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Executive Compensation When a Firm is a Business Group Member

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Keywords: executive compensation, business groups, chaebols, tunneling, cash flow rights, control-ownership disparity, expropriation risk

JEL Classifications: G30, G32, G34

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This paper examines how executive pay is set when a firm is a business group member. Using Korea as a laboratory setting, we find that member firm's cash compensation for its executives is positively linked to the stock performance of other member firms as well as its own. Further analyses reveal that this positive link to other members' performance is consistent with the hypothesis of corporate resources being tunneled from one member to another for the benefit of the controlling family. We find that this link is stronger to the performance of others that are more likely to benefit from tunneling (firms in which the controlling family has cash flow rights greater than those of the subject firm) and in firms that are more likely to suffer from tunneling (firms in which the controlling family has control-ownership disparity above the sample median).

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1. Introduction

This paper examines how executive pay is set when a firm is a business group member. Existing literature is full of evidence that business group firms behave differently from stand-alone firms (Johnson et al, 2000; Khanna and Palepu, 2000; and Khanna and Yafeh, 2007). Naturally, one would expect that business group and stand-alone firms would set their executive pay in a different fashion. Surprisingly, however, there are only a handful of papers on this. To name some, Kato, Kim, and Lee (2007) study the pay-performance sensitivity of Korean business group firms. Urzúa (2009) study the relationship between controller's cash flow rights and board compensation using Chilean business group firms. Cheong and Kim (2014) study the relationship between the size of business group and the level of family pay premium using Korean business group firms. To the best of our knowledge, this is the first paper investigating executives' pay sensitivity to the performance of other member firms within the same business group.

Business group is a network of multiple firms controlled by a holding company or a controlling family. It has a number of features that make member firm's performance be highly correlated with that of another. They are tightly connected through intra-group share holdings; they are typically in related industries; and they form an internal capital market and borrow from another. So, one would expect that executive pay of a typical business group member is correlated not only with its own performance, but also with the performance of other members connected through shareholding, supply chain, or lending relationship.

In this paper, however, we explore another possibility: tunneling. Existing literature is packed with evidence that business groups in emerging markets engage in tunneling for the benefit of controlling family members (Bae, Kang, and Kim, 2002; Bertrand, Mehta, and Mullainathan, 2002; Baek, Kang, and Lee, 2006; Cheung, Rau, and Stouraitis, 2006; Hwang and Kim, 2014, Black et al., 2015). Tunneling from one firm to another, however, requires the cooperation of executives who sit on the board of firms involved in the transaction. For groups prevalent with tunneling, one can hypothesize that executive pay must be designed to incentivize the executives to cooperate. Of course, incentive pay is not the only method one can use to induce cooperation.

Promotions or demotions can also be utilized. These, however, are highly disruptive methods that cannot be used at high frequencies (e.g., yearly). In this paper, we limit our analyses on incentive pay, which is less disruptive, and therefore more efficient.

Say firm *A* engages in a transaction that hurts itself for the benefit of firm *B*. On one hand, this lowers the observed performance of firm *A*. If firm *A* executives are paid solely based on firm *A*'s observed performance, they may resist such transaction. On the other hand, the same transaction improves the performance of firm *B*, and firm *B* executives would be overly paid if the pay is solely based on firm *B*'s observed performance. In this setting, how should one design executive pay to incentivize firm *A* executives to cooperate and not to over pay firm *B* executives?

As for firm *A* executives, their pay should be positively linked to firm *A*'s observed performance and also to the amount tunneled (τ), which is now a part of firm *B*'s observed performance. As for firm *B* executives, their pay should be positively linked to firm *B*'s observed performance, but negatively to the amount tunneled (τ), which is now a part of firm *A*'s original performance. Thus, the pay to firm *A* executives should be positively linked to firm *A*'s observed performance and also to firm *B*'s observed performance. Likewise, the pay to firm *B* executives should be positively linked to firm *B*'s observed performance, but negatively to firm *A*'s observed performance.

This executive pay structure, ideal in the presence of tunneling, gives rise to a number of empirical predictions. First, we predict that pay sensitivity to other member firm's performance should be positive on average when limiting our sample to publicly-traded firms. This is based on our belief and evidence in the existing literature that most publicly-traded firms fall in the first category of firms (firm *A* in the previous example). Black et al. (2015) show that related-party transactions, on average, destroy the market value of publicly-traded firms in Korea, suggesting that these firms are, on average, the victims of tunneling, whereas privately-traded firms or individual controlling family members are the beneficiaries.

Second, pay should be link to the performance of other firms that are likely to benefit from tunneling (firm *B* in the previous example), but not to the performance of those that are not likely to. To the extent that controlling party's cash flow rights can tell which firms are likely to benefit from tunneling, one would expect to see pay being linked to the performance of other firms

where the controlling party has cash flow rights *greater* than the subject firm, but not to the performance of those where the controlling party has cash flow rights *less* than the subject firm.

Third, pay sensitivity to other member firms' performance should also be stronger in firms that are more likely to suffer from tunneling (higher fractions of τ in the previous example). To the extent that control-ownership disparity captures the extent of tunneling, firms that have high control-ownership disparity would be the ones with high pay sensitivity to other member firms' performance.

Among these three empirical predictions, notice that the first one is possible even in the absence of tunneling. The performance of member firms in a common supply chain or member firms connected through shareholdings or loans are likely to be positively correlated and thus have their executive pay linked to the performance of other member firms. The second and the third predictions, however, are possible only in the presence of tunneling.

We test these empirical predictions using Korean data from 2002-2011 (excluding 2008 when pay-performance relationship was greatly disrupted amidst global financial crisis). Korea provides an ideal laboratory setting for a number of reasons. First, it is dominated by large number of family-controlled business groups, known as chaebols, such as Samsung, Hyundai Motors, and LG. The group's founding family that tightly controls its member firms, is also likely to have control over the executive pay of its member firms. Not surprisingly, popular press in Korea report that group chairman has considerable discretion over the cash bonuses paid to his executives, and sometimes uses his power to ensure their loyalty (*Hankyoreh*, August 13, 2013). The same newspaper reports that compensation committees hardly exist in chaebol firms, and even if it does, it hardly functions (*Hankyoreh*, August 15, 2013).

Second, existing literature points out that Korean chaebol firms suffer from tunneling, the prevalence of which is important in our study (Bae, Kang, and Kim, 2002; Baek, Kang, and Lee, 2006, Hwang and Kim, 2014, and Black et al., 2015). The literature also documents a significant deviation of family's control rights over its cash flow rights in chaebol firms (Kim, Lim, and Sung, 2007). Third, information on executive cash compensation, intra-group ownership structure, and related-party transactions are available over an extended number of years, which makes this study possible.

Our investigation of executive pay in Korean chaebol firms confirms our empirical predictions. We first confirm that executive pay of a chaebol firm is positively linked not only to its own stock performance, but also to that of other member firms in the same chaebol group. Further analyses reveal that this positive link to other members' performance is consistent with the hypothesis of corporate resources being tunneled from one member to another for the benefit of the controlling family. We find that this link is stronger to the performance of others that are more likely to benefit from tunneling (firms in which the controlling family has cash flow rights greater than those of the subject firm) and in firms that are more likely to suffer from tunneling (firms in which the controlling family has control-ownership disparity above the sample median).

This paper is organized as follows. Section 2 develops the key hypotheses of this paper. Section 3 describes the data and the empirical strategies. Section 4 reports the empirical results, and section 5 concludes.

2. Hypotheses Development

Business group is a network of multiple firms controlled by a holding company or a controlling family. It has a number of features that makes member firm's performance to be highly correlated with that of another. First, they are tightly connected through intra-group share holdings. So, an earnings shock in firm *A* can easily spread to others (say, *B*, *C*, and *D*) that hold shares in firm *A*. Second, unless completely diversified, member firms in a business group are typically in related industries. Vertically integrated member firms in a common supply chain heavily engage in related-party transactions with one another. So, a cost shock in upstream firm *A* can influence others (say, *B*, *C*, and *D*) in the downstream. Third, in the presence of external financing frictions, business group members may form an internal capital market and borrow from one another. So, a debt service failure of firm *A* will surely affect the earnings of others (say, *B*, *C*, and *D*) that have extended credit. So, one would expect that executive pay of a typical business group member would be correlated not only with its own performance, but also with the performance of other members connected through shareholdings, common supply chain, or loans.

In this paper, we explore another possibility: tunneling. Existing literature is packed with

evidence that business groups in emerging markets engage in tunneling for the benefit of controlling family members (Bae, Kang, and Kim, 2002; Bertrand, Mehta, and Mullainathan, 2002; Baek, Kang, and Lee, 2006; Cheung, Rau, and Stouraitis, 2006; Hwang and Kim, 2014; and Black et al., 2015). Tunneling from one firm to another, however, requires the cooperation of executives involved in the transaction. For groups prevalent with tunneling, one can hypothesize that executive pay must be designed to incentivize the executives to cooperate.

Say firm *A* engages in a transaction that hurts itself for the benefit of firm *B*. This lowers the performance of firm *A* from π_A^* to $\pi_A = \pi_A^* - \tau$, where τ is the amount tunneled. On one hand, if firm *A* executives are paid solely based on firm *A*'s observed performance (π_A), they may resist such transaction.

$$\pi_A = \pi_A^* - \tau \quad (1)$$

On the other hand, the transaction improves the observed performance of firm *B* from π_B^* to $\pi_B = \pi_B^* + \tau$, and firm *B* executives would be overly paid if the pay is solely based on firm *B*'s observed performance (π_B).

$$\pi_B = \pi_B^* + \tau \quad (2)$$

In this setting, how would one design executive pay to incentivize firm *A* executives to cooperate and not to overpay firm *B* executives? Ideally, the pay to firm *A* executives should be positively linked to firm *A*'s original performance (π_A^*) and the pay to firm *B* executives should be positively linked to firm *B*'s original performance (π_B^*). If pay sensitivity to its own true performance should be α, the pay to firm *A* and *B* executives should be set as follows:

$$P_A = \alpha\pi_A^* \quad (3)$$
$$P_B = \alpha\pi_B^* \quad (4)$$

The original performances of firm *A* and *B* (π_A^* and π_B^*), however, are not observable to us. If

we replace these with observed performances and the amount tunneling, one can obtain the following equations.

$$P_A = \alpha\pi_A + \alpha\tau \quad (5)$$
$$P_B = \alpha\pi_B - \alpha\tau \quad (6)$$

The amount tunneled, however, is also unobservable to us. So, let us assume that the amount of tunneling takes up a certain fraction ($0 < \lambda < 1$) of firm *B*'s observed performance (π_B), and this is equivalent to a certain fraction ($0 < \eta < 1$) of firm *A*'s original performance (π_A^*). Then, we have the following equations.

$$P_A = \alpha\pi_A + \alpha\lambda\pi_B \quad (7)$$
$$P_B = \alpha\pi_B - \alpha\eta\pi_A^* = \alpha\pi_B - \alpha\frac{\eta}{1-\eta}\pi_A \quad (8)$$

The second equality in Equation (8) can be easily obtained by Equation (1) and the fact that $\tau = \eta\pi_A^*$. From Equation (7), we see that the pay to firm *A*' executives should be positively linked to firm *A*'s observed performance and also to firm *B*'s observed performance. From Equation (8), we can see that the pay to firm *B*' executives should be positively linked to firm *B*'s observed performance, but negatively to firm *A*'s observed performance.

We believe most publicly-traded firms, however, fall in the first category of firms (firm *A* in our example). Black et al. (2008) show that related-party transactions, on average, destroy the market value of publicly-traded firms, suggesting that these firms are, on average, the victims of tunneling, whereas privately-traded firms or individual controlling family members are the beneficiaries. So, we predict that pay sensitivity to other member firm's performance should be positive on average when limiting our sample to publicly-traded firms. So, we have our first hypothesize (**H1**).

H1: *Executive cash pay of business group firms is positively linked to other member firms' performance as well as to its own*

Notice that **H1** is derived solely based on the tunneling argument, without any consideration of shareholdings, common supply chain, or lending relationship among member firms. Equations (7) and (8) also show how the sensitivity to other member firm's performance would be influenced by the extent of tunneling, which is captured by λ or η. If we take the first derivatives of these sensitivities in respect to λ and η, we have the following results.

$$\frac{d(\alpha\lambda)}{d\lambda} = \alpha > 0 \quad (9)$$

$$\frac{d(\frac{-\alpha\eta}{1-\eta})}{d\eta} = -\frac{\alpha}{(1-\eta)^2} < 0 \quad (10)$$

Positive sign in Equation (9) suggests that firm *A*'s positive pay sensitivity to firm *B*'s observed performance should strengthen with greater degree of tunneling to firm *B*. Likewise, the negative sign in Equation (10) suggests that firm *B*'s negative pay sensitivity to firm *A*'s observed performance should strengthen with greater degree of tunneling from firm *A*.

Again, if most publicly-traded firms fall in the first category of firms, following Equation (9), we can predict that the link is stronger to the performance of others that are more likely to benefit from tunneling (firm *B* with high λ in the previous example), but not to the performance of those that are not likely to (say, firm *C* that do not benefit from tunneling, λ = 0). Hwang and Kim (2014) provide evidence on the importance of cash flow rights in tunneling. Using Korean cheabol firms, they reveal that firms where heirs become a major shareholder (i.e., high cash flow rights) experience greater related-party transactions and benefit from them in terms of earnings. To the extent that controlling party's cash flow rights can tell which firms are likely to benefit from tunneling, one should see positive link to the performance of other member firms, in which the controlling party has cash flow rights *greater* than the subject firm, but not to the performance of those, in which the controlling party has cash flow rights *less* than the subject firm. This prediction gives rise to our second hypothesis (**H2**).

H2: *Executive cash pay of business group firms is positively linked to the performance of other*

member firms, in which the controlling party has cash flow rights greater than those of the subject firm, but not to the performance of other member firms, in which the controlling party has cash flow rights less than those of the subject firm.

Third, pay sensitivity to other member firms' performance should also be stronger in firms that are more likely to suffer from tunneling (higher fractions of τ or high λ in the previous example). To the extent that control-ownership disparity captures the extent of tunneling, firms that have high control-ownership disparity should be the ones with high pay sensitivity to other member firms' performance. As for research on control-ownership disparity or on its connection with tunneling, see La Porta, López de Silanes, and Shleifer (1999), Claessens, Djankov, and Lang (2000), Faccio and Lang (2000), Mitton (2002), Joh (2003), Lemmon and Lins (2003), and Kim, Sung, and Wei (2011). So, we have our third hypotheses (**H3**).

H3: *The positive link of executive cash pay to other member firms' performance exists in firms, in which the controlling party has control-ownership disparity above the sample median, but not in firms, in which the controlling party has control-ownership disparity below the sample median*

Black et al. (2015) devised an index that can capture the risk of minority shareholder expropriation. This index, which is named as the expropriation risk index (ERI), equals the weighted-sum of cash flow rights differentials (cash flow rights of the subject firm minus the cash flow rights of other member firms in the same business group), where each differential is weighed by the corresponding amount of related-party transactions between the two firms scaled by the subject firm's total sales (see the next section for the exact formula). Firms with $ERI > 0$ can be considered as firms that are likely to suffer from tunneling (firm *A* in our example) and firms with $ERI \leq 0$ can be considered as firms that are either neutral or likely to benefit (firm *B* in our example). Notice that *ERI* is a single index that incorporates all three factors we have investigated in earlier hypotheses (**H2** and **H3**). It considers the cash flow rights the controlling family has in other member firms, the cash flow rights it has in the subject firm, and the volume of related-party transactions between them. Using *ERI*, we can devise our fourth hypothesis (**H4**).

H4: *The positive link of executive cash pay to other member firms' performance exists in firms with positive ERI, but not in firms with zero or negative ERI.*

If the controlling shareholder of a business group (i.e., chaebol chairperson) sits on the board and he or she also receives compensation, firm's executive pay, which now includes the pay to the chairperson, may not be a useful measure to test our hypotheses. According to Cheong and Kim (2014), family executives are paid higher than non-family executives in Korea, and this tendency strengthens in large business group firms. They also show that this family pay premium is particularly high for chaebol chairperson, dwarfing the size of pay to other family and non-family executives. On top of this, there is no reason to link the chairperson's pay to the performance of other member firms as means to induce his or her cooperation. The chairperson is the ultimate beneficiary of any tunneling transaction, and as such, there is no reason to give him or her economic incentives to engage in one. So, we expect to see our results weaken or even disappear if we limit our analyses to firms where the chaebol chairperson sits on the board as an executive. This gives rise to our last hypothesis (**H5**).

H5: *The hypotheses that executive cash pay is positively linked to other member firms' performance (H1), that this positive link exists only to the performance of those that are likely to benefit from tunneling (H2), and that it exists only in firms that are likely to suffer from tunneling (H3) weakens or disappears if chaebol chairperson sits on the board as an executive.*

3. Methodology

3.1. Sample Construction

To test our hypotheses, we start with a sample of chaebol firms included in Korea Composite Stock Price Index (KOSPI) during 2002-2011 (excluding 2008). We start from 2002 because this

is the first year Total Solution 2000 (*TS2000*), a database administered by Korea Listed Companies Association (KLCA), provides the data on executive compensation. *TS2000*, the raw data of which is originally from company business reports (similar to Form 10-K and Form 10-Q in the US), is equipped with a function that allows massive data downloading. We exclude 2008, the year of global financial crisis. This year's stock return – whether it is industry adjusted or not – must have been driven predominantly by the crisis, and unlikely to be driven by tunneling transactions, making it inappropriate for us to study pay-performance relationship to uncover tunneling. In fact, KOPSI fell by 41% from 1897.13 to 1124.47 during 2008. If we add back in 2008 into our sample, the coefficients weaken, but the key results remain qualitatively similar.

We obtain the list of chaebol firms from Korea Fair Trade Commission (KFTC), which has been designating large business groups and their member firms each year since 1987. The designation has been based on aggregate size of member firms' assets (excluding financial firms). During our sample period, KFTC changed the size threshold for its designation of large business groups. From 2002 to 2007, it used the threshold of 2 trillion Korean won (approximately, 2 billion US dollars). Since 2008, it is using the threshold of 5 trillion Korean won. Prior to 2002, KFTC simply designated top 30 groups with no explicit size threshold. For details on KFTC's designation process, see Kim, Lim, and Sung (2007).

Using this initial sample of firm-year observations, we collect executive pay data from *TS2000*. During the sample period of this paper, however, Korea's *Capital Market and Financial Investment Service Act* did not require companies to disclose cash compensation figures at the individual director level, which makes it inevitable for us to use data aggregated over multiple directors.[1] According to the disclosure guidelines set by the Financial Supervisory Service (FSS), Korea's financial supervisory authority, companies should report aggregate cash compensation figures separately for (i) directors (excluding outside directors and audit committee members), (ii) outside directors (excluding outside directors serving audit committee), (iii) audit committee

[1] Contrary to cash compensation, data on the holdings of company shares and stock options are available at the individual director level. Also, to a limited extent, individual director's cash compensation is being disclosed from the third quarter of 2013. Korea's revised *Capital Markets and Financial Investment Service Act* requires the directors receiving a total compensation (excluding unexercised stock options) of more than 500 million Korean won (approximately 500 thousand US dollars) to disclose the details of their pay in company business reports. See Cheong and Kim (2014) for details.

members, and (iv) internal auditors.

In this paper, we collect aggregate pay disclosed for the first category of directors and label it as total pay to executives (TPAY). Following Kato, Kim, and Lee (2007), we use total pay, instead of average pay (APAY), as our key dependent variable. To control for any influence the number of executives might have on TPAY, we control for the number of executives in all of our regressions. Since the number of executives exactly equals TPAY/APAY, we get the same results regardless of which dependent variable we use. To adjust for inflation, we deflate TPAY using Bank of Korea's Consumer Price Index (CPI), and use 2002 constant values. Notice that we do not investigate officers, who do not serve on the board. Their pay is simply not available. Also, we do not investigate outside directors, which is not the focus of this paper.

During our data collection process, however, we noticed that cash compensation figures disclosed in company business reports are misleading for a non-trivial number of firms. For example, they sometimes failed to exclude outside directors or audit committee members when reporting the aggregate pay to the executives. On other occasions, the number of executives includes executives who are not registered board members. For a limited number of cases, we were fortunate to correct such errors. For example, if we know the number of outside directors included and the average pay they receive, we can infer the total compensation paid to the executives. In many cases, however, such inferences were not possible. This led us to drop 246 firm-year observations (approximately 22%) from our original sample of 1,119 (in terms of first differenced TPAY). We further drop 2008 data (to be more exact, 2008 stock return data; 116 observations) because this year's stock return must have been driven predominantly by the crisis, and unlikely to be driven by tunneling transactions, making it inappropriate for us to study pay-performance relationship to uncover tunneling.

Table 1 shows the number of chaebol groups in each year and year-by-year sample statistics on the number of listed firms in each chaebol group. In 2011, we have 34 chaebol groups in the sample with 5.56 listed firms in each group on average.

3.2. Key Variables

Our key measure of performance is industry-adjusted stock return (RET). It is the logarithmic annual return, computed from dividend- and stock split-adjusted stock prices, and adjusted for market value-weighted average industry return using first 2-digit Korea SIC codes. As an alternative performance measure, we use industry-adjusted return on assets (ROA). We calculate annual changes in ROA for both individual firms and industry portfolios (value-weighted average of ROA in the same 2-digit Korea SIC code, where total assets are used as weights), and define the difference as industry-adjusted changes in ROA.

We measure other member firms' performance using the value-weighted average of their RETs and ΔROAs. We label them as RET Affiliates and ΔROA Affiliates. Again, market capitalization and total assets are used as weights, respectively for RET Affiliates and ΔROA Affiliates. They are also industry-adjusted in a manner similar to firm-level performance measures. Notice that when computing ΔROA Affiliates, we not only use listed firms, but also privately-traded unlisted firms.

We also use more refined measures of other member firm's performance. RET Affiliates (More-CF) is RET Affiliates measured using firms, in which the controlling family has cash flow rights *greater* than those of the subject firm. RET Affiliates (Less-CF) is RET Affiliates measured using firms, in which the controlling family has cash flow rights *less* than those of the subject firm. We also have measures that consider the existence of related-party transactions. RET Affiliates (More-CF & With RPT) is RET Affiliates measured using firms, in which the controlling family has cash flow rights greater than those of the subject firm, and with which the subject firm has related-party transactions. RET Affiliates (Less-CF & RPT) is RET Affiliates measured using firms, in which the controlling family has cash flow rights less than those of the subject firm, and with which the subject firm has related-party transactions. We have similar measures for ΔROA Affiliates.

To construct our performance variables, we use two data sources. Stock return and market capitalization data comes from Financial Guide (Fn-Guide). All accounting variables come from *TS2000*. Table 2 Panel A defines the key variables and Panel B reports their summary statistics.

Controlling family's cash flow rights is computed following Kim, Lim, and Sung (2007). It is the sum of controlling family's direct and indirect ownership, where the family includes the

controlling shareholder, its spouse, and relatives within certain degrees of kinship (six with the controlling shareholder or four with the spouse). Equation (11) shows the formula.

$$cfr_j = d_j + \sum_{k=1}^{n} s_{jk} d_k + \sum_{k=1}^{n} s_{jk} \sum_{l=1}^{n} s_{kl} d_l + \cdots \quad (11)$$

d_j is controlling family's direct ownership in firm j. The subsequent terms capture indirect ownership through member firms under the control of the same controlling shareholder. For example, the second term is the 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 complete intragroup ownership structure in a matrix form (S), we can easily compute the vector of cash flow rights (cfr) by the following formula (12), where d is the vector of direct family ownership.

$$cfr = (I - S)^{-1} d \quad (12)$$

Control-ownership disparity is the controlling family's voting rights subtracted by its cash flow rights. Again, we calculate voting rights following Kim, Lim, and Sung (2007). It includes direct ownership in firm j by the controlling family, non-family executives, and member firms (including not-for-profit organizations under family's control).

$$vr_j = d_j + e_j + \sum_{k=1}^{n} s_{jk} \quad (13)$$

Expropriation risk index (ERI) is computed following Black et al., (2015). As mentioned earlier, it is an index devised to capture the risk of minority shareholder expropriation. It equals the weighted-sum of cash flow rights differentials (cash flow rights in other member firms in the same business group minus the cash flow rights in the subject firm), where each differential is weighed by the corresponding amount of related-party transactions between the two firms scaled by the subject firm's total sales. Equation (14) shows the ERI formula for firm j.

$$ERI_j = \sum_{k=1}^{n} \frac{RPT_{jk}}{Sales_j}(cfr_k - cfr_j) \quad (14)$$

3.3. Research Design

Following Kaplan (1994) and Kato, Kim, and Lee (2007), we estimate Equation (15) as our baseline pay-performance elasticity regression.[2] Notice that we use first-differenced log of TPAY (total pay) as our dependent variable, which effectively makes it unnecessary to include firm-fixed effects in the regression. On the right-hand side, we include stock return (RET), ∆ROA, first-differenced log of NEXEC (number of executives), stock options dummy (OPTION), it's interaction with RET, and year dummies.

$$\Delta\, ln(TPAY_{i,t}) = \beta_0 + \beta_1 RET_{i,t} + \beta_2 \Delta ROA_{i,t} + \beta_3 \Delta\, ln(NEXEC_{i,t}) + \beta_4 OPTION_{i,t} + \beta_5 RET_{i,t} \times OPTION_{i,t} + \lambda_t + \varepsilon_{i,t} \quad (15)$$

The coefficients of our interest are $\beta_1$and β_2. They measures pay-performance elasticity in respect to RET and ∆ROA. We include number of executives (in difference in log) on the right-hand side to control for its obvious influence on total pay (in difference in log). We also control for stock options dummy (1 if any of the firm's executives hold unexercised stock options and 0 otherwise) and its interaction with RET. We expect that stock option grants make it less necessary for firms to have high pay-performance elasticity (negative β_5). In the presence of this interaction term, coefficients $\beta_1$and β_2 capture pay-performance elasticity in the absence of stock options. Information on stock option grants comes from individual company business reports. In Section 4.2, we show results with additional controls (for example, lagged performance variables or lagged dependent variable) and confirm that they do not have any

2 Sample coverage differs in two ways between our paper and that of Kato, Kim, and Lee (2007). First, sample periods do not overlap. Their sample ends in 2001, whereas ours starts from 2002. Second, we use the entire KOSPI firms, whereas they use only the KOSPI200 firms.

material influence over our coefficients of our interest ($\beta_1$and β_2).

When testing our key hypotheses, we simply add other member firms' performance variables on the right-hand side, as in Equation (16).

$$\begin{aligned}\Delta \ln(TPAY_{i,t}) = {} & \beta_0 + \beta_1 RET_{i,t} + \beta_2 \Delta ROA_{i,t} + \beta_3 RET^A_{i,t} + \beta_4 ROA^A_{i,t} \\ & + \beta_5 \Delta \ln(NEXEC_{i,t}) + \beta_6 OPTION_{i,t} + \beta_7 RET_{i,t} \times OPTION_{i,t} \\ & + \lambda_t + \varepsilon_{i,t} \end{aligned} \quad (16)$$

The coefficients of our interest are $\beta_3$and β_4. We expect them to be positive and statistically significant if cash pay to the executives of business group firms are positively linked to other member firms' performance as well as its own.

4. Empirical results

4.1. Summary statistics

Table 2 Panel B presents the descriptive statistics of our key variables. TPAY (total cash compensation to inside directors) ranges from 50 million to 80 billion Korean won (approximately 80 million US dollars) with a mean of 2.5 billion and a median of 1.4 billion Korean won. The number of executives ranges from one to 12, with a mean of 3.7 and a median of 3 executives. Average cash compensation, which we can infer from TPAY and the number of executives figures, is 669 million Korean won. The table also shows that 29 percent of chaebol firms in KOSPI grant stock options to their inside directors.

Panel C presents correlations among our performance variables. Despite the fact that we use industry demeaned excess returns, the correlations are positive and statistically significant in many cases. First, our two key performance variables, RET and ΔROA, have a correlation coefficient of 0.182 with zero *p*-value. Second, the correlation between firm's own stock performance and other member firms' stock performance is also positive and statistically

significant: 0.196 between RET and RET Affiliates.

4.2. Pay's Elasticity to Its Own Performance

In this subsection, we investigate the association between executive pay and firm performance. In Table 3 Column (1), we report the estimates of Equation (15) illustrated in Section 3.3. The coefficient on RET is 0.165 and highly significant, but the coefficient on ΔROA is statistically insignificant. The coefficient value of 0.165 indicates that a 100% increase in stock price (i.e., one unit change in RET Affiliates) results in a 16.5% increase in total annual cash compensation of all inside directors. This figure is substantially higher than the figure (9.5%) reported in Kaplan (1994) for Japanese companies in 1980. As expected, the coefficient on the log change in number of executives is positive and statistically significant. The coefficient value of 0.42 indicates that an additional executive will result in a 42% increase in total annual cash compensation of all inside directors. The coefficient on the interaction term between RET and the stock option dummy is negative, but not statistically significant.

In Columns (2) – (5), we experiment with additional controls. In Column (2), we add the interaction term between ΔROA and the stock option dummy. The interaction term is statistically insignificant, and its inclusion does not have a material influence on the coefficients of our interest (RET and ΔROA). In Columns (3) and (4), we add lagged performance variables. They are statistically significant, but again do not have a substantial influence on the coefficients of our interest. In Column (5), we add the lagged dependent variable. Again, there is no material change on the coefficients of our interest. Given the robustness of our coefficient estimates on RET and ΔROA, we use the most parsimonious one (Column 1) as our baseline specification in all the analyses that follow.

4.3. Pay's Elasticity to Other Member Firms' Performance

Table 4 reports the estimates of Equation (16) illustrated in Section 3.3. We run cash compensation regressions on its own performance, other member firms' performance, controls,

and year dummies. We can make a couple of observations. First, the coefficients on other member firms' performance are positive, but statistically significant only in case where other member firms' performance is measured by value-weighted excess return (RET Affiliates). The coefficient of 0.108 in Column (3) suggests that a 100% increase in stock price of other member firms results in a 10.8% increase in total annual cash compensation of all inside directors. The coefficient on ΔROA Affiliates is insignificant when added alone (Column (2)) or added together with RET Affiliates (Column (3)). The absence of ΔROA Affiliates' significance is consistent with our earlier finding in the previous section that ΔROA does not explain executives' cash compensation (see Table 3). Second, the influence of other member firms' performance is almost as strong as that of its own performance. In Column (3), the coefficient on the firm's own stock performance (RET) is 0.151.

Thus, we provide empirical evidence of our first hypothesis (**H1**) that executive cash pay of business group firms is positively linked to other member firms' performance as well as to its own. This finding, however, may be consistent with stories other than tunneling. Executive pay of a typical business group member can be correlated not only with its own performance, but also with the performance of other members connected through shareholdings, supply chain, or lending. We effectively exclude these alternative explanations by confirming the empirical predictions of **H2** – **H4** in the following sub-sections.

4.4. Elasticity to the Performance of Affiliates and Their Characteristics

Table 5 tests our second hypothesis (**H2**) that executive cash pay of business group firms is positively linked to the performance of other member firms, in which the controlling party has cash flow rights *greater* than those of the subject firm, but not to the performance of other member firms, in which the controlling party has cash flow rights *less* than those of the subject firm. To see this, we replace our original two measures of other member firms' performance (RET Affiliates and ΔROA Affiliates) with the following four: RET Affiliates (More-CF), RET Affiliates (Less-CF), ΔROA Affiliates (More-CF), and ΔROA Affiliates (Less-CF). RET Affiliates (More-CF) measures RET Affiliates using other member firms, in which the

controlling family has cash flow rights *greater* than those of the subject firm. RET Affiliates (Less-CF) measures RET Affiliates using other member firms, in which the controlling family has cash flow rights *less* than those of the subject firm. ΔROA Affiliates (More-CF), and ΔROA Affiliates (Less-CF) are similarly defined.

The results on RET Affiliates reported in Table 5 confirm our empirical prediction that tunneling is the key reason why we observe executive cash pay's sensitivity to other member firms' performance. The coefficient on RET Affiliates (More-CF) is positive and statistically significant (Column 1), whereas that on RET Affiliates (Less-CF) is statistically insignificant (Column 2). In Column (3), we put both measures in the same regression, and confirm our findings in Columns (1) and (2). As for measures using ΔROA, the coefficient estimates are all insignificant. Again, this is consistent with our earlier finding that ΔROA does not explain executives' cash compensation (see Table 3).

In Columns (4) – (6), we limit to firms that have related-party transactions with the subject firm when measuring other member firms' performance. For example, we use RET Affiliates (More-CF & With-RPTs) and RET Affiliates (Less-CF & With-RPTs) in replace of RET Affiliates (More-CF) and RET Affiliates (Less-CF). RET Affiliates (More-CF & with-RPTs) measures RET Affiliates using other member firms, in which the controlling family has cash flow rights greater than those of the subject firm, and with which the subject firm has related-party transactions. Likewise, RET Affiliates (Less-CF & with-RPTs) measures RET Affiliates using other member firms, in which the controlling family has cash flow rights less than those of the subject firm, and with which the subject firm has related-party transactions.

Again, the results are consistent with our tunneling hypothesis. The coefficient on RET Affiliates (More-CF & With-RPTs) is positive and statistically significant (Columns 4, 6), whereas that on RET Affiliates (Less-CF & With-RPTs) is statistically insignificant (Column 5, 6). As for measures using ΔROA, the coefficient estimates are all insignificant.

4.5. Subsample Results on the Elasticity to Affiliates' Performance

In this subsection, we run a number of subsample regressions to test our remaining hypotheses

(**H3**, **H4**, and **H5**).

High vs. Low Control-Ownership Disparity Firms

For our tunneling hypothesis to be true, pay sensitivity to other member firms' performance should be stronger in firms that are more likely to suffer from tunneling. To the extent that control-ownership disparity captures the extent of tunneling, firms that have high control-ownership disparity should be the ones with high pay sensitivity to other member firms' performance.

In Table 6, we run the regressions in Tables 4 and 5 again using two subsamples: one with control-ownership disparity above the median value of 19.82% (Columns (1) - (5)) and another below the median (Columns (6) - (10)). Across all specifications, we control for ΔROA Affiliates and other controls, but do not report their coefficients to save space. The results show that pay sensitivity to other member firms' performance survives in the high disparity firms, but not in the low disparity firms. The coefficient on RET Affiliates (All) in the high-disparity sample is 0.227 and statistically significant, whereas that in the low-disparity sample is -0.015 and statistically insignificant. We find similar results for RET Affiliates (More-CF) and RET Affiliates (More-CF & With-RPTs). So, our findings support Hypothesis 3. It is also important to note that the coefficients in the high-disparity subsample are greater in magnitude than those in the full sample reported in Tables 4 and 5. Note that the coefficient on RET Affiliates (All) in the full sample is only 0.108 (Table 4, Column (3)).

High vs. Low Expropriation Risk Index Firms

In addition to control-ownership disparity, *ERI* is another measure one can use to capture the likelihood of expropriation. As explained earlier, firms with ERI > 0 are considered as those that are likely to suffer from tunneling and firms with ERI ≤ 0 are considered as those that are either neutral or likely to benefit.

Table 7 splits the full sample into firms with *ERI* > 0 (Column (1)) and those with *ERI* ≤ 0

(Column (2)), and show that the coefficient on RET Affiliates is positive and statistically significant only in the subsample where firms have positive ERI. Thus, we have findings that support Hypothesis 4. The coefficient of 0.150 on RET Affiliates suggest that a 100% increase in stock price of other member firms results in a 15% increase in total annual cash compensation of all inside directors. Also note that this coefficient of 0.150 is greater in magnitude than that estimated using the full sample (0.108).

Absence vs. Presence of Group Chairperson on BOD

If the controlling shareholder of a business group (i.e., chaebol chairperson) sits on the board, and if he or she also receives compensation, we expect our earlier findings on pay's elasticity to other member firms' performance to weaken or to even disappear. As explained earlier, there are two reasons behind this. First, there is no reason to believe that the chairperson's pay should be linked to the performance of other member firms as means to induce his or her cooperation in a transaction that ultimately benefits him or her. Second, such pay to chaebol chairperson is substantially larger than that to others, making our executive pay measure, inclusive of pay to all inside directors, insensitive to other member firms' performance (Cheong and Kim (2014)).

Table 8 splits further the high disparity subsample (firms with control-ownership disparity greater than the sample median) into two smaller subsamples: one is comprised of firms with the controlling shareholder on the board (Column (1)) and another is comprised of firms without (Column (2)). The results show that the coefficient on RET Affiliates is positive and statistically significant only in the first subsample, where the controlling shareholder is absent. We find similar results when using RET Affiliates (More-CF & With-RPTs) and ΔROA Affiliates (More-CF & With-RPTs).

Thus, we have results supporting Hypothesis 5. The coefficient of 0.270 on RET Affiliates suggest that a 100% increase in stock price of other member firms results in a 27% increase in total annual cash compensation of all inside directors if we limit the sample to firms with high disparity and no controlling shareholder on the board. Also note that this coefficient of 0.270 is greater in magnitude than that estimated using the full sample (0.108).

5. Conclusion

This paper examines how executive pay is set when a firm is a business group member. Existing literature is full of evidence that business group firms behave differently from stand-alone firms. Naturally, one would expect that business group and stand-alone firms would set their executive pay in a different fashion. Surprisingly, however, there are only a handful of papers on this. To the best of our knowledge, this is the first paper investigating executives' pay sensitivity to the performance of other member firms within the same business group.

In this paper, we explore how the existence of tunneling among business group members may shape the executive pay of its member firms. We develop a number of hypotheses and confirm them using Korean chaebol firms. First, we confirm that executive pay of a chaebol firm is positively linked not only to its own stock performance, but also to that of other member firms in the same chaebol group. Second, we find that this link is stronger to the performance of others that are more likely to benefit from tunneling (firms in which the controlling family has cash flow rights greater than those of the subject firm) and in firms that are more likely to suffer from tunneling (firms in which the controlling family has control-ownership disparity above the sample median).

Executive pay is not the only means the controlling party can utilize to induce executives' cooperate in tunneling transactions. Hiring, promoting, and firing decisions can also be an effective tool. Related to this, one promising extension of this study would be investigating the sensitivity of CEO turnover to other member firms' performance. Another important topic worth exploring, but not fully investigated, is how the existence of supply chain, shareholdings, and lending relationships among member firms can affect the sensitivity of CEO's pay to other member firms' performance.

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Table 1: Sample Construction

	Number of chaebol groups	Number of listed firms in each chaebol group				
		Mean	St. Dev.	Min.	Median	Max.
2003	27	4.41	3.31	1	4.0	14
2004	30	4.20	2.85	1	3.5	14
2005	33	4.15	2.71	1	4.0	14
2006	37	4.11	2.64	1	4.0	14
2007	38	4.18	2.73	1	3.0	15
2008	43	4.26	2.92	1	3.0	16
2009	29	5.31	3.49	2	5.0	16
2010	32	5.34	3.46	2	5.0	16
2011	34	5.56	3.47	2	5.0	18

Table 2: Variable Definitions and Summary Statistics

Panel A: Variable definitions

Variables	Definitions
TPAY	Sum of cash compensation paid to inside board of directors in million Korean won (approximately thousand US dollars). The figures are 2002-costant values using Bank of Korea's CPI.
RET	Logarithmic stock return adjusted for dividends and stock-splits minus logarithmic value-weighted industry (using first 2-digit Korea SIC code) stock return, where market capitalizations are used as weights
ΔROA	First-differenced ROA (net income/total assets) minus first-differenced value-weighted industry (using first 2-digit Korea SIC code) ROA, where total assets are used as weights
RET Affiliates (All)	Weighted-average of other member firms' RET, where market capitalizations are used as weights
More-CF	RET Affiliates measured using other firms, in which the controlling family has cash flow rights greater than those of the subject firm
Less-CF	RET Affiliates measured using other firms, in which the controlling family has cash flow rights less than those of the subject firm
More-CF & With RPT	RET Affiliates measured using other firms, in which the controlling family has cash flow rights greater than those of the subject firm, and with which the subject firm has related-party transactions.
Less-CF & With RPT	RET Affiliates measured using other firms, in which the controlling family has cash flow rights less than those of the subject firm, and with which the subject firm has related-party transactions.
ΔROA Affiliates (All)	Weighted-average of other member firms' ΔROA, where total assets are used as weights
More-CF	ΔROA Affiliates measured using other firms, in which the controlling family has cash flow rights greater than those of the subject firm
Less-CF	ΔROA Affiliates measured using other firms, in which the controlling family has cash flow rights less than those of the subject firm
More-CF & With RPT	ΔROA Affiliates measured using other firms, in which the controlling family has cash flow rights greater than those of the subject firm, and with which the subject firm has related-party transactions.
Less-CF & With RPT	ΔROA Affiliates measured using other firms, in which the controlling family has cash flow rights less than those of the subject firm, and with which the subject firm has related-party transactions.
No. of Executives	Number of inside board of directors. It equals TPAY/APAY. APAY is cash compensation paid to inside board of directors in million Korean won.
Stock Option	1 if any executive of the firm owns unexercised stock options and 0 otherwise
Control-Ownership Disparity	Controlling family's voting rights subtracted by its cash flow rights
Expropriation Risk Index	Weighted average of cash flow right differentials (cash flow right in an affiliate – cash flow right in the subject firm), where the weights are related-party transaction volumes scaled by the subject firm's total sales.

Panel B: Summary statistics

Variables	*N*	Mean	St. Dev.	Min	Median	Max
TPAY	757	2,503	4,863	50	1,357	79,800
∆ln(TPAY)	757	0.067	0.436	-1.984	0.061	1.606
RET	757	-0.063	0.357	-1.378	-0.067	1.687
∆ROA	757	-0.003	0.069	-0.452	-0.002	0.379
RET Affiliates (All)	743	-0.017	0.271	-0.922	-0.029	0.977
More-CF	743	-0.009	0.281	-1.415	0.000	1.687
Less-CF	743	-0.030	0.283	-1.133	0.000	1.315
More-CF & With-RPTs	743	-0.014	0.272	-1.547	0.000	1.687
Less-CF & With-RPTs	743	-0.029	0.279	-1.458	0.000	1.291
∆ROA Affiliates (All)	757	0.002	0.051	-0.212	-0.002	0.607
More-CF	757	-0.004	0.093	-1.705	-0.009	0.569
Less-CF	757	0.004	0.112	-0.399	0.000	2.611
More-CF & With-RPTs	757	-0.002	0.069	-0.910	0.000	0.666
Less-CF & With-RPTs	757	0.005	0.146	-0.452	0.000	3.556
No. of Executives	752	3.740	1.513	1.000	3.017	12.000
∆ln(No. of Executives)	749	-0.036	0.285	-1.609	0.000	1.948
Stock Option	757	0.287	0.453	0.000	0.000	1.000
Control-Ownership Disparity	757	0.202	0.162	0.000	0.198	0.775
Expropriation Risk Index	757	0.004	0.070	-1.055	0.002	0.160

Panel C: Correlation among performance variables

Variables	RET	∆ROA	RET Affiliates	∆ROA Affiliates
RET	1.000			
∆ROA	0.182	1.000		
	[0.000]***			
RET Affiliates	0.196	0.002	1.000	
	[0.000]***	[0.956]		
∆ROA Affiliates	0.012	0.040	0.035	1.000
	[0.743]	[0.272]	[0.344]	

Table 3: Pay's Elasticity to its Own Performance

Dependent variable: Log change in executive's total cash compensation = ∆ln(TPAY)

Variables	(1)	(2)	(3)	(4)	(5)
Constant	0.083	0.086	0.049	0.052	**0.092**
	[1.64]	[1.71]*	[1.03]	[1.09]	**[2.39]****
RET	**0.165**	**0.173**	**0.173**	**0.168**	**0.158**
	[3.21]***	**[3.34]*****	**[3.29]*****	**[3.29]*****	**[2.43]****
RET_{-1}			**0.097**		
			[2.45]**		
∆ROA	0.270	0.081	0.232	0.363	0.001
	[1.30]	[0.34]	[1.15]	[1.62]	[0.00]
ΔROA_{-1}				**0.147**	
				[1.75]*	
$\Delta \ln(TPAY)_{-1}$					**-0.204**
					[-4.56]***
∆ln(No. of Executives)	**0.420**	**0.419**	**0.412**	**0.419**	**0.365**
	[6.59]***	**[6.53]*****	**[6.42]*****	**[6.66]*****	**[5.91]*****
Stock Option	-0.046	-0.045	**-0.047**	**-0.047**	**-0.061**
	[-1.51]	[-1.47]	**[-1.68]***	**[-1.71]***	**[-1.82]***
x RET	-0.071	-0.084	-0.124	-0.133	-0.099
	[-0.76]	[-0.90]	[-1.47]	[-1.64]	[-1.01]
x ∆ROA		0.691			
		[1.50]			
Year dummy	Yes	Yes	Yes	Yes	Yes
N	749	749	726	739	619
Adj. R-square	0.104	0.105	0.112	0.110	0.132

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, controls, and year dummies. RET is logarithmic stock return adjusted for dividends and stock-splits minus logarithmic value-weighted industry (using first 2-digit Korea SIC code) stock return, where market capitalizations are used as weights. ∆ROA is first-differenced ROA (net income/total assets) minus first-differenced value-weighted industry (using first 2-digit Korea SIC code) ROA, where total assets are used as weights. No. of Executives is the number of inside board of directors. Stock Option is a dummy variable taking a value of 1 if any executive of the firm owns unexercised stock options and 0 otherwise. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

Table 4: Pay's Elasticity to Other Member Firms' Performance

Dependent variable: Log change in executive's total cash compensation = ∆ln(TPAY)

Variables	(1)	(2)	(3)
Constant	0.076	0.083	0.076
	[1.46]	[1.65]	[1.46]
RET Affiliates	**0.108**		**0.108**
	[2.21]**		**[2.20]****
∆ROA Affiliates		0.146	0.055
		[0.61]	[0.23]
RET	**0.151**	**0.165**	**0.151**
	[2.93]***	**[3.21]*****	**[2.92]*****
∆ROA	0.318	0.266	0.316
	[1.41]	[1.28]	[1.40]
∆ln(No. of Executives)	**0.423**	**0.422**	**0.424**
	[6.52]***	**[6.61]*****	**[6.50]*****
Stock Option	-0.046	-0.046	-0.046
	[-1.50]	[-1.50]	[-1.49]
x RET	-0.067	-0.072	-0.068
	[-0.72]	[-0.76]	[-0.72]
Year dummy	Yes	Yes	Yes
N	735	749	735
Adj. R-square	0.110	0.103	0.109

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, other member firms' performance, controls, and year dummies. Other variables are defined in Table 2 and 3. RET Affiliates is weighted-average of other member firms' RET, where market capitalizations are used as weights. ∆ROA Affiliates is weighted-average of other member firms' ∆ROA, where total assets are used as weight. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

Table 5: Elasticity to the Performance of Affiliates and Their Characteristics

Dependent variable: Log change in executive's total cash compensation = ∆ln(TPAY)

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.080	0.080	0.080	0.080	0.080	0.081
	[1.54]	[1.54]	[1.54]	[1.52]	[1.54]	[1.52]
RET Affiliates						
More-CF	**0.105**		**0.103**			
	[2.07]**		**[2.02]****			
Less-CF		0.039	0.034			
		[0.84]	[0.72]			
More-CF & With-RPTs				**0.094**		**0.094**
				[2.01]**		**[2.00]****
Less-CF & With-RPTs					0.005	0.007
					[0.09]	[0.11]
∆ROA Affiliates						
More-CF	-0.068		-0.071			
	[-0.59]		[-0.61]			
Less-CF		-0.011	-0.003			
		[-0.17]	[-0.05]			
More-CF & With-RPTs				0.089		0.087
				[0.46]		[0.45]
Less-CF & With-RPTs					-0.018	-0.014
					[-0.39]	[-0.30]
RET	**0.154**	**0.162**	**0.150**	**0.154**	**0.166**	**0.153**
	[2.93]***	**[3.14]*****	**[2.89]*****	**[2.97]*****	**[3.28]*****	**[3.03]*****
∆ROA	0.307	0.310	0.314	0.281	0.306	0.286
	[1.36]	[1.39]	[1.37]	[1.24]	[1.38]	[1.24]
∆ln(No. of Executives)	**0.425**	**0.427**	**0.424**	**0.426**	**0.427**	**0.426**
	[6.56]***	**[6.60]*****	**[6.52]*****	**[6.54]*****	**[6.63]*****	**[6.52]*****
Stock Option	-0.044	-0.049	-0.044	-0.044	-0.049	-0.044
	[-1.44]	[-1.60]	[-1.45]	[-1.44]	[-1.59]	[-1.43]
x RET	-0.069	-0.068	-0.067	-0.068	-0.069	-0.067
	[-0.73]	[-0.72]	[-0.71]	[-0.72]	[-0.73]	[-0.70]
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
N	735	735	735	735	735	735
Adj. R-square	0.109	0.105	0.107	0.108	0.105	0.106

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, other member firms' performance, controls, and year dummies. Other variables are defined in Tables 2, 3, and 4. Other member firms' performance labeled as 'More(Less)-CF' is measured by using affiliates, in which the controlling family has cash flow rights greater (less) than those of the sample firm. Other member firms' performance labeled as 'More(Less)-CF & With-RPTs' is measured by using affiliates, in which the controlling family has cash flow rights greater (less) than those of the subject firm and with which the subject firm has related-party transactions. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

Table 6: Subsample Results on the Elasticity to Affiliates' Performance and Their Characteristics

(High vs. Low Control-Ownership Disparity Firms)

Dependent variable: Log change in executive's total cash compensation = ΔIn(TPAY)

	Control-Ownership Disparity > Median (19.82%)					Control-Ownership Disparity < Median (19.82%)				
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Constant	0.045	0.056	0.056	0.059	0.059	**0.129**	0.126	**0.125**	**0.128**	**0.128**
	[0.62]	[0.78]	[0.78]	[0.81]	[0.81]	**[1.76]***	[1.69]*	**[1.69]***	**[1.74]***	**[1.75]***
RET Affiliates										
All	**0.227**					-0.015				
	[2.50]**					[-0.25]				
More-CF		**0.170**	**0.170**				0.033	0.032		
		[2.20]**	**[2.19]****				[0.47]	[0.44]		
Less-CF			0.010					0.012		
			[0.15]					[0.21]		
More-CF & With-RPTs				**0.173**	**0.171**				-0.023	-0.024
				[2.50]**	**[2.42]****				[-0.35]	[-0.35]
Less-CF & With-RPTs					-0.033					0.023
					[-0.33]					[0.35]
ΔROA Affiliates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	374	374	374	374	374	361	361	361	361	361
Adj. R-square	0.120	0.118	0.116	0.119	0.117	0.111	0.111	0.109	0.111	0.108

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, other member firms' performance, controls, and year dummies. All variables are defined in Tables 2 - 5. We split the full sample into low vs. high control-ownership disparity subsamples using a sample median of 19.82%. Control-ownership disparity of a firm is defined as the controlling family's voting rights subtracted by its cash flow rights. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

Table 7: Subsample Results on the Elasticity to Affiliates' Performance

(High vs. Low Expropriation Risk Index Firms)

Dependent variable: Log change in executive's total cash compensation = ∆ln(TPAY)

Variables	(1) Expropriation Risk Index > 0	(2) Expropriation Risk Index ≤ 0
Constant	**0.106**	0.044
	[1.92]*	[0.46]
RET Affiliates	**0.150**	0.014
	[2.17]**	[0.19]
∆ROA Affiliates	0.147	0.073
	[0.30]	[0.28]
RET	0.099	**0.250**
	[1.32]	**[3.61]*****
∆ROA	**0.541**	-0.128
	[1.78]*	[-0.32]
∆ln(No. of Executives)	**0.513**	**0.376**
	[5.13]***	**[4.24]*****
Stock Option	-0.060	-0.008
	[-1.54]	[-0.16]
x RET	0.042	**-0.281**
	[0.33]	**[-2.33]****
Year dummy	Yes	Yes
N	432	303
Adj. R-square	0.129	0.082

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, other member firms' performance, controls, and year dummies. Other variables are defined in Tables 2, 3, and 4. We split the full sample into positive vs. non-positive expropriation risk index (ERI) subsamples. ERI of a firm is defined as the weighted average of cash flow right differentials (cash flow right in an affiliate – cash flow right in the subject firm), where the weights are related-party transaction volumes scaled by the subject firm's total sales. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

Table 8: Subsample Results on the Elasticity to Affiliates' Performance and Their Characteristics

(Absence vs. Presence of Group Controlling Shareholder on BOD)

Dependent variable: Log change in executive's total cash compensation = ∆ln(TPAY)

	Controlling Shareholder Absent			Controlling Shareholder Present		
Variables	(1)	(2)	(3)	(6)	(7)	(8)
Constant	0.055	0.047	0.019	-0.013	0.012	**0.125**
	[0.80]	[0.67]	[0.28]	[-0.07]	[0.07]	**[1.68]***
RET Affiliates						
All	**0.271**			0.095		
	[2.29]**			[0.67]		
More-CF		0.164			0.197	
		[1.63]			[1.50]	
Less-CF		0.009			0.111	
		[0.08]			[0.93]	
More-CF & With-RPTs			**0.180**			0.137
			[1.97]*			[1.17]
Less-CF & With-RPTs			-0.035			0.134
			[-0.30]			[0.99]
∆ROA Affiliates						
All	0.145			-0.024		
	[0.33]			[-0.03]		
More-CF		0.054			-0.469	
		[0.15]			[-0.79]	
Less-CF		-0.563			-0.078	
		[-1.16]			[-1.23]	
More-CF & With-RPTs			**0.534**			0.172
			[1.81]*			[0.48]
Less-CF & With-RPTs			0.057			-0.041
			[0.19]			[-0.98]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
N	289	289	289	85	85	85
Adj. R-square	0.137	0.125	0.131	0.070	0.074	0.065

Notes: This table reports the results of cash compensation (log change in total cash compensation to inside directors) regressions on its own performance, other member firms' performance, controls, and year dummies. All variables are defined in Tables 2 - 5. We limit our sample to firms with control-ownership disparity greater than the median (19.82%) and split them into subsamples with and without the group controlling shareholder in the board of directors. We report t-values in the parentheses, and use standard errors clustered at the firm level. ***, **, * represent statistical significance at the 1%, 5%, and 10% levels, respectively. Coefficients significant either at the 5% or 10% levels are in **bold**.

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