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Related-Party Transactions, Chaebol Affiliations, and the Value of Cash Holdings

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Abstract: This study examines whether related-party transactions (RPTs) impact the value of firms' cash holdings. Using a 2011–2018 sample of Korean public firms, we find that greater RPTs lead to lower cash holdings value. In particular, this decline is more pronounced in Korean chaebol firms than in non-chaebol firms. Our findings suggest that a unique and complex corporate governance structure of chaebol firms makes it difficult for outside investors to monitor firms' internal cash management decisions, resulting in a negative valuation of cash holdings. This study contributes to the extant literature by providing additional evidence that RPTs in chaebol firms with severe agency problems may lower the value of cash holdings.

Keywords: related-party transactions; value of cash holdings; chaebol; corporate governance

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1. Introduction

This study examines whether related-party transactions (RPTs) impact the value of cash holdings. RPTs are transactions with related parties, such as principal shareholders, directors, or affiliated companies. Unlike arm's length transactions in which the buyers and sellers act independently without one party influencing the other, RPTs are arbitrary and may influence the related party [1,2]. For example, when firms have incentives to inflate earnings to avoid being delisted, or prior to issuing new equity, they disclose higher levels of related-party sales.

Previous studies show that conflicts of interest between controlling shareholders and minority shareholders cause RPTs, especially in emerging markets with relatively weak legal protection for minority shareholders [3,4]. This conflict of interests is likely to destroy firm value because controlling shareholders may extract private benefits from minority shareholders through "tunneling" [1,5,6]. Johnson et al. [5] use the term "tunneling" to describe the transfer of resources out of firms to benefit their controlling shareholders. La Porta et al. [7] argue that the expropriation of minority shareholders by controlling shareholders is particularly serious in firms where the controlling shareholders have concentrated ownership that exceeds their cash flow rights and have power over the firm. In addition, firms have significantly negative abnormal stock returns when they report RPTs, suggesting that the capital market assigns lower values to such firms.

This study investigates whether RPTs impact the value of cash holdings using Korean firm data in order to examine how investors perceive the cash management of firms with RPTs. Our study focuses on Korean firms because Korean chaebols have a unique business group structure, such as pyramidal ownership structure and cross-shareholding among firms belonging to a large business group [8,9]. In particular, chaebol firms commonly use RPTs to transfer their wealth by expropriating minority shareholders [8,10,11].

Therefore, RPTs in chaebol firms are likely to be used for opportunistic decisions that may have negative effects on the firms' future growth and corporate sustainability. In addition, efficient cash management is a critical corporate decision which determines firms'

sustainability. The market participants evaluate firms' future performance by examining whether those firms have the ability to produce future cash flows. In other words, management of cash holdings is one of the most important decisions for companies to achieve sustainable performance in the long run. Thus, investigating the relationship between the value of cash holdings and RPTs is expected to determine whether this relation impacts firms' long-term growth and sustainability.

The value of cash holdings depends on how investors expect the firm to use its cash. Cash is a highly liquid asset, making it easier for the firm to divert resources toward private benefits compared to other assets [12,13]. In addition, cash is difficult for external capital providers to monitor and control how the firm uses it; thus, firms can exercise large discretion over its cash expenditures [14].

Prior studies show that, on average, the market value of an additional dollar in cash holdings is less than a dollar [15,16]. Further, the value of one additional dollar of cash reserves differs considerably based on how the firm uses its cash. For example, shareholders negatively evaluate the cash holdings of firms with severe agency costs [16,17]. This finding suggests that investors perceive that such firms will use its cash resources inefficiently, which could destroy firm value. Thus, this study examines whether RPTs, which are arbitrary transactions among affiliates and trigger agency problems, results in a significant decrease in the value of cash holdings.

In addition, we investigate whether chaebol firms in Korea show a more significant negative effect of RPTs on the market value of cash holdings than non-chaebol firms do. A Korean chaebol refers to a large business conglomerate characterized as having a pyramidal ownership structure and cross-shareholding among firms belonging to a large business group [18–20]. Every year, the Korea Fair Trade Commission (KFTC) discloses a list of large business groups whose assets are worth more than KRW 10 trillion. The firms included in the list face greater anti-trust scrutiny in their intra-group transactions and take more responsibility for disclosure requirements. This complex governance structure makes it difficult for outside investors to monitor and control firms' internal business decisions [8,9]. Further, chaebol firms have more active RPTs because they have more affiliated companies compared to non-chaebol firms. Bae et al. [8] and Baek et al. [10] document that chaebol firms utilize RPTs for tunneling in which controlling shareholders transfer the wealth of minority shareholders to themselves. Hence, RPTs in chaebol firms are likely to lead to inefficient use of cash holdings, leading market participants to attach a lower value to cash assets in chaebol firms than in non-chaebol firms.

Using 3872 firm-year observations from 2011 to 2018, the main results of this study show that RPTs decrease the market value of cash holdings. This finding suggests that investors attach a lower value to the cash assets of firms with RPTs, which are arbitrary transactions between affiliates. In addition, the negative effect of RPTs on the value of cash holdings is more significant in chaebol firms than in non-chaebol firms, suggesting that capital market participants evaluate cash holdings arising from the RPTs of chaebol firms negatively. Thus, the results of this study provide evidence that chaebol affiliations with RPTs could be a possible factor contributing to a lower value of cash holdings. Further, we performed a battery of analyses to ensure robustness of our main results. We confirm that our main findings remain qualitatively unchanged after these additional analyses.

This paper contributes to the extant literature in the following ways. First, this study provides an understanding of the direct negative associations between RPTs and the market value of cash holdings. This study provides additional evidence that investors perceive firms with active RPTs to manage cash inefficiently, showing negative reactions to the corporate cash resources of those firms. Second, this study documents the pronounced negative impact of RPTs on the value of cash holdings in chaebol firms. Due to chaebol firms' unique ownership structures and complex corporate governance system, shareholders have more negative evaluations of chaebols. Using Korean firm data, this study suggests that the effect of RPTs on the value of cash holdings is likely to be more pronounced in unique corporate governance settings such as chaebol firms. Finally, this study suggests for the

policy implication for RPTs. In Korea, firms with RPTs are required to disclose information regarding RPTs such as the names of related-parties and the transaction amounts among the affiliated companies in the footnotes of financial statements. However, specific transaction terms such as sale and purchase prices and margin rates for each RPT are not disclosed, suggesting that managerial discretion is likely to be involved in RPTs. The results in our study imply that a disclosure system for RPTs should be implemented and that stronger regulation for unfair RPTs needs to be implemented.

The rest of the paper is organized as follows. Section 2 presents the literature review and hypotheses development. Section 3 describes the research design and sample selection process. Section 4 presents the empirical results, and Section 5 concludes the paper.

2. Literature Review and Hypotheses Development

2.1. Related-Party Transactions (RPTs)

RPTs indicates transactions between a firm and its principal shareholders, directors, or affiliated companies [2]. Arm's length transactions are based on the value-maximization decision in a competitive business environment, whereas, RPTs are more likely to be influenced by managerial discretion [4]. For example, managers may purchase products at lower prices and sell at higher prices so that they can have higher profits.

A large body of literature related to RPTs shows how controlling shareholders can expropriate wealth from minority shareholders in firms with concentrated ownership. RPTs could reduce firms' value because they may arise from conflicts of interests between controlling shareholders and minority shareholders, especially in emerging markets where the legal protection of minority shareholders is weak [3,4]. Johnson et al. [5] provide evidence that controlling shareholders extract private benefits from minority shareholders through "tunneling". Cheung et al. [6] find that firms listed on the Hong Kong stock market show significantly negative abnormal stock returns when they provide information related to RPTs, implying that the market assigns lower value to companies engaged in RPTs. Jian and Wong [1] document that firms listed in China utilize related sales to their controlling owners to prop up earnings. Specifically, the levels of related sales and operating profits resulting from related sales are abnormally high when firms have incentives to manage earnings.

RPTs and tunneling are not limited to Asian countries. Prior studies provide international evidence on RPTs and tunneling. Abudy and Lauterbach [21] find a significant negative relationship between average change in controlling shareholders' equity holdings and the stock market's annual return for large Israeli firms, partially supporting the financial tunneling hypothesis. Atanasov et al. [22] show that even though a corporate law reform in Bulgaria restrained financial tunneling, cash-flow tunneling has increased, suggesting that tunneling is difficult to prevent. Using adjusted absolute abnormal accruals, Gordon and Henry [23] provide evidence of earnings management from RPTs. Further, in the U.S., RPTs show a negative association with current and future market prices [24,25]. Using a sample of French companies, Bennouri et al. [26] document a negative association between the presence of high-quality auditors and the number of reported abnormal RPTs.

2.2. Value of Cash Holdings

The value of cash holding is determined by investors' expectations of how cash is used in the firm [16,27]. Cash is a highly liquid asset, which makes it easier for managers to divert resources to private benefits compared to other assets [12,13]. Myers and Rajan [12] argue that cash is likely to be useful for managers to gain private utility as it can be used for tunneling to transfer minority shareholder wealth to the controlling shareholders. In addition, cash is likely to create an agency problem between managers and outside stakeholders because it is difficult for external capital providers to monitor and control how cash is used in the firm, thus, managers may use cash at their discretion. Harford et al. [14] report that managers in firms with high agency costs are likely to use cash in investment projects that could destroy shareholders' value.

Recent studies on the value of cash holdings have reported that, on average, the market value of an additional dollar in cash holdings is less than one dollar [15,16]. Faulkender and Wang [15] provide evidence that the value to the equity holder of one additional dollar of cash reserves varies considerably depending on how the cash is used in the firm. Specifically, if firms pay high levels of cash dividends, and have low bond credit rating, and if the size of enterprise is small, those firms have limited financing in the capital markets. The larger these constraints, the more likely the firms' additional cash flows will be reflected in the stock returns. In addition, Dittmar and Mahrt-Smith [16] find evidence that investors have negative evaluation on cash holdings of firms with higher agency costs, whereas firms with better corporate governance show a stronger relation between cash holdings and stock returns. Moreover, Louis et al. [17] document that the market value of an additional dollar in cash holdings increases in firms with high accounting conservatism. This suggests that accounting conservatism results in a more efficient use of cash holdings, mitigating agency conflicts between managers and shareholders.

2.3. Business Groups Affiliation

In Korea, a large business conglomerate is known as a chaebol. A chaebol has a pyramidal and circular ownership structure, which is controlled by members of a founding family. This ownership structure enables a small number of controlling shareholders to exert full control over affiliated firms, even though they have a relatively small portion of cash flow rights [18–20]. There are firms whose structures are similar to chaebol firms in other countries. In Japan, keiretsu is a network of firms, affiliated with a main bank or a major firm. Cooke [28] argues that keiretsu companies provide less information than other companies in the annual reports. Using a sample of Indian firms, Bertrand et al. [29] find that ultimate owners of the Indian pyramids are more likely to divert resources from firms lower in the pyramid toward firms higher in the pyramid.

Johnson et al. [5] document that controlling shareholders of European business groups have incentives to transfer resources from member firms so that they can increase their own wealth. In the U.S., family firms are managed or controlled by founding families and they constitute about one-third of the SP 500 [30]. Family firms in the U.S. have severe agency problems arising between controlling and non-controlling shareholders [31]. Prior studies show that family firms have strong incentives to manipulate earnings to conceal the negative effects of RPTs [30].

2.4. Hypotheses Development

RPTs are internal transactions between a firm and its affiliated parties. Thus, outside investors have difficulty obtaining detailed information about RPTs, and managers' discretion is more likely to get involved in RPTs [4]. Further, conflicts of interest between controlling shareholders and minority shareholders lead RPTs to destroy the firms' value, particularly in emerging markets where minority shareholders' legal protection is weaker than in developed markets. Prior studies document that controlling shareholders expropriate the wealth of minority shareholders through tunneling [5].

Based on the evidence that RPTs are caused by agency problems between controlling and minority shareholders, we may conclude that firms involved in RPTs have lower value of the firms' cash holdings. Since cash is a highly liquid asset compared to other assets, managers are more likely to divert corporate resources into private utility. Moreover, external capital providers have difficulty monitoring and controlling how cash is used in the firm, thus, managers have incentives to invest in unprofitable projects that could erode the firm's value for their private benefits. Capital market participants are more likely to perceive firms involved in RPTs as abusing corporate cash resources for opportunistic decisions, showing negative evaluation on the value of cash holdings.

To the best of our knowledge, examining the direct relationship between RPTs and the value of cash holdings is a relatively unexplored area in the literature. Previous studies on RPTs have investigated whether RPTs affect firms' future stock returns and earnings

management decisions, and the relation between corporate governance and RPTs. It is plausible to expect that investors are more likely to have negative reactions to the use of corporate cash holdings for firms involved in RPTs in which management's discretion may be involved.

Hypothesis 1 (H1). *RPTs are negatively associated with the value of cash holdings.*

Next, we examine whether the impact of RPTs on the value of cash holdings varies between chaebol and non-chaebol firms. In particular, chaebol firms utilize RPTs for tunneling in which the wealth of minority shareholders is transferred to controlling shareholders [8,10,11]. Further, complex corporate governance, such as pyramidal ownership structures and cross-holdings among firms that belong to a large business group in chaebol firms makes it difficult for outside stakeholders to monitor internal business decisions [8,9]. In addition, chaebol firms have many affiliated companies, and relatively more active RPTs than firms that do not belong to large business groups.

Therefore, RPTs in chaebol firms are likely to trigger more severe agency problems between controlling and minority shareholders, resulting in more inefficient use of cash holdings than in non-chaebol firms. This inefficient use of cash holdings triggers negative evaluation of the firms' cash holdings in the capital markets. Based on this reasoning, we hypothesize that RPTs in chaebol firms show a more significant decrease in the value of cash holdings than RPTs in non-chaebol firms. As a result, we set the second hypothesis as follows.

Hypothesis 2 (H2). *The negative association between RPTs and the value of cash holdings is stronger in chaebol firms than in non-chaebol firms.*

3. Research Model and Data

3.1. Regression Model

According to Faulkender and Wang [15], one additional dollar in cash holdings of a firm is considered less than a dollar in market value. This means that investors may discount the value of actual additional cash holdings that a firm owns. The objective of this study is to examine whether RPTs erode the marginal market value of cash holdings. We extend Faulkender and Wang's [15] model by including RPTs as an additional explanatory variable and an interacting term of change in cash holdings (△CASH) and RPTs. We estimate the following regression model to examine the effect of RPTs on the value of cash holdings:

$$\begin{aligned} \mathrm{SAR} = \beta_0 + \beta_1 \triangle \mathrm{CASH} + \beta_2 \triangle \mathrm{CASH} \times \mathrm{DRPT} + \beta_3 \mathrm{DRPT} + \beta_4 \triangle \mathrm{E} + \beta_5 \triangle \mathrm{NA} + \beta_6 \triangle \mathrm{RD} \\ + \beta_7 \triangle \mathrm{INT} + \beta_8 \triangle \mathrm{DIV} + \beta_9 \mathrm{CASH}_{t-1} + \beta_{10} \mathrm{LEV} + \beta_{11} \mathrm{MSH} + \beta_{12} \mathrm{FSH} \\ + \text{Industry\&Year Dummy} + \epsilon, \end{aligned} \tag{1}$$

where the dependent variable is size-adjusted abnormal return (SAR). We measure SAR in the following ways. First, we divide samples into 10 portfolios based on firm size, which is the market value of equity. Then, we calculate the median value of stock returns for each portfolio and use the median value as expected stock returns. Finally, SAR is the difference between a firm's stock return, and the expected return. A majority of Korean firms announce financial statements three months after the fiscal year-end, so we compute annual size-adjusted abnormal returns from April in current year to March in the next year [32–34]. DRPT indicates a dummy variable for RPTs. We use this dummy variable to provide better interpretation on the interaction term of change in cash holdings (△CASH) and RPTs. We compute median value of RPTs per year, and assign DRPT equal to 1 if RPT is greater than the median, and DRPT equal to 0 if RPT is less the median. According to Faulkender and Wang [15], β_1 indicates the market value of cash holdings. Specifically, β_1 shows how investors evaluate the change in corporate cash holdings. If β_1 is significantly positive, the stock market places a positive value on cash holdings. If β_1 is significantly negative, the market participants attach a lower value to cash assets. Our main variable

of interest is the coefficient of β_2. By examining β_2, we interpret how investors perceive the change in cash holdings of a firm with RPTs. A significantly negative coefficient of β_2 reveals that the market value of cash is significantly lower for firms with high levels of RPTs than for firms with low levels of RPTs.

As in prior studies, we control for firm-specific factors that may be correlated with both returns and cash holdings [15–17,35]. The financing variables include interest expense (INT), dividends (DIV), and leverage (LEV). We include earnings before interest and extraordinary items (E) to control for changes in firms' profitability, and total assets net of cash (NA) and research and development expenditures (RD) to control for changes in the firm's investment policy. We also include cash holdings in the prior year ($CASH_{t-1}$), as the different levels of cash holdings affect the changes in the value of cash. Additionally, we add ownership by majority shareholders (MSH) and foreign shareholders (FSH) as the corporate governance control variables because these mechanisms substantially affect the investors' ability to pressure management to use cash resources efficiently. Finally, we include industry and year dummies to control for differences in year and industry characteristics.

3.2. Sample Selection

We use a sample of Korean firms listed on the Korean Stock Exchange from 2011 to 2018. We extract financial and stock return data from the KIS-Value database provided by Korea Investors Services. The Korea Fair Trade Commission releases a list of large business groups, which we use to select chaebol firms. This list is based on total assets and includes firms affiliated with large business groups. We include companies with their accounts closing in December, and exclude financial institutions. In addition, we winsorize the sample at the top and bottom 1% of the independent and dependent variables to eliminate the effect of outlier. This sample selection process yields 3872 firm-year observations.

4. Empirical Results

4.1. Univariate Tests

Table 1 provides the descriptive statistics for the variables used in this study. The SAR has a mean close to 0 (−0.005) because we subtract the benchmark portfolio return from the firm' s stock return to compute the size-adjusted abnormal returns. The average change in cash holdings (△CASH) is positive, suggesting that, on overage, firms are increasing their cash holdings over time. The mean for RPT1, which is the sum of related-party sales, purchases, other revenues, and expenses scaled by sales revenue, is 0.323. The mean values of RPT2, the sum of related-party sales and other revenues scaled by sales revenue, and RPT3, the sum of related-party purchases and other expenses scaled by sales revenue, are 0.185 and 0.140, respectively.

Table 2 reports the Pearson correlations between the variables for pooled samples. The change in cash holdings (△CASH) has a significantly positive correlation with size-adjusted abnormal returns (SAR), implying that an increase in cash holdings results in higher firm value. The RPT variables (RPT1, RPT2, and RPT3) are not significantly correlated with SAR. SAR has significantly positive correlations with the change in earnings before interest and extraordinary items (△E), change in total assets net of cash (△NA), cash holdings in the prior year ($CASH_{t-1}$), and foreign shareholders' ownership (FSH). Additionally, leverage (LEV) shows a significantly negative correlation with SAR.

4.2. Multivariate Analysis

Table 3 presents results from the regression of the value of cash holdings on RPTs. Column 1 of Table 3 shows the regression results using DRPT1 as the independent variable, which is equal to 1 if RPT1 is greater than the annual median value of RPT1, and 0 if RPT1 is less than the annual median value of RPT1. Column 2 and Column 3 report the results using DRPT2 and DRPT3, respectively.

Table 1. Descriptive Statistics.

Variables	Mean	Q1	Median	Q3	Std. Dev.
SAR	−0.005	−0.244	−0.052	0.170	0.383
△CASH	0.003	−0.014	0.000	0.017	0.044
RPT1	0.323	0.063	0.197	0.473	0.337
RPT2	0.185	0.016	0.072	0.225	0.265
RPT3	0.140	0.018	0.074	0.199	0.171
△E	−0.001	−0.026	−0.001	0.022	0.071
△NA	0.043	−0.025	0.025	0.088	0.145
△RD	0.001	0.000	0.000	0.000	0.004
△INT	0.000	−0.001	0.000	0.001	0.004
△DIV	0.001	0.000	0.000	0.001	0.005
CASHt-1	0.055	0.012	0.036	0.076	0.059
LEV	0.412	0.248	0.410	0.560	0.206
MSH	0.443	0.331	0.448	0.548	0.159
FSH	0.101	0.014	0.045	0.141	0.133

The variables are defined in Appendix A.

Table 2. Correlations analysis.

	SAR	△CASH	RPT1	RPT2	RPT3	△E	△NA	△RD	△INT	△DIV	CASH	LEV	MSH	FSH
SAR	1.00													
△CASH	**0.08**	1.00												
RPT1	−0.07	**−0.05**	1.00											
RPT2	−0.023	**−0.04**	**0.88**	1.00										
RPT3	−0.01	**−0.04**	**0.66**	**0.23**	1.00									
△E	**0.20**	**0.12**	−0.02	−0.00	**−0.04**	1.00								
△NA	**0.13**	**−0.10**	0.02	0.02	−0.01	**0.18**	1.00							
△RD	0.03	**0.04**	−0.00	−0.00	−0.02	0.00	**0.10**	1.00						
△INT	−0.03	−0.03	0.02	0.01	0.02	**−0.10**	**0.25**	**0.07**	1.00					
△DIV	0.02	−0.01	0.02	0.03	0.01	**−0.03**	0.04	**0.04**	**−0.04**	1.00				
$CASH_{t-1}$	**0.03**	**−0.28**	**−0.09**	**−0.08**	**−0.05**	−0.03	**0.15**	0.02	−0.00	**0.08**	1.00			
LEV	**−0.04**	0.03	**−0.16**	**−0.21**	−0.00	−0.01	**−0.05**	−0.02	0.03	**−0.06**	**−0.24**	1.00		
MSH	−0.00	**−0.05**	**0.05**	**0.06**	0.01	−0.02	0.01	**−0.07**	0.01	0.03	**−0.07**	**−0.14**	1.00	
FSH	**0.05**	−0.01	**0.12**	**0.11**	**0.08**	0.01	**0.05**	**0.05**	0.01	**0.08**	**0.10**	**−0.18**	**−0.14**	1.00

This table presents the Pearson correlations between the variables for pooled samples. The bold number indicates statistical significance at the 0.05 level. The variables are defined in Appendix A.

The main variable of interest is the interaction variable △CASH × DRPT. This variable examines whether higher levels of RPTs impact the value of cash holdings. The regression results show that the coefficient of △CASH × DRPT1 is −0.415, which is statistically significant at the 10% level. The coefficient of △CASH × DRPT2 is −0.514, which is also significantly negative at the 10% level. The magnitude of this coefficient implies that shareholders attach 51.4 Korean won less to 100 Korea won of cash held in firms with greater RPTs. This suggests greater RPTs lead to a decline in cash value. In other words, shareholders react negatively to cash holdings for firms with higher number of RPTs. The results can be interpreted as follows. Investors perceive that firms with high levels of RPTs have incentives to manage cash inefficiently and may use the cash resources for unprofitable investment projects, which could destroy firm value. Prior studies show that RPTs could destroy a firm's value as they are caused by conflicts of interests between controlling shareholders and minority shareholders. For example, firms experience significantly negative abnormal stock returns and industry-adjusted returns when they disclose RPTs [6,24]. Further, firms use RPTs to prop up earnings [1]. Therefore, the results in this study are similar to these earlier studies since we provide evidence that greater RPTs may influence shareholders to show negative evaluation on corporate cash resources, resulting in lower value of cash holdings. In addition, RPT2 is the sum of related-party sales and other revenues scaled by sales revenue, thus firms are more likely to use RPT2 to report

higher earnings. As a results, the market provides a more negative evaluation of cash holdings for firms with greater RPT2. However, the coefficient of △CASH × DRPT3 is not significant. The results in Table 3 indicate that firms with active RPTs are more likely to have lower value of cash holdings.

Table 3. Related-party transactions (RPTs) and value of cash holdings.

$$SAR = \beta_0 + \beta_1 \triangle CASH + \beta_2 \triangle CASH \times DRPT + \beta_3 DRPT + \beta_4 \triangle E + \beta_5 \triangle NA + \beta_6 \triangle RD + \beta_7 \triangle INT + \beta_8 \triangle DIV + \beta_9 CASH_{t-1} + \beta_{10} LEV + \beta_{11} MSH + \beta_{12} FSH + \text{Industry/Year Fixed Effect} + \epsilon$$

Variables	**Dependent Variable: SAR**		
	(1)	(2)	(3)
Intercept	−0.052 (−1.78) *	−0.041 (−1.18)	−0.043 (−1.27)
△CASH	0.901 (4.97) ***	0.952 (5.04) ***	0.818 (4.29) ***
△CASH × DRPT1	−0.415 (−1.82) *		
△CASH × DRPT2		−0.514 (−1.88) *	
△CASH × DRPT3			−0.198 (−0.72)
RPT1	−0.001 (−0.92)		
RPT2		−0.009 (−0.71)	
RPT3			−0.007 (−0.56)
△E	0.813 (10.94) ***	0.904 (10.23) ***	0.905 (10.24) ***
△NA	0.207 (5.32) ***	0.269 (5.83) ***	0.267 (5.78) ***
△RD	0.437 (0.31)	0.030 (0.02)	−0.007 (−0.00)
△INT	−1.883 (−1.36)	−2.975 (−1.81) *	−2.922 (−1.78) *
△DID	1.028 (1.04)	1.037 (0.89)	1.052 (0.90)
$CASH_{t-1}$	0.211 (2.15) **	0.207 (1.81) *	0.221 (1.94) *
LEV	−0.009 (−0.32)	−0.016 (−0.49)	−0.014 (−0.42)
MSH	0.023 (0.67)	0.026 (0.64)	0.023 (0.58)
FSH	0.142 (3.56) ***	0.105 (2.22) **	0.107 (2.25) **
IND	Included	Included	Included
YR	Included	Included	Included
Adj R2	0.08	0.07	0.07
F-value	9.70 ***	9.23 ***	9.12 ***
N	3872	3872	3872

T-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The variables are defined in Appendix A.

For control variables, we find that the coefficient of leverage (LEV) is negative. Firms with very little debt may have higher expected returns due to the lower likelihood of default. Therefore, higher leverage could result in lower expected return. We acknowledge the negative coefficient of leverage in prior literature examining the value of cash holdings [15–17]. The negative coefficient of change in interest expense (INT), which is another control variable, can be explained in a similar context. Firms with higher leverage are more likely to incur greater interest expense from the previous year, resulting in lower expected returns. We find that the coefficients of change in earnings before interest and extraordinary items (△E), change in total assets net of cash (△NA), and ownership by foreign shareholders (FSH) are significant and positive. This suggests that firms that are profitable, have larger assets except cash, and owned by higher percentage of foreign investors have higher expected returns. The results of these control variables are qualitatively similar to the results in prior studies [15–17,32].

Based on the regression results of Table 3, we conclude that investors are likely to attach a lower value to the cash assets of firms with greater RPTs, as they perceive such firms as allocating cash resources inefficiently.

Table 4 reports results from the regression of the value of cash holdings on the RPTs for chaebol and non-chaebol firm samples, which we report in Panels A and B, respectively. In Panel A, the coefficients of △CASH × DRPT1, △CASH × DRPT2, and △CASH × DRPT3 are significantly negative. However, the coefficients of these three variables in Panel B are

not significant. For example, the coefficient of △CASH × DRPT2 in Panel B of Table 4 is not significant and has a value of −0.753. This suggests that shareholders attach 75.3 Korean won less to 100 Korean won of cash held in firms with greater RPTs in non-chaebol firms. Overall, the negative impact of RPTs on the value of cash holdings is significant only for chaebol firms. The results suggest that RPTs in chaebol firms with complex corporate governance mechanisms lead investors to evaluate these firms as likely to manage cash inefficiently, thus reducing firm value. Previous research argued that chaebol firms have incentives to utilize RPTs for tunneling because the wealth of minority shareholders may be transferred to the wealth of controlling shareholders [8,10,11]. Moreover, complicated corporate governance structures in chaebol firms make it harder for outside investors to monitor internal business decisions [8,9]. Thus, our findings for Hypothesis 2 are in line with these prior studies since we suggest that RPTs in chaebol firms with complex governance mechanism induce investors to perceive these firms as likely to manage cash holdings inefficiently, lowering firms' value.

4.3. Robustness Tests

4.3.1. GMM Estimation

We use the generalized method of moments (GMM) to control the endogeneity problems. First, we include instrumental variables that affect RPTs following prior studies [1,36]. In Equation (2) below, the dependent variable is RPTs and independent variables are instrumental variables such as firm size, leverage, market to book ratio, and industry and year dummy variables.

$$\text{RPT} = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{LEV} + \beta_3 \text{MTB} + \text{ Industry\&Year Dummy} + \epsilon, \quad (2)$$

where

SIZE = Natural logarithm of total assets;
LEV = Total liabilities divided by total assets;
MTB = Market value divided by book value of shareholders' equity.

Overall, we find that the results using GMM estimators are qualitatively similar to the results in Tables 3 and 4. Thus, even when we use GMM estimators to control endogeneity problems, our hypotheses are supported (untabulated).

4.3.2. Alternative Measures of SAR

We use alternative measures of SAR to confirm the robustness of our findings. We compute cumulative abnormal return (CAR) using a market-adjusted model. The equally weighted index and value weighted index are used to compute market returns [37–40]. Monthly abnormal returns are calculated as the difference between a firm's stock returns and market returns. CAR is the sum of a firm's monthly abnormal returns over the year ending three months after the fiscal year-end. We confirm that the results are consistent with our main findings, which use SAR (untabulated).

4.3.3. Analyses Clustered at the Firm Level and Business Group Level

We perform empirical analyses clustered at the firm level and business group (chaebol) level since standard errors may be correlated. We find consistent results with our main findings in Tables 3 and 4 (untabulated).

Table 4. RPTs and value of cash holdings: Chaebol and non-chaebol firms.

$$SAR = \beta_0 + \beta_1 \triangle CASH + \beta_2 \triangle CASH \times DRPT + \beta_3 DRPT + \beta_4 \triangle E + \beta_5 \triangle NA + \beta_6 \triangle RD + \beta_7 \triangle INT + \beta_8 \triangle DIV + \beta_9 CASH_{t-1} + \beta_{10} LEV + \beta_{11} MSH + \beta_{12} FSH + \text{Industry/Year Fixed Effect} + \epsilon$$

Panel A: Chaebol Firms

Variables	**Dependent Variable: SAR**		
	(1)	(2)	(3)
Intercept	−0.078 (−2.27) ***	−0.073 (−1.75) *	−0.018 (−0.30)
△CASH	0.837 (4.09) ***	1.005 (4.74) ***	1.062 (2.54) **
△CASH × DRPT1	−0.453 (−1.75) *		
△CASH × DRPT2		−0.749 (−2.36) **	
△CASH × DRPT3			−0.224 (−2.40) **
RPT1	−0.002 (−0.17)		
RPT2		−0.003 (−0.20)	
RPT3			−0.040 (−1.91) *
△E	0.814 (9.54) ***	0.900 (8.74) ***	0.923 (5.56) ***
△NA	0.223 (4.96) ***	0.294 (5.44) ***	0.138 (1.77) *
△RD	1.146 (0.69)	0.289 (0.14)	1.333 (0.43)
△INT	−1.341 (−0.83)	−2.209 (−1.13)	−2.659 (−1.61)
△DID	1.024 (0.89)	1.057 (0.76)	0.737 (0.35)
$CASH_{t-1}$	0.225 (1.99) **	0.221 (1.65) *	0.161 (0.70)
LEV	−0.001 (−0.02)	−0.004 (−0.10)	−0.055 (−0.93)
MSH	0.032 (0.79)	0.037 (0.76)	0.017 (0.23)
FSH	0.125 (2.39) ***	0.088 (1.41)	0.128 (1.58)
IND	Included	Included	Included
YR	Included	Included	Included
Adj R2	0.08	0.07	0.10
F-value	7.69 ***	7.45 ***	3.40 ***
N	946	946	946

Panel B: Non-chaebol firms

Variables	**Dependent Variable: SAR**		
	(1)	(2)	(3)
Intercept	−0.033 (−0.57)	−0.045 (−0.71)	−0.074 (−1.80) *
△CASH	1.341 (3.20) ***	1.480 (2.05) **	0.788 (3.62) ***
△CASH × DRPT1	−0.402 (−0.79)		
△CASH × DRPT2		−0.753 (−1.31)	
△CASH × DRPT3			−0.206 (−0.65)
RPT1	−0.004 (−2.13) **		
RPT2		−0.036 (−1.68) *	
RPT3			0.002 (0.16)
△E	0.806 (5.35) ***	0.934 (5.68) ***	0.901 (8.74) ***
△NA	0.129 (1.82) *	0.136 (1.74) *	0.292 (5.41) ***
△RD	0.253 (−0.89)	0.459 (0.47)	0.251 (0.12)
△INT	−2.977 (−1.14)	−4.522 (−1.57)	−2.122 (−1.08)
△DID	1.000 (0.52)	0.836 (0.39)	1.065 (0.77)
$CASH_{t-1}$	0.158 (0.74)	0.186 (0.80)	0.226 (1.69) *
LEV	−0.072 (−1.32)	−0.083 (−1.36)	−0.003 (−0.09)
MSH	0.039 (0.58)	0.036 (0.49)	0.035 (0.71)
FSH	0.125 (1.73) *	0.093 (1.16)	0.089 (1.42)
IND	Included	Included	Included
YR	Included	Included	Included
Adj R2	0.11	0.10	0.07
F-value	7.58 ***	3.42 ***	7.26 ***
N	2926	2926	2926

T-statistics are reported in parentheses. *, **, and *** denote statistical significance at the 0.10, 0.05, and 0.01 levels, respectively. The variables are defined in Appendix A.

5. Conclusions

This study examines whether RPTs affect the value of cash holdings in the Korean stock market setting. The empirical results show that greater RPTs lead to lower values of cash holdings. In particular, the RPTs of chaebol firms result in a more significant decrease in the value of cash holdings. This finding suggests that chaebol firms' unique ownership structures and complex corporate governance systems make it difficult for outside investors to monitor firms' internal business decisions. Thus, shareholders have a more negative evaluation of the cash holdings of chaebol firms due to RPTs. This study extends the previous literature that investigates the relationship between corporate governance and the value of cash holding [16,17,41]. We provide additional evidence that chaebol-affiliated firms with RPTs could be a possible factor contributing to the decline in the value of cash holdings.

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Appendix A

Table A1. Definitions of Variable.

Variable	Definition
SAR	Size-adjusted abnormal stock returns over the year ending three months after the fiscal year-end
△CASH	Change in cash plus marketable securities over the fiscal year scaled by total assets at the beginning of the year
RPT	RPT1, RPT2, or RPT3
RPT1	Sum of related-party sales, purchases, other revenues, and other expenses scaled by sales revenue
RPT2	Sum of related-party sales and other revenues scaled by sales revenue
RPT3	Sum of related-party purchases and other expenses scaled by sales revenue
DRPT1	DRPT1 is equal to 1 if RPT1 is greater than the annual median value of RPT1, and 0 otherwise
DRPT2	DRPT2 is equal to 1 if RPT2 is greater than the annual median value of RPT2, and 0 otherwise
DRPT3	DRPT3 is equal to 1 if RPT3 is greater than the annual median value of RPT3, and 0 otherwise
△E	Change in earnings before extraordinary items over the fiscal year scaled by total assets at the beginning of the year
△NA	Change in non-cash assets over the fiscal year scaled by total assets at the beginning of the year
△RD	Change in research and development expenses over the fiscal year scaled by total assets at the beginning of the year
△INT	Change in interest expenses over the fiscal year scaled by total assets at the beginning of the year
△DIV	Change in dividends over the fiscal year scaled by total assets at the beginning of the year
$CASH_{t-1}$	Cash plus marketable securities at the beginning of the fiscal year scaled by total assets at the beginning of the year
LEV	Total liabilities divided by total assets
MSH	Majority shareholders' ownership
FSH	Foreign shareholders' ownership

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