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The Effect of Corporate Governance on the Degree of Agency Cost in the Korean Market

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Abstract: This study examines the relationship between corporate governance (CG) and agency costs using Korean market data, particularly for chaebol firms. The final sample includes 660 firm-year observations between 2016 and 2020 for Korean non-financial firms listed on the Korean Composite Stock Price Index (KOSPI). This study employs an ordinary least-squares panel data regression model using two proxies for agency costs, namely, asset utilization ratio and operating expense ratio, and six CG individual metrics as independent variables (CG score, protection of shareholder rights, board structure, disclosure, audit organization, and managerial discretion and error management). We find that firms with high CG experience lower agency costs than those with low CG. Moreover, our evidence suggests that firms can decrease agency costs by improving the quality of CG. The results of our regression model also support the idea that CG is effective in reducing agency costs for chaebol firms but not for non-chaebol firms. Finally, our findings suggest that the implementation of effective CG mechanisms in firms might improve managerial behavior through better decision-making to maximize the value of firms.

Keywords: corporate governance; agency costs; chaebol firms; non-chaebol firms

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1. Introduction

Corporate governance (CG) includes all administrative mechanisms for firms and ensures appropriate decision-making processes and controls to benefit and preserve the balance of interests of all stakeholders, including shareholders, employees, suppliers, customers, and the community. It focuses on the processes to achieve firm's objectives according to the social, economic, financial, regulatory, and market environments, comprising the degree of confidence and trust stakeholders have in firm management (La Porta et al. 2002). An adequate CG structure supports the quality of decisions made by managers and the board of directors, enabling firms to sustain their business and create long-term relationships between parties while also increasing firm value (FV) (Tulcanaza-Prieto and Lee 2022).

Jensen and Meckling (1976) introduced the agency problem, which states the relationship between the principal and agent using a contract. The principal's role involves compliance with the contract between parties, the regulation of discretionary behavior, and the power of the agent in firm decision-making. However, it is difficult to maintain a permanent supervision of the principal over the medium and long term given limited resources. Agents with power have incentives and the ability to maximize their self-interests without promoting managerial principles. Agency theory examines classic conflicts of interest such as those between principals and agents, owners and managers, controlling and minority shareholders, and employers and employees. Therefore, agency problems are considered critical factors in the business cycle, given that they include ethical risks, decision-making conflicts, and access to relevant firm information. Conversely, CG principles can help

reduce agency problems because they involve standards, norms, regulations, and best corporate practices by introducing the roles and responsibilities of each job position, a timely and accurate disclosure of financial and non-financial information, higher accountability and transparency standards, and advanced communication plans. Therefore, an effective CG structure may decrease agency cost (AC) by introducing financial transparency and reducing conflicts among stakeholders.

In this study, we analyze the relationship between CG and AC using Korean market data. Following the Asian financial crisis in 2008, the Korean market implemented International Financial Reporting Standards (IFRS) and environmental, social, and governance (ESG) best practices to provide a reference point for CG in Korean firms. Specifically, the main guidelines and regulatory system in Korea are dictated by the Commercial Code, Security Exchange Act, and laws from the Korean Securities Exchange Listed Companies that apply to listed firms. These regulations are all designed as primary laws governing stock corporations listed on the Korean Stock Exchange and incorporate provisions as CG tools. Therefore, Korea has undergone significant regulatory and legal modifications over the past decade that are aligned with the outside director's election, the revision of minority shareholders' attributes and rights, the active role of auditors and outside accountants, the revision of the quality of financial information, and the reconsideration of flexibility for mergers and acquisitions.

The Korean market is also characterized by business groups and firms with family control, called chaebols (Hwang et al. 2013; Kim et al. 2021). In 2015, the combined sales of the top five chaebol firms contributed almost half of the total Korean Gross Domestic Product (GDP), similar to half of all Korean exports. Moreover, chaebols expanded into new industrial sectors and tapped into lucrative foreign markets. For instance, exports grew from 4% of GDP in 1961 to more than 40% by 2016. Chaebols have since grown to become a powerful force in the country and continue to be the backbone of the economy. According to the Bank of Korea, the 2019 total revenues of the five largest South Korean chaebols alone represented 44% of the country's GDP. Chaebols will continue to play an important role in South Korea's effort toward technology transfer and an innovation-based economy, promoting multilateral free trade agreements (FTAs), which also include supply and demand for chaebols.

The purpose of this study is to examine the relationship between CG and AC in Korean firms, and chaebol firms in particular, during the period between 2016 and 2020. Most previous studies (Abdur Rouf 2011; Black et al. 2006; Liu et al. 2012; Subanidja et al. 2016; Tulcanaza-Prieto and Lee 2022) have concentrated on the relationship between CG and FV without considering AC behavior in firms. Previous studies have shown that better CG contributes to higher market value; however, little evidence has been provided on the role of CG and how governance can increase value. Our study includes two metrics of AC: asset utilization ratio or asset turnover (AC1) and operating expense ratio (AC2). We also use six proxies for CG: CG score (CGS), protection of shareholder rights (CG1), board structure (CG2), disclosure (CG3), audit organization (CG4), and managerial discretion and error management (CG5). Thus, we can explain which among five CG characteristics are effective or ineffective in influencing firm AC.

This study's findings reveal that firms with high CG show lower AC than those with low CG. We also find a significant positive (negative) relationship between AC1 (AC2) and CG metrics in firms with strong CG, and insignificant relationships in firms with weak CG. These results indicate that when maintained at a certain level, CG can effectively reduce AC. This study also provides evidence that the relationship between CG and AC is significant for chaebol firms but insignificant for non-chaebol firms. This implies that the CG mechanism of chaebol firms is effective at reducing AC, whereas that of non-chaebol firms is ineffective. Moreover, these findings suggest that chaebol firms have different financial and operational characteristics from non-chaebol firms. Chaebol firms grow like pyramids, in both directions, horizontally and vertically, and follow specific and rigorous financial policies referring to their levels of debt, cash-holding, and investment, which

are aligned with their low probability of bankruptcy, low financial costs, and high stock prices compared to those for non-chaebol firms. Lew (2015) found that debt level is a crucial variable that differentiates between chaebol and non-chaebol firms, given that chaebol firms show higher leverage ratios with cheap costs of borrowing given the access to privileged information.

The remainder of this paper is organized as follows. Section 2 presents the theoretical framework and develops the theoretical and empirical aspects associated with the relationship between AC proxies and CG metrics. Section 3 describes the methodology, variables of interest, and information sources. The results are presented in Section 4. Finally, Section 5 discusses the study's findings and their implications.

2. Literature Review

2.1. Protection of Shareholder Rights

Given their position and attributes, institutional and controlling shareholders have sufficient decision-making power and incentives to monitor and influence managers. They have access to a firm's detailed financial information and act as internal supervisors and monitors, thereby reducing agency conflicts between parties. Moreover, shareholders influence the dividend policy, which is another financial tool used to mitigate agency problems (Moez 2018). Conflicts of interest between controlling and minority shareholders arise in the presence of a mismatch between voting (control) rights and cash flow (ownership) rights. Similarly, Norli et al. (2015) showed that a specific group of shareholders, representing centralized ownership and acting as a monitor and guarantor for a business, can establish a long-term relationship with institutional shareholders based on trust and loyalty, resulting in agency problem type 2. Therefore, the separation of voting and cash flow rights may decrease the impact of agency problem type 2 (DePamphilis 2019). For example, Korean, Japanese, German, and Italian firms apply cross-sharing holding structures that provide ownership power to a group of institutional shareholders, such as keiretsu in Japan or chaebols in Korea. Moreover, smaller boards of directors outstrip larger ones, given that they ensure shareholder rights and interests, thereby minimizing AG and increasing firm performance in Chinese and US firms (Cheng et al. 2008; Vijayakumaran 2019). Therefore, we propose the following hypothesis:

Hypothesis 1. *The protection of shareholder rights influences the degree of AC in firms.*

2.2. Board Structure

Vijayakumaran (2019) investigated the relationship between board composition and AC in non-financial firms listed on the Shanghai and Shenzhen Stock Exchanges, finding that higher management ownership associated with a strong CG structure reduces AC conflicts, whereas board characteristics and size do not directly affect AC. The author noted that a firm that effectively uses its assets and has a low expense ratio is expected to experience fewer AC conflicts (Singh and Davidson 2003). Moreover, the board of directors (executive and non-executive) must establish control and monitoring mechanisms to supervise management teams. Specifically, previous research (Brown et al. 2011) has shown that non-executive directors exercise supervisory roles, work for shareholder rights and interests, and reduce managerial discretion, given their independence from a firm's management activities, whereas executive directors are generally in charge of business tasks such as finance, production, and sales.

Uadiale (2010) noted that a large board of directors might increase a firm's expertise and advice strategies, which also increases the amount of information available to stakeholders, thereby decreasing AC problems. Moreover, board member independence controls, limits, and reduces AC differences between parties. However, Eisenberg et al. (1998) found that a large board of directors increases cooperation and communication problems between parties, given the higher coordination costs and different members' views, which in turn increases AC conflicts and decision-making delays. Therefore, Jensen

(1993) noted that seven or eight may be the optimal number of board members to maintain a good communication channel. Thus, we propose the following hypothesis:

Hypothesis 2. *Board structure influences the degree of AC in firms.*

2.3. Disclosure

AC theory analyzes disclosure as a tool to reduce costs derived from conflicts of interest between principals (owners) and agents (managers). In line with AC theory, Schipper (1981) noted that financing costs might be reduced by (a) agreeing on some restrictions or covenants and (b) eliminating the costs of information required for creditors, which is transformed into disclosed information, showing that principals control agents and they can demonstrate that they are acting appropriately. Therefore, information disclosure will increase more for firms with a greater decline in AC. Security analysis has a greater impact on AC reduction in smaller firms than in larger firms, given the complex scrutiny of a greater amount of information. This results in less effective monitoring activity in larger firms, which aligns with their greater information asymmetry, increasing firm AC (Doukas et al. 2005). Moreover, financial information disclosure may depend on firm characteristics, such as firm size. However, labor pressure might also influence information disclosure, given that labor unions can use it in the negotiation process of working conditions (Nassreddine 2016).

Corporate disclosure involves people inside a firm communicating information, policies, firm performance, and governance to those outside the firm. This disclosure can take different forms, such as financial statements based on accounting standards (e.g., IFRS), good CG practices, respect for specific rules and formats, restricted managerial discretion, and stakeholders being allowed to better understand a firm's financial and non-financial information. Moreover, effective CG mechanisms include firm disclosure through the Sarbanes–Oxley Act of 2002 and Securities and Exchange Commission (SEC)'s Regulation Fair Disclosure. Specifically, transparency is part of Pillar 3 of Basel II, which mentions that disclosure improves market discipline through financial regulations. Information asymmetry between firms and parties (e.g., shareholders, creditors, employees, and public authorities) may be considered one factor influencing global financial and economic crises. Therefore, mandatory or voluntary disclosure would reduce information asymmetry, increase the effective control of managers, and re-establish good CG in a firm (Farvaque et al. 2011).

A firm can increase its exposure (Farvaque et al. 2011) by (a) disclosing more information; (b) increasing the frequency of disclosure; (c) enhancing the feasibility and availability of disclosure (e.g., increasing media reports); (d) raising the quality of information disclosure; (e) improving internal and external controls; (f) incorporating international normalization into reports for better clarity, comparability, and understanding of the financial reports given accounting standards; and (g) providing the market-to-market or fair value of a firm. Therefore, the benefits of disclosure include reduced information asymmetry, increased shareholder value creation, improved information held by third parties, increased share liquidity, more effective CG, and decreased AC. Therefore, we propose the following hypothesis:

Hypothesis 3. *Disclosure influences the degree of AC in firms.*

2.4. Audit Organization

Audits promote confidence and trust in specific financial information and reports. Moreover, the principal–agent problem involved in AC theory facilitates the improvement of audit quality to provide reliable financial information, helping to ensure that managers run a firm according to the shareholders' best interests, thereby aligning the interests of shareholders, directors, and auditors (Watts and Zimmerman 1978).

Audit organization might include internal and external audits oriented to guarantee credibility and objectivity in financial reports, which also involves legal accompaniment. Audit committee members take active roles in overseeing a firm's accounting and financial reporting policies and practices, selecting an independent auditor, receiving and analyzing audit results, and acting as a communication link among management, auditors, government structure, and general firm members (Zahirul et al. 2010). In a simple analysis of AC theory, principals do not trust agents or provide reliable and relevant financial firm information. Therefore, they may hire external and independent experts, introducing the concept of auditors as agents of principals who provide independence, trust, and objectivity. Auditor independence from the board of directors is a key factor in enhancing audit quality. However, the relationship between the auditor team and the board of directors must be improved for the benefit of the firm and its shareholders.

Selecting an effective audit committee might reduce the AC problem in a firm, given the increase in the credibility of annually audited financial statements and the safeguarding of shareholder interests. Previous studies have shown that audit quality improves the value, trust, and confidence of financial reporting information; reduces information risk; decreases information asymmetry; provides investors with more reliable information to monitor and supervise agents' investment and operating decisions; and improves disclosure quality, which also reduces AC conflicts (Houqe et al. 2017; Lai and Liu 2017). Therefore, building the auditor team's reputation is crucial for promoting the trust, confidence, independence, and quality that shareholders want. Thus, we propose the following hypothesis:

Hypothesis 4. *Audit organization influences the degree of AC in firms.*

2.5. Managerial Discretion and Error Management

Managerial discretion involves managers' opportunistic behavior and the degree of discretion in their decision-making, acting as a sign of their ability to manage a firm. When this signal is not transparent and does not transmit credibility, it contributes to an increase in AC conflicts, in which managerial discretion plays a relevant role and can also generate AC problems, especially if managerial compensation is low with weak corporate controls. Previous studies have examined managerial discretion and its relationship with AC; however, no consensus has been reached on the link between these two variables. Miller (2011) noted that managerial discretion increases when information asymmetry is present, effective CG mechanisms are absent, and internal and external controls are weak, provoking higher AC and low corporate efficiency, accompanied by ownership dilution and lower debt levels (Jensen and Meckling 1976). However, when corporate controls are effective, managerial discretion is negatively associated with AC because firm investors' active supervision precedes the alignment of interests between managers and corporations, thereby increasing firm performance and reducing AC. (Denis and McConnell 2003; Shleifer and Vishny 1997) argued that firm owners and board members can act as internal and external monitoring supervisors who discipline managers and administrators and mitigate their discretional behavior.

Moreover, error management might be considered a fundamental key for the development of organizations, because communication plans cannot be innovated or improved without errors being made. Therefore, communication is an essential characteristic of successful teams, and firms' communication strategies may have positive effects in terms of error management, information asymmetry, and AC problems (Frese and Keith 2015). A firm's management will want to reduce administration errors. Therefore, organizations should include and improve rules, responsibilities, standards, and protocols when errors occur. Moreover, firms must provide active information to users; team members might detect or even correct errors immediately to mitigate escalation to more errors or error cascades. Both error detection and error prevention might be reduced by sharing error knowledge in teams and organizations. Therefore, we propose the following hypothesis:

Hypothesis 5. *Managerial discretion and error management influence the degree of AC in firms.*

3. Empirical Design

3.1. AC Metrics

According to the previous literature, AC is measured using two metrics (Henry 2010; Nguyen et al. 2020; Tian and Estrin 2007; Vijayakumaran 2019): (1) asset utilization ratio or asset turnover and (2) operating expense ratio. The first metric reflects managerial efficiency, the effectiveness of firms' investment decisions, and the ability of firm management to direct assets toward their most productive use. Therefore, firms with lower asset turnover ratios do not make optimal investment decisions and use funds for unproductive assets, thereby generating AC for shareholders (Ang et al. 2000; Singh and Davidson 2003). The second metric includes managerial bonuses, managerial income, rents, equipment leasing, office buildings, equipment and fittings, communication and marketing bills, and entertainment and traveling expenses. Therefore, management has discretionary authority over these expenses, meaning that the higher the ratio, the greater the AC, given the misalignment of interests between parties (Singh and Davidson 2003).

3.2. CG Metrics

CG metrics are formed based on five CG features (Standard & Poor's Governance Services 2004; Tulcanaza-Prieto and Lee 2022; Tulcanaza-Prieto et al. 2020), evaluated over 100 points each (total maximum score of 500 points): (1) protection of shareholders' rights (CG1), (2) board structure (CG2), (3) disclosure (CG3), (4) audit organization (CG4), and (5) managerial discretion and error management (CG5). All metrics are summarized in CGS.

KCGS (Korea Institute of Corporate Governance and Sustainability 2021) began CG evaluation in 2003, which included establishing standards for CG best practices in firms and society through an integral evaluation. The selection criteria for firms (target companies) for evaluation comprise KOSDAQ 150 constituent companies, stock market-listed firms, listed financial firms, major unlisted financial firms, and companies belonging to large conglomerates (chaebols). Firms excluded from the evaluation are newly listed companies during the evaluation period, paper firms, and foreign companies with headquarters overseas. Moreover, the purpose of evaluating CG in Korean firms is to induce and improve corporate sustainability practices and provide financial and non-financial information to stakeholders, which also improves access to capital in responsible investment markets.

The evaluation model system implemented by KCGS includes the selection and continuous revision of the most important practices, domestic laws and regulations, international norms, and systems to provide a reference point for the CG situation in Korea, including ESG best practices, resulting in the six criteria used in this study. Financial and non-financial information was collected from various sources, such as corporate and public information, news, and the media, while the evaluation procedure consisted of the following stages: (1) evaluation preparation, (2) evaluation performance, (3) rating assignment, and (4) result analysis and rating adjustment.

The (Korea Corporate Governance Service 2016) promotes transparency, reliable management, and efficiency in corporations and contains the five CG metrics used in this study. First, shareholders' rights include their maximum protection from (i) merger and acquisition, business transfer, and split-off; (ii) dissolution; (iii) capital reduction; (iv) all-inclusive exchange and transfer of shares; (v) increase in capital that changes ownership structures; and (vi) amendments to the articles of incorporation. Moreover, the code covers the exercise of voting rights directly or indirectly and provides access to all necessary and timely information in sufficient quantity and without partiality. Second, the board of directors and its structure perform decision-making and supervisory roles in firms, comprising the establishment of business goals with specific strategies, the assessment of management performance and determination of compensation levels, the formation of policies to improve other governance matters, and the supervision of compliance with laws, regulations,

codes, accounting and financial reporting systems, risk management, and financial control. The board structure should include CEOs and both internal and external directors with competence and professional expertise and diverse backgrounds to contribute to corporate management. Each member should have specific functions and responsibilities. Board meetings should be held regularly, at least once every quarter, and the board of directors nominates audit and compensation committees and designs a management remuneration policy in alignment with shareholders' long-term interests.

Disclosure involves the exposure of any information about a business that may have serious implications for shareholder and stakeholder decision-making. Firms' information disclosures must be periodic and include forecasts of future business performance and financial standing. Audit reports and important prompt disclosure should preferably be prepared and disclosed in both Korean and English. However, audit organization should be formed entirely by outside directors, with at least one member having expertise in auditing. Audit organization also covers the internal audit system, inspects the business conduct of directors and managers, and confirms the quality and reliability of financial reports according to acceptable accounting standards. The audit committee, including financial officers, the head of the internal audit unit, and external auditors, should meet at least once each quarter. Finally, managerial discretion and error management cover changes in corporate control, such as mergers, acquisitions, splits, and transfers of business, using a transparent and fair procedure, which also decreases managers' opportunistic behavior and degree of discretion in decision-making. This feature also considers communication plans, rules, standards, responsibilities, and corporate protocols to reduce errors.

3.3. Research Model and Sample

This study incorporates the two AC metrics as dependent variables and five individual CG metrics as independent variables, and CGS as their consolidated value. The control variables are tangibility, size, firm liquidity, leverage, and net interest payment. This study employs an ordinary least squares (OLS) panel data regression model with fixed effects. Equations (1) and (2) measure the sign and magnitude of the relationship between the consolidated CG metric and AC conflicts and individual CG metrics and AC problems as follows:

$$\mathrm{AC}_{i,t} = \beta_0 + \beta_1 \mathrm{CGS}_{i,t} + \beta_2 \mathrm{Tang}_{i,t} + \beta_3 \mathrm{Size}_{i,t} + \beta_4 \mathrm{Liq}_{i,t} + \beta_5 \mathrm{Lev}_{i,t} + \beta_6 \mathrm{NetIntPay}_{i,t} + \sum_{j=1}^{n} \beta_j \mathrm{Industry}_{i,t} + \sum_{k=11}^{f} \beta_k \mathrm{Year}_{i,t} + \varepsilon_{i,t}, \quad (1)$$

$$\mathrm{AC}_{i,t} = \beta_0 + \beta_1 \mathrm{CG1}_{i,t} + \beta_2 \mathrm{CG2}_{i,t} + \beta_3 \mathrm{CG3}_{i,t} + \beta_4 \mathrm{CG4}_{i,t} + \beta_5 \mathrm{CG5}_{i,t} + \beta_6 \mathrm{Tang}_{i,t} + \beta_7 \mathrm{Size}_{i,t} + \beta_8 \mathrm{Liq}_{i,t} + \beta_9 \mathrm{Lev}_{i,t} + \beta_{10} \mathrm{NetIntPay}_{i,t} + \sum_{j=1}^{n} \beta_j \mathrm{Industry}_{i,t} + \sum_{k=11}^{f} \beta_k \mathrm{Year}_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where the dependent variable is measured by:

$\mathrm{AC1}_{i,t} = \left(\frac{\text{Annual sales}}{\text{Total assets}}\right)_{i,t}$ is the first measurement of AC, and is the asset utilization ratio of firm i in year t,

$\mathrm{AC2}_{i,t} = \left(\frac{\text{Operating expenses}}{\text{Total sales}}\right)_{i,t}$ is the second measurement of AC, and is the operating expense ratio of firm i in year t.

The independent variables are the following:

$\mathrm{CGS}_{i,t}$ is the CGS of firm i in year t. It is composed of protection of shareholder rights $\mathrm{CG1}_{i,t}$, board structure $\mathrm{CG2}_{i,t}$, disclosure $\mathrm{CG3}_{i,t}$, audit organization $\mathrm{CG4}_{i,t}$, and managerial discretion and error management $\mathrm{CG5}_{i,t}$; thus, $\mathrm{CGS}_{i,t} = \mathrm{Log}(\mathrm{CG1} + \mathrm{CG2} + \mathrm{CG3} + \mathrm{CG4} + \mathrm{CG5})_{i,t}$ for firm i in year t.

The control variables are the following:

$\mathrm{Tang}_{i,t} = \left(\frac{\text{Net fixed assets}}{\text{Total assets}}\right)_{i,t}$ is the asset tangibility for firm i in year t;

$\mathrm{Size}_{i,t} = \mathrm{Log}(\text{Total assets})_{i,t}$ is the size of the firm represented by the natural logarithm of total assets for firm i in year t;

$\text{Liq}_{i,t} = \left(\frac{\text{Current assets}}{\text{Current liabilities}}\right)_{i,t}$ is the firm liquidity for firm i in year t;

$\text{Lev}_{i,t} = \left(\frac{\text{Current liabilities}+\text{Non}-\text{current liabilities}}{\text{Total assets}}\right)_{i,t}$ is the debt ratio for firm i in year t;

$\text{NetIntPay}_{i,t} = \left(\frac{\text{Interest income}-\text{Interest expenses}}{\text{Total assets}}\right)_{i,t}$ is the net interest payment for firm i in year t.

The dummy terms $\text{Industry}_{i,t}$ and $\text{Year}_{i,t}$ represent a firm's industry (eight non-financial industries are listed on the Korean Composite Stock Price Index [KOSPI]) and the year of information, respectively, and $\varepsilon_{i,t}$ is the error term.

The final sample includes 660 firm-year observations from the period between 2016 and 2020 for Korean non-financial firms listed on the KOSPI. Information of CG was collected from corporate webpages, and the websites of S&P and KCGS (see detailed CG metrics data in Section 3.2), while financial reports and databases of Korean firms were obtained using KisValue version 3.2 (i.e., financial database of Korean firms) (Kis-Value Version 3.2 2018). The most important dataset limitation is to obtain a recent CG dataset, which depends on the transparency and disclosure of the Korean firms because firms protect internal data and they provide information on their CG status only using their own reports (Tulcanaza-Prieto and Lee 2022).

4. Results

4.1. Descriptive Analysis

Table 1 provides the descriptive statistics. Comparing both AC metrics, AC2 shows the highest dispersion (standard deviation = 0.620), given that it encompasses expenses such as those related to management, property, and marketing. Moreover, the sample might be influenced by AC conflicts, given that the mean of AC1 maintains a low value (0.050), while the AC2 average value is 0.360, presuming that the funds are inefficiently used given the management's discretionary authority for overall expenses, which also increases AC conflicts and information asymmetry between parties.

Table 1. Descriptive statistics.

Variables	Mean	Std. Dev.	Min	Lower Quartile (Q1)	Median	Upper Quartile (Q3)	Max
				Dependent variables			
AC1	0.050	0.038	0.004	0.023	0.041	0.066	0.287
AC2	0.360	0.620	−0.953	0.029	0.132	0.390	3.965
				Independent variables			
CGS	2.219	0.098	1.948	2.153	2.218	2.274	2.599
CG1	1.729	0.080	1.347	1.679	1.736	1.786	1.897
CG2	1.252	0.170	0.574	1.097	1.211	1.273	1.916
CG3	1.338	0.197	0.854	1.196	1.301	1.456	1.887
CG4	1.632	0.145	0.903	1.556	1.623	1.732	1.982
CG5	1.211	0.619	0.000	1.000	1.477	1.602	1.954
				Control variables			
Tang	0.308	0.164	0.006	0.182	0.289	0.426	0.922
Size	19.869	1.409	16.298	18.882	19.532	20.463	25.824
Liq	1.912	1.180	0.213	1.112	1.583	2.258	7.782
Lev	0.394	0.161	0.096	0.257	0.384	0.525	0.889
NetIntPay	−0.004	0.010	−0.055	−0.009	−0.002	0.002	0.023

Note: The dependent variables are (1) asset utilization ratio or asset turnover (AC1) and (2) operating expense ratio (AC2). The independent variables are (1) CG score (CGS), (2) protection of shareholder rights (CG1), (3) board structure (CG2), (4) disclosure (CG3), (5) audit organization (CG4), and (6) managerial discretion and error management (CG5). All CG metrics are calculated using their natural logarithms. The control variables are (1) asset tangibility (Tang), (2) size (Size), (3) firm liquidity (Liq), (4) leverage, and (5) net interest payment (NetIntPay). The standard deviation, minimum, and maximum are denoted as Std. Dev., Min., and Max., respectively.

Referring to CG components, the most important factor is the protection of shareholder rights, with a mean value of 1.729, whereas managerial discretion and error management provide less of a contribution and have the highest scattering (mean = 1.211, standard deviation = 0.619) in the CG structure of the Korean sample.

4.2. Correlation Analysis

Table 2 shows an inverse linear association between both AC metrics because AC1 decreases and AC2 increases when a firm experiences AC problems. Moreover, all CG metrics show significant correlations (with different signs) with both dependent variables. The Pearson correlation coefficients are lower than 0.7, indicating a low possibility of multi-collinearity in the regression model (Gujarati 1988).

Table 2. Correlation matrix.

	AC1	AC2	CGS	CG1	CG2	CG3	CG4	CG5	Tang	Size	Liq	Lev	NetIntPay
AC1	1												
AC2	−0.441 ***	1											
CGS	0.119 ***	−0.080 **	1										
CG1	0.025 **	−0.008 **	0.439 ***	1									
CG2	0.140 ***	−0.024 **	0.557 ***	0.010	1								
CG3	0.171 ***	−0.136 ***	0.643 ***	0.147 ***	0.512 ***	1							
CG4	0.045 **	−0.021 **	0.585 ***	0.097 **	0.434 ***	0.453 ***	1						
CG5	0.040 **	−0.104 ***	0.566 ***	0.169 ***	0.055	0.092 **	−0.054	1					
Tang	−0.137 ***	0.118 ***	0.023	−0.048	0.008	−0.016	0.048	0.003	1				
Size	0.131 ***	−0.047	0.499 ***	0.012	0.601 ***	0.609 ***	0.541 ***	0.015	0.081 **	1			
Liq	0.204 ***	−0.289 ***	0.052	0.206 ***	−0.142 ***	−0.050	−0.065	0.131 ***	−0.230 ***	−0.086 **	1		
Lev	−0.269 ***	0.462 ***	−0.111 ***	−0.139 ***	0.100 **	0.003	0.027	−0.175 ***	0.129 ***	0.047	−0.720 ***	1	
NetIntPay	0.332 ***	−0.557 ***	0.175 ***	0.142 ***	0.004	0.163 ***	0.009	0.158 ***	−0.190 ***	0.115 ***	0.507 ***	−0.606 ***	1

Note: *** and ** indicate statistical significance at the 1% and 5% levels (two-tailed), respectively.

4.3. T-Test Analysis

Table 3 shows the difference in t-test results for the equality of means for firms according to CG level and ownership structure. The first classification is calculated using a firm's CGS quartile value. Firms with strong CG show firm-year observations with CGS values higher than 2.274 (quartile 3), whereas those with weak CG show firm-year observations with CGS values lower than 2.153 (quartile 1). This sample comprises 179 and 144 firm-year observations for firms with strong and weak CG, respectively. The difference in CGS between the two groups is 0.249, which is statistically significant. All five CG characteristics (i.e., protection of shareholder rights, board structure, disclosure, audit organization, and management discretion and error management) consistently show higher mean values for firms with strong CG than for those with weak CG, as with CGS. The mean AC1 value for firms with strong CG is 0.058, whereas that for firms with weak CG is 0.049. The difference in the mean AC1 values for each group is 0.009 and statistically significant at the 5% level. These results indicate that firms characterized by high CG have lower AC than those with low CG, which is consistent with all hypotheses that effective CG mechanisms may decrease AC. The results for AC2 are also consistent with this finding. The mean AC2 value for firms with strong CG is lower than that for firms with weak CG. The difference between these mean values is −0.127 and statistically significant at the 5% level.

Table 3. T-test for equality of means for firms according to (1) CG level and (2) ownership structure.

Variable	(1) CG Level				(2) Ownership Structure			
	Strong CG (N = 179)	Weak CG (N = 144)	Difference	t-Value	Chaebol Firms (N = 121)	Non-Chaebol Firms (N = 539)	Difference	*t*-Value
AC1	0.058	0.049	0.009	1.967 **	0.059	0.048	0.011	2.963 ***
AC2	0.292	0.419	−0.127	−1.963 **	0.319	0.469	−0.150	−1.990 **
CGS	2.340	2.091	0.249	41.947 ***	2.313	2.198	0.115	12.923 ***
CG1	1.757	1.668	0.089	10.309 ***	1.734	1.528	0.206	11.780 ***
CG2	1.340	1.141	0.199	10.563 ***	1.398	1.160	0.238	16.408 ***
CG3	1.515	1.220	0.295	14.293 ***	1.562	1.289	0.273	16.149 ***
CG4	1.757	1.536	0.221	16.071 ***	1.779	1.601	0.178	13.737 ***
CG5	1.515	0.530	0.985	16.294 ***	1.226	1.020	0.206	10.294 ***

Note: *** and ** indicate statistical significance at the 1% and 5% levels (two-tailed), respectively.

The sample is also classified into two groups: chaebol firms with 121 firm-year observations and non-chaebol firms with 539 firm-year observations. This classification is according to the ownership structure of firms, which is organized, structured, and provided by KCGS (Korea Institute of Corporate Governance and Sustainability 2021). Therefore, detailed information on chaebol and non-chaebol firms is available on the KCGS website and corporate web pages for each firm. The mean value of AC1 (AC2) is 0.059 (0.319) for chaebol firms, which is higher (lower) than for non-chaebol firms. The differences in each agency metric between AC1 and AC2 are statistically significant, indicating that the AC of chaebol firms is lower than that of non-chaebol firms. Moreover, the mean CGS value is higher for chaebol firms than for non-chaebol firms. All five CG characteristics of CG consistently show higher mean values for chaebol firms than for non-chaebol firms. These results indicate that chaebol firms tend to balance their CG and manage AC better than non-chaebol firms. Thus, chaebol firms may implement the norms, policies, and regulations of supervision better than non-chaebol firms. These findings also align with the presence of AC problems and managerial discretion in decision-making associated with the inefficient allocation of firm resources, which might be prevented by implementing competent CG strategies.

Most chaebols are pyramidal business groups in which families retain control over many assets using intercorporate shareholding. This ownership structure makes the financial and accounting standards more flexible, creates deviations in cash flow and earnings (Tulcanaza-Prieto and Lee 2022; Tulcanaza-Prieto et al. 2020), increases information asymmetry between parties, promotes managers' opportunistic behavior, and increases the control and power of shareholders decisions; consequently, AC disputes between majority and minority shareholders are aggravated. Moreover, the term CG in Korea is associated with the intercorporate control structure of a business group from the perspective of controlling families, which generates an inherent agency problem among controlling shareholders, minority shareholders, and managers. Therefore, CG structure is viewed from the family's perspective as a control structure and not a standard (legal) governance mechanism. Therefore, the effectiveness of the CG structure of the largest business groups in Korea differs from that in other countries.

4.4. Regression Analysis

4.4.1. AC According to Firm CG Level

Table 4 shows the results of the linear regression to describe the relationship between both AC metrics and the six CG metrics using two samples comprising firms with high and low CG. For firms with a strong CG structure, we find a significant (at least at the 5% level) positive relationship between all CG metrics and AC1 and a significant negative relationship between all CG metrics and AC2. Both findings are consistent with our hypotheses that CG mechanisms positively influence the degree of AC in firms. Moreover,

we find that all five CG characteristics have statistically significant positive relationships with AC1 and significant negative relationships with AC2. These results imply that a firm's well-developed CG environment might decrease AC and that each of the five CG characteristics plays an effective role in decreasing AC. Therefore, the five hypotheses of the study are confirmed for firms with high CG.

Table 4. Relationship between AC and CG characteristics according to firm CG level.

Variables	Firms with High CG				Firms with Low CG			
	AC1	**AC1**	**AC2**	**AC2**	**AC1**	**AC1**	**AC2**	**AC2**
CGS	0.064 ** (2.081) [1.559]		−0.355 *** (−2.581) [2.559]		0.004 (0.065) [1.729]		0.218 (0.197) [1.129]	
CG1		0.003 ** (2.056) [0.806]		−0.112 ** (2.232) [1.241]		−0.003 (−0.073) [1.007]		0.582 (0.969) [1.537]
CG2		0.044 ** (2.550) [0.270]		−0.123 ** (−2.419) [3.700]		−0.020 (−0.855) [1.874]		0.444 (1.189) [1.274]
CG3		0.027 ** (2.202) [0.370]		−0.398 * (−1.687) [2.702]		0.010 (0.497) [1.876]		−0.612 (−0.956) [1.276]
CG4		0.059 ** (2.493) [0.388]		−0.168 ** (−2.407) [2.577]		−0.011 (−0.414) [1.800]		−0.084 (−0.191) [1.880]
CG5		0.005 ** (2.549) [0.594]		−0.124 ** (−2.407) [1.682]		0.007 (1.277) [1.785]		−0.056 (−0.645) [1.775]
Tang	−0.064 *** (−2.755) [1.028]	−0.068 *** (−2.881) [0.585]	0.433 * (1.785) [1.628]	0.432 * (1.749) [1.709]	−0.006 (−0.313) [1.296]	−0.011 (−0.571) [1.380]	0.121 (0.398) [1.296]	0.137 (0.440) [1.380]
Size	0.003 ** (2.487) [1.800]	0.002 ** (2.563) [0.253]	−0.001 ** (−2.012) [1.700]	−0.055 * (−1.668) [3.951]	−0.006 * (−1.909) [1.163]	−0.005 * (−1.707) [1.003]	0.121 ** (2.519) [1.163]	0.126 *** (2.607) [3.203]
Liq	−0.008 *** (−2.775) [2.766]	−0.008 * (−1.784) [0.367]	0.156 *** (3.383) [2.566]	0.157 *** (3.328) [2.725]	0.005 (1.221) [2.158]	0.004 (0.896) [4.227]	0.130 * (1.827) [2.158]	0.137 * (1.925) [2.267]
Lev	−0.020 ** (−2.645) [4.87]	−0.030 *** (−2.824) [0.231]	1.489 *** (3.905) [4.244]	1.519 *** (3.969) [4.324]	−0.029 (−0.986) [2.995]	−0.027 (−0.887) [1.431]	1.258 *** (2.625) [2.995]	1.321 *** (2.722) [3.141]
NetIntPay	0.388 *** (4.684) [2.620]	0.396 *** (4.595) [0.359]	−0.318 *** (−5.914) [2.620]	−0.561 *** (−5.997) [2.783]	0.674 (1.617) [2.031]	0.627 (1.467) [1.144]	−0.456 *** (−5.201) [2.031]	−0.333 *** (−4.813) [2.144]
Intercept	−0.097 (−0.744)	0.079 (0.708)	−1.520 (−1.119)	−1.772 (−1.525)	0.178 (1.189)	0.208 * (1.782)	−3.465 (−1.416)	−3.704 * (−1.956)
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.319	0.405	0.548	0.564	0.323	0.247	0.350	0.365
F-Stat.	6.221 ***	5.387 ***	12.264 ***	10.203 ***	4.072 ***	3.466 ***	6.137 ***	5.318 ***
DW	1.871	1.895	1.792	1.803	2.006	2.026	2.037	2.076

Note: Beta represents unstandardized coefficients. Numbers in parentheses are t-statistics. Numbers in brackets are variance inflation factors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

However, we find a statistically insignificant relationship between CG and the degree of AC for firms with low CG. Firms may need to sustain a certain level of CG to experience the effectiveness of CG or decrease AC. For instance, corporate boards might be considered effective in monitoring management when they possess relevant skills, experience, and knowledge. Moreover, active disclosure (measured in our study by CG3) may provide better information to use when monitoring management, thereby reducing information asymmetry and AC conflicts more effectively.

The results of this study are consistent with agency problem resolution and introducing effective CG mechanisms in firms to increase the supervision and control of managerial decisions. CG tools might help monitor firm risk, promote the implementation of a transparent accountability system, generate a culture of sensibility and clarity, and disclose consistent financial and non-financial information to make decisions (Detthamrong et al. 2017; Cho and Lee 2017). Moreover, when firms have high CG, AC, the cost of capital, and self-interested managerial behavior decrease, given the increased confidence of investors and shareholders motivated by free access to public information. Therefore, confidence in the managerial process increases.

Introducing CG tools helps maximize a firm's efficiency and performance, which is also caused by a decline in the available cash flow for free spending and managerial judgment. CG practices might act as effective corporate tools to reduce the possibility of entrenched managers using their discretion to make financial and non-financial decisions, thus also introducing transparency, control, supervision, and confidence in the firm's proceedings. Firms with high CG may show stable income, constant profits, continuous earnings, and low-risk firm profiles. Notably, the board of directors plays a supervisory role and authorizes decisions consistent with the protection of shareholder rights. Furthermore, audit organization promotes and incorporates standards and best practices to improve firm performance and reporting quality. When information is disclosed, transparent, and accessible to all decision-makers, AC declines due to decreased information asymmetry and consecutive management errors.

AC theory is grounded in self-interested strategies and conflicts of interest between managers and shareholders taking large risky positions, given the possibility of expropriation. However, appropriate governance structures are created to protect stakeholder interests by increasing the independence of the board and committees, increasing access to transparent information, and promoting and implementing high-quality audit committees. For instance, Byun et al. (2008) found that protecting shareholder rights and improving financial reporting quality can reduce AC conflicts and information asymmetry. Effective CG defends shareholder rights, promotes the adoption of national and international accounting standards, and incorporates high-level audit committees, showing the prevalence of monitoring activities over managers and financial reporting, which also negatively affects AC. Managers' opportunistic behavior and ability to manipulate firm information also declines, given the high possibility of being discovered in well-governed firms (Jin et al. 2018; Lasfer 2006; Tulcanaza-Prieto and Lee 2022).

The effective implementation of CG mechanisms might represent the interests of the shareholders and oversee the management of the firm, which also decreases AC problems. For instance, an adequate board of directors (independent, diverse, skilled, and engaged) might mitigate AC conflicts by selecting, evaluating, and compensating managers providing a strategic direction and goals of the firm and ensuring compliance and risk management. Indeed, the empowering of shareholders to participate in the governance and decision-making of the firm might mitigate AC problems by monitoring managers and the board, which also reaffirms the shareholders' rights and ensures that they are fair, equal, and transparent. The practical implications of the implementation of effective CG practices in firms might include (i) risk mitigation by providing a safeguard of interests of shareholders, board, and management; (ii) improved capital flow and share price with reduced capital costs caused by robust financial management reporting, appropriate capital structure, and lower risks premium; (iii) reputational boost and brand information through transparency

in a firm's internal policies and control mechanisms; (iv) increase in the firm's image and value through the implementation of an effective corporate social responsibility strategy; (v) more effective and better decision-making by establishing a clear delineation of roles between parties (owners and management); (vi) improved reporting of data and quality of information to make informed and fact-based decisions; (vii) higher staff retention and motivation with well-defined and communicated firm vision and direction; and (viii) the limitation of disruptive behavior, corruption, wastages and conflicts of interest. Therefore, strong CG mechanisms provide the management and board with power tools to deal more effectively with the challenges of running a firm.

4.4.2. AC According to Firm Ownership Structure

Table 5 shows the results of eight multiple linear regressions describing the relationship between the AC and CG metrics for the two firm subsamples according to ownership structure. We find a significant (at least at the 5% level) positive relationship between CGS and AC1 and a significant (at least at the 5% level) negative relationship between CGS and AC2 for chaebol firms. These results suggest that the overall CG level may play an effective role in reducing AC for chaebol firms. Specifically, the negative relationship between AC2 and the CG metrics indicates that introducing CG tools might decrease a firm's highest operating expenses, and these resources might be used appropriately in innovation and research activities. We also find that all five CG characteristics show statistically significant positive relationships with AC1 and significant negative relationships with AC2. These results indicate that each of the five CG characteristics may be effective in reducing AC for chaebol firms. Furthermore, effective CG tools and policies provide more information for shareholders and reduce some chaebol problems, such as the expropriation of small shareholders and high dependence on debt financing, as noted by (Kim 2005; Kim et al. 2016; Lew 2015). However, we find a statistically insignificant relationship between both AC metrics and all CG measurements of non-chaebol firms. Therefore, the five hypotheses of the study are confirmed for chaebol firms.

Table 5. Relationship between AC and CG characteristics according to firm ownership structure.

Variables	Chaebol Firms				Non-Chaebol Firms			
	AC1	**AC1**	**AC2**	**AC2**	**AC1**	**AC1**	**AC2**	**AC2**
CG	0.101 ** (2.382) [1.945]		−0.442 *** (−2.850) [1.945]		−0.011 (−0.608) [1.133]		0.450 (1.612) [1.133]	
CG1		0.018 ** (2.353) [1.421]		−0.693 ** (−2.178) [1.421]		−0.017 (−0.873) [1.154]		0.709 (1.368) [1.196]
CG2		0.017 ** (2.459) [4.682]		−0.099 ** (−2.225) [4.682]		0.016 (1.218) [1.378]		0.118 (0.609) [1.778]
CG3		0.005 ** (2.161) [3.333]		−0.571 *** (−2.683) [3.333]		0.023 (1.174) [4.683]		−0.425 (−1.509) [1.283]
CG4		0.088 ** (2.051) [2.135]		−0.069 ** (−2.136) [2.135]		−0.028 (−1.251) [1.507]		0.180 (0.965) [1.247]
CG5		0.005 *** (2.783) [1.727]		−0.198 ** (−2.427) [1.727]		−0.001 (−0.361) [1.111]		0.008 (0.202) [1.131]

Table 5. *Cont.*

Variables	Chaebol Firms				Non-Chaebol Firms			
	AC1	**AC1**	**AC2**	**AC2**	**AC1**	**AC1**	**AC2**	**AC2**
Tang	−0.029 ** (−2.097) [1.980]	−0.027 *** (−2.984) [2.059]	0.485 ** (2.493) [1.900]	0.494 ** (2.530) [2.059]	−0.003 (−0.268) [1.181]	0.000 (−0.002) [1.205]	0.059 (0.396) [3.581]	0.047 (0.315) [1.276]
Size	0.001 ** (−2.086) [1.823]	−0.002 *** (−2.439) [2.688]	0.040 *** (2.020) [3.023]	0.092 * (1.958) [2.688]	−0.001 (−0.691) [1.118]	−0.002 (−0.873) [1.260]	0.048 * (1.646) [1.008]	0.063 ** (2.054) [1.276]
Liq	0.010 ** (2.154) [2.658]	0.011 ** (2.284) [2.732]	0.129 ** (2.245) [2.558]	0.109 * (1.881) [2.732]	0.000 (0.024) [2.380]	0.001 (0.402) [2.461]	0.081 *** (2.849) [2.395]	0.067 ** (2.330) [2.461]
Lev	0.002 ** (2.047) [5.179]	0.017 ** (2.416) [5.614]	0.876 * (1.874) [5.177]	0.780 * (1.643) [5.614]	−0.019 (−1.106) [3.126]	−0.017 (−1.017) [3.169]	1.486 *** (5.857) [3.762]	1.437 *** (5.657) [3.169]
NetIntPay	1.889 *** (2.840) [3.668]	2.078 *** (3.053) [3.771]	−3.872 *** (−4.156) [3.668]	−3.474 *** (−4.275) [3.771]	0.831 *** (3.885) [2.023]	0.752 *** (3.479) [2.090]	−5.365 *** (−7.822) [1.085]	−3.980 *** (−7.315) [4.090]
Intercept	−0.148 (−1.424)	−0.053 (−0.422)	−0.375 (−0.294)	−0.546 (−0.365)	0.114 ** (2.118)	0.124 ** (2.358)	−2.437 *** (−2.990)	−2.825 *** (−3.550)
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.464	0.454	0.519	0.542	0.118	0.130	0.326	0.333
F-Stat.	7.318 ***	5.860 ***	8.894 ***	7.924 ***	5.516 ***	5.006 ***	17.260 ***	14.437 ***
DW	2.097	2.036	2.073	2.092	1.736	1.754	2.039	2.046

Note: Beta represents unstandardized coefficients. Numbers in parentheses are t-statistics. Numbers in brackets are the variance inflation factors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively.

Lew (2015) mentioned that chaebol groups increase the efficiency of managing firms using their pyramidal horizontal and vertical structure. Moreover, chaebol firms differ from non-chaebol firms because of their competitiveness, grounded in their intrinsic characteristics such as (i) economic concentration (mega-fusion or mega-merger), (ii) lower sensitivity of asymmetric information, (iii) larger size, (iv) higher debt ratios, (v) lower operational and borrowing costs, (vi) higher investment opportunities, (vii) easy access of cash from their sister firms, and (viii) lower probability of bankruptcy. Chaebol firms have the possibility to choose different CG mechanisms according to their needs and market regulations compared to non-chaebol firms because of their solid financial ground with lower asymmetric information and higher stock prices. Conversely, non-chaebol firms adapt quickly to new financial conditions (quick adjustment of cash levels), showing their less financial security given the lower level of CG.

Previous studies have shown that CG mechanisms do not necessarily guarantee a decrease in AC conflict. Doo and Yoon (2020) found that audit committees do not directly improve financial reporting, given that the auditing mechanism reflects agency motives rather than monitoring incentives. Their findings are consistent with the results of this study, at least for chaebol firms, given the significant positive (negative) relationship between AC1 (AC2) and CG4. Moreover, Kim and Han (2018) demonstrated that CEOs in chaebol firms are paid 60% more than professional (outside) CEOs, indicating an excessive executive compensation for family CEOs, who are generally not evaluated according to their talent, skills, and knowledge, given the preferences for family ties over qualifications in most chaebol firms. This is consistent with our finding of a significant positive (negative) relationship between CG2, CG5, and AC1 (AC2). Both CG metrics are proxies for managerial incentives and compensation, including CEO stock ownership, family board membership, and CEO and management errors. Our results indicate that differences in

compensation mechanisms between family and non-family executives can lead to AC problems. The finding of a positive relationship between AC and CG1 (or CG2) is also consistent with the results of (Hwang et al. 2013), who reported that chaebol firms with low CG practices tend to have a smaller dividend payment distribution. They concluded that chaebol families exercise entrenched control with less protection for minority shareholders.

The control variables of the regression models show significance for the AC metrics of chaebol firms; however, they do not show significance in most regressions for non-chaebol firms. For instance, leverage has a positive and significant relationship with both AC metrics, grounded in the motivation of entrenched managers to engage leverage beyond its optimal level, performing selfish strategies, under-investment, or feeding properties, which also increase AC problems and decrease FV. However, this phenomenon might be reduced in firms with strong CG structures because they increase their clarity, reliability, and confidence in their managerial processes through information disclosure. Moreover, debt reduces AC by decreasing the cash flow available for spending and modifying its role as a disciplinary financial tool (González 2013). Specifically, in the Korean context, most firms promote controlling shareholders or families as an effective CG mechanism, given that it provides efficient operations and management (Black et al. 2006; Y. Lee et al. 2015; Yoon et al. 2006).

5. Conclusions

AC provides an important research question regarding the importance and effectiveness of CG tools in a firm, given the information asymmetry and conflicts of interest between shareholders and managers resulting in AC problems. Therefore, implementing effective and competitive CG structures is crucial for firms. Previous studies have provided only indirect information on the relationship between AC and CG because they have generally focused on the relationship between CG and firm performance (García-Osma and Gill-de-Albornoz 2007; Kang and Kim 2012; Kim 2005). This study analyzes the relationship between AC and CG metrics using firm-year observations of non-financial firms listed on the KOSPI from the period between 2016 and 2020. We find that firms with strong CG have lower AC than those with weak CG. Introducing both the asset utilization ratio or asset turnover (AC1) and the operating expense ratio (AC2) as proxies for AC, we find a significant positive (negative) relationship between AC1 (AC2) and CGS for firms with strong CG, but no significant relationship for firms with weak CG.

All six CG metrics (i.e., CGS, protection of shareholder rights, board structure, disclosure, audit organization, manager discretion, and error management) show statistically significant coefficients with both AC1 and AC2. These results support our hypotheses that firms can decrease AC by improving the protection of shareholder rights, board structure, disclosure, audit organization, and manager discretion and error management. This implies the prevalence of the Korean corporate control structure over the effectiveness of CG mechanisms, which also causes inefficiencies in the market, such as increased AC conflicts between parties. Therefore, we conclude that the AC problem might be improved by implementing effective CG mechanisms that monitor and control agents' actions, reduce managers' opportunistic behavior, enhance owners' supervisory role, improve the quality of financial reporting, and provide certain and real firm information. However, firms must maintain a certain level of CG to experience its effectiveness, which is understandable in the real world. For instance, corporate boards may be considered effective in monitoring management when they have relevant skills, experience, and knowledge. Moreover, active disclosure (measured in our study by CG3) may provide better information for monitoring management, thus reducing information asymmetry and AC conflicts more effectively.

We also find that the relationship between CG and AC is valid for chaebol firms but not for non-chaebol firms. Chaebol firms in Korea are unique in terms of their ownership structure. In family firms and within their business group structures, we identified the prevalence of hierarchical decision-making rather than a technical process. This study's findings provide support for the role of CG, as shown in the literature. CG not only

incorporates processes related to the social, economic, financial, regulatory, and market environments but also improves managerial behavior, facilitating better decision-making to maximize FV. Nevertheless, the interpretation of our results is inevitably affected by limitations because of the lack of a causality analysis between CG and AC.

The main limitation of this study refers to the actualization of CG datasets, which depends on the transparency and disclosure of firms given it is private and stealthy information in firms. Finally, we suggest that firms reduce information asymmetry and agency problems by implementing a robust CG strategy. We also recommend that future research include other CG proxies such as CEO compensation, the existence of remuneration and nomination committees, and tenure structure to verify the degree and prevalence of the opportunistic behavior of managers. Moreover, the authors suggest studying detailed managerial compensation schemes with both fixed and variable components (salary, bonus, stock options, and long-term incentives) to measure their effect on AC problems.

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