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The Moderating Role of Corporate Governance in the Relationship between Leverage and Firm Value: Evidence from the Korean Market

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Abstract: This study examines the moderating function of corporate governance (CG) to the relationship between leverage and firm value (FV) using Korean market data. The study employs ordinary least-squares panel data regressions and two methods to manage endogeneity problems. The findings show a meaningful negative relationship between leverage and FV. This relationship, however, disappears, when the interaction variable of leverage \times CG is included in the econometric model. These results indicate that an effective CG mechanism may lessen the probability of either the entrenched management-decision-making behavior or the agency costs of debt and, therefore, the negative effect of debt to FV diminishes. Moreover, our data show that the relationship between leverage and FV becomes positive, even though insignificant, for firms with a high level of CG, whereas it stays significantly negative for firms with a low level of CG. We also find that leverage for firms with a high level of CG is lower than those firms with a low level of CG. These additional findings support our conclusion of the moderating role of CG, which also influences the firms' risk, leverage, and FV. The authors recommend the implementation of a robust CG plan to decrease the information asymmetry and the agency leverage problem.

Keywords: firm value; corporate governance; leverage; agency costs of debt; financial position



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1. Introduction

Is corporate governance (CG) a moderating variable in the relationship between firm value (FV) and leverage? This inquiry has not been profoundly studied in the financial literature. Prior works usually focus on (1) the relationship between leverage and FV (Chen 2004; Cheng et al. 2010; González 2013; Jensen 1986; Opler and Titman 1994), (2) the relationship between FV and CG (Brown and Caylor 2006; Detthamrong et al. 2017; Tulcanaza-Prieto and Lee 2022b), and (3) the mediator role of leverage in the relationship between FV and CG (Detthamrong et al. 2017; Kijkasiwat et al. 2022). However, findings on the mediator role of leverage are not conclusive.

This study expands this mutual relationship to a concurrent relationship between leverage, CG, and FV. We address the question of whether CG moderates the effect of leverage on FV. This moderation relationship is important to study for the following reasons. First, effective CG provides financial efficiency because of the lower managers' discretion over the financial resources of a firm which is also related to the optimum capital-structure composition, which will not be modified drastically given the supervisory role of agents, if any. Second, an effective CG structure might decrease the agency problem between parties because it introduces financial transparency, increases the reporting quality, and innovating

with accountability and adequate control systems, which also shows the fundamental value of a firm, concluding with the increase in insider's and outsider's confidence and reliability. Third, CG introduces protection to shareholders' rights, information disclosure, and reduces error management, which revises the final use of financial resources and reinforces the FV in the medium and long term.

This study introduces five individual CG characteristics, namely, shareholder rights, board structure, disclosure, audit organization, and management error, and an aggregate metric, which is the corporate governance score (CGS). Moreover, the dependent variables for FV are Tobin's Q and the price-to-book ratio, while the independent variables are leverage and CG metrics, and it employs four control variables. The study ran ordinary least-squares (OLS) panel regressions and a two-stage least-square (2SLS) regression model and a generalized method of moments (GMM) to control the endogeneity problem. The sample is formed using 860 Korean firm-year observations during the 2017–2020 period, which follow the International Financial Reporting Standards (IFRS). IFRS provide transparent and reliable accounting data and developed countries such as Australia, the United Kingdom, and the United States follow these international norms.

This paper supports three hypotheses. First, leverage and FV showed a significantly negative relationship, which is grounded in the entrenched management hypothesis and the agency cost of debt. Leverage is an important financial variable to control the operating cash flow and the discretion of managers. Second, CG significantly positively influenced FV because CG controls the firm's risk through appropriate accountability and regulation systems, which also include transparency and information disclosure, providing long-term FV maximization. Third, CG moderates and decreases the negative relationship between debt and FV. Moreover, CG increases the firm's transparency and/or decreases the disputes between managers and shareholders; therefore, managers might not take advantage of leverage to make selfish decisions. CG provokes efficiency and the maximization of FV due to its disciplinary mechanism that includes the permanent supervision of parties. Leverage might be controlled using effective CG mechanisms.

For a robustness check, we conduct additional regression analyses by dividing total firms into two groups according to the degree of CG. The first analysis shows that the negative relationship between leverage and FV loses its statistical significance for high-level firms, while it remains strong for low-level firms. These results indicate that an effective CG may act as a control variable for managers when they want to increase arbitrary financial debt. Therefore, it limits the agency conflicts of financial debt and reduces the negative effect on debt to FV accordingly, which is consistent with our previous conclusion. The second and third analyses contribute with a robustness check and control of the endogeneity problem by testing the results using 2SLS and GMM.

The contribution of the study is the identification of CG as an effective tool and moderator variable in the association between debt and FV. Effective CG might increase the FV, reduce the probability for managers to increase the firm's leverage, and decrease the probability of scandals, fraud, manipulation of earnings, and unusual activities in a firm. In the presence of a high level of CG, managers may be restricted to access free cash flow and the budget of a firm may be controlled, which promotes the increase in firm performance. Strong-CG mechanisms may also prevent the management from absorbing bondholder's wealth through over-indebtedness. From these findings, we conclude that firms with strong-CG levels do not inevitably show the FV deprivation related to capital structure modification. Moreover, the study presents two proxies for FV, which corroborate the research's findings. The manuscript also covers a robustness check using the disaggregation of the sample in firms with high and low levels of CG, and it presents the results of 2SLS regressions models and GMM regressions to control endogeneity issues.

The manuscript presents the literature examination which supports three hypotheses in Section 2; Section 3 focuses on methodology development; sample statistics correspond to Section 4; and Section 5 covers the empirical findings and robustness check. The last

section of the study discusses the results, presents conclusions, and suggests research lines for upcoming performance.

2. Literature Review

2.1. Leverage and FV

Jensen (1986) mentioned that the level of debt acts as a disciplinary financial tool. Moreover, more leverage raises FV until a specific point, and then the FV starts to decline (Lin and Chang 2011). Leverage can improve the FV because it compresses managers to make value-maximizing decisions. The agency cost of free cash flow is also reduced using leverage because managers might not exercise discretion over the corporate resources; thus, debt provides efficiency to the firm and shows a positive influence on internal capital markets (Wruck 1990). Some prior studies showed that lucrative firms increase their performance quality by rising their debt indicators, meaning a positive relationship between debt and FV (Abor 2005; Jensen 1986; Modigliani and Miller 1958; Ruland and Zhou 2005).

On the other hand, there are two views to study the negative relationship between leverage and FV. The traditional view of the pecking-order theory involves higher profitability and retained earnings, which declines the level of firm debt (González 2013). For instance, American highly leveraged firms have a tendency to experience lower operating profits than their competitors and lose market shares (Opler and Titman 1994). The management-entrenchment hypothesis implies that the entrenched managers have incentive enough to increase leverage beyond the optimal level. According to (Aggarwal et al. 2007; Harris and Raviv 1991), the entrenchment hypothesis stimulates managers to increase debt to inflate the elective influence of their equity securities and decrease the appropriation attempts by outside parties who may enlarge FV. Entrenched managers might also adopt excess leverage to use a signaling device to reveal an allegiance to sell assets or otherwise restructure, thereby displacing takeover attempts by third parties who might replace the firm assets to increase FV. The agency costs of debt may also motivate entrenched managers to enlarge leverage over and above the optimal point by taking large risks, hiring under investment, or milking properties. The higher the level of debt is, the more possibility there is for stockholders to engage in selfish strategies and the lower the FV will be, respectively. Previous studies in developing countries have shown a significant negative relationship between leverage and FV (Chen 2004; Ibhagui and Olokoyo 2018; Simon-Oke and Afolabi 2011). Therefore, the first hypothesis is as follows:

Hypothesis 1. *FV is negatively affected by leverage.*

2.2. CG and FV

CG is an arrangement of direction and supervision that influences the firm's goals. CG might act as a contract that governs the relationships between shareholders and managers. CG comprises the effective assessment of the firm's risk. Good- and strong-CG mechanisms allow firms to (i) generate the firms' value through operations, research, and innovation, which also includes financial wealth; (ii) offer accountability and satisfactory control systems; and (iii) introduce a status of consciousness and transparency (Detthamrong et al. 2017; Tulcanaza-Prieto and Lee 2022b). Moreover, CG can be considered a strategic tool in countries with weak legal atmospheres. The literature (Durnev and Kim 2005) mentioned that CG provides instruments to decrease the inadequacies and complications of the legal organization of nations.

Previous studies developed CG metrics according to the country's environment, showing that CG might positively influence FV (Tulcanaza-Prieto et al. 2020b). The authors found that CG policies and practices positively influence FV in developed and emerging markets (Black et al. 2006; Brown and Caylor 2006; Gompers et al. 2003; Klapper and Love 2004; Tulcanaza-Prieto and Lee 2022b; Tulcanaza-Prieto et al. 2020b). The positive relationship between CG and FV is grounded in the agency model of divided payout

because of the higher investor confidence, and, also, it generates a low cost of capital (La Porta et al. 2002). Moreover, the agency-cost problems and the opportunistic behavior of managers are reduced in firms with a high level of CG because these firms increase their transparency, disclose their public information, increase the reliability of their firms, and raise confidence in their decision-making process. Specifically, in the Korean market, most companies have controlling shareholders or families as an efficient tool of CG. It promotes efficient operations, increases the FV, and controls the actions of managers (Black et al. 2006; Lee et al. 2015; Yoon et al. 2006). Therefore, the second hypothesis is as follows:

Hypothesis 2. *FV is positively affected by CG practices.*

2.3. Leverage, CG, and FV

The traditional view of management entrenchment states the relationship between leverage and FV, showing a negative relationship between both variables, which also is grounded in the agency cost of debt and the different interests between parties (shareholders and debtholders) based on the decisions made by management. Moreover, agency costs of debt might rise when the interests of shareholders and managers diverge, given an increase in the cost of debt. However, strong-CG mechanisms attempt to reduce this conflict of interest (Chan-Lau 2001; Jensen 1986).

If the entrenchment hypothesis is a dominant explanation, then CG practices may play a moderating role in loosening and breaking down the negative relationship between leverage and FV. The entrenched managers have access to firms' information and have discretion over the leverage decisions of their firm. Information asymmetry generates monitoring and controlling difficulties with their actions. Specifically, entrenched managers fail to undergo discipline from the full range of corporate governance, which includes monitoring by the board committee, the takeover threat, and stock-based performance incentives. CG practices might act as effective corporate-control tools to reduce the probability of entrenched managers using discretion to decide to leverage above the optimal level, which may not necessarily reduce FV as a result.

CG structure has a vital influence on the degree of agency of costs of debt since it helps to mitigate the inefficiencies of capital allocations between business units, given the decrease in information asymmetries between parties (Altieri 2022). Moreover, the authors (Abdullah and Tursoy 2021) mentioned that CG significantly positively affects FV, while there is a negative relationship between a CG measurement (board size) and FV. However, these findings were weakened after the IFRS implementation in German firms, suggesting that both capital and CG structures cause better firm performance. The authors (Ngatno et al. 2021) showed that CG mechanisms in Indonesian firms act as a control and monitor the capital-structure decisions and decrease the agency costs of debt, given the presence of a commissioner and its optimal role in reducing the opportunistic behavior of managers, showing that effective CG decreases agency costs of debt, and, thus, the negative relationship between debt and FV is loosened.

Prior studies individually analyzed the relationship between (i) leverage and FV and (ii) FV and CG. However, there are not many articles about the concurrent relationship between leverage, CG, and FV. The objective of this paper is to show that CG might be considered a control tool that reduces the probability of taking an excessive risk by a firm (e.g., over leveraged) and improves, or at least diminishes the decrease in, FV. In this context, strong CG might provide the mechanisms to decrease the negative effect of leverage on FV and modify it into a positive because CG practices induce transparency, control, low discretion, and confidence in all management decisions and processes. When the information is transparent for all economic agents, the fundamental value of the firm might be shown to stakeholders, who believe in the administration's decisions because of the stable income and low-risk-firm profile. Therefore, the third hypothesis is presented as follows:

Hypothesis 3. *Effective CG practices moderate the relationship between leverage and FV.*

3. Empirical Design

3.1. CG Metrics

CG metrics are integrated using five CG characteristics (Standard & Poor's Governance Services 2004), which are over 100 points each: (i) shareholder rights (CG1), (ii) board structure (CG2), (iii) disclosure (CG3), (iv) audit organization (CG4), and error management (CG5). The maximum value of CGS is 500, which is the aggregation of the five previous scores. In the Korean market, all firms adopted the IFRS, which improves accounting quality and decreases the frequency of transaction manipulation in the legal system and in financial statements (Ferentinou and Anagnostopoulou 2016).

3.2. Research Model

We used OLS-panel data-regression models with fixed effects (Nwakuya and Ijomah 2017) to investigate the relationship between leverage, CG, and FV in Korean non-financial firms. The dependent variable is FV measured using Tobin's Q and price-to-book ratio (considered for the study as an alternative proxy to verify main findings), while the independent variables are leverage and CG metrics. The control variables are asset tangibility, size, firm liquidity, and net interest payment. The control variables were selected because they represent firm-specific variables, which explain the variance of FV and enhance the internal validity of the study, limiting the influence of confounding and other external variables. For instance, the tangibility of assets might be used as collateral, which also is related to a higher possibility of obtaining external financing (high leverage) and influence on the FV (Titman and Wessels 1988). Moreover, large firms are more diverse economically, showing less risk of bankruptcy, and their FV will maintain stability or increase its performance (Rajan and Zingales 1995). Liquidity might influence positively and negatively the capital-structure decisions. Liquidity ratios might be related to higher debt ratios by incurring short-term debt, while the high agency cost of liquidity reveals limits of debt financing provided by creditors, and the firm performance will be affected by the liquidity decisions (Ozkan 2001). Finally, the net interest payment is related to the net profit margin, showing that an increase in the firm's stock value is reflected in a higher FV (Modigliani and Miller 1958).

3.2.1. Leverage and FV

In Equation (1), the coefficient β_1 measures the relationship between leverage and FV. If β_1 is negative, the pecking-order theory and agency-cost theory prevail in Korean firms.

$$FV_{i,t} = \beta_0 + \beta_1 Lev_{i,t} + \beta_2 Tang_{i,t} + \beta_3 Size_{i,t} + \beta_4 Liq_{i,t} + \beta_5 NetIntPay_{i,t} + \sum_{j=1}^n \beta_j Industry_{i,t} + \sum_{k=9}^f \beta_k Year_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where $FV_{i,t}$ is composed of (1) Tobin's $Q_{i,t}$ denoted as $Tobin's Q_{i,t} = \left(\frac{Equity\ market\ value + liabilities\ market\ value}{Equity\ book\ value + liabilities\ book\ value} \right)_{i,t}$, and (2) Price-to-book ratio, calculated using $Price - to - book\ ratio_{i,t} = \left(\frac{Market\ per\ share}{Book\ value\ per\ share} \right)_{i,t}$. $Lev_{i,t}$ is the debt ratio composed of total debt ratio $Lev_{i,t}$, short-term debt ratio $StLev_{i,t}$, and long-term debt ratio $LtLev_{i,t}$ denoted as $Lev_{i,t} = \left(\frac{Current\ liabilities + Noncurrent\ liabilities}{Total\ assets} \right)_{i,t}$, $StLev_{i,t} = \left(\frac{Current\ liabilities}{Total\ assets} \right)_{i,t}$, $LtLev_{i,t} = \left(\frac{Noncurrent\ liabilities}{Total\ assets} \right)_{i,t}$, $Tang_{i,t} = \left(\frac{Net\ fixed\ assets}{Total\ assets} \right)_{i,t}$ is the asset tangibility, $Size_{i,t} = \log(Total\ assets)_{i,t}$ is the size of the firm represented with the natural logarithm of total assets, $Liq_{i,t} = \left(\frac{Current\ assets}{Current\ liabilities} \right)_{i,t}$ is the firm liquidity, $NetIntPay_{i,t} = \left(\frac{Interest\ income - Interest\ expenses}{Total\ assets} \right)_{i,t}$ is the net interest payment. The dummy terms $Industry_{i,t}$ and $Year_{i,t}$ represent a firm's industry (there are eight non-financial industries listed on the Korean Composite Stock Price Index [KOSPI]), and the year of information, respectively, and $\varepsilon_{i,t}$ is the error term. The subscripts i and t denote the firm and fiscal year, respectively.

3.2.2. CG and FV

In Equation (2), we expect a positive coefficient for β_1 because strong-CG practices might increase the FV through effective corporate control and confidence.

$$FV_{i,t} = \beta_0 + \beta_1 CGS_{i,t} + \beta_3 Tang_{i,t} + \beta_4 Size_{i,t} + \beta_5 Liq_{i,t} + \beta_6 NetIntPay_{i,t} + \sum_{j=1}^n \beta_j Industry_{i,t} + \sum_{k=9}^f \beta_k Year_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where $CGS_{i,t}$ is the CGS of firm i in year t . It is composed of shareholder rights $CG1_{i,t}$, board structure $CG2_{i,t}$, disclosure $CG3_{i,t}$, audit organization $CG4_{i,t}$, and error management $CG5_{i,t}$, and, thus, $CGS_{i,t} = Log (CG1 + CG2 + CG3 + CG4 + CG5)_{i,t}$ for firm i in year t .

3.2.3. Leverage, CG, and FV

In Equations (3) and (4), coefficients β_1 and β_2 measure the relationship between (i) leverage and FV and (ii) CG and FV, respectively. In Equation (4), we introduce the interaction term $CGS_{i,t} \times Lev_{i,t}$ in our model. The coefficient β_3 is the result of our third hypothesis, which indicates the interaction effect of CG on the relationship between leverage and FV

$$FV_{i,t} = \beta_0 + \beta_1 Lev_{i,t} + \beta_2 CGS_{i,t} + \beta_3 Tang_{i,t} + \beta_4 Size_{i,t} + \beta_5 Liq_{i,t} + \beta_6 NetIntPay_{i,t} + \sum_{j=1}^n \beta_j Industry_{i,t} + \sum_{k=9}^f \beta_k Year_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$FV_{i,t} = \beta_0 + \beta_1 Lev_{i,t} + \beta_2 CGS_{i,t} + \beta_3 CGS_{i,t} \times Lev_{i,t} + \beta_4 Tang_{i,t} + \beta_5 Size_{i,t} + \beta_6 Liq_{i,t} + \beta_7 NetIntPay_{i,t} + \sum_{j=1}^n \beta_j Industry_{i,t} + \sum_{k=9}^f \beta_k Year_{i,t} + \varepsilon_{i,t}, \quad (4)$$

where $CGS_{i,t} \times Lev_{i,t}$ is the interaction term between CG and the leverage of firm i in year t . The research representation of this manuscript is presented in Figure 1.

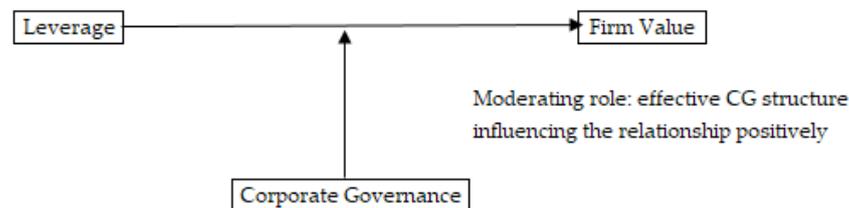


Figure 1. Research model.

4. Sample Statistics

Our initial sample consists of 265 Korean non-financial firms listed on the KOSPI (Fama and French 1992) with 1060 firm-year observations during the 2017–2020 period. To be considered in the final sample, the firms must have shown completed financial information for four years (four financial periods). Moreover, extreme values and outliers were dropped in the initial sample using the interquartile-range method and confidence intervals with two standard deviations (Gujarati 1988). The final sample contains 860 firm-year observations of 215 Korean non-financial firms, resulting in 215 firm-year observations per year. The final database is formed by eight non-financial industries listed on the KOSPI. Table 1 shows the composition of the final sample.

The information on firms is obtained from the webpage of S&P and KisValue version 3.2 (Kis-Value Version 3.2 2018). KisValue is a financial database of Korean firms. IBM SPSS Statistics version 26 was employed as software to process all data and provide descriptive and inference statistics.

Table 2 describes all statistics for dependent, independent, and control variables. The dependent variables, Tobin's Q and price-to-book ratio, are considered driving factors of investment decisions. The average value of Tobin's Q is close to zero, showing that the stocks might be undervalued. The mean value of the price-to-book ratio is lower than one, suggesting solid investments in the long term given that many investors use the price-to-book ratio to find undervalued stocks, to be rewarded in the future. Moreover, the debt ratio can be interpreted as the proportion of a firm's assets that are financed with

debt. Its mean value is below one, meaning that a greater portion of the firm's assets is funded using equity. Finally, the principal CG component is shareholders' rights, given its mean value.

Table 1. Sample selection and distribution per industry.

Detail	No.
Initial number of firms	265
(−) Firms with incomplete information for four years	42
(−) Firms with extreme values and outliers	8
=Final number of firms	215
Number of firms per industry	No.
Communications	26
Construction	27
Electrical and electronic equipment	27
Electricity and gas	26
Food and beverages	26
Non-metallic-mineral production	29
Paper and wood	28
Transport and storage	26
Final number of firms per industry	215

Table 2. Descriptive statistics.

Variables	Mean	Std. Dev.	Min	Lower Quartile (Q1)	Median	Upper Quartile (Q3)	Max
Dependent variables							
Tobin's Q	0.030	0.054	−0.202	0.005	0.030	0.057	0.287
Price-to-book ratio	0.563	0.181	0.006	0.425	0.573	0.711	0.900
Independent variables							
Lev	0.437	0.181	0.096	0.289	0.427	0.576	0.935
CGS	2.211	0.101	1.902	2.142	2.210	2.266	2.599
CG1	1.726	0.079	1.347	1.679	1.736	1.786	1.897
CG2	1.200	0.173	0.574	1.097	1.211	1.273	1.923
CG3	1.332	0.199	0.854	1.196	1.301	1.456	1.887
CG4	1.633	0.146	0.903	1.556	1.623	1.732	1.982
CG5	1.137	0.655	0.000	1.000	1.477	1.602	1.954
Control variables							
Tang	0.323	0.174	0.005	0.186	0.302	0.445	0.922
Size	19.877	1.487	16.185	18.848	19.507	20.481	25.824
Liq	1.739	1.141	0.213	0.974	1.422	2.137	7.782
NetIntPay	−0.007	0.012	−0.097	−0.013	−0.005	0.001	0.023

Table 3 shows that Tobin's Q and price-to-book ratio had a significant negative and positive correlation with leverage and CG proxies, respectively. Moreover, leverage showed a significant positive linear association with board structure, disclosure, and audit organization, while it presented a significant negative correlation with CGS, shareholder rights, and error management. The correlation values themselves were not enough to increase the multi-collinearity problem (Gujarati 1988).

Table 3. Pearson correlation matrix.

	Tobin's Q	Price-to-Book Ratio	Lev	CGS	CG1	CG2	CG3	CG4	CG5	Tang	Size	Liq	NetIntPay
Tobin's Q	1												
Price-to-book ratio	0.538 ***	1											
Lev	−0.442 ***	−0.311 ***	1										
CGS	0.193 ***	0.196 ***	−0.097 ***	1									
CG1	0.069 **	0.049 **	−0.127 ***	0.439 ***	1								
CG2	0.125 ***	0.110 ***	0.096 ***	0.571 ***	0.028	1							
CG3	0.137 ***	0.137 ***	0.030 ***	0.641 ***	0.144 ***	0.514 ***	1						
CG4	0.034 ***	0.052 ***	0.094 ***	0.598 ***	0.086 **	0.447 ***	0.454 ***	1					
CG5	0.181 ***	0.208 ***	−0.220 ***	0.586 ***	0.161 ***	0.071 **	0.119 ***	−0.010 ***	1				
Tang	−0.172 ***	−0.154 ***	0.197 ***	0.006	−0.001	0.030	−0.046	0.059	−0.065	1			
Size	0.097 ***	0.086 **	0.097 ***	0.542 ***	0.038	0.614 ***	0.616 ***	0.572 ***	0.068 **	0.081 **	1		
Liq	0.308 ***	0.235 ***	−0.715 ***	0.084 **	0.193 ***	−0.118 ***	−0.026	−0.060	0.178 ***	−0.268 ***	−0.091 ***	1	
NetIntPay	0.456 ***	0.390 ***	−0.635 ***	0.217 ***	0.122 ***	0.036	0.173 ***	−0.002	0.253 ***	−0.234 ***	0.094 ***	0.514 ***	1

Note: *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

5. Regression Analysis

5.1. Relationship between Leverage and FV

Table 4 shows the results of linear regression between leverage and FV. There is a significant negative relationship between all leverage metrics and FV at the 1% level. Therefore, the first hypothesis of this study is accepted. Moreover, the F-statistic is significantly higher for all models and the Durbin–Watson statistic is close to 2.0.

Table 4. Relationship between leverage and FV.

Variables	Tobin's Q		Price-to-Book Ratio	
Lev	−0.080 *** (−5.428) [3.075]		−0.021 *** (−3.161) [3.259]	
StLev		−0.037 *** (−3.287) [2.261]		
LtLev			−0.083 *** (−4.248) [1.760]	
Tang	−0.025 *** (−2.669) [1.194]	−0.029 *** (−2.940) [1.281]	−0.012 ** (−2.195) [1.287]	−0.029 ** (−2.492) [1.203]
Size	0.004 *** (4.004) [1.154]	0.003 *** (2.777) [1.195]	0.006 *** (4.770) [1.344]	0.004 *** (3.022) [1.154]
Liq	−0.002 * (−1.900) [2.192]	0.002 * (1.852) [2.202]	0.004 ** (2.425) [1.482]	−0.001 ** (−2.096) [2.219]
NetIntPay	0.206 *** (6.517) [1.973]	0.604 *** (9.502) [1.597]	1.431 *** (8.229) [1.721]	0.437 *** (5.903) [2.111]
Intercept	0.006 (0.261)	0.005 (0.186)	−0.056 (−1.332)	−0.009 (−0.310)
Year—fixed effects	Yes	Yes	Yes	Yes
Industry—fixed effects	Yes	Yes	Yes	Yes
Adj. R ²	0.309	0.289	0.299	0.212
F-Stat.	26.549 ***	24.251 ***	25.466 ***	12.535 ***
DW	1.963	1.893	1.909	1.949

Note: Beta corresponds to unstandardized coefficients. Numbers inside the parentheses are t-statistics. Numbers inside the brackets are the values of the variance inflation factor. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The results are supported by two theories, the pecking order and the agency cost (Fama and French 1998; González 2013); thus, the level of debt acts as a disciplinary financial

tool (Cheng et al. 2010). The authors (Jiraporn et al. 2008) showed that debt is an active mechanism to protect poor investors because leverage might substitute or accompany CG strategies to reduce agency conflicts.

The results show that financial distress is costly, meaning that leveraged firms will deal with the greatest operating problems. The authors (Opler and Titman 1994) showed that highly leveraged firms experience lower operating profits and lose market shares in American firms.

Similar findings were supported previously. The author (González 2013) showed a meaningful negative relationship between debt and firm performance using a sample of 39 developed and developing countries, suggesting that highly leveraged firms might show a deterioration in operating performance and FV. Moreover, he mentioned that the legal instruments and legal system might influence the degree of leverage in firms. The authors (Onaolapo and Kajola 2010) and (Pratomo and Ismail 2006) found that leverage has a significant negative effect on FV in Nigerian and Malaysian firms, respectively. Both studies showed the prevalence of agency theory.

The control variables Size and NetIntPay showed a significant positive effect in the regression model, while asset tangibility and liquidity performed a negative effect on FV. These findings revealed that managers' decision depends on the levels of assets and liabilities (current and noncurrent for both cases). Managers prefer to cover interest and principal payments, which also decreases the managers' discretion and limits the firm's financial position. Moreover, large firms show higher FV, suggesting a positive relationship between size and FV.

5.2. Relationship between CG and FV

CG is the system of management and supervision to achieve the aims of the firm. It is considered the mechanism to evaluate and control the risk of a firm using appropriate accountability and regulation systems to guarantee that its application is successful. Strong-CG structures allow firms to generate added value through processes, innovation, and research activities. CG systems have improved permanently since the 1997 Asian Financial Crisis. CG is indispensable for firms to generate and increase a philosophy of consciousness, transparency, and accountability, which might include firms' value creation and financial wealth (Detthamrong et al. 2017).

Table 5 confirmed that all CG metrics have a significant (at least at the 10% level) positive relationship with FV. Hypothesis 2 is accepted, showing that a suitable governance system decreases the firm's depreciation, because of the decrease in the fight of interest between parties and the decay of information asymmetry. A strong-CG structure is an active instrument to show the fundamental value of a firm (Tulcanaza-Prieto and Lee 2022b).

Prior studies showed that firms adopt governance structure to maximize their FV (Black et al. 2006; Klapper and Love 2004; Liu et al. 2012; Tulcanaza-Prieto and Lee 2022a, 2022b). Notably, board directors and board structures monitor key activities and costs, review the organizational complexity, and approve strategic decisions (Liu et al. 2012; Uchida 2011). The board structure might offer improved admission to financial information and follow the decision-making process of managers, which increase the FV. Moreover, audit organization provides additional safeguards, meets required standards, and promotes best practices. Specifically, an audit committee decreases the asymmetry of the information problem between parties and improves the monitoring of management because it primarily oversees the financial-reporting process of the firm and ensures the high quality of corporate financial reporting. Firms with a competent audit organization might decrease their accounting scandals, which is traduced in a better FV in the short and long term (Aldamen et al. 2012; Klein 2002).

Table 5. Relationship between CG and FV.

Variables	Tobin's Q						Price-to-Book Ratio
CGS	0.045 ** (2.378) [1.555]						0.053 ** (2.200) [1.568]
CG1		0.011 ** (2.538) [1.102]					
CG2			0.034 *** (2.759) [1.934]				
CG3				0.019 * (1.859) [1.740]			
CG4					0.006 ** (2.450) [1.582]		
CG5						0.006 *** (2.621) [1.111]	
Tang	−0.023 ** (−2.361) [1.193]	−0.023 ** (−2.398) [1.193]	−0.022 ** (−2.295) [1.195]	−0.022 ** (−2.244) [1.202]	−0.023 ** (−2.421) [1.192]	−0.022 ** (−2.321) [1.194]	−0.028 ** (−2.368) [1.202]
Size	0.002 (1.602) [1.575]	0.004 *** (3.368) [1.142]	0.001 (1.001) [1.799]	0.002 (1.628) [1.732]	0.004 *** (2.986) [1.714]	0.004 *** (3.213) [1.142]	0.002 (1.320) [1.572]
Liq	0.004 ** (2.501) [1.482]	0.004 *** (2.686) [1.514]	0.005 *** (2.815) [1.483]	0.005 *** (2.741) [1.482]	0.004 *** (2.640) [1.478]	0.004 ** (2.481) [1.483]	0.001 *** (2.618) [1.509]
NetIntPay	0.671 *** (10.185) [1.496]	0.712 *** (10.523) [1.474]	0.710 *** (10.561) [1.474]	0.673 *** (10.223) [1.498]	0.705 *** (10.451) [1.483]	0.636 *** (9.943) [1.520]	0.512 *** (7.231) [1.568]
Intercept	−0.091 ** (−2.487)	−0.005 (−0.120)	−0.019 (−0.849)	−0.019 (−0.841)	−0.020 (−0.856)	−0.027 (−1.183)	−0.098 ** (−2.111)
Year—fixed effects	Yes						
Industry—fixed effects	Yes						
Adj. R ²	0.289	0.285	0.291	0.287	0.285	0.290	0.216
F-Stat.	24.291 ***	23.782 ***	24.476 ***	24.083 ***	23.774 ***	24.406 ***	12.836 ***
DW	1.991	2.082	2.086	1.988	2.183	2.095	2.063

Note: Beta corresponds to unstandardized coefficients. Numbers inside the parentheses are t-statistics. Numbers inside the brackets are the values of the variance inflation factor. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The defense of shareholder's rights introduces additional monitoring of financial reports, raises the value of auditing standards, contributes to agendas of social responsibility, and raises transparency in financial reports, showing that extensive supervisory control decreases the probability of managers exercising discretion in all processes, which also increases the FV (Geiger and North 2013; Lopes 2018; Tulcanaza-Prieto et al. 2020a). Moreover, disclosure and error management are positively associated with FV because both characteristics provide efficiency and transparency in operational and financial procedures in a firm because of the higher information quality, the diversification of firms' risk, and the reduction of consecutive errors, which also provide financial stability to the investors (Foerster et al. 2013).

5.3. Relationship between Leverage, CG (with Interaction Effect), and FV

The findings of Table 6 show a positive relationship between CG and FV and the interaction variable (leverage \times CG) and FV, while all regressions show an insignificant positive relationship between leverage and FV. The interaction variable and FV show a statistically significant coefficient, suggesting that CG exercises a moderating effect in the relationship between leverage and FV because the significance of the CG coefficient prevails compared to the leverage coefficient. Therefore, Hypothesis 3 is accepted.

Table 6. The interaction effect of CG on the relationship between leverage and FV.

Variables	Tobin's Q						Price-to-Book Ratio
Lev	1.379 (0.827) [3.227]	2.563 (1.479) [3.086]	0.388 (0.707) [3.589]	0.675 (1.298) [3.610]	0.015 (0.016) [3.886]	0.652 (0.791) [5.691]	0.219 (0.901) [3.851]
CGS	0.771 *** (3.124) [7.895]						0.100 *** (2.866) [7.734]
CG1		0.546 *** (3.147) [8.395]					
CG2			0.669 *** (3.078) [8.420]				
CG3				0.620 *** (3.410) [7.762]			
CG4					0.143 *** (2.598) [7.068]		
CG5						0.053 *** (2.943) [8.093]	
Lev × CGS	0.927 ** (2.238) [3.454]						0.108 *** (1.966) [2.209]
Lev × CG1		1.091 ** (2.086) [2.584]					
Lev × CG2			0.868 ** (2.004) [5.209]				
Lev × CG3				1.002 ** (2.121) [6.520]			
Lev × CG4					0.418 ** (2.090) [1.667]		
Lev × CG5						0.013 ** (2.116) [3.085]	
Tang	−0.216 *** (−2.649) [1.196]	−0.217 *** (−2.654) [1.195]	−0.205 ** (−2.515) [1.197]	−0.213 *** (−2.610) [1.206]	−0.215 *** (−2.630) [1.196]	−0.211 ** (−2.577) [1.205]	−0.029 ** (−2.434) [1.205]
Size	0.025 ** (2.300) [1.603]	0.037 *** (3.943) [1.161]	0.020 *** (2.662) [1.823]	0.026 ** (2.262) [1.753]	0.040 *** (3.464) [1.748]	0.036 *** (3.866) [1.159]	0.002 ** (2.491) [1.596]
Liq	−0.016 (−0.954) [2.196]	−0.011 (−0.638) [2.308]	−0.007 (−0.398) [2.263]	−0.008 (−0.452) [2.241]	−0.013 (−0.774) [2.238]	−0.016 (−0.922) [2.235]	−0.003 (−0.105) [2.221]
NetIntPay	0.033 *** (6.308) [1.991]	0.325 *** (6.496) [1.975]	0.243 *** (6.482) [1.976]	0.842 *** (6.180) [2.008]	0.303 *** (6.474) [1.979]	0.950 *** (6.230) [2.003]	0.371 *** (5.605) [2.146]
Intercept	0.536 ** (2.666)	2.955 *** (3.484)	1.528 *** (4.730)	1.387 ** (4.408)	1.714 ** (3.914)	1.965 *** (9.474)	−0.197 * (−1.668)
Year—fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry—fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.312	0.308	0.316	0.317	0.307	0.311	0.216
F-Stat.	23.955 ***	23.484 ***	24.374 ***	24.407 ***	23.427 ***	23.809 ***	21.464 ***
DW	1.919	1.918	1.929	1.933	1.921	1.912	2.063

Note: Beta corresponds to unstandardized coefficients. Numbers inside the parentheses are t-statistics. Numbers inside the brackets are the values of the variance inflation factor. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

CG might reduce the agency problem because it provides the correct atmosphere of accountability, faith, and transparency in a firm. On one hand, firms with weak CG are more significantly leveraged than firms with strong CG, showing poorer FV (Jiraporn et al. 2012). On the other hand, strong-CG mechanisms might reduce agency costs and managers reduce the financial leverage of the firm, which also maximizes the FV (Wen et al. 2002).

The results show that CG metrics exercise a significant positive influence on the FV, which also decreases the financial leverage of Korean firms. Our results imply that monitoring, supervising, and controlling tools are effective mechanisms to protect shareholders' rights, promote transparency and reliability in firms, induce information disclosure, and reduce error management. Strong-CG tools reduce the individualistic conduct and performance of managers, provoking the increase in FV. Our results of the moderating effects of CG inductively support the management-entrenchment hypotheses and the agency costs of debt, motivating the negative relationship between leverage and FV.

Previous studies did not analyze the combined effect of CG, leverage, and FV. They tested separately the relationship between leverage and FV, and CG and FV. Other studies focused on financial leverage as a mediator variable in the relationship between FV and CG. These studies argued that CG does not influence FV directly, but rather modifies FV indirectly through financial leverage (Kijkasiwat et al. 2022). However, these findings were debated by (Detthamrong et al. 2017)'s study because they showed that financial leverage does not modify the effect of CG on FV in Thai small firms. However, they suggested (but did not prove) that CG exerts an indirect effect on FV via financial leverage. Our study covered this gap proving the moderating effect of CG in the relationship between FV and leverage. However, it is also important to notice that our conclusion could not be stable because of relatively high values of the variance inflation factor in explanatory variables (Marcoulides and Raykov 2018).

5.4. Robustness Tests

5.4.1. Analysis of the Leverage Difference between Firms with High and Low Levels of CG

The study employs Tobin's Q as the main proxy for FV in the robustness check given it represents the market value of assets and its intrinsic value, showing its undervaluation or overvaluation to forecast the capital investment in the future. The study classified firms with high and low levels of CG according to their quartile. Firms with firm-year observations having a CGS higher than 2.26583 (quartile 3) were classified as firms with a high level of CG, whereas those with firm-year observations with a CGS lower than 2.14246 (quartile 1) were classified as firms with a low level of CG. Our sample is composed of 215 firm-year observations for each group. The sample was classified into two groups to recognize the level of predilection for financial leverage and its effect on FV.

Table 7 shows the results of the t-test for equality of means using independent samples. The average of all dependent and independent variables was statistically different for firms with high and low levels of CG, showing that the mean of Tobin's Q in firms with strong CG was higher than its value in firms with weak CG, while the mean of leverage is lower in firms with a high level of CG than its value in firms with a low level of CG. CG mechanisms might influence managers to diminish their behavior and demotivate them to raise unnecessary financial debt. The interaction term between leverage and CG might lose the relationship between both variables. We expect a weak negative relationship for a strong-CG sample and a strong negative relationship for a weak-CG sample.

Table 7. T-test for equality of means for firms with high and low levels of CG.

Variable	Firms with High Level of CG	Firms with Low Level of CG	Difference	t-Value
Tobin's Q	0.042	0.018	0.024	4.291 ***
Lev	0.429	0.476	-0.047	-2.780 ***
CGS	2.341	2.087	0.254	48.729 ***
CG1	1.757	1.672	0.085	11.194 ***
CG2	1.350	1.136	0.214	13.122 ***
CG3	1.522	1.215	0.307	17.396 ***
CG4	1.763	1.537	0.225	19.102 ***
CG5	1.510	0.456	1.055	20.654 ***

Note: *** indicates statistical significance at the 1% level.

We compare the relationship between leverage and FV with strong-CG firms to that of weak-CG firms (Table 8).

Table 8. Relationship between leverage and FV using firms with high and low levels of CG.

Variables	Tobin's Q					
	Firms with High Level of CG			Firms with Low Level of CG		
Lev	−0.019 (−0.581) [1.866]			−0.109 *** (−3.226) [3.804]		
StLev		−0.033 (−0.978) [2.763]			−0.102 *** (−2.649) [2.572]	
LtLev			−0.126 (−1.468) [1.478]			−0.078 *** (−2.620) [3.403]
Tang	−0.053 ** (−2.523) [1.255] 0.004 (1.149) [1.124] 0.008 (1.361) [2.280] 1.827 ***	−0.045 ** (−2.041) [1.392] 0.005 (1.316) [1.172] 0.013 ** (2.294) [2.366] 2.060 ***	−0.031 (−1.407) [1.453] 0.007 * (1.903) [1.260] 0.010 ** (2.260) [1.446] 1.797 ***	−0.044 * (−1.828) [1.482] 0.004 (1.687) [1.444] −0.005 (−1.147) [2.141] 1.278 **	−0.054 ** (−2.145) [1.574] 0.002 (0.680) [1.601] −0.006 (−1.117) [2.681] 2.317 ***	−0.031 (−1.223) [1.530] 0.005 ** (2.044) [1.722] 0.003 (0.792) [1.593] 1.501 **
NetIntPay	−0.001 (−0.010)	−0.044 (−0.556)	−0.066 (−0.881)	0.048 (1.000)	0.078 (1.391)	−0.028 (−0.578)
Year—fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry—fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	0.370	0.372	0.387	0.335	0.320	0.309
F-Stat.	9.962 ***	10.037 ***	10.658 ***	8.177 ***	7.725 ***	7.380 ***
DW	1.723	1.768	1.745	2.058	2.086	2.025

Note: Beta corresponds to unstandardized coefficients. Numbers inside the parentheses are t-statistics. Numbers inside the brackets are the values of the variance inflation factor. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

CG practices might act as effective corporate-control tools to reduce the probability for entrenched managers to use discretion to decide to leverage above the optimal level, which may not necessarily reduce FV, respectively. Firms characterized by strong-CG practices may show a negative relationship between leverage and FV than those with weak-CG practices may do. On the other hand, if the negative relationship between leverage and FV is due to the traditional view, the discipline of CG practices may not be effective in moderating the relationship. We may not observe any statistical significance on the difference in the relationship between the two groups.

As we mentioned earlier, the agency costs of debt stimulate the negative relationship between leverage and FV, given that leverage inspires stockholders' strategies against bondholders such as through enchanting large risks, engaging in under investment, or milking properties. The higher the level of leverage is, the more there is probability for stockholders to engage in selfish strategies, and the lower the FV is, respectively. Appropriate governance structures defend the interests of all stakeholders and include autonomy of the board, management, and committees, access to clear information, disclosure, and high-level audit boards, and thus, all mechanisms might reduce agency conflicts of debt, while a weak CG might increase information asymmetry and increase agency conflicts of debt. Therefore, CG could loosen the negative relationship between leverage and FV.

If the moderating role of CG on the relationship between leverage and FV is reinforced, the probability could decrease that the management exercises his or her discretion over the financial resources of a firm. We may observe that the level of leverage with strong CG is lower or at least not higher than with weak CG. If the moderating role of CG is true, it is also plausible that the chance for management to expropriate bondholders' wealth (the source of agent costs of debt) would decrease. Therefore, management with a strong CG would have less incentive to increase leverage to take advantage of agency costs of debt

than that with a weak CG. The level of leverage with a strong CG could be lower than that with a lower CG, respectively.

5.4.2. Analysis 2SLS Regression

To reinforce the conclusion that CG moderates the relationship between leverage and FV and to control the endogeneity problem, we employed Equations (5) and (6) using 2SLS regression analysis. Both equations provide econometric specifications (Black et al. 2006). In the first stage, we ran Tobin's Q and CGS controlled by "Size_Dummy" and "Size". In the second stage, we ran the model using the results from the first stage.

First stage:

$$CGS_{i,t} = \beta_0 + \beta_1 Tobin's\ Q_{i,t} + \beta_2 Size_Dummy_{i,t} + \beta_3 Size_{i,t} + \varepsilon_{i,t}, \quad (5)$$

Second stage:

$$Tobin's\ Q_{i,t} = \alpha_0 + \alpha_1 CGS_{i,t} + \alpha_2 Lev_{i,t} + \alpha_3 Tang_{i,t} + \alpha_4 Size_{i,t} + \alpha_5 Liq_{i,t} + \alpha_6 NetIntPay_{i,t} + \sum_{j=1}^n \alpha_j Industry_{i,t} + \sum_{k=8}^f \alpha_k Year_{i,t} + \varepsilon_{i,t}, \quad (6)$$

where "Size_Dummy" = 1, if total assets \geq KRW 2 trillion, and 0 otherwise, given firms with assets of over KRW 2 trillion are obligatory to have an audit committee. The results of the second stage of 2SLS regression in Table 9 show a positive relationship between CG and FV, which supports the earlier findings (Hypothesis 2, Tables 5 and 6). Moreover, the coefficient of the interaction term is significant and positive, suggesting that CG moderates the relationship between leverage and FV (Hypothesis 3, Table 6). CG reduces the likelihood for the management to raise exaggeratedly the firm's leverage. CG might be considered an effective mechanism to reduce agency conflict between parties and decrease the opportunistic behavior of managers, which also increases the firms' efficiency and raises the FV.

The introduction of CG policies in a firm increases transparency because of the access to public information; it decreases the agency costs; declines asymmetric information between parties; reduces the manager's opportunistic behavior; increases the supervisory role of owners and shareholders; improves the quality of financial reporting; and elevates the reliability of firms. The authors (Kim et al. 2003; Persons 1995) argued that large firms usually show strong corporate mechanisms with internal control systems, which also decrease the possibility of fraud and unusual activities. Moreover, the size of a firm might be considered as an extra signal to sustain our third hypothesis that CG acts as a moderating variable and prevents excessive indebtedness in a firm.

5.4.3. Analysis of GMM Regression

We employ a second method to control the endogeneity problem, which is GMM with first-order difference models. GMM with one lag in the studied variable solves the endogeneity problem because it reduces the unobserved effects and creates equal-sided conditions between the explanatory variables and error term (Arellano and Bond 1991; Arellano and Bover 1995). Equations (7) and (8) show the test for the endogenous relationship between FV and leverage and FV and CGS.

$$Tobin's\ Q_{i,t} = \alpha_0 + \alpha_1 Lev_{i,t-1} + \alpha_2 Tang_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 Liq_{i,t} + \alpha_5 NetIntPay_{i,t} + \varepsilon_{i,t}, \quad (7)$$

$$Tobin's\ Q_{i,t} = \alpha_0 + \alpha_1 CGS_{i,t-1} + \alpha_2 Tang_{i,t} + \alpha_3 Size_{i,t} + \alpha_4 Liq_{i,t} + \alpha_5 NetIntPay_{i,t} + \varepsilon_{i,t} \quad (8)$$

Table 9. Relationship results of the 2SLS model.

First-Stage Regression Results		
Variable	CGS	
Tobin's Q	0.583 *** (3.017)	
Intercept	1.957 *** (22.87)	
Adj. R ²	0.009	
F-Stat.	9.101 ***	
Covariance Tobin's Q	0.094	
Second-Stage Regression Results		
Variable	Tobin's Q	
Lev	0.680 (1.384) [3.077]	1.379 (0.827) [3.227]
CGS	0.368 ** (2.285) [1.556]	0.771 ** (2.124) [7.895]
Lev*CGS		0.927 ** (2.238) [3.454]
Tang	−0.213 *** (−2.612) [1.195]	−0.216 *** (−2.649) [1.196]
Size	0.024 ** (2.214) [1.594]	0.025 ** (2.300) [1.603]
Liq	−0.017 (−0.978) [2.195]	−0.016 (−0.954) [2.196]
NetIntPay	0.610 *** (6.291) [1.991]	0.533 *** (6.308) [1.991]
Intercept	1.454 *** (4.632)	0.536 (0.666)
Quarter—fixed effects	Yes	Yes
Industry—fixed effects	Yes	Yes
Adj. R ²	0.312	0.312
F-Stat.	25.340 ***	23.955 ***
DW	1.913	1.919

Note: Beta corresponds to unstandardized coefficients. Numbers inside the parentheses are t-statistics. Numbers inside the brackets are the values of the variance inflation factor. *** and ** indicate statistical significance at the 1% and 5% levels, respectively.

The results of GMM are presented in Table 10. Findings revealed a negative relationship between leverage and FV (Hypothesis 1) and a positive relationship between CG and FV (Hypothesis 2). When the interaction term (Lev × CGS) is introduced in the model, there is a persistent positive effect of CGS over FV, while the negative relationship between leverage and FV is loosened by the moderating effect of CG (Hypothesis 3). We conclude that the agency cost of debt predicts a negative relationship between leverage and FV; however, CG might lessen the degree of the relationship between both variables using the properties of agency cost of debt.

The study did not employ the difference-in-difference method because this quasi-experimental technique compares changes in outcomes over time between two different populations, the treatment group and the comparison group (Gujarati 1988). However, in our sample, we do not differentiate both groups. We showed firms divided into firms with high and low levels of CG, using the third and first quartile values of CGS, but the general

sample does not have a control group given the conditions to stay in the final sample (see Section 4).

Table 10. Relationship results of the GMM regression.

Variables		Tobin's Q	
Lev _{t-1}	−0.005 ** (−2.385)		0.038 (1.557)
CGS _{t-1}		0.051 ** (2.473)	0.062 *** (3.072)
Lev × CGS			0.048 *** (5.553)
Tang	−0.014 ** (−2.247)	−0.016 ** (−2.220)	−0.019 * (−1.763)
Size	0.003 ** (2.355)	0.001 *** (2.897)	0.002 *** (2.653)
Liq	0.003 (1.562)	0.004 (1.632)	−0.003 (−1.368)
NetIntPay	1.782 *** (8.534)	1.768 *** (9.015)	1.248 *** (5.596)
Sargan test (<i>p</i> -value)	0.908	0.898	0.874

Note: Numbers inside the parentheses are z-statistics. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

6. Conclusions

This study analyzes the simultaneous relationship and joint effect between leverage, CG and FV using a sample of 860 firm–year observations of non-financial firms listed on the KOSPI from 2017 to 2020. We proved three hypotheses in the study using Tobin's Q and price-to-book as proxies of FV. First, we found that the effect of leverage is significantly negative on FV, revealing the prevalence of the management-entrenchment hypothesis and the agency cost of debt. Second, we find that all six CG metrics exercise a significant and positive influence on FV. CG supervises, controls, and assesses the risk of a firm using an accurate accountability system. This result implies that CG may increase the FV using the implementation of innovation, research, transparency, high information quality, diversification of the firm's risk, and added value in its products and services, which impact the long-term financial wealth of a firm. Appropriate CG structure may decrease the agency problem between parties, which results in influencing the fundamental value of a firm positively. Third, by introducing an interaction variable (Lev × CG), we showed that CG moderates the negative relationship between leverage and FV. Specifically, the leverage coefficient lost its significance in the presence of CG mechanisms, while CG and the interaction term significantly positively influence FV. These results indicate that the CG mechanism could exercise effective control in a firm. It reduces the opportunistic behavior of managers related to leverage so that firm performance is improved. Previous studies tested individually the relationship between leverage and FV, and CG and FV, or they introduced leverage as a mediator variable between CG and FV. However, their findings were not statistically supported given the insignificant influence of leverage in the relationship. Our manuscript shows the importance of CG as a mediator variable in the relationship between leverage and FV. This conclusion, however, may be premature, because the empirical design is limited to only one country and over four years. Moreover, another limitation of the study is the possibility of facing multicollinearity problems (especially in Table 6) given the higher values of the variance inflation factor.

Moreover, an additional analysis is conducted by dividing the total sample into two groups of high level of CG and low level of CG. We find the negative relationship between leverage and FV becomes weak for firms with a high level of CG, while it stays strong for firms with low levels of CG. This result is consistent with our conclusion that an effective CG mechanism may prevent managers from engaging in opportunistic behavior or transferring wealth from debt holders. We also find firms characterized by high-level CG

are leveraged less than firms with low levels of CG. This result may imply that managers could give up debt financing to understand the difficulty of selfish decision making in an environment of high-level CG.

Furthermore, we employed a 2SLS regression model and GMM model to control the endogeneity problem. The results reinforced our previous findings that CG limited the managerial opportunistic behavior and improved FV, accordingly.

Previous studies did not test the joint relationship between CG, leverage, and FV. Generally, authors performed individual relationships between (i) CG and FV and (ii) leverage and FV. In the Indonesian market, Budiharjo (2021) showed that good CG (measured by the audit committee) and leverage positively influence FV. Similarly, Baihaqqi et al. (2023)'s findings revealed that leverage negatively influences FV while CG (measured by independent commissioner) does not affect FV, showing lower profits in higher leveraged firms and that an independent commissioner does not necessarily increase the effectiveness of firms. Finally, Memon et al. (2019) argued that optimal leverage and strong CG are essential tools for increasing the FV. The authors also considered the age of the firm in their models, proving that the degree of individual relationships between CG and FV, and leverage and FV depend on the firm age. Previous studies' findings are aligned with our results of individual relationships between CG, leverage, and FV. However, our study provides the combined effect of variables. Moreover, our findings of the moderating role of CG are supported by the degree of effectiveness of CG in firms because it provides control tools to monitor the behavior and decisions of managers and check the performance of firms continuously. In this sense, our findings may provide additional evidence to support the agency costs of debt or the entrenchment hypothesis, which have been for a long time controversial in the literature on capital structure.

For future research, authors might consider the inclusion of the tenure structure given the prevalence of family firms in the Korean market, and introduce the existence of bonuses in the model to verify the degree and prevalence of the opportunistic behavior of managers. Moreover, researchers may provide more stable and robust evidence by enlarging the database by including international data or by expanding the period of data.

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