression to verify whether treatment group firms experience greater increase in related-party transactions than control group firms after the treatment.

$$RPT_{it} = \alpha + \beta_0 TG_i + \beta_1 TP_{it} + \beta_2 TG_i \cdot TP_{it} + X\Phi + \mu_i + \nu_t + \varepsilon_{it} \quad (1)$$

RPT_{it} is related-party transactions of firm i with other member firms at year t . We explain the details of its measurement in the next section. TG_i is a treatment group dummy that takes a value of 1 if firm i is treated (experience a major increase in heir's ownership during 2000-2009) and 0 otherwise. We explain what we exactly mean by 'a major increase in heir's ownership' in the next section. TP_{it} is a treatment period dummy that takes a value of 1 if firm i is treated at year t or before. Notice that this treatment period dummy is defined separately for each treatment group

⁷ Major family ownership changes include changes in heir's net ownership by more than 5%p, changes in controlling shareholder's net ownership by more than 5%p, and changes in other relatives' net ownership by more than 5%p.

firm i . Firm i and firm i 's matching firm takes the same value for TP_{it} . X is a column vector of control variables. μ_i and ν_t are respectively firm- and year-fixed effects. The coefficient of interest is β_2 , which captures the increase in related-party transactions of treatment group firms after the treatment relative to control group firms. We expect this coefficient to be positive and statistically significant. Since same firms appear multiple times in this panel regression, we use coefficient standard errors clustered at the firm-level. Control variables include firm size, firm age, leverage, and a number of time-varying dummies intended to capture abrupt changes in the size of related-party transactions (spin-offs, mergers, and new group affiliations). See Table 2, Panel A for their definitions.

To see whether the tendency of earnings increasing with related-party transactions strengthens in treatment group firms after the treatment, we run the following regression with triple interactions.

$$EBITDA_{it} = \alpha + \beta_0 TG_i + \beta_1 TP_{it} + \beta_2 RPT_{it} + \beta_3 TG_i \cdot TP_{it} + \beta_4 TG_i \cdot RPT_{it} + \beta_5 TP_{it} \cdot RPT_{it} + \beta_6 TG_i \cdot TP_{it} \cdot RPT_{it} + X\Phi + \mu_i + \nu_t + \varepsilon_{it} \quad (2)$$

$EBITDA_{it}$ is earnings before interest, tax, depreciation, and amortization of firm i at year t . We explain the details of its measurement in the next section. Other variables are defined earlier. The coefficient of interest is β_6 , which captures the increase in earnings responsiveness to related-party transactions of treatment group firms after the treatment relative to control group firms. We expect this coefficient to be positive and statistically significant. Control variables include firm size, firm age, leverage, cash holdings, R&D expenditure, and advertising expenditure.

To see whether the tendency of dividend payout increasing with related-party transactions strengthens in treatment group firms after the treatment, we run the following regression with triple interactions.

$$DIV_{it} = \alpha + \beta_0 TG_i + \beta_1 TP_{it} + \beta_2 RPT_{it} + \beta_3 TG_i \cdot TP_{it} + \beta_4 TG_i \cdot RPT_{it} + \beta_5 TP_{it} \cdot RPT_{it} + \beta_6 TG_i \cdot TP_{it} \cdot RPT_{it} + X\Phi + \mu_i + \nu_t + \varepsilon_{it} \quad (3)$$

DIV_{it} is cash dividends (including dividends paid out to preferred shareholders) paid out by firm i at year t . We explain the details of its measurement in the next section. Other variables are defined earlier. The coefficient of interest is β_6 , which captures the increase in dividends responsiveness to related-party transactions of treatment group firms after the treatment relative to control group firms. We expect to be positive and statistically significant. Control variables include firm size, firm age, and leverage.

To see whether control over other member firm's sensitivity to related-party transactions strengthen in treatment group firms after the treatment, we run the following regression with triple interactions.

$$MCI_{it} = \alpha + \beta_0 TG_i + \beta_1 TP_{it} + \beta_2 RPT_{it} + \beta_3 TG_i \cdot TP_{it} + \beta_4 TG_i \cdot RPT_{it} + \beta_5 TP_{it} \cdot RPT_{it} + \beta_6 TG_i \cdot TP_{it} \cdot RPT_{it} + X\Phi + \mu_i + \nu_t + \varepsilon_{it} \quad (4)$$

MCI_{it} is marginal contribution to group control index of firm i at year t . We explain the details of its measurement in the next section.

We conduct two falsification tests in this paper. First, we run difference-in-differences regression (1) using treatment group firms where 'non-heirs' become a major shareholder. In this regression, TG_i takes a value of 1 if firm i experiences a major increase in non-heir's ownership during 2000-2009 and 0 otherwise. If the increase in related-party transactions are for the benefit of heirs and their successions, they should not respond to changes in 'non-heir's' ownership. Second, we run difference-in-differences regressions (2) - (4), where counterparties of the original treatment group firms (i.e., firms where heir becomes a major shareholder) are used as our new treatment group. Again, if the increase in related-party transactions is for the benefit of heirs and their successions, one should not see firms in the other side of transaction producing higher earnings, paying out more dividends, or strengthening control over other firms.

3. Data and Key Variables

A. *Sample Chaebol Groups*

Our treatment and control group firms are from 26 chaebol groups that have been designated as large business group by Korea Fair Trade Commission (KFTC) for at least 6 years during our sample period of 2000-2009 (i.e., designated in the Aprils of 2001 to 2010). Table 1 lists the name of 26 chaebol groups and the number of their member firms in each year. Since 1987, KFTC has been designating large business groups and their member firms every year in April. Designation depends on the aggregate size of member firms' assets (net asset in case of financial firms), measured at the end of prior year December. During 1993-2002, KFTC designated 30 largest business groups without using any size threshold. During 2002-2008, KFTC used an explicit threshold of 2 trillion Korean won and designated any group above the threshold as a large business group. Since 2009, KFTC is using the threshold of 5 trillion won.

When announcing the list of large business groups, KFTC also announces the person who controls the group and the list of firms under its control. For us, this is a very convenient feature since we do not need to come up with an algorithm of our own to identify them. Control is explicitly defined in the *Monopoly Regulation and Fair Trade Act* and its enforcement decree. It considers not only shares directly owned, but also those indirectly owned through related parties, such as relatives and other member firms. It also considers channels of influence that do not rely on share ownership. A person in control can be both, a natural person or a legal person. In this paper, we exclude the latter and focus on the former. For details on the identification of member firms and the person in control, see Kim, Lim, and Sung (2007).

B. *Major Increase in Heir's Ownership*

Since 2007, KFTC made public the detailed ownership structure of large business groups it designates. This is done through a portal site, named OPNI, from which we download all the necessary data for this paper. The data is available from 2000. When it comes to share ownership among member firms, this data gives a complete picture. Complicated web of intragroup

ownership structure is summarized in a simple $n \times n$ matrix, where n is the number of member firms. In this matrix, element x_{ij} is the fraction of shares firm j owns in firm i .

But, when it comes to share ownership by controlling person's family members, the data is incomplete in a sense that it does not give information for each individual family member. For privacy reasons, family owned shares are broken down into three groups: shares held by the controlling shareholder (the person in control of the group), the immediate family members, and the other relatives. Immediate family members include the spouse, the parents, and the children. Other relatives include those within certain degrees of kinship (six with the controlling shareholder or four with the spouse).

In this paper, we regard the shares held by immediate family members as those held by the heir. There can be two potential problems for doing so. One is that it includes the shares held by spouse and parents. Another has to do with the possibility of younger siblings, instead of children, succeeding family ownership. The first problem is trivial since spouse and parents hardly own shares.⁸ Among the treatment group firms we study in this paper, there is only one firm with spouse's ownership and none with parents'. In our robustness check, we obtain virtually the same result after excluding this firm from the sample.⁹

The second problem is not a concern either since there are only a limited number of cases where the group chairman position is succeeded by a younger sibling. One such rare example is Doosan, where five brothers have taken turns in assuming the position. But, even in this case, shares have not changed hands between brothers. Each brother inherited shares from their parents, and they too are giving their shares to their respective children.

Our treatment group dummy TG_i takes a value of 1 if firm i experiences a major increase in heir's ownership during 2000-2009 and 0 otherwise. A 'major increase in heir's ownership' means that its 'net' ownership (heir's ownership – controlling shareholder's ownership – other

⁸ According to Economic Reform Research Institute (ERRI, 2012) the average (median) fraction of spouse's ownership out of that of immediate family is only 5.7% (0.1%) as of 2011 in case of top 20 chaebol groups.

⁹ Since 2009, each individual family member is required to disclose their detailed share ownership in each member firm. In this paper, however, we do not make use of this data. At the time of this writing, this data covers only five years, which is too short to investigate the key hypotheses of this paper.

relatives' ownership) increases by more than 5%p and that its ownership is greater than those of controlling shareholder's and other relatives'. That is, $\Delta OWN_H > 5\% p$, $OWN_H > OWN_C$, and $OWN_H > OWN_R$, where ΔOWN_H is change in heir's net ownership, and OWN_H , OWN_C , OWN_R are respectively the ownerships held by the heir, the controlling shareholder, and other relatives.

Two points are worth noting here. First, we focus on ownership relative to other family members (i.e., net ownership). If ownership increases not only for the heir, but also for others, the subsequent increase in related-party transactions cannot be regarded as those just for the heir. Likewise, the subsequent increase in firm's importance in group control cannot be regarded as that for the heir's succession. By focusing on net ownership, we can effectively rule out such alternative explanations. But, we do not exclude the possibility where the ownership of heir and others both drop, but the drop of others is greater.¹⁰ Second, we impose a condition that the heir is the largest shareholder among the family members. So, we exclude cases where heir's net ownership increases by more than 5%p, but its ownership is yet below that of other family groups. Other treatment group dummies used in our falsification tests are similarly defined.

C. *Marginal Contribution to Group Control*

MCI_{it} is the marginal contribution to group control index of firm i at year t . This index, originally from Kim, Lim, and Sung (2007), is a measure devised to identify firms, through which a controlling shareholder can most efficiently strengthen her control over other firms in the same group. To be an efficient control vehicle, this firm must hold equity stakes in other firms, which in turn hold equity stakes in others, which in turn hold equity stakes in others, and so on. One way to quantify the degree of such direct and indirect equity holdings is to compute the cash flow rights a controlling shareholder can additionally obtain from other firms when the vehicle firm becomes a part of the group. Alternatively, one can compute the cash flow rights a controlling shareholder will have to lose from others when the vehicle firm is no longer a group firm.

¹⁰ Three such cases exist in our sample. If we drop them, statistical significance weakens, but our basic results remain intact.

By scaling this additional cash flow rights by the vehicle firm's book equity, one can have a measure that captures marginal contribution to group control. That is, the additional dollar amount of equity one can directly or indirectly obtain in other firms by investing one dollar of equity in the vehicle firm. Notice that this measure is not designed to identify firms that already hold the largest equity stakes in other firms. Rather, it identifies firms that can most easily grow into one in the future. For a controlling shareholder that wishes to maximize her control, the most effective way is to acquire an equity stake in the firm with the highest *MCI* and let it grow into one that holds the largest equity stakes in other firms. Equation (4) shows the formula of firm *i*'s marginal contribution to group control index:

$$MCI_{it} = \frac{\sum_{j=1, j \neq i}^n BE_{jt} cfr_{jt} - \sum_{j=1, j \neq i}^n BE_{jt} cfr_{jt}^{-i}}{BE_{it}} \quad (4)$$

BE_{it} is firm *i*'s book value of equity at year *t*. cfr_{jt} is the cash flow rights controlling family has in firm *j* when all member firms are included in the group. cfr_{jt}^{-i} is cash flow rights controlling family has in firm *j* when all member firms, but firm *i*, are included in the group. The first term in the numerator measures total cash flow rights the controlling family would receive from other firms (denoted as *j*) when firm *i* ($i \neq j$) is included in the group. The second term in the numerator captures total cash flow rights the control family would receive from other firms (denoted as *j*) when firm *i* ($i \neq j$) is removed from the group. We divide the difference by the firm's book equity to control for any size effect, since larger firms are more likely to have greater contributions to group control.¹¹

¹¹ Our measure is similar, but not identical to the 'centrality' measure introduced by Almeida et al. (2011). They identify firms by computing the average decrease in critical control threshold (CC) across all group firms other than firm *i*, after excluding firm *i* from the group. Critical control (CC) threshold is the highest control threshold that is consistent with family control of a firm. Control threshold *T* is the minimum votes a family needs to hold directly or indirectly to control a firm. This measure has an advantage of using voting rights, which we ultimately wish to capture, instead of cash flow rights. But, this measure is not adjusted for firm size, and therefore has a tendency of favoring large firms that already has large control over others.

The index can have a value equal to zero. This happens when firm i does not have any equity investment in other member firms. It should also be noted that the index has no upper bound. If there is no restriction on debt or the length of equity investment chain, the index can be well above '1.' So, we winsorize the index at its 99th percentile value.

Cash flow rights (cfr_{jt}) is the sum of controlling family's direct and indirect ownership. Again, we follow Kim, Lim, and Sung (2007) and compute cash flow rights as follows:

$$cfr_{jt} = d_j + \sum_{k=1}^n s_{jk} d_k + \sum_{k=1}^n s_{jk} \sum_{l=1}^n s_{kl} d_l + \dots \quad (5)$$

d_j is controlling family's direct ownership in firm j at year t . Family includes the controlling shareholder, its spouse, and relatives within certain degrees of kinship (six with the controlling shareholder or four with the spouse). The subsequent terms capture indirect ownership through member firms under the control of the same controlling shareholder. For example, the second term is family's indirect ownership in firm j through firm k (k can take values from 1 to n). The third term is family's indirect ownership in firm j through firm k and firm l (l can also take values from 1 to n). Since we know the intragroup ownership structure in a matrix form (S), we can easily compute the vector of cash flow rights (cfr) by the following formula, where d is the vector of direct family ownership.

$$cfr = (I - S)^{-1} d \quad (6)$$

D. Others

RPT_{it} is the natural logarithm of 1 plus the sum of firm i 's related-party sales to member firms at year t plus firm i 's related-party purchases from member firms at year t . Sales and purchases are measured in million Korean won (approximately thousand US dollars) and adjusted for inflation using Bank of Korea's GDP deflator (base year = 2005). RPS_{it} is the natural logarithm of 1 plus the firm i 's related-party sales to member firms at year t . RPP_{it} is the natural logarithm of 1 plus the firm i 's related-party purchases from member firms at year t .

It is worth noting that favorable treatment to heir-controlled firms can take place in two ways. One is giving more business deals (i.e., increasing the number of units sold to or purchased from related-party transactions) and the other is giving such deals in favorable terms (i.e., higher sales price to or lower purchase price from related-party transactions). In case of RPS_{it} , the volume channel and the price channel work in the same direction. They both increase RPS_{it} . But, in case of RPP_{it} , the two channels work in the opposite direction. Greater volume of units purchased from related-parties at a given purchase price increases RPP_{it} , whereas lower purchase price from related-parties at a given volume of units purchased drops RPP_{it} . In this regard, RPP_{it} cannot effectively capture the extent of favorable treatment to heir-controlled firms. We expect our results using RPP_{it} to be weaker than those using RPS_{it} .

$EBITDA_{it}$ is the signed natural logarithm of earnings before interest, tax, depreciation, and amortization of firm i at year t . A signed logarithm takes the logarithm of the absolute value of the variable and assigns the original sign. Values for absolute value less than one are set to be zero. Since we have many privately-traded firms in our sample, we use EBITDA instead of Tobin's q as our measure of firm performance. As is the case with related-party transactions, EBITDA is also in million Korean won and adjusted for inflation using Bank of Korea's GDP deflator (base year = 2005). DIV_{it} is the natural logarithm of 1 plus the cash dividends (including dividends paid out to preferred shareholders) paid out to firm i at year t . Dividends are measured in million Korean won and adjusted for inflation using Bank of Korea's GDP deflator (base year = 2005).

Notice that we deliberately do not scale related-party transactions (RPT) or earnings by sales. The focus of this paper is not on the fraction of RPT over sales, nor on profit margins. Rather, we are interested in the increase in earnings size as a result of the increase in RPTs. Larger earnings matter because it helps the firm to hold more equity stakes in other firms or payout more dividends to the heir. But, we do control for size in our regressions. We include firm's total assets in natural logarithm as a covariate in our regressions. Total assets are also in million Korean won and adjusted for inflation using Bank of Korea's GDP deflator (base year = 2005).

The data on related-party transactions are available originally from each company's business reports (similar to 10K in US), but can be massively downloaded from *KIS-Value*, a financial database administered by NICE Credit Information Service Co., Ltd. *KIS-Value* provides RPT

data not only for publicly-traded listed firms, but also for externally-audited private firms. *TS2000*, a financial database administered by the Korea Listed Companies Association (KLCA), provides RPT data limited to publicly-traded listed firms, but it gives the breakdown of RPT data for each counterparty firm. E_{it} and all other accounting variables used as controls are from *TS2000*.

4. Results

A. A Preliminary Look

Table 2 gives the definition (Panel A) and the summary statistics (Panel B) of variables used in this paper. Table 3 shows how changes in related-party transactions, earnings, and dividends vary with changes in net ownership. It reports median (Panel A) and mean (Panel B) of paired-sample differences in related-party transactions (RPT_{it} , RPS_{it} , RPP_{it}), earnings ($EBITDA_{it}$), and dividend payouts (DIV_{it}) before and after net ownership change of various degrees ($\pm 5\%p$, $+10\%p$, and $+15\%p$) for each family group (heir, controlling shareholder, and other relatives). The last three columns report the average number of years before and after the net ownership change and the number of firms used in the calculation for each level of ownership changes.

A number of observations can be made. First, the changes in related-party transactions and earnings are positive, regardless of the level of net ownership change and the family member being investigated. This is so even when they are all adjusted for inflation. Second, there is a clear tendency of related-party transactions (RPT_{it} , RPS_{it} , RPP_{it}) and earnings ($EBITDA_{it}$) increasing to a greater extent for larger changes in heir's net ownership. Median changes in RPT_{it} , RPS_{it} , RPP_{it} , and $EBITDA_{it}$ respectively jump from 0.32, 0.16, 0.09, and 0.3 to 1.38, 1.13, 1.67, and 1.11 as we move from the net ownership change of $<-5\%p$ to $>15\%p$. The mean changes look even more pronounced. Third, we can find a similar pattern for the controlling shareholder. Median changes in RPT_{it} , RPS_{it} , RPP_{it} , $EBITDA_{it}$, and DIV_{it} respectively jump from 0.59, 0.35, 0.59, 0.29, and 0.11 to 0.92, 0.58, 2.70, 0.55, and 0.36 as we move from the net ownership change of $<-5\%p$ to $>15\%p$. The jump, however, is much moderate than that for the heir with the exception of related-party purchases. Similar pattern emerges when using 'mean' changes rather

than ‘median’ changes. Fourth, the patterns for other relatives are mixed. When using mean changes, there is a tendency of RPT_{it} , RPS_{it} , RPP_{it} , $EBITDA_{it}$, and DIV_{it} increasing as we move from the net ownership change of $<-5\%$ to $>15\%$. But, such pattern disappears when using median changes.

B. Ownership Change and Related-Party Transactions

Table 4 reports our first difference-in-differences (DiD) regression results. They are firm fixed effects regressions of related-party transactions (RPT_{it} , RPS_{it} , and RPP_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), their interaction ($TG_i \times TP_{it}$), control variables, and year dummies. We also include time-varying dummies capturing spin-offs, mergers, and new affiliates, but their coefficients are suppressed. Treatment group dummy (TG_i) is absorbed in firm FE. Sample includes 36 treatment group firms that experienced major increase in heir’s ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level.

The coefficients of our interest (the coefficients on $TG_i \times TP_{it}$) are all positive and marginally significant. The coefficients of -0.2667 on TP_{it} and 0.6021 on $TG_i \times TP_{it}$ in column (2) imply that a firm experiencing a major increase in heir’s ownership experiences a jump in related-party sales by 33.54% (= 60.21% – 26.67%), whereas its matching firm experiences a drop in related-party sales by 26.67%. Among the controls, firm size is most significant.

C. Ownership Change, Related-Party Transactions, and Earnings

Table 5 reports our second difference-in-differences (DiD) regression results. They are firm fixed effects regressions of earnings ($EBITDA_{it}$) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, control variables, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Again, sample includes 36 treatment group firms that experienced major increase in heir’s net ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code

for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level.

The coefficients of our interest (the coefficients on $TG_i \times TP_{it} \times RPT_{it}$) are positive and statistically significant when using related-party sales (column 2), positive and marginally significant when using related-party transactions (sum of related-party sales and purchases), but not significant when using related-party purchases (column 3). The coefficient of 0.6752 on RPS_{it} suggests that a 1% increase in RPS_{it} increases $EBITDA_{it}$ by 0.6752% for matching firms before the treatment, and the coefficient of 0.6947 on $TG_i \times TP_{it} \times RPS_{it}$ suggests that a 1% increase RPS_{it} increases $EBITDA_{it}$ by 1.37% ($= 0.6752 + 0.6947$) for treatment firms after the treatment.

The statistical and economic significance of related-party sales is consistent with the accusations made by non-governmental organizations (NGO) and popular press against Korean chaebols.¹² According to the reports they published, heirs benefit from their equity stakes in firms that heavily rely on related-party sales to member firms. These firms are mostly found in IT services, logistics, advertising, and constructions.

There can be two possibilities behind the insignificance of related-party purchases. One is related-party purchases not benefiting heir-controlled firms. The other is related-party purchases not effectively capturing the extent of favorable treatment to heir-controlled firms. As mentioned earlier, in case of RPP_{it} , the volume channel (greater volume of units purchased from related-parties) and the price channel (lower purchase price from related-parties) work in the opposite direction, and therefore a higher RPP_{it} does not necessarily indicate a more favorable treatment to heir-controlled firms.

D. Ownership Change, Related-Party Transactions, and Dividend Payouts

Table 6 reports our third difference-in-differences (DiD) regression results. They are firm fixed effects regressions of dividend payouts (DIV_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, control

¹² Solidarity for Economic Reform (SER) and its sister organization, Economic Reform Research Institute (ERRI), are the two pioneering NGOs in this area. Since 2006, they have been publishing a number of reports on related-party sales aimed to benefit controlling family members.

variables, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Again, sample includes 36 treatment group firms that experienced major increase in heir's net ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level.

The coefficients of our interest (the coefficients on $TG_i \times TP_{it} \times RPT_{it}$) are positive and marginally significant when using related-party sales (column 2), but not significant when using related-party transactions (column 1) or related-party purchases (column 3). The coefficient of 0.1693 on RPS_{it} suggests that a 1% increase in RPS_{it} increases DIV_{it} by 0.1693% for matching firms before the treatment, and the coefficient of 0.2402 on $TG_i \times TP_{it} \times RPS_{it}$ suggests that a 1% increase RPS_{it} increases DIV_{it} by 0.41% ($= 0.1693 + 0.2402$) for treatment firms after the treatment.

These results are consistent with those reported in Table 5, where we investigate the influence of related-party transactions on earnings. Provided that dividend payout increases with earnings, it is natural to see the treatment group firms that experience higher earnings from related-party transactions to become the firms that experience higher dividend payouts.

E. Ownership Change, Related-Party Transactions, and Group Control

Table 7 reports our fourth difference-in-differences (DiD) regression results. They are firm fixed effects regressions of marginal contribution to group control index (MCI_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Again, sample includes 36 treatment group firms that experienced major increase in heir's net ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level.

The results on marginal contribution to group control are very similar to those on earnings. The coefficients of our interest (the coefficients on $TG_i \times TP_{it} \times RPT_{it}$) are positive and statistically significant when using related-party sales (column 2), positive and marginally

significant when using related-party transactions (sum of related-party sales and purchases), but not significant when using related-party purchases (column 3). The coefficient of 0.0006 on RPS_{it} suggests that a 10% increase in RPS_{it} hardly increases MCI_{it} for matching firms before the treatment, and the coefficient of 0.0663 on $TG_i \times TP_{it} \times RPS_{it}$ suggests that a 10% increase in RPS_{it} increases MCI_{it} by 0.669 ($= 0.663 + 0.006$), which is close to a one standard deviation increase for treatment firms after the treatment (See Table 2 Panel B).

F. Falsification Tests

Table 8 reports the results of our first falsification test. We run difference-in-differences regressions identical to those reported in Table 4, but using treatment group firms where ‘non-heirs’ become a major shareholder. Columns (1) – (3) ((4) – (6)) use 25 (30) treatment group firms that experienced major increase in controlling shareholder’s (other relative’s) ownership and 25 (30) control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. If increase in related-party transactions are for the benefit of heirs and their successions, it should not respond to changes in ‘non-heir’s’ ownership. This is what we find. The coefficients of our interest (the coefficients on $TG_i \times TP_{it}$) are all positive, but statistically insignificant, indicating that related-party transactions do not increase in firms where ‘non-heirs’ become a major shareholder.

In our second falsification test, we run difference-in-differences regressions identical to those reported in Tables 5-7, but using counterparties of the original treatment group firms (i.e., firms where heir become a major shareholder) as our new treatment group. Again, if increase in related-party transactions is for the benefit of heirs and their successions, one should not see firms in the other side of transaction producing higher earnings or strengthening control over other firms.

For this second falsification test, we make use of *TS2000*, the financial database administered by Korea Listed Companies Association (KLCA), which provides the name, but not the code of counterparties (including privately-traded firms) that engage in related-party transactions with listed firms. Among these counterparties, we exclude individuals and overseas subsidiaries. The remaining firms become our new treatment group firms. For each treatment group firm, we again identify matching firms based on year, industry, and asset size. But, we do this only during 2000-

2004, where we have identified the code of counterparties. We plan to extend the sample period so that it covers that of our key regressions. Presently, we have only 18 firms in our treatment group.

Table 9 reports the results. TG_i takes a value of 1 if firm i is the counterparty of the original treatment group firm, and 0 otherwise. TP_{it} takes a value of 1 if the original treatment group firm of firm i experiences a major increase in heir's net ownership at year t or before. All related-party transaction variables are defined from the perspective of the counterparty firm. The coefficients of our interest (the coefficients on $TG_i \times TP_{it} \times RPT_{it}$) are all statistically insignificant, indicating that related-party transactions do not improve the counterparty firms' earnings, dividend payouts, or strengthen their control over other firms.

If corporate resources are tunneled from the counterparty firm to the heir-controlled firm, one would expect counterparty firms to experience a fall in earnings, dividend payouts or a weakening of control over other firms. But, this is not what we find, which is nothing to be surprised of given the reality that counterparty firms are chosen among those that are large and well performing. The size of related-party transaction favoring heir-controlled firms typically takes up a small fraction of the counterparty firm's total sales. Any cost resulting from such transaction hardly has a material impact on the counterparty firm's earnings, dividend payouts, and control over other firms.

5. Conclusion

In this paper, we investigate if families controlling business groups make use of related-party transactions to benefit firms, in which heirs hold significant equity stakes, and thereby let such firms grow large enough to strengthen their control over other firms within the group. Using a sample of Korean chaebol firms during 2000-2009, we report a number of results consistent with our hypotheses. First, related-party transactions increase in firms where heirs become a major shareholder (treatment group) after the ownership change (treatment). Second, earnings increase with related-party transactions in treatment group firms after the treatment. Third, dividend payout increase with related-party transactions in treatment group firms after the treatment.

Fourth, importance in group control increases with related-party transactions in treatment group firms after the treatment.

These academic findings confirm the non-academic allegations made by non-governmental organizations (NGOs) and popular press in Korea. It also justifies the new regulatory actions taken by the Korean government in recent years to curb tunneling. In December 2011, the National Assembly passed a bill revising the *Inheritance and Gift Tax Act* and allowing the National Tax Office to levy gift tax on expropriated income from related party sales. More specifically, shareholders individually owning more than 3% (directly or indirectly) of total outstanding shares of a company, where related-party sales take up more than 30% of its total sales, are subject to a gift tax. The taxable gift income is equal to earnings before tax (NOPLAT) \times (percentage of related-party sales out of total sales – 15%) \times (percentage of shareholding – 3%).

Another regulatory action took place in August 2013. The National Assembly passed a bill revising the *Monopoly Regulation and Fair Trade Act* and allowing the Fair Trade Commission to levy penalty on related-party transactions that favors controlling family members. The new rule applies to members of large business groups designated by KFTC. To be identified as a beneficiary firm, controlling family members in aggregate must directly own more than 30 percent of outstanding shares and must have entered related-party transactions in significantly favorable terms.

We believe our findings are relevant not only to Korea, but also to many other countries. Family controlled business groups are prevalent in emerging markets and even in some developed economies (Khanna and Yafeh, 2007). Families controlling these business groups may use related-party transactions as means of family ownership succession if the country's regulatory environment does not permit an easy solution to it.

This paper contributes to the literature in three main ways. First, we investigate and shed light on an important aspect of family firms underexplored in the existing literature: the 'succession of family ownership.' We show that in a country setting with strict inheritance law, family-controlled business groups may engage in related-party transactions to favor firms where the heir holds significant equity stake. We also show that such favored firms become more important in controlling other firms in the group. In this paper, related-party transaction is recognized not only as a tunneling tool, but also as a succession apparatus. Related to this, we believe a cross-country

study that exploits the differences in inheritance law can be a fruitful future research topic. A study taking advantage of inheritance law changes can also be promising. Second, we contribute to the studies on family firm performance, which became popular during the past several years. We contribute to this area of study by highlighting the importance of related-party transactions when assessing firm performance, especially when firms are parts of a business group. Third, we add to the literature on tunneling among business group firms. We report empirical evidence that related-party transactions can be used as a tunneling vehicle benefiting founding family members at the expense of outside minority shareholders. Our evidence on tunneling, however, is indirect in nature like in most tunneling papers.

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Figure 1: Hanwha S&C's Use of Related-Party Transactions for Tunneling and Succession

Following figure depicts how major change in Hanwha S&C's ownership structure prompted the increase in its related-party sales, earnings, and control over other member firms in the group.

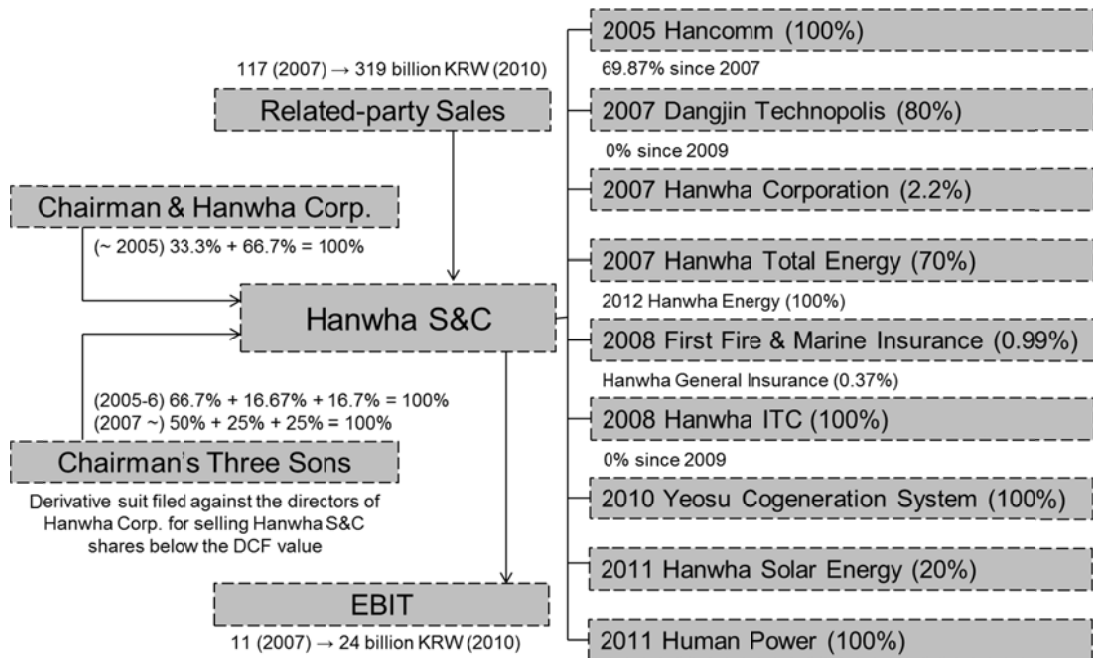


Table 1: Sample Chaebol Groups

List of chaebol groups, and the number of their member firms in each year. Column (1) lists a total of 26 Chaebols designated by the KFTC for at least 6 years during the sample period of 2000-2009 (i.e., designated in the Aprils of 2001 to 2010). Column (2) counts the number of member firms in each group in each year. Column (3) shows the controlling shareholders' names and column (4) the generations from founders (1, 2, and 3 indicates 1st, 2nd, and 3rd generation).

No	(1) Chaebol Name	(2) Number of Member Firms										(3) Controlling Shareholder	(4) Genera- tion
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		
1	CJ	26	24	30	38	45	53	60	62	61	53	Lee Jae-Hyun	3
2	Daelim	14	13	13	11	11	12	14	14	16	16	Lee Joon-Yong	2
3	Dongbu	13	15	17	16	14	15	15	21	24	22	Kim Jun-Ki	1
4	Dongkuk Steel	8	6	7	8	8	12	11	12	13	11	Jang Se-Joo	3
5	Doosan	16	16	20	20	17	17	17	19	22	25	Park Yong-Gon	3
6	GS	-	-	-	-	40	49	48	57	63	68	Huh Chang-Soo	3
7	Hanjin	17	19	21	21	22	21	25	27	32	37	Cho Joong-Hoon (~2002), Cho Yang-Ho (2003~)	1, 2
8	Hanwha	21	22	27	25	25	24	27	33	35	40	Kim Seung-Youn	2
9	Hyosung	14	14	14	15	15	16	22	28	39	38	Cho Suk-Rae	2
10	Hyundai	18	11	9	8	6	9	8	8	9	11	Chung Mong-Hun (~2003), Hyun Jeong-Eun (2004~)	2, 3
11	Hyundai Department Store	15	10	19	17	20	23	24	25	24	29	Chung Mong-Keun (~2006), Chung Ji-Sun (2007~)	2, 3
12	Hyundai Development Company	8	9	10	11	11	12	15	14	15	14	Chung Se-Young (~2006), Chung Mong-Kyu (2007~)	1, 2
13	Hyundai Heavy Industries	-	-	3	3	4	4	4	6	8	10	Chung Mong-Joon	2
14	Hyundai Motor Company	14	21	21	26	26	37	34	33	37	38	Chung Mong-Koo	2
15	KCC	-	5	5	6	4	4	4	6	9	9	Chung Sang-Yong	1
16	Kolon	22	28	31	30	27	22	33	33	37	35	Lee Dong-Chan (~2006), Lee Woong-Yeol (2007~)	2, 3
17	Kumho	14	13	13	14	16	21	34	50	47	46	Park Sung-Yong (~2005), Park Sam-Koo (2006~)	2, 2
18	LG	37	46	45	45	47	32	31	36	52	53	Koo Bon-Moo	3
19	Lotte	30	31	33	33	39	41	42	43	51	57	Shin Kyuk-Ho	1
20	LS	-	-	-	7	17	19	19	23	31	43	Koo Tae-Hoi	1
21	OCI	22	19	19	19	18	19	18	15	18	18	Lee Hoi-Rim (~2007), Lee Soo-Young (2008~)	1, 2
22	Samsung	55	54	54	55	53	49	50	49	53	57	Lee Kun-Hee	2
23	Shinsegae	9	10	12	12	13	14	15	15	15	12	Lee Myung-Hee	2
24	SK	50	57	55	54	46	54	55	63	75	74	Chey Tae-Won	2
25	Tongyang	20	8	7	8	8	8	14	13	15	17	Hyun Jae-Hyun	2
26	Youngpoong	23	24	23	20	19	26	22	21	22	23	Jang Byung-Hee (~2002), Jang Hyung-Jin (2003~)	1, 2
Total number of Chaebols		22	23	24	25	26	26	26	26	26	26		
Total number of group firms		466	475	508	522	571	613	661	726	823	856		

Table 2: Variable Definitions and Summary Statistics

Definition and summary statistics of variables used in this paper. Panel A defines each variable. Panel B provides summary statistics for each family group. We use nonfinancial firms from 26 chaebol groups (see Table 1) during 2000-2009.

Panel A. Variable Definitions

Variables	Definitions
Left-Hand Side Variables	
RPT_{it}	$\ln[(\text{sum of related-party sales and purchases} / \text{GDP deflator}) + 1]$; related-party sales and purchase are measured in million Korean won (approximately thousand US dollars)
RPS_{it}	$\ln[(\text{related-party sales} / \text{GDP deflator}) + 1]$; related-party sales are measured in million Korean won (approximately thousand US dollars)
RPP_{it}	$\ln[(\text{related-party purchases} / \text{GDP deflator}) + 1]$; related-party purchase are measured in million Korean won (approximately thousand US dollars)
$EBITDA_{it}$	$\ln(\text{absolute value of earnings before interest, taxes, depreciation and amortization} / \text{GDP deflator}) \times \text{sign of original EBITDA}$ if its absolute value is greater than 1, and 0 otherwise.
MCI_{it}	Marginal contribution to group control index; winsorized at the 99 th percentile values; see Section 3.C for the details of its definition.
DIV_{it}	$\ln[(\text{dividend} / \text{GDP deflator}) + 1]$; dividend is measured in million Korean won (approximately thousand US dollars)
Right-Hand Side Variables	
TG_i	Treatment group dummy, which takes a value of 1 if the firm i experiences a major increase in heir's ownership and 0 otherwise. Major increase in heir's ownership means that its net ownership (heir's ownership – controlling shareholder's ownership – other relatives' ownership) increases by more than 5%p and it is greater than both, the controlling shareholder's ownership and the other relatives' ownership. Other treatment group dummies used in our falsification tests are similarly defined.
TP_{it}	Treatment period dummy that takes a value of 1 if firm i is treated at year t or before. Notice that this treatment period dummy is defined separately for each treatment group firm i . Firm i and firm i 's matching firm takes the same value for TP_{it} .
$NOWN_{H_{it}}$	Heir's net ownership; heir's ownership ($OWN_{H_{it}}$) – controlling shareholders' ownership ($OWN_{C_{it}}$) – other relatives' ownership ($OWN_{R_{it}}$)
$NOWN_{C_{it}}$	Controlling shareholders' net ownership; controlling shareholders' ownership ($OWN_{C_{it}}$) – heir's ownership ($OWN_{H_{it}}$) – other relatives' ownership ($OWN_{R_{it}}$)
$NOWN_{R_{it}}$	Other relatives' net ownership; other relatives' ownership ($OWN_{R_{it}}$) – heir's ownership ($OWN_{H_{it}}$) – controlling shareholders' ownership ($OWN_{C_{it}}$)
Firm size	$\ln(\text{Total assets} / \text{GDP deflator})$; total assets are measured in million Korean won (approximately thousand US dollars)
Firm age	Number of years since a firm's establishment, measured by $\ln(\text{year} - \text{year of establishment})$
Leverage	$\ln[(\text{Book value of debt} / \text{total assets}) + 1]$
Cash holdings	$\ln(\text{Cash and cash equivalents} / \text{total assets})$
R&D expenditure	$\ln[(\text{R\&D} / \text{Sales}) \times 100 + 1]$; winsorized at the 99 th percentile values
Advertising expenditure	$\ln[(\text{Advertising} / \text{Sales}) \times 100 + 1]$; winsorized at the 99 th percentile values
Spin-off	1 if a firm experiences spin-off at year t or before, and 0 otherwise.
Merger	1 if a firm experiences merger at year t or before, and 0 otherwise.
New affiliate	1 if a firm is affiliated to a business group at year t or before, and 0 otherwise.

Panel B. Summary Statistics

Variables	Heir						Controlling Shareholders						Other Relatives					
	N	Mean	Med.	S.D.	Min.	Max.	N	Mean	Med.	S.D.	Min.	Max.	N	Mean	Med.	S.D.	Min.	Max.
<i>RPT_{it}</i>	632	10.85	10.95	1.95	0.00	15.47	416	10.66	10.75	2.19	0.00	14.67	507	9.64	9.74	2.86	0.00	14.93
<i>RPS_{it}</i>	632	10.02	10.36	2.56	0.00	15.18	416	9.32	10.14	3.12	0.00	14.29	507	8.49	9.29	3.45	0.00	14.06
<i>RPP_{it}</i>	632	8.98	9.32	2.72	0.00	14.70	416	9.09	9.54	3.13	0.00	14.03	507	7.87	8.19	3.64	0.00	14.68
<i>EBITDA_{it}</i>	617	7.26	9.00	5.85	-11.49	14.42	384	8.17	9.25	5.31	-13.16	13.94	495	6.27	8.37	6.34	-13.16	13.64
<i>MCI_{it}</i>	626	0.26	0.00	0.72	0.00	3.98	418	0.23	0.00	0.65	0.00	3.98	459	0.28	0.00	0.59	0.00	3.98
<i>DIV_{it}</i>	616	3.93	0.00	4.17	0.00	12.38	384	4.14	0.00	4.38	0.00	11.58	495	2.75	0.00	3.89	0.00	11.58
<i>TG_i</i>	650	0.51	1.00	0.50	0.00	1.00	430	0.53	1.00	0.50	0.00	1.00	538	0.50	0.50	0.50	0.00	1.00
<i>TP_{it}</i>	650	0.49	0.00	0.50	0.00	1.00	430	0.50	1.00	0.50	0.00	1.00	538	0.54	1.00	0.50	0.00	1.00
<i>NOWN_{it}</i>	637	0.02	0.00	0.19	-0.60	1.00	430	-0.03	0.00	0.09	-0.44	0.20	482	-0.11	0.00	0.33	-1.00	0.75
<i>OWN_{it}</i>	637	0.07	0.00	0.15	-0.03	1.00	430	0.03	0.00	0.07	-0.01	0.43	482	0.13	0.00	0.29	-0.41	1.00
Firm size	617	11.99	12.01	1.52	8.66	15.86	384	12.32	12.18	2.10	6.45	17.03	495	11.68	11.16	1.88	8.26	15.95
Firm age	629	2.45	2.64	0.96	0.00	4.09	415	2.48	2.64	1.08	0.00	4.03	516	2.32	2.30	1.08	0.00	4.33
Leverage	617	0.43	0.44	0.13	0.01	0.72	384	0.43	0.46	0.15	0.01	0.76	495	0.47	0.49	0.17	0.00	1.16
Cash holdings	617	0.06	0.04	0.07	0.00	0.51	384	0.06	0.03	0.09	0.00	0.64	495	0.06	0.02	0.09	0.00	0.51
R&D	650	0.08	0.00	0.27	0.00	1.42	430	0.12	0.00	0.32	0.00	1.42	538	0.05	0.00	0.20	0.00	1.42
Advertising	650	0.30	0.04	0.57	0.00	2.88	430	0.23	0.04	0.39	0.00	2.56	538	0.35	0.06	0.51	0.00	2.88
Spin-off	650	0.00	0.00	0.00	0.00	0.00	430	0.00	0.00	0.00	0.00	0.00	538	0.00	0.00	0.04	0.00	1.00
Merger	650	0.00	0.00	0.00	0.00	0.00	430	0.01	0.00	0.12	0.00	1.00	538	0.00	0.00	0.00	0.00	0.00
New Affiliate	650	0.00	0.00	0.00	0.00	0.00	430	0.00	0.00	0.00	0.00	0.00	538	0.02	0.00	0.14	0.00	1.00

Table 3: Changes in RPT, EBITDA, and Dividends Before and After Net Ownership Changes

The median (Panel A) and the mean (Panel B) of paired-sample differences in RPT_{it} , RPS_{it} , RPP_{it} , $EBITDA_{it}$, and Div_{it} before and after net ownership change of various degrees ($\pm 5\%p$, $+10\%p$, and $+15\%p$) for each family group (heir, controlling shareholder, and other relatives). See Table 2 for the definitions of RPT_{it} , RPS_{it} , RPP_{it} , $EBITDA_{it}$, and Div_{it} . The year of net ownership change is not used in the computation. Sample consists of nonfinancial firms from 26 chaebol groups (see Table 1) during 2000-2009. We exclude firms that underwent a spin-off or a merger from the sample. We also exclude newly added member firms during the sample period.

Panel A: Median of paired-sample differences

	Δ Ownership	Before Δ Ownership - After Δ Ownership					no. of years (before)	no. of years (after)	no. of firms
		RPT_{it}	RPS_{it}	RPP_{it}	$EBITDA_{it}$	DIV_{it}			
$NOWN_{H_{it}}$	$> 15\%p$	1.38	1.13	1.67	1.11	0.14	3.7	3.8	22
	$> 10\%p$	1.11	0.88	1.60	0.98	0.00	3.6	3.7	27
	$> 5\%p$	0.64	0.87	0.80	0.63	0.00	3.5	3.8	35
	$< -5\%p$	0.32	0.16	0.09	0.30	0.72	3.6	3.3	37
$NOWN_{C_{it}}$	$> 15\%p$	0.92	0.58	2.70	0.55	0.36	5.5	3.0	4
	$> 10\%p$	0.41	0.28	0.22	0.30	0.49	4.6	3.1	10
	$> 5\%p$	0.48	0.66	0.23	0.31	0.99	4.6	3.1	17
	$< -5\%p$	0.59	0.35	0.59	0.29	0.11	3.9	3.4	49
$NOWN_{R_{it}}$	$> 15\%p$	0.66	0.39	0.44	0.62	0.31	3.8	2.7	13
	$> 10\%p$	0.66	0.39	0.44	0.62	0.31	3.9	3.2	13
	$> 5\%p$	0.26	0.16	0.65	0.19	1.35	3.8	3.1	18
	$< -5\%p$	0.61	0.68	0.49	0.47	0.09	3.5	4.0	42

Panel B: Mean of paired-sample differences

	Δ Ownership	Before Δ Ownership - After Δ Ownership					no. of years (before)	no. of years (after)	no. of firms
		RPT_{it}	RPS_{it}	RPP_{it}	$EBITDA_{it}$	DIV_{it}			
$NOWN_{H_{it}}$	$> 15\%p$	2.73	2.33	3.25	3.85	1.34	3.7	3.8	22
	$> 10\%p$	2.17	1.85	2.99	3.28	0.83	3.6	3.7	27
	$> 5\%p$	1.64	1.57	2.20	2.41	0.35	3.5	3.8	35
	$< -5\%p$	0.84	0.29	0.55	0.85	1.23	3.6	3.3	37
$NOWN_{C_{it}}$	$> 15\%p$	0.85	0.90	1.53	2.09	0.88	5.5	3.0	4
	$> 10\%p$	0.60	0.66	0.95	0.12	1.33	4.6	3.1	10
	$> 5\%p$	0.68	1.06	0.88	1.88	1.83	4.6	3.1	17
	$< -5\%p$	1.13	0.43	1.09	1.24	0.09	3.9	3.4	49
$NOWN_{R_{it}}$	$> 15\%p$	1.83	1.63	1.39	1.92	2.12	3.8	2.7	13
	$> 10\%p$	1.65	1.49	1.19	1.82	1.99	3.9	3.2	13
	$> 5\%p$	1.27	1.06	1.34	1.57	2.60	3.8	3.1	18
	$< -5\%p$	0.84	0.66	0.96	1.40	1.07	3.5	4.0	42

Table 4: Ownership Change and Related-Party Transactions

Firm fixed effects regressions of related-party transactions (RPT_{it} , RPS_{it} , and RPP_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), their interaction ($TG_i \times TP_{it}$), control variables, and year dummies. We also include time-varying dummies capturing spin-offs, mergers, and new affiliates, but their coefficients are suppressed. Treatment group dummy (TG_i) is absorbed in firm FE. Sample include 36 treatment group firms that experienced major increase in heir's ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

	(1)	(2)	(3)
	Related-party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})
TP_{it}	-0.1324 (-0.93)	-0.2667 (-1.38)	-0.2387 (-0.92)
$TG_i \times TP_{it}$	0.3906* (1.80)	0.6021* (1.67)	0.6158* (1.75)
Firm size	0.6822*** (3.23)	0.3782 (1.50)	1.0067*** (3.48)
Firm age	0.3279* (1.72)	0.6744* (1.84)	0.2891 (0.76)
Leverage	-0.3840 (-0.34)	0.2795 (0.23)	-0.6671 (-0.39)
Constant	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	602	602	602
Number of firms	72	72	72
within R-sq	0.192	0.136	0.167

Table 5: Ownership Change, Related-Party Transactions, and Earnings

Firm fixed effects regressions of earnings ($EBITDA_{it}$) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, control variables, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Sample include 36 treatment group firms that experienced major increase in heir's ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

Dependent Var.	(1)	(2)	(3)
	$EBITDA_{it}$		
Types of RPT	Related-Party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})
TP_{it}	6.6177* (1.84)	6.1879*** (2.79)	4.3488* (1.75)
RPT_{it}	0.7819 (1.64)	0.6752*** (3.31)	0.5615* (1.99)
$TG_i \times TP_{it}$	-9.8245* (-1.89)	-8.4469** (-2.51)	-4.1508 (-1.52)
$TG_i \times RPT_{it}$	-0.2157 (-0.34)	-0.3760 (-1.14)	-0.2650 (-0.76)
$TP_{it} \times RPT_{it}$	-0.5789* (-1.78)	-0.5740** (-2.60)	-0.4506* (-1.85)
$TG_i \times TP_{it} \times RPT_{it}$	0.7650* (1.71)	0.6947** (2.15)	0.3094 (1.11)
Firm size	0.5215 (0.70)	0.9003 (1.29)	0.4839 (0.64)
Firm age	2.6736*** (3.12)	2.5072*** (3.07)	2.6968*** (2.95)
Leverage	-5.3704 (-1.38)	-6.0444 (-1.64)	-5.3130 (-1.42)
Cash holdings	2.8052 (0.60)	2.7519 (0.61)	4.6822 (0.94)
R&D expenditure	-0.4417 (-0.39)	-0.5094 (-0.49)	-0.3162 (-0.30)
Advertising expenditure	-2.3931** (-2.12)	-2.5513** (-2.12)	-2.2672** (-2.33)
Constant	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	602	602	602
Number of firms	72	72	72
within R-sq	0.102	0.112	0.0956

Table 6: Ownership Change, Related-Party Transactions, and Dividends

Firm fixed effects regressions of dividends (DIV_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, control variables, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Sample include 36 treatment group firms that experienced major increase in heir's ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

Dependent Var.	(1)	(2)	(3)
	DIV_{it}		
Types of RPT	Related-Party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})
TP_{it}	0.4972 (0.33)	1.5026 (1.37)	0.0104 (0.01)
RPT_{it}	0.1426 (0.74)	0.1693* (1.84)	0.0893 (0.74)
$TG_i \times TP_{it}$	-2.2009 (-1.14)	-3.7044*** (-2.72)	-0.7998 (-0.48)
$TG_i \times RPT_{it}$	0.1695 (0.63)	-0.0175 (-0.11)	0.0007 (0.00)
$TP_{it} \times RPT_{it}$	-0.0276 (-0.21)	-0.1271 (-1.33)	0.0144 (0.09)
$TG_i \times TP_{it} \times RPT_{it}$	0.0811 (0.47)	0.2402* (1.87)	-0.0413 (-0.24)
Firm size	0.3718 (1.17)	0.4890 (1.52)	0.4414 (1.34)
Firm age	1.0798** (2.20)	1.0415** (2.20)	1.0873** (2.18)
Leverage	-3.5381** (-2.11)	-3.6166** (-2.23)	-3.4048** (-2.03)
Constant	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	602	602	602
Number of firms	72	72	72
within R-sq	0.124	0.127	0.117

Table 7: Ownership Change, Related-Party Transactions, and Group Control

Firm fixed effects regressions of marginal contribution to group control index (MCI_{it}) on treatment group dummy (TG_i), treatment period dummy (TP_{it}), related-party transactions (RPT_{it} , RPS_{it} , or RPP_{it}), their interactions, and year dummies. Treatment group dummy (TG_i) is absorbed in firm FE. Sample include 36 treatment group firms that experienced major increase in heir's ownership and 36 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

Dependent Var.	(1)	(2)	(3)
	MCI_{it}		
Types of RPT	Related-Party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})
TP_{it}	0.1457 (1.10)	0.1285 (1.29)	0.0577 (0.49)
RPT_{it}	0.0013 (0.19)	0.0006 (0.15)	0.0019 (0.36)
$TG_i \times TP_{it}$	-0.4203 (-1.24)	-0.4640* (-1.93)	-0.0036 (-0.02)
$TG_i \times RPT_{it}$	-0.0132 (-0.58)	-0.0259 (-1.47)	0.0140 (0.60)
$TP_{it} \times RPT_{it}$	-0.0127 (-1.06)	-0.0121 (-1.35)	-0.0049 (-0.38)
$TG_i \times TP_{it} \times RPT_{it}$	0.0564* (1.67)	0.0663** (2.23)	0.0199 (1.02)
Constant	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	610	610	610
Number of firms	72	72	72
within R-sq	0.0972	0.113	0.0975

Table 8: Falsification Tests on Related-Party Transactions

Firm fixed effects regressions, identical to those reported in Table 4, but using treatment group dummy (TG_i), where non-heirs (controlling shareholder or other relatives) become a major shareholder. Columns (1) – (3) ((4) – (6)) use 25 (30) treatment group firms that experienced major increase in controlling shareholder’s (other relative’s) ownership and 25 (30) control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)
	Related-party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})	Related-party Transactions (RPT_{it})	Related-party Sales (RPS_{it})	Related-party Purchases (RPP_{it})
Treatment Group	Controlling Shareholder			Other Relatives		
TP_{it}	-0.0445 (-0.26)	-0.2236 (-0.69)	-0.3127 (-1.08)	0.0841 (0.46)	0.3954 (1.63)	-0.1440 (-0.27)
$TG_i \times TP_{it}$	0.2476 (0.75)	0.4820 (0.85)	0.0168 (0.04)	0.8179 (1.50)	0.5802 (1.23)	0.4540 (0.58)
Firm size	0.5519*** (3.86)	0.1893 (0.76)	1.0197** (2.49)	0.5978 (1.33)	0.3947 (1.04)	0.7913 (1.28)
Firm age	0.6401*** (2.69)	0.9985* (1.88)	1.1190* (1.71)	0.2937 (1.08)	0.9491** (2.31)	-0.5816 (-0.98)
Leverage	0.0671 (0.09)	-0.9718 (-0.86)	3.1549* (1.93)	3.1539 (1.66)	3.5072 (1.42)	4.6526** (2.41)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	379	379	379	473	473	473
Number of firms	50	50	50	60	60	60
within R-sq	0.186	0.135	0.201	0.408	0.249	0.293

Table 9: Falsification Tests on Earnings, Dividends, and Group Control

Firm fixed effects regressions, identical to those reported in Tables 5, 6, and 7, but using counterparties of the original treatment group firms (i.e., firms where heir become a major shareholder) as our new treatment group. TG_i takes a value of 1 if firm i is the counterparty of the original treatment group firm, and 0 otherwise. TP_{it} takes a value of 1 if the original treatment group firm of firm i experiences a major increase in heir's net ownership at year t or before. Control variables are suppressed. We use 18 treatment group firms and 18 control group firms identified by covariate matching based on year, industry (4-digit code for manufacturing and 2-digit code for others), and asset size. t -values are reported in the parenthesis, and are based on standard errors clustered at the firm level. *, **, and *** respectively indicate significance at 10%, 5%, and 1% levels. Significant results (at 10% level or better) are shown in boldface.

Dependent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	<i>EBITDA_{it}</i>			<i>DIV_{it}</i>			<i>MCI_{it}</i>		
Types of RPT	Related -party Transactions (<i>RPT_{it}</i>)	Related -party Sales (<i>RPS_{it}</i>)	Related -party Purchases (<i>RPP_{it}</i>)	Related -party Transactions (<i>RPT_{it}</i>)	Related -party Sales (<i>RPS_{it}</i>)	Related -party Purchases (<i>RPP_{it}</i>)	Related -Party Transactions (<i>RPT_{it}</i>)	Related -Party Sales (<i>RPS_{it}</i>)	Related -party Purchases (<i>RPP_{it}</i>)
<i>TP_{it}</i>	4.8967** (2.81)	2.7009** (2.31)	3.4178** (2.57)	2.6272 (0.65)	0.3328 (0.11)	-0.4909 (-0.15)	-0.4464 (-0.29)	-0.8437 (-1.23)	-0.2535 (-0.25)
<i>RPT_{it}</i>	-0.3113 (-1.63)	0.0589 (0.55)	0.0333 (0.19)	-0.5571 (-0.98)	0.0083 (0.03)	0.0112 (0.04)	-0.0032 (-0.02)	0.0226 (0.36)	-0.0586 (-0.47)
<i>TG_i x TP_{it}</i>	0.0891 (0.05)	3.1138 (1.19)	0.3096 (0.19)	-3.9350 (-0.69)	0.4450 (0.07)	-2.0819 (-0.49)	1.0402 (0.63)	1.3039 (1.52)	0.6710 (0.59)
<i>TG_i x RPT_{it}</i>	0.8316* (1.83)	0.5450 (1.00)	0.4239 (1.31)	1.5417 (1.69)	1.0397 (1.08)	0.5971 (0.91)	-0.0397 (-0.23)	-0.0567 (-0.76)	0.0506 (0.38)
<i>TP_{it} x RPT_{it}</i>	-0.3770** (-2.75)	-0.2166** (-2.32)	-0.2742** (-2.57)	-0.2147 (-0.74)	0.0016 (0.01)	0.0510 (0.21)	0.0335 (0.28)	0.0698 (1.17)	0.0180 (0.22)
<i>TG_i x TP_{it} x RPT_{it}</i>	0.0175 (0.13)	-0.2203 (-1.17)	-0.0084 (-0.07)	0.5099 (1.15)	0.1869 (0.37)	0.3533 (0.96)	-0.0731 (-0.55)	-0.1020 (-1.42)	-0.0479 (-0.51)
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	170	170	170	170	170	170	169	169	169
Number of firms	18	18	18	18	18	18	18	18	18
within R-sq	0.566	0.562	0.560	0.400	0.371	0.380	0.0672	0.135	0.0654