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The Marginal Value of Cash and Agency Conflicts in Korean Firms*

Sang-Su Kim¹, Jeong Hwan Lee²

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Abstract

Prior literature expects a lower marginal cash value for weaker governance firms. We test this empirical hypothesis by using the sample of publicly traded Korean firms from 2005 to 2013. To measure the quality of governance structures, we employ the corporate governance scores provided by Korean Corporate Governance Services. The empirical model of Faulkender and Wang (2006) is adopted to estimate the marginal value of cash. Our empirical analysis shows a higher marginal value of cash for the good governance firms in the examination of the total governance score. This finding is consistent to the agency view of cash policy predicting a larger marginal value of cash for the firms with higher governance scores. However, this positive relationship is not robust for a subset of detailed governance scores; a lower marginal cash value is observed for the firms with better qualities of board structure, auditing, dividend policies. Moreover, our empirical analysis verifies a quite low level of marginal cash value for Korean firms, which supports the existence of severe agency conflicts in Korean corporations. Our results verify the significant role of agency conflicts between a manager and shareholders in the determination of marginal cash values in the Korean firms.

Keywords: Cash Policy, Corporate Governance, Manager-Shareholder Conflicts, Marginal Value of Cash.

JEL Classification Codes: G30, G31, G32, G35.

1. Introduction

It is one of the most controversial questions in finance literature how the conflicts between a manager and shareholders affect cash management policy. The marginal value of cash lies at the center of these analyses because of its crucial role in shaping a firm's cash saving, payout, and external financing policies (Bolton, Chen, & Wang, 2011). Yet, this relationship between the agency conflicts and the marginal value of cash is largely unexamined in Korean corporations in spite of its importance in the understanding of cash policies.

Prior literature predicts a lower marginal value of cash for the firms with weaker governance structures. Weaker governance structures tend to permit more severe manager-shareholder conflicts such as managerial resource diversions. As a manager burns out cash inside a corporation for his/her own managerial benefits, the marginal (shareholder) value of cash decreases more significantly. Value destructive acquisitions or substantial perk consumptions could be representative examples of the use of cash for managerial benefits.

These economic arguments allow us to develop testable empirical hypotheses between corporate governance scores and the marginal (shareholder) value of cash. Corporate governance scores capture the quality of a company's corporate governance practices. A great quality of corporate governance structure makes a manager's behaviors well aligned with the interests of his/her shareholders. Hence, the marginal (shareholder) value of cash tends to be higher for the firms with greater governance scores. Indeed, prior studies such as Dittmar and Mahrt-Smith (2007) and Pinkowitz, Stulz, and Williamson (2006) examine this relationship in the U.S. market and the international market, respectively.

This paper tests the above empirical hypothesis in the sample of firms listed in Korean Stock Exchange. We

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1 First Author, Assistant Professor, Department of Economics, Korea National Open University, Korea.
e-mail: sskim512@knou.ac.kr

2 Corresponding Author, Assistant Professor, College of Economics and Finance, Hanyang University [222 Wangsimni-ro, Seongdong-gu, Seoul, South Korea. Zip: 04763]
e-mail: jeonglee@hanyang.ac.kr

employ the model of Faulkender et al. (2006) to calculate the marginal shareholder value of cash. The model estimates how one dollar change in cash stock induces the change in the firm's market value against its benchmark group. In line with Faulkender et al. (2006), we incorporate the 4 by 4 formed on the size and BE to ME ratios as the benchmark group. Kim and Lee (2016) also use the same benchmark return in the examination of Korean retail industry.

We adopt the corporate governance scores published by Korean Corporate Governance Services. The main variable of interests is the total governance score. This total governance score is the representative measure quantifying overall governance practices and is closely associated with the degree of agency conflicts between a manager and shareholders inside a corporation. We further investigate the detailed scores of shareholder rights, board structure, auditing, distribution policy, and information disclosure. Such analyses in the sub-categories of the total score permit us to examine how a specific governance attribute affects the determination of marginal cash values.

We limit our sample period from 2005 to 2013. Our sample choice is a natural one because the corporate governance scores are published after 2005. We categorize firm-year observations into the low, middle and high score groups based on each corporate governance score including the total governance score measure. Then, we calculate the marginal values of cash according to these three groups of firms.

Our main results are as follows. First, we show that the marginal cash value is larger for the high governance score firms, in our analysis of the total governance score. The marginal cash value of the low score group is 0.32 which is far smaller than that of the high score group, 0.56 in our baseline estimation. This finding remains stable to the change of our benchmark return as the market portfolio one according to the capital asset pricing model (CAPM).

This finding confirms our empirical prediction between agency conflicts and the marginal value of cash. Good governance firms indeed show a higher marginal value of cash and poor governance firms show a lower marginal value of cash. Our finding is also in line with the empirical results of Dittmar et al. (2007) and Pinkowitz et al. (2006), which emphasize the role of agency conflicts in the determination of marginal cash values.

Such low marginal cash values indicate a severe agency conflicts in Korean firms. Bolton et al. (2011) argue that the marginal value of cash cannot be lower than, $1 - \text{dividend income tax rate}$, if there is no agency conflicts between a manager and shareholders. Considering the fact that the dividend income tax rate is around 15% during the sample period, the estimated marginal cash value is unjustifiably

low without a considerable degree of manager-shareholder conflicts.

Next, we investigate the marginal value of cash in accordance with the detailed set of corporate governance attributes. This sub-category analysis partially supports the above empirical findings using the total governance score. On the one hand, the marginal cash value is higher for the good governance firms, in the examinations of the shareholder rights and the information disclosure scores. On the other hand, we obtain in conclusive results in the studies for the governance quality of board structure, auditing quality, and distribution policy.

This paper contributes to the existing studies in a number of aspects. First of all, such a higher marginal value of cash for the firms with good corporate governance structure argues for the agency view of cash management policy. This view expects a positive relationship between corporate governance scores and the marginal value of cash. For instance, Pinkowitz et al. (2006) verify a smaller marginal cash value for countries with poor corporate governance structures. Dittmar et al. (2007) show that a greater corporate governance score is associated with a higher marginal value of cash for the U.S. financial market. This paper provides another piece of empirical evidence that supports the agency view of cash policy.

Next, our estimation results are in line with the literature of managerial resource diversion in Korean firms. Korean firms are known to involve with substantial managerial diversion problems, such as value destructive acquisitions (Bae, Kang, & Kim, 2002), and offering favorable equity prices for controlling shareholders (Baek, Kang, & Lee, 2006). This managerial resource diversion problem is accepted as a key economic factor leading to a lower marginal cash value (Nikolov & Whited, 2014). Such low marginal cash values in our examinations are consistent to the existing studies highlighting severe managerial resource diversions in Korean firms.

Lastly, our analysis on the detailed set of corporate governance score emphasizes the importance of overall corporate governance practices in the determination of marginal cash values. Our empirical results based on the governance quality of board structure, auditing quality, and distribution policies are not well aligned with the agency view of cash policy, unlike our result from the total governance score. This finding suggests that shareholders consider the overall effectiveness of corporate governance structures rather than a specific attribute, in their valuation of cash inside a corporation.

This paper proceeds as follows. Section 2 reviews the existing literature. Section 3 presents our empirical models. Section 4 reports our estimation results. Section 5 concludes.

2. Data and Methodology

A number of studies have theoretically analyzed the economic determinants of cash policy. The marginal value of cash lies at the core of these studies because of its pivotal role in deciding dividend payout, cash savings, and external financing policies. For instance, Hennessy and Whited (2005) and Bolton et al. (2011) theoretically verify that the lower bound of marginal cash value is determined by the margin between dividend payouts and cash saving choices. Their results indicate that the marginal value of cash should not be lower than $(1-\tau_d)$ without any agency conflicts, where the variable τ_d points to the dividend income tax rate.

There are two main stream views of empirical studies regarding the determination of marginal value of cash. The first strand of the literature highlights how external financing frictions influence the marginal shareholder value of cash. The analysis of Faulkender et al. (2006) is a representative example. They empirically confirm the higher marginal value of cash for the financially constrained U.S. firms, after theoretically arguing the positive relationship between the marginal value of cash and external financing costs.

The other strand of literature emphasizes the implications of agency conflicts in the determination of marginal cash values. As a firm experiences more severe manager-shareholder conflicts, its cash stock is more likely to burn out for the managerial benefits, leading to a lower marginal value of cash. Such managerial resource diversions are a representative economic reason driving low marginal cash values (Nikolov et al., 2014). This strand of literature has mainly used corporate governance scores as a proxy variable for the manager-shareholder conflicts. For example, Dittmar et al. (2007) show that the marginal cash value of high governance score firms is almost as twice large as that of low governance score firms in their cross-sectional analysis of the U.S. firms. Pinkowitz et al. (2006) investigate the marginal value of cash across financial markets by using country-level corporate governance indices. They find that shareholders highly value one dollar of cash holding in a country with higher corporate governance scores.

Our study is also closely related with the cash management policy literature in Korean corporations. Gong (2006) investigates the cross-sectional determinants of cash stocks in the Korean financial market. Park and Yon (2009) show that Korean firms with weaker governance structures retain more cash stocks by using corporate governance scores as the quality of corporate governance. Kim and Lee (2016) investigate the relationship between corporate governance structure and the marginal value of cash in Korean retail industry.

3. Empirical Model

3.1. Estimation

We calculate the marginal value of cash by adopting the approach of Faulkender et al. (2006). They estimate the additional shareholder value of cash from one dollar increase in cash stock over a firm's fiscal year. The dependent variable is the excess return of each firm year observation, which refers to the difference between its stock return and benchmark return. This inclusion of the benchmark returns offsets an individual firm's common risk components. To take account of firm specific risks, the empirical model also includes several financing and investment controls as independent variables. Our baseline empirical model is described as follows.

$$\begin{aligned} r_{i,t} - R_{i,t}^B = & \beta_0 + \frac{\beta_1 \Delta C_{i,t}}{M_{i,t-1}} + \frac{\beta_2 \Delta E_{i,t}}{M_{i,t-1}} + \frac{\beta_3 \Delta NA_{i,t}}{M_{i,t-1}} + \frac{\beta_4 \Delta RD_{i,t}}{M_{i,t-1}} \\ & + \frac{\beta_5 \Delta L_{i,t}}{M_{i,t-1}} + \frac{\beta_6 \Delta D_{i,t}}{M_{i,t-1}} + \frac{\beta_7 \Delta C_{i,t}}{M_{i,t-1}} + \frac{\beta_8 \Delta L_{i,t}}{M_{i,t-1}} + \frac{\beta_9 \Delta NF_{i,t}}{M_{i,t-1}} \\ & + \frac{\beta_{10} C_{i,t}}{M_{i,t-1}} \times \frac{\Delta C_{i,t}}{M_{i,t-1}} + \beta_{11} L_{i,t} * \frac{\Delta C_{i,t}}{M_{i,t-1}} + \epsilon \end{aligned}$$

The equation (1) investigates how one dollar change in cash holdings results in the variation in the firm's market value compared to its benchmark group. The term ΔX indicates changes in a general variable X in the equation (1). For example, ΔC represents the changes in a firm's cash holding over a fiscal year. We use the realized change as the unexpected change component of cash by following the model of Faulkender et al. (2006). The dependent variable $r_{i,t} - R_{i,t}^B$ points to the excess stock return of firm i over the fiscal year t, in which $r_{i,t}$ is the firm's stock return and $R_{i,t}^B$ is the firm's benchmark return. The control variables include a variety of firm characteristics from financial statements. These variables account for the sources idiosyncratic risks that may be correlated with the changes in the excess returns. The control variables related to financing activities are cash stock, $C_{i,t}$, interest payments, $l_{i,t}$, market leverage ratio, $L_{i,t}$, and net financing $NF_{i,t}$. Earnings before interest and extraordinary items, $E_{i,t}$ represents the effect of a firm's cash flow generation on the firm valuation.

Investment policy is captured by the changed in total assets net out of cash holding, $\Delta NA_{i,t}$ and R&D expenditures, $RD_{i,t}$. To control payout policies, cash dividends payout, $D_{i,t}$ is also introduced. All independent variables are divided by the previous year market equity value, $M_{i,t-1}$, except the market leverage ratio. This normalization permits us to interpret the estimated coefficients as the dollar change in shareholders' value from one dollar increase in the corresponding independent variables.

In our baseline model, the marginal value of cash for an average firm, MVC is obtained via the following equation.

$$MVC = \beta_1 + \beta_{10}(\overline{C/M}) + \beta_{11}\overline{L} \quad (2)$$

In this equation (2), $(\overline{C/M})$ is the mean of previous period cash holdings deflated by the market equity and \overline{L} is the average market leverage ratio. This is because the change in cash holding linearly affects the value of firm via the coefficients of β_1 , β_{10} and β_{11} .

Korean Corporate Governance Services publishes a detailed set of corporate governance scores for the listed Korean firms after 2005. This set of governance grades measures various governance attributes in Korean corporations. Korean Corporate Governance Services assign governance scores to the firms for the quality of overall governance structure, shareholder rights, board structure, auditing, distribution policy, and information disclosure.

To test our empirical hypothesis, we categorize the sample firm-year observations into the low, middle, and high governance score group in accordance with the scores of each governance attribute. For a specific fiscal year, we firstly rank the firm-year observation based on its governance scores. We choose the firm-year observations in the top (bottom) 33% of score distribution as the high (low) score group. All other firm year observations are considered as the middle group.

3.2. Data Description

We investigate the marginal cash value for the firms listed in Korean Stock Exchange from 2005 to 2013. We use the WISEfn database to obtain financial statements for the sample of firms.

To construct the excess return, we have to know about its benchmark returns as well. Our baseline model uses the 4 by 4 benchmark portfolios formed on the size and BE to ME portfolio as in Faulkender et al. (2006). The break points for the benchmark portfolio returns in Korean financial markets are obtained from the analysis of Son et al. (2009). The benchmark returns correspond to the fiscal year of each firm-year observation.

All other variable constructions are in line with the approach used in Faulkender et al. (2006). The market value of equity is constructed as the number of outstanding shares multiplied by the stock's closing price at the end of its fiscal year. Net assets variable is defined as total book assets less cash holdings. Cash holdings is cash plus marketable securities. The profitability is captured by earnings before interest and taxes (EBIT). Market leverage

is a firm's debt to market value ratio. It is defined as the sum of short-term and long-term debt obligations over the total of market value of equity and total debt obligations. Net financing refers to total equity issuances less repurchases plus debt issuance less debt retirements. If a firm does not report its R&D expenditures, we set the R&D variable to zero. All variables are winsorized at the 1% level for the stability of our estimation results.

To account for the potential effect of external financing frictions in the determination of the marginal cash value, we exclude some firm-year observations that are highly likely to experience financial frictions. We use the measure developed by Kaplan and Zingales (1997) consistent with Kim et al. (2016). The Kaplan-Zingales prediction equation has the following formulation:

$$KZindex = -1.002Profits + 0.283Q + 3.139Lev - 39.998Divs - 1.131CashHolding$$

The Profits variable is earnings before interest and taxes (EBIT). The Cash Holdings is cash plus marketable securities. The Dividends are cash dividends. The Lev variable refers to total debt obligations. The Q variable indicates the Tobin's Q ratio, which is defined as the sum of market equity and total debt obligations divided by total assets. All variables are deflated by the book asset values.

A higher score of this Kaplan-Zingales equation indicates a greater likelihood of experiencing financial constraints. Thus, we remove the firm-year observations in the top 10% of Kaplan-Zingales score distribution to take account for the potential effect of financial constraints.

4. Main Results

4.1. Summary Statistics

<Table 1> Summary Statistics

stats	Mean	p25	p50	p75	Sd
$r_t - R_t^B$	0.027	-0.266	-0.058	0.210	0.518
$\Delta C_t / M_{t-1}$	0.016	-0.034	0.004	0.054	0.170
C_t / M_{t-1}	0.165	0.037	0.094	0.203	0.224
$\Delta E_t / M_{t-1}$	0.015	-0.046	0.005	0.060	0.201
$\Delta NA_t / M_{t-1}$	0.197	-0.018	0.117	0.350	0.737
$\Delta RD_t / M_{t-1}$	0.000	0.000	0.000	0.000	0.004
$\Delta I_t / M_{t-1}$	-0.000	-0.004	0.000	0.005	0.033
$\Delta D_t / M_{t-1}$	0.002	0.000	0.000	0.001	0.013
L_t	0.465	0.287	0.463	0.637	0.218

NF _t /M _{t-1}	0.118	-0.048	0.046	0.231	0.643
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<Table 1> summarizes the variables used in the main empirical model. Table 1 documents the mean, 1st quartile (p25), median (p50), 3rd quartile (p75) and standard deviation (sd) of each variable. All variables are divided by the previous period market equity value except the market leverage ratio. The variables of interests are $r_t - R_t^B$, the excess return with the benchmark of 4 by 4 portfolios formed on the BE/ME ratios and size; $\Delta C_t/M_{t-1}$, the change of cash holdings; C_t/M_{t-1} , cash holdings; $\Delta E_t/M_{t-1}$, the changes in profits; $\Delta NA_t/M_{t-1}$, the change in net asset value; $\Delta RD_t/M_{t-1}$, the change in R&D expenditures; $\Delta I_t/M_{t-1}$, the change in interest expenses; $\Delta D_t/M_{t-1}$, the change in cash dividends; L_t , market leverage ratio; and NF_t/M_{t-1} , net financing.

In <Table 1>, the median excess return of the Korean financial market is -0.058, while the mean excess return is positive at 0.027. Such mean and median returns point out a slightly right-skewed distribution of excess returns. The mean and median of change in cash holdings are slightly positive but they are not different significantly. This result points to a relatively symmetric distribution of changes in cash holdings. The mean value of cash holding, 0.165 is far higher than its median value, 0.094, which also points to a significantly right-skewed distribution. The changes in net assets and net financing vary significantly in our sample but the changes in R&D expenditures and interest expenses remain relatively unchanged around 0. These results potentially imply rigidities in R&D expenditures and debt financing policies.

<Table 2> Summary Statistics: Governance Scores

stats	Mean	p25	p50	p75	Sd
Total	109.9	94.0	105.0	120.0	25.9
Shareholder Rights	48.8	43.0	49.0	55.0	8.3
Board	19.3	13.0	18.0	22.0	9.1
Auditing	21.5	15.0	20.0	26.0	8.9
Distribution Policy	2.7	0.0	3.0	4.0	2.2
Information Disclosure	18.4	12.0	16.0	22.0	9.5

<Table 2> summarizes the corporate governance scores. It documents the mean, 1st quartile (p25), median (p50), 3rd quartile (p75) and standard deviation (sd) of each variable. <Table 2> shows that a median firm has 105 points of the total governance score, while the average firm has 109.9 points. Such mean and median values indicate a slightly right-skewed distribution of the governance scores. The mean and median of shareholder right scores about 49 and almost identical, which points to a relatively symmetric shape of the distribution. This relatively symmetric pattern is also observed in all other governance scores.

4.2. Estimation Results: Total Governance Score

This section investigates the relationship between the total governance score and the marginal value of cash. The total governance score captures the quality of a firm's overall corporate governance practices. Hence, the total score is a representative measure to reflect the seriousness of agency conflicts between a manager and shareholders inside a corporation.

<Table 3> Marginal Value of Cash: Total Governance Score

Independent Variables	Low	Middle	High
$\Delta C_t/M_{t-1}$	0.376 (1.1)	0.872** (2.3)	0.677 (1.6)
$\Delta E_t/M_{t-1}$	0.296*** (3.2)	0.447*** (4.6)	0.452*** (3.9)
$\Delta NA_t/M_{t-1}$	0.204*** (3.8)	0.231*** (3.9)	0.099* (1.9)
$\Delta RD_t/M_{t-1}$	3.351 (0.9)	1.677 (0.6)	4.329 (1.3)
$\Delta I_t/M_{t-1}$	-0.018 (-0.0)	-0.858* (-1.9)	0.367 (0.5)
$\Delta D_t/M_{t-1}$	6.534*** (4.3)	3.568** (2.4)	7.248*** (4.7)
C_t/M_{t-1}	0.370*** (5.1)	0.202*** (3.2)	0.317*** (3.8)
L_t	-0.738*** (-8.9)	-0.515*** (-8.8)	-0.537*** (-8.6)
NF_t/M_{t-1}	-0.077 (-1.2)	-0.152** (-2.0)	-0.065 (-1.0)
$(\Delta C_t/M_{t-1}) * C_{t-1}/M_{t-1}$	0.509 (1.5)	-0.186 (-0.8)	-0.577* (-1.9)
$(\Delta C_t/M_{t-1}) * L_t$	-0.286 (-0.6)	-0.926 (-1.6)	-0.046 (-0.1)
Intercept	0.271*** (5.8)	0.167*** (5.0)	0.187*** (6.9)
N	1084	1435	1448
Adj-R ²	0.202	0.170	0.150
Implied MVC	0.32	0.40	0.57

<Table 3> documents the estimation results of marginal cash values for the high/middle/low score groups according to the total governance scores. All empirical models use the benchmark return, R_t^B , as the 4 by 4 portfolio returns formed on the size and BE to ME ratios. The first column reports the estimation results for the low score group. The

second and the last column document the results for the middle and the high score group, respectively. This table includes the estimated coefficients, t-values (in parenthesis) and the marginal value of cash implied by each estimation. The mark of '**' points to the statistical significance at 90% level. The marks of '***' and '****' point out the significance at 95% level and 99% level, respectively.

<Table 3> shows a higher marginal value of cash for the high governance score group. For example, the marginal cash value of the low score group is 0.32 but the value increases to 0.40 for the middle governance score group. This value becomes the largest at 0.40, in the high score group.

This finding implies a higher marginal value of cash for better governance firms, which argues for the agency view of cash management policy. A smaller corporate governance score points to a weaker corporate governance structure. Such weak governance structures permit more serious manager-shareholder conflicts, which may result in a lower shareholder value of cash inside a corporation. A number of prior empirical studies such as Dittmar et al. (2007) and Pinkowitz et al. (2006) confirm this positive relationship between governance structures and marginal cash values. Our finding adds additional evidence to the prior studies.

Moreover, the estimated marginal cash values across all governance groups indicate substantial agency conflicts between a manager and shareholders in the Korean market. All of the marginal cash values are smaller than 0.6. Considering the fact that the dividend income tax rate is around 15% during this period, such a low marginal cash value suggests significant manager-shareholder conflicts in Korean firms. Without any agency conflicts, the marginal cash value cannot be lower than 1 – dividend income tax rate.

This low marginal value of cash is well aligned with the existing studies highlighting significant resource diversions in the Korean market. For example, Bae et al. (2002) and Baek et al. (2006) confirm severe resource diversions in Korean corporations in acquisition decisions and equity offering policies. This resource diversion problem is accepted as a key economic reason that potentially reduces the marginal shareholder value of cash substantially (Nikolov et al., 2014).

<Table 4> reports the estimation results for the low/middle/high score group with the market portfolio return as the benchmark one, R_{it}^B . The table still examines the effect of the total governance scores on the marginal cash value. The first column reports the estimation results on the low score group. The second and the last column document the results on the middle and the high score group, respectively. This table includes the estimated coefficients,

t-values (in parenthesis) and the marginal value of cash implied by each estimation. The mark of '**' points to the statistical significance of 90% level. The marks of '***' and '****' point out the significance of 95% level and 99% level, respectively.

The table robustly confirms a greater marginal value of cash for the high governance score firms. For example, the estimated marginal cash value of the low score group is 0.48 in the first column. This value is far smaller than that of the high governance score group, 0.78. This value of the low score group is also smaller than the value of the middle score group, 0.53.

<Table 4> Marginal Value of Cash: Total Governance Score with Market Return as Benchmark Return

Independent Variables	Low	Middle	High
$\Delta C_i/M_{t-1}$	0.597	1.098***	0.791*
	(1.6)	(2.7)	(1.8)
$\Delta E_i/M_{t-1}$	0.314***	0.431***	0.520***
	(3.5)	(4.7)	(4.0)
$\Delta NA_i/M_{t-1}$	0.183***	0.254***	0.098*
	(3.0)	(4.0)	(1.8)
$\Delta RD_i/M_{t-1}$	1.315	-0.703	5.081
	(0.4)	(-0.2)	(1.4)
$\Delta I_i/M_{t-1}$	-0.285	-1.438***	-0.019
	(-0.4)	(-2.8)	(-0.0)
$\Delta D_i/M_{t-1}$	6.348***	6.149***	7.782***
	(3.7)	(4.2)	(4.6)
C_i/M_{t-1}	0.522***	0.369***	0.402***
	(6.1)	(5.6)	(4.1)
L_t	-0.660***	-0.448***	-0.455***
	(-7.6)	(-7.4)	(-6.9)
NF_i/M_{t-1}	-0.079	-0.165**	-0.057
	(-1.1)	(-2.0)	(-0.8)
$(\Delta C_i/M_{t-1}) * C_{t-1}/M_{t-1}$	0.507	-0.264	-0.702**
	(1.6)	(-1.0)	(-2.1)
$(\Delta C_i/M_{t-1}) * L_t$	-0.408	-1.078*	0.116
	(-0.7)	(-1.7)	(0.2)
Intercept	0.306***	0.185***	0.184***
	(6.2)	(5.2)	(6.5)
N	1084	1435	1448
Adj-R ²	0.183	0.204	0.156
Implied MVC	0.48	0.54	0.73

<Table 4> strengthens the validity of our previous

estimation results using the 4 by 4 portfolio returns as the benchmark one. The low governance score firms robustly show a lower shareholder value of cash. This result supports again the agency view of cash management policy; more severe agency conflicts may drive a lower marginal value of cash.

Furthermore, the table still verify a generally low marginal value of cash compared to the theoretical lower bound without agency conflicts. For example, the marginal cash values are less than 0.75 for all groups, which is substantially smaller than the theoretical lower bound without agency problems, 1-dividend income tax rate. Such low marginal cash values are in line with the existing studies emphasizing significant resource diversion problems in Korean corporations, as mentioned above.

4.3. Sub-category Analysis

Now, we examine the relationship between the marginal value of cash and specific corporate governance attributes. Korean Corporate Governance Service publishes not only the total governance score but also a detailed set of governance measures. To be specific, it publishes the scores for the quality of shareholder rights, board structure, auditing, distribution policy, and information disclosure. The total governance score is indeed the sum of these governance scores. According to each governance measure, we estimate the marginal cash values. We use the 4 by 4 portfolio returns formed on the size and BE to ME ratio as the benchmark return the same as before. The change of benchmark return to the market portfolio return does not affect our findings significantly while we do not report the results here.

<Table 5> documents the estimation results of marginal cash values according to the groups based on the shareholder right scores. The first column documents our estimation results for the low score group. The second column and the third column show our results for the middle and high score group, respectively. This table contains the estimated coefficients, t-values (in parenthesis) and the marginal value of cash. The sign of '**' implies the statistical significance at 90% level. The signs of '***' and '****' indicate the significance at 95% level and 99% level, respectively.

<Table 5> still shows a greater marginal value of cash for the high governance score firms, even if we employ the governance scores of shareholder rights. For example, the marginal cash value of the low score group is 0.44 but the value becomes 0.52 for the high score group. The marginal cash value for the middle group is 0.48, which is in between the values of low and high score group.

<Table 5> Marginal Value of Cash: Shareholder Right Scores

Independent Variables	Low	Middle	High
$\Delta C_t/M_{t-1}$	0.494 (1.0)	0.640** (2.0)	0.848** (2.5)
$\Delta E_t/M_{t-1}$	0.381*** (3.9)	0.233** (2.4)	0.450*** (4.4)
$\Delta NA_t/M_{t-1}$	0.199*** (3.1)	0.173*** (3.5)	0.131* (1.9)
$\Delta RD_t/M_{t-1}$	1.481 (0.4)	6.363* (1.7)	3.733 (1.2)
$\Delta I_t/M_{t-1}$	0.033 (0.0)	-0.447 (-0.6)	0.409 (0.5)
$\Delta D_t/M_{t-1}$	7.930*** (4.9)	3.615*** (2.7)	5.234*** (3.0)
C_t/M_{t-1}	0.293*** (3.6)	0.274*** (3.7)	0.306*** (3.8)
L_t	-0.730*** (-8.0)	-0.706*** (-10.7)	-0.484*** (-7.9)
NF_t/M_{t-1}	-0.159** (-2.2)	-0.044 (-0.7)	-0.063 (-0.6)
$(\Delta C_t/M_{t-1}) * C_{t-1}/M_{t-1}$	0.024 (0.1)	-0.517* (-1.7)	-0.490** (-2.1)
$(\Delta C_t/M_{t-1}) * L_t$	-0.107 (-0.1)	-0.157 (-0.3)	-0.571 (-1.2)
Intercept	0.309*** (6.2)	0.269*** (7.8)	0.121*** (4.2)
N	1088	1469	1363
Adj-R ²	0.192	0.152	0.152
Implied MVC	0.44	0.48	0.52

<Table 5> undergirds the validity of our previous estimation results adopting the total governance score. First of all, Table 5 suggests a higher marginal value of cash for good governance firms even if we specifically consider the shareholder right score, a subcategory of the total governance measure. This finding is consistent with our estimation results in <Tables 3> and <Tables 4>, which argue for the agency view of cash management policy. Furthermore, generally low marginal cash values indicate substantial agency conflicts between a manager and shareholders in the Korean financial market as analyzed above. This low value is also in line with the literature of managerial resource diversion problems in Korean firms as (Bae et al., 2002; Baek et al., 2006).

<Table 6> reports the estimation results of marginal cash values for the based on the quality of the board of directors. The first column documents our estimation results for the low score group. The second column and the third column show our results for the middle and high score group, respectively. This table contains the estimated coefficients,

t-values (in parenthesis) and the marginal value of cash. The '**' implies the statistical significance of 90% level. The '***' and '****' indicate the significance of 95% level and 99% level, respectively.

<Table 6> Marginal Value of Cash: Board of Directors Scores

Independent Variables	Low	Middle	High
$\Delta C_i/M_{t-1}$	0.906*** (3.2)	0.382 (1.1)	0.787 (1.4)
$\Delta E_i/M_{t-1}$	0.336*** (3.6)	0.509*** (4.8)	0.449*** (4.0)
$\Delta NA_i/M_{t-1}$	0.212*** (3.4)	0.201*** (3.8)	0.112** (2.0)
$\Delta RD_i/M_{t-1}$	-0.046 (-0.0)	0.371 (0.1)	6.961** (2.2)
$\Delta I_i/M_{t-1}$	-0.769 (-1.3)	0.487 (0.8)	1.019 (1.4)
$\Delta D_i/M_{t-1}$	3.978*** (2.9)	4.513*** (2.6)	6.178*** (3.3)
C_i/M_{t-1}	0.171** (2.4)	0.297*** (4.2)	0.373*** (3.9)
L_t	-0.557*** (-8.2)	-0.625*** (-9.0)	-0.599*** (-8.7)
NF_i/M_{t-1}	-0.126 (-1.5)	-0.131** (-2.1)	-0.067 (-1.1)
$(\Delta C_i/M_{t-1}) * C_{t-1}/M_{t-1}$	-0.382 (-1.3)	-0.232 (-0.6)	-0.179 (-0.5)
$(\Delta C_i/M_{t-1}) * L_t$	-0.682 (-1.4)	0.094 (0.2)	-0.716 (-0.8)
Intercept	0.183*** (4.9)	0.225*** (5.9)	0.219*** (7.0)
N	1275	1233	1368
Adj-R ²	0.154	0.171	0.151
Implied MVC	0.52	0.38	0.44

<Table 6> shows a non-monotonic pattern in the marginal cash values according to the groups based on the quality of board structure. For example, the marginal cash value of the low score group is 0.52 but the value decreases to 0.44 for the high score group. Yet, the marginal cash value for the high group is larger than the value for the middle group, 0.38.

The estimation results in <Table 6> are interesting in a couple of perspectives. Most of all, this finding is not well aligned with the agency view of cash management policy. A weaker corporate governance firm shows a higher marginal value of cash. This may be because we just consider a specific governance aspect, not overall corporate governance practices. In fact, the board structure score partakes in less than 20% of the total score, as shown in <Table 2> Our finding implies that shareholders may

consider the value of one dollar inside a corporation by taking account of the overall governance practice, not by focusing on a specific governance attribute.

Moreover, the low marginal value of cash in these firms is consistent with the existing studies suggesting significant resource diversion problems in Korean corporations as well. For instance, Bae et al. (2002) and Baek et al. (2006) provide empirical evidence about considerable resource diversions in Korean corporations, which potentially reduces the marginal shareholder value of cash. Such low values are consistent with our prior estimation results in <Tables 3>, <Table 4> and <Table 5>.

<Table 7> reports the estimation results of marginal cash values for the groups sorted by to the auditing quality scores. The first column documents our estimation results for the low score group. The second column and the third column show our results for the middle and high score group, respectively. This table contains the estimated coefficients, t-values (in parenthesis) and the marginal value of cash. The '**' implies the statistical significance at 90% level. The '***' and '****' indicate the significance at 95% level and 99% level, respectively.

<Table 7> Marginal Value of Cash: Auditing Quality Score

Independent Variables	Low	Middle	High
$\Delta C_i/M_{t-1}$	0.830** (2.3)	0.452 (1.5)	0.637 (1.4)
$\Delta E_i/M_{t-1}$	0.304*** (3.5)	0.415*** (4.3)	0.407*** (3.5)
$\Delta NA_i/M_{t-1}$	0.187*** (3.6)	0.200*** (3.3)	0.094* (1.8)
$\Delta RD_i/M_{t-1}$	-0.739 (-0.2)	0.391 (0.1)	4.089 (1.1)
$\Delta I_i/M_{t-1}$	0.671 (1.1)	-1.252** (-2.3)	0.475 (0.7)
$\Delta D_i/M_{t-1}$	3.810*** (2.9)	5.499*** (3.2)	7.415*** (3.8)
C_i/M_{t-1}	0.288*** (3.4)	0.230*** (4.0)	0.286*** (3.0)
L_t	-0.573*** (-8.1)	-0.597*** (-8.5)	-0.562*** (-8.4)
NF_i/M_{t-1}	-0.092 (-1.6)	-0.105 (-1.3)	-0.057 (-0.9)
$(\Delta C_i/M_{t-1}) * C_{t-1}/M_{t-1}$	0.091 (0.3)	-0.408* (-1.8)	-0.026 (-0.1)
$(\Delta C_i/M_{t-1}) * L_t$	-0.840 (-1.5)	0.139 (0.3)	-0.602 (-0.8)
Intercept	0.170*** (4.7)	0.216*** (5.5)	0.221*** (7.1)
N	1264	1235	1351
Adj-R ²	0.143	0.186	0.142

Implied MVC	0.46	0.45	0.36
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Surprisingly, <Table 7> shows a decreasing pattern in the marginal cash values according to the groups based on the auditing quality. For example, the marginal cash value of the low score group is 0.46 but the value decreases to 0.36 for the high score group. The estimated marginal cash value for the middle group is in between the values of the low and the high groups.

This decreasing pattern, in fact, argues against the agency view of cash management policy. As a firm has weaker governance structure in terms of auditing quality, the firm rather has a higher marginal shareholder value of cash. Such decreasing marginal cash values directly contradict the agency view of cash policy.

This contradiction is probably due to the consideration of a specific governance attribute rather than the overall governance practices. Indeed, the auditing quality score also partakes in less than 20% of the total score, as shown in <Table 2>. Shareholders may place a more significant weight on the overall governance structures compared to a particular aspect of corporate governance in their valuation of cash inside a corporation. This finding is also in line with the results of <Table 6>.

<Table 8> Marginal Value of Cash: Distribution Policy

Independent Variables	Low	Middle	High
$\Delta C_i/M_{t-1}$	0.514 (0.9)	0.913** (2.3)	0.676** (2.1)
$\Delta E_i/M_{t-1}$	0.230* (1.9)	0.609*** (4.9)	0.554*** (4.3)
$\Delta NA_i/M_{t-1}$	0.375*** (3.7)	0.119* (1.7)	0.123** (2.3)
$\Delta RD_i/M_{t-1}$	10.033 (1.6)	1.228 (0.5)	1.957 (0.6)
$\Delta I_i/M_{t-1}$	0.775 (0.7)	-1.126** (-2.3)	-0.484 (-0.7)
$\Delta D_i/M_{t-1}$	3.926 (1.1)	7.501*** (4.6)	3.591*** (3.4)
C_i/M_{t-1}	0.297*** (2.7)	0.264*** (3.7)	0.195*** (3.0)
L_t	-0.834*** (-7.2)	-0.523*** (-8.6)	-0.420*** (-7.7)
NF_i/M_{t-1}	-0.279** (-2.4)	-0.053 (-0.6)	-0.073 (-1.0)
$(\Delta C_i/M_{t-1}) * C_{t-1}/M_{t-1}$	-0.926** (-2.5)	-0.014 (-0.1)	0.159 (0.7)
$(\Delta C_i/M_{t-1}) * L_t$	0.561 (0.6)	-1.152* (-1.9)	-0.875* (-1.7)
Intercept	0.353*** (5.4)	0.220*** (7.3)	0.088*** (3.4)
N	522	1480	1201
Adj-R ²	0.181	0.196	0.183

Implied MVC	0.61	0.37	0.30
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<Table 8> contains the estimation results of marginal cash values for the group of firms formed on the distribution policy scores. The first column documents our estimation results for the low score group. The second column and the third column show our results for the middle and high score group, respectively. The mark of '*' points to the statistical significance at 90% level. The marks of '**' and '***' point out the significance at 95% level and 99% level, respectively.

The results of <Table 8> are exactly consistent to those of <Table 7>. For all of the three estimation results, the marginal cash values are quite low compared to the theoretical lower bound without any agency conflicts. Furthermore, the marginal value of cash decreases as the governance scores of distribution policy increase; the values are 0.61, 0.37 and 0.30, respectively for the low, middle and high governance score groups.

These findings are generally in line with our previous estimation results. First of all, for all of our previous estimations confirm prevailing low marginal cash values in Korean corporations. This low marginal cash value is in line with the managerial diversion literature in Korean corporations such as Bae et al. (2002) and Baek et al. (2006).

Moreover, this decreasing pattern of marginal cash value argues against the agency view of cash policy as in <Tables 6> and <Tables 7>. This decreasing pattern also suggests that shareholders may place a more significant weight on the overall governance structures compared to a particular aspect of corporate governance in their valuation of cash inside a corporation.

Table 9 reports the estimation results of marginal cash values for the low/middle/high score group firms according to the scores of information disclosure. The first column documents our estimation results for the low score group. The second column and the third column show our results for the middle and high score group, respectively. This table contains the estimated coefficients, t-values (in parenthesis) and the marginal value of cash. The '*' sign implies the statistical significance at 90% level. The '**' and '***' signs indicate the significance at 95% level and 99% level, respectively.

<Table 9> Marginal Value of Cash: Information Disclosure

Independent Variables	Low	Middle	High
$\Delta C_i/M_{t-1}$	0.767** (2.2)	0.878* (1.9)	0.733* (1.7)
$\Delta E_i/M_{t-1}$	0.258*** (3.0)	0.424*** (4.4)	0.369*** (3.2)
$\Delta NA_i/M_{t-1}$	0.154*** (3.2)	0.235*** (3.6)	0.195*** (3.2)
$\Delta RD_i/M_{t-1}$	0.659 (0.1)	1.817 (0.6)	6.379** (2.0)
$\Delta I_i/M_{t-1}$	0.724 (0.9)	-1.138** (-2.4)	0.237 (0.3)
$\Delta D_i/M_{t-1}$	4.635*** (2.7)	4.670*** (3.4)	7.678*** (4.3)
C_i/M_{t-1}	0.296*** (3.1)	0.294*** (4.0)	0.344*** (5.3)
L_t	-0.663*** (-8.1)	-0.589*** (-8.6)	-0.566*** (-8.7)
NF_i/M_{t-1}	-0.090 (-1.2)	-0.149* (-1.9)	-0.115* (-1.7)
$(\Delta C_i/M_{t-1}) * C_{t-1}/M_{t-1}$	-0.124 (-0.3)	0.157 (0.5)	-0.358 (-1.1)
$(\Delta C_i/M_{t-1}) * L_t$	-0.568 (-1.0)	-0.949 (-1.3)	-0.401 (-0.6)
Intercept	0.242*** (5.0)	0.188*** (5.3)	0.208*** (7.1)
N	1058	1426	1388
Adj-R ²	0.151	0.180	0.164
Implied MVC	0.45	0.50	0.58

Table 9 reports a larger marginal value of cash for the high governance score group, even if we employ the information disclosure scores. For example, the marginal cash value of the low score group is 0.45 but the value increases to 0.58 for the high score group. The marginal cash value for the middle group is 0.50, which lies in between the values of the low and the high score groups.

Table 9 reaffirms the validity of our previous estimation results adopting the total governance score and the shareholder right score. First of all, Table 9 points to a higher marginal value of cash for good governance firms even though we examine the quality of information disclosure. This finding is consistent with our previous analyses with the scores of overall governance practices and shareholder right, which also argues for the agency

view of cash management policy. Moreover, the estimated marginal cash values are quite low; these low marginal cash values indicate substantial agency conflicts between a manager and shareholders in the Korean financial market as well. This low value is also in line with the literature of managerial resource diversion problems in Korean firms (Bae et al., 2002; Baek et al., 2006).

5. Discussion and Implication for Managerial Action

Our empirical analysis points out that the distribution of marginal cash value in the Korean financial market is consistent to the agency view of cash management policy. The estimated marginal cash value is indeed larger for the high score group in the examination of the total governance score and of several sub-indices of the governance scores. Considering that poor governance structures allow more severe agency conflicts between a manager and shareholders, this finding argues for the agency view of cash management policy. Our results are also in line with the previous empirical studies highlighting agency conflicts in the determination of marginal cash values, such as Dittmar et al. (2007) and Pinkowitz et al. (2006).

Moreover, the prevailing low marginal cash values in the Korean financial markets indicate substantial agency conflicts in between a manager and shareholders. In our baseline model using the 4 by 4 returns based on the size and BE/ME portfolios, the estimated marginal cash value is never greater than 0.65 and is usually around 0.4. These values are quite low compared to the theoretical lower bound without any agency conflicts, 1-dividend income tax rate. These results are consistent to the prior empirical studies indicating substantial resource diversion problems in the Korean financial market such as Bae et al. (2002) and Baek et al. (2006).

Our sub-index analysis implies that shareholders appear to assign more significant importance to the overall governance practices rather than individual governance attributes, in their valuation of cash inside a corporation. For instance, the marginal value of cash is even lower for the high governance score group, if we exclusively consider the governance quality of auditing and distribution policies. This finding suggests the importance of comprehensive interactions among governance attributes in shaping the marginal shareholder value of cash.

Our findings present novel insights on the existing literature of cash policy. First of all, our estimation result provides empirical evidence supporting the agency view of cash management policy. This literature expects a lower

marginal value of cash for the firms with weaker corporate governance structures (e.g. Dittmar et al., 2007). Poor governance structures tend to allow more severe conflicts between a manager and shareholders, which decreases the shareholder value of cash. The empirical findings adopting the representative governance measure directly support this empirical hypothesis.

Our analysis on the individual governance attributes implies the quality of overall governance practices outweighs a particular governance aspect in the determination of marginal cash values. For example, the marginal value of cash is indeed lower for the high governance score group, if we separately consider auditing and distribution policies. This finding suggests that the effective governance mechanism that restrains the manager-shareholder conflicts is derived from the overall interactions among several corporate governance structures

Moreover, we also found substantially low marginal cash values for the sample of firms. This finding is in line with the results of prior studies highlighting significant managerial resource diversion problem. Korean firms are believed to experience considerable managerial diversion problems, such as value destructive acquisitions (Bae et al., 2002), and setting favorable equity prices for controlling shareholders (Baek et al., 2006). These resource diversions are accepted as a key economic reason inducing a lower marginal value of cash (Nikolov et al., 2014).

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6. Conclusions

This paper examined the relationship between corporate governance structure and the marginal cash value in the Korea financial market. We firstly showed that the marginal cash value of the low governance score group is smaller than that of the high score group based on the total governance score; the total governance score is the representative measure to capture a firm's overall quality of corporate governance structure. We also examined the marginal value of cash for the detailed set of governance scores. On the one hand, we found that the low score group showed a smaller marginal value of cash in the examinations of the shareholder rights, and the information disclosure scores. On the other hand, a lower marginal value of cash is observed for the high governance score firms when the group is categorized by the quality of board structure, auditing and distribution policy.

Our study uses relatively a short time period of sample because the corporate governance scores are only available after 2005. If a longer time period is examined, more concrete relationships between agency conflicts and the marginal cash value will be verified in the Korean financial market. This research direction is left to future studies.

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