Board Characteristics and Sustainability Ratings of Multi-Business Groups: An evidence from Korean Conglomerates (Chaebols)

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Abstract. The interest of Environmental, Social, and Governance (ESG) scores is increasing in both academic research and industry practices. Previous studies have examined the effects of ESG scores on the operating and market performance of firms but have found mixed results. The objective of this study is to provide a preliminary analysis of the effect of ESG scores on financial performances of the Korean multi-business group conglomerates, the Chaebols. Using a panel sample for fixed/random effects models, this study investigates a sample of the largest 41 Chaebol firms with a total of 246 observations during the period of 2014–2019. Our results showed that the governance score of the firm has a positive effect on financial performance. Further, we analyzed the factors affecting governance scores of the firm in relation to board characteristics. Out of four independent variables, three showed significant results. These are CEO duality, the board size, and the average age of board members of the firms. The results remain consistent and significant after robustness testing.

1 Introduction

The growing importance of corporate social responsibility (CSR) activities of firms is well established in the literature. Despite there being no consensus regarding its definition, CSR activities of the firm are aimed at meeting the expectations of society [1]. Scholars view sustainability as a multidimensional construct of the responsible activities of the firm to strategically formulate the future planning of businesses [2,3]. More international organizations and governments are mandating the implementation of environmental, social, and governance (ESG) disclosure information and the United Nations expects that all the multinational corporations (MNCs) in stock exchanges report ESG performance scores by 2030. Although CSR is not a new debate topic in both academia and industry, a firm’s CSR performance is a useful indicator in understanding the implications of the activities of the firms. Currently, there is more than 80 trillion dollars’ worth under the management of institutional investors as part of the Principles for Responsible Investment initiative.

The use of ESG rating scores to evaluate the firm’s corporate CSR efforts is increasingly significant. The issue of ESG has become controversial as firms are struggling with pressure from various stakeholders [1,4]. More investors and consumers are expecting a proactive approach and transparent CSR activities from the firm. Furthermore, NGOs and other stakeholders of the firm argue that the firm should be more responsible as it benefits from society [2]. Hence, there is a need for firms to accommodate the aforementioned demands from various stakeholders of the firm to be more sustainable and competitive.

Additionally, the dominant present literature suggests that the positive effects of ESG on a firm’s performance as a long-term sustainable business strategy are critical. In recent years, the interest in ESG data and its impact on a firm’s performance has increased rapidly as more analysts and investors utilize ESG ratings for investment materials [5]. Furthermore, the ESG performance scores benefit the stakeholders of the firm to attain more transparent and reliable data on each dimension of ESG [6]. Thus, as more firms are disclosing ESG information, the disclosure of non-financial measures and the ESG practices of the firm will continue to increase in the future [7].

The firm benefits from engaging in CSR activities in many ways. First, the firm gains a positive reputation by promoting positive ESG scores to the stakeholders. Second, ESG disclosure scores lower the cost of capital of the firm [8]. Hence, the firms utilize efforts on ESG scores to enhance the ability to improve access to capital, which eventually leads to a positive market and financial performance of the firm [6,9,10]. More importantly, both shareholders and stakeholders of the firm view ESG as an essential factor in the investment criteria, thus investigating the link between ESG and the financial performance is pivotal for a firm in crafting their long-term strategy.

A large section of the literature has shown a positive relationship between CSR and firm performances [7,11–13]. Although prior literature found inconclusive results in the relationship between ESG performance and financial performance of the firm, this study aims to fill

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the gap in the literature by providing empirical evidence from one of the emerging markets. Thus, the objective of this study is to examine the role of the board of directors in the relationship between ESG performance and corporate financial performances.

Most of the ESG research on South Korean firms have used a domestic ESG measurement such as the Korea Corporate Governance Service (KCGS) database to examine the effects of ESG scores on the performances of the firms [14–16]. Although the KCGS database provides comprehensive ESG scores for all South Korean firms from 2004, it fails to capture the global standards of ESG disclosure information. As the ESG performance of firms is globally measured in the investment world, it is inevitable to use global measurement metrics. Thus, in this study, we obtained data from one of the most commonly used ESG rating score databases, Sustainalytics, and data provided by an independent agency to shed light on the impact of ESG rating scores on South Korean firms' performance.

The contribution of this study is threefold. First, we utilize the separate E, S, G scores of family-owned multi-business group conglomerates, known as chaebols, of Korea. Considering the significant impact of these chaebols in the country, investigating the effects of ESG of the largest firms on the Korea Composite Stock Price Index (KOSPI) will pave the way for future research on multi-business groups which has been less explored. Second, we are particularly interested in governance (GOV) scores of the firms in South Korea as Korean chaebol firms are often criticized for weak corporate governance systems and having issues such as excessive ownership [17], poor disclosure practices [18], and low ethical commitment [19]. In particular, little is known about the relationship between ESG scores and firm performance of multi-business groups and the impact of governance scores on financial performances. Finally, we also seek to investigate the effects of the characteristics of the board on governance and firm performance to determine its importance.

2 Literature review

2.1 Stakeholder theory

The vast amount of the literature has examined the relationship between the CSR(ESG) and the performance of the firm. Based on the stakeholder theory, the firm must consider its internal and external stakeholders when formulating business strategy. This study attempts to focus on the corporate view on ESG practices from a stakeholder's perspective but not as a competitive advantage. One of the fundamental theories in the field of CSR (ESG), the stakeholder theory, emphasizes the effect of ESG on the economy and the stakeholders of a corporation. Built on this prominent theory, prior studies suggest that ESG benefits both firms and stakeholders [7]. However, there are conflicting and inconclusive results regarding the effects of ESG on the performances of the firm in the literature [20].

Several studies have documented that the stakeholders not only affect corporate performance but also have the power to influence the firm. For instance, due to the nature of ESG externality regulations, institutional arrangements affect the firms' ESG practices [21]. As government policy changes, the agent's beliefs are reset by new policy decisions [22]. Also, the firms will face more pressure under stronger government regulations or regulatory bodies as they will need to comply with mandatory laws [21]. Most importantly, the lack of understanding of how ESG information disclosure affects corporate financial performances remains unanswered.

In this study, we focus on governance dimension of the ESG for following reasons. First, the concerns for the corporate governance of Korean companies has increase over the years as the ESG disclosures become mandatory in capital market. Second, the conflict between ESG activism and ESG investment is growing in Asia recently. The investors and public are closely watching the companies ESG disclosures and implementations.

2.2 Chaebol: Korean large scale business group

The large-scale business groups, chaebols generate revenues almost equal amount of GDP of the South Korea has been a unique vertically integrated form of industry. Chaebol is distinctive structure of the company focusing on family ownership in South Korea. For example, Samsung has more than 13 diversified affiliate companies but controlled by few individuals including the founding family members. These chaebols have been criticized for concentration of the power and control over the companies. We also argue that the agency problem will persist in the chaebols as the ownership and management is not fully separated. In this study, we examine the characteristics of the board members in chaebols, the largest business group in Korea, which accounts for more than one-third of market capitalization in the capital market in the country and half of South Korea's GDP [23]. Despite its importance and contribution to both domestic and international economy, the studies of chaebols' corporate governance and board characteristics are still unexplored. The study of internal control of Chaebols and role of board of directors will provide more information and understanding of corporate governance of multi business groups. These multi business groups owned by families are also practices known in other countries with different local terms such as Keiretsu in Japan. Therefore, by studying Chaebols, insights into similar business practices can be gained.

2.3 ESG and financial performance

For the last decade, several finance-related studies have suggested a positive relationship between ESG rating scores and the financial performance of the firm. A better ESG performance enables the firm to increase the shareholders by satisfying the demand from stakeholders such as the government, financial institutions, and investors. Unfortunately, many studies are mainly focused on the effects of ESG on firm performance [24].

Although some argue that ESG has a negative impact on firm growth [25], stock price, and corporate investment [26], a vast amount of the literature has found that ESG performance positively impacts market reaction [27], corporate financial performance [28-29], lower capital constraints [6], the future financial performance of firms [30], firm reputation and competitive advantage [31].

The use of ESG scores in decision-making for investment is becoming increasingly popular in emerging countries [32]. Several prior studies on emerging countries have found conflicting results. For instance, [33] showed that there are no significant effects of ESG score on the financial performance of Malaysian firms. In the study of BRICS (Brazil, Russia, India, China, and South Africa) countries, empirical results showed that the positive effects of ESG on stock returns were significant [28]. Several prior studies on CSR activities of South Korean firms show that the aforementioned positive linear relationship is also found in South Korea.

Therefore, we predict that the ESG scores of the firm affect the outcome of the firm performance. However, unlike previous studies, we predict that the ESG scores will be reflected not only in the accounting-based performance but also in the operational and market performance of the firm. Thus, to compare the distinctive effects of the ESG on each different performance of the firm we hypothesize the following:

H1: The ESG scores of the firm are positively associated with firm performance.

H1a: Environmental scores of a firm positively affect firm performance.

H1b: Social scores of a firm positively affect firm performance.

H1c: Governance scores of a firm positively affect firm performance.

2.4 Board characteristics

Recently, the issue of transparent and efficient corporate governance has gained attention in both academia and industry as the role of the board of directors in establishing and executing the ESG strategy of the firm is critical [34]. Since the global financial crisis in 2007, which was the result of inappropriate management of governance structure of firms, a significant negative aftermath and unethical scandals of the MNCs such as the collapse of Lehman Brothers and the Korean chaebol's political corruption problems have raised the alarm not only to investors but also other stakeholders of the firm. Also, prior literature has shown that the poor management of corporate governance led to the Asian financial crisis in 1997 [35-36].

Some scholars argued that the chaebols are often criticized for powerful and concentrated ownership structure, weak accountability, and reliability of governance structure [17]. Despite the growing research on corporate governance systems in emerging markets, the study of the impact of "business-groups" (such as chaebols) on governance is still scarce [23]. Further, existing literature reveals that the role of the board in CSR is essential [37]. Indeed, the board of directors plays a critical part in developing the long-term CSR strategies of the firm.

Therefore, built on previous findings from the literature, we aim to investigate the importance of the board of directors in formulation of CSR strategies in this study. The study predicts that the governance disclosure scores of the firms will play a crucial role in the relationship between the characteristics of the board of directors and financial performance, and hence is reflected in the firm's ESG performance.

In our second empirical study, we employ a variety of board characteristics—women on board, the average age of directors, CEO duality, and the number of directors on the board—to examine the impact of board members on CSR and the financial performance of the firm. In several previous studies, the role of the board of directors has been highlighted as stakeholders of the firm [34]. The research on composition of the board of directors is frequently studied in CSR topics due to its essential role in decision making processes.

Few studies have investigated the age of the board of directors. However, as the ESG performance topic is gaining attention in board discussions, we believe that the average age of the members is a relevant factor in developing the sustainability strategy of the firm. Some prior studies showed that there is a curvilinear relationship [38-39]. Therefore, we predict that the younger board members are more proactive and aware of ESG matters which can lead to more involvements of employees of the firm.

H2a: The average age of the board of directors negatively affects governance score.

The issue of gender equality in the Board of Directors is a controversial topic in corporate governance studies. As more institutional investors and international bodies push for the presence of women on board, the number of women directors is also measured by ESG rating agencies. The study of gender diversity in the board is not scarce but gaining more interests in the research of corporate governance. Despite the difference in background, culture, religion and believes the previous studies suggest that women are more motivated for social issues [40], and are thus more effective than men [41] in establishing firms' long-term social and environmental goals.

H2b: The percentage of women on board positively affects the governance score.

Among other attributes of the board of directors, this study highlights the dual roles of the CEO. Some proponents of the CEO duality suggest that the concentration of the power leads to better performance of the firm and results in effective management as the leader can formulate the strategies of the firms [42]. The opposite views of CEO duality in corporate finance literature argue it constrains the independence of the board [43], [44], and thus hampers the effectiveness of the managerial activities of the board. Studies on the relationship between CEO duality and firm performance have shown mixed results [45]. This study predicts that

CEOs with dual roles inhibit and diminish the governance performance score.

H2c: CEO duality negatively affects the governance score.

Previous empirical research suggests that the board size affects the decision-making process of the board. Some scholars argue that a smaller board is considered to be more effective at monitoring, coordinating, and communicating leading to higher accountability of the board [37, 46]. The board size can be complex and different depending on the industry and country. It is more important to our samples of the study is multi-business groups as chaebols tend to have large size of the board. Further, a larger board may have free-riding issues and agency problems due to the high number of members on board [47]. However, a larger board might have some advantages such as more diversified board composition and efficient allocation of the job of directors on board [48].

H2d: The number of directors on board positively affects governance score.

3 Research methods

Our sample data consists of the chaebol business groups listed on the Korean Stock Exchange KOSPI index (refer to appendix A and appendix B for a full list of the samples) focusing on the largest business groups in the country. The study of a single country enables us to obtain reliable results as it reduces the endogeneity issues from aggregated data. collected panel data for empirical study from period 2014–2019 as most of our sample started reporting the ESG scores from 2014 onward in the database. Based on the prior studies, the total of 51 firms were classified as a chaebol group in 1980s and 90 business groups were identified as chaebol in 2000s by Korean regulatory bodies. After matching the sample with our dependent variables and excluding the omitted data, the final sample used in the study was 41 firms over six years with a total of 246 observations. The firm performance is represented by two different measures while there are seven independent variables and three control variables. The detailed descriptions of our variables are presented in Table 1. Unfortunately, data for the second study involving board characteristics variables are not available for several of the companies in the dataset. Therefore, the second study comprises of 32 companies spanning over the same time period resulting in 192 observations.

To measure the performance of CSR, this study employs the overall ESG scores of each firm. Currently, more than 100 rating agencies provide firms' ESG indices using an unstandardized metric based on their own assessment criteria [49]. Despite the variances and inconsistencies in ESG data providers and agencies, the vast literature have adopted the ESG disclosure scores to measure the ESG practices of the firms in empirical studies [50].

We collected data of ESG from Sustainalytics provided by Wharton Research Database Services. Sustainalytics is considered the widest-ranging ESG data provider and collects extensive data from more than 4,500 firms worldwide with both qualitative and quantitative measurements to assess the management of firms' ESG issues [51]. The ESG performance scores of the Korean chaebol have been available for investors and other stakeholders of the firm since 2014. We obtained each environmental (E), social (S) and governance (G) score from the database scale of 0–100, wherein a higher score reflects a more positive ESG performance of the firm. The governance scores were also introduced as a dependent and mediating variable in later models.

In the second part of the analysis, board characteristics variables are introduced as the factors affecting governance scores of the firms. Due to the importance of governance, it is crucial to determine the factors that affect the governance scores. The board characteristics are commonly discussed in prior studies with regards to two topics. First, the governance [34, 37], and the second is conglomerate [52, 53]. Since this research is investigating the corporate governance issues in Korean chaebol firms, it is imperative to include board characteristics as independent variables as board significantly affect the decision-making process of the firm.

The following variables are used to indicate board characteristics. These are CEO duality (CEO), number of directors (DIR), women on board (WOM), and average age (AGE).

The CEO duality refers to firms where the CEO is also a member of the board. This is a common practice in Korean firms and distinctive in chaebol business groups. It is a dummy variable where 1 indicates the presence of CEO duality while 0 indicates that the CEO does not hold two roles [44, 54]. The number of directors is the number of board members. It also indicates the board size which is a common indicator of board characteristics used across ESG related studies [37, 55]. Women on board are the percentage of women board directors. Gender equality and diversity is an increasingly popular topic discussed in the ESG literature. Many studies have focused on the importance of the involvement of female directors. This variable has also been included in numerous governance studies [56], [57]. Lastly, the average age is the average age of the board members [34, 58].

There are two indicators of financial performance used in this research. These two are return on asset (ROA) and ROE. This study improves upon previous studies by using two types of dependent variables to measure the performance of the firm. The ROA and ROE are the most frequently used accounting-based measures of firm profitability in CSR research [59], [60] are incorporated to examine financial performances.

A series of control variables were utilized to reduce noise and to add richness to the regression models in the testing. Three variables are used as control variables in this research. These three are leverage (LVG), market capitalization (LMC), and revenue growth (REV_GROWTH). As with most studies in the field, financial leverage is considered an essential variable in measuring the risk of the firm. Also, existing literature found that corporate financial performances are directly affected by the financial leverage of the firm [61]. The revenue growth rate, another strong accounting-based measure of estimation of financial performance of the firm, is included to examine its effects on the empirical model in this study. For the third control variable, although there are conflicting results found in previous studies when using the size of the firm to control the financial performances and the value of the firm, it is believed that firm size and market value are directly linked [62]. As the firm expands and grows, more attention is gained from investors and the public. Thus, the firm size control variable is expected to have a moderating effect as firms with large sizes use more resources to report ESG data [63], [64]. All data are taken from Bloomberg. The natural logarithm of market capitalization is used. The descriptions of variables are presented in Table 1.

Table 1. Descriptions of the variables

Variable	Description	Source
E	Environment performance score	Sustainalytics
S	Social performance score	
G	Governance performance score	
CEO	The dual role of CEO in the board of director	Bloomberg
DIR	Total number of directors on board	
AGE	The average age of the board members	
WOM	Percentage of women on board	
ROA	Net Income/Total assets	DataStream (Refinitiv)
ROE	Net Income/average shareholder's equity	
LVG	Total debt/total assets	Bloomberg
LMC	Natural logarithm of the number of shares of outstanding x market price per share	
REV_GROWTH	Percentage change in revenue (YoY)	

3.1 Empirical Models

There are two different studies conducted in this research. The first study aims to determine whether E, S, and G scores have a significant effect on the financial performance of a firm. It is expected that ESG ratings will have a positive impact on performance, therefore companies should pay closer attention to these aspects. As previously mentioned, financial performance is represented by two different variables. The empirical models of the first study are as follows:

$$ROA_{it} = \alpha + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 LVG_{it} + \beta_5 LMC_{it} + \beta_6 REV\_GROWTH_{it} + e_{it} \quad (1)$$

$$ROE_{it} = \alpha + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 LVG_{it} + \beta_5 LMC_{it} + \beta_6 REV\_GROWTH_{it} + e_{it} \quad (2)$$

The second study examines board characteristics of the samples. The third empirical model examines the effect of board characteristics on governance that is expected to be significant. The following two models test the mediating role of governance between board characteristics and financial performance. The governance performance can either be a full mediator or a partial mediator. The empirical models of the second study are as follows:

$$G_{it} = \alpha + \beta_1 CEO_{it} + \beta_2 DIR_{it} + \beta_3 WOM_{it} + \beta_4 AGE_{it} + \beta_5 LVG_{it} + \beta_6 LMC_{it} + \beta_7 REV\_GROWTH_{it} + e_{it} \quad (3)$$

$$ROE_{it} = \alpha + \beta_1 CEO_{it} + \beta_2 DIR_{it} + \beta_3 WOM_{it} + \beta_4 AGE_{it} + \beta_5 LVG_{it} + \beta_6 LMC_{it} + \beta_7 REV\_GROWTH_{it} + e_{it} \quad (4)$$

$$ROE_{it} = \alpha + \beta_1 G_{it} + \beta_2 LVG_{it} + \beta_3 LMC_{it} + \beta_4 REV\_GROWTH_{it} + e_{it} \quad (5)$$

Due to the use of panel data, two subscripts are shown in the models to represent the time horizon (t) and cross-section of companies (i). The panel regressions were performed using Eviews 11. Several tests were carried out including the assumptions of regression. The Chow test and Hausman test were used for determining the most suitable regression model. Heteroscedasticity robust standard errors were reported. STATA 17 is used to perform the data analysis. The results are presented in the following chapter.

4 Findings and discussions

Table 2 shows the mean, standard deviation (SD), minimum and maximum value of variables for the first study. This provides a basic information of the samples including the size of the companies and the variegated nature of the data. On average, the Chaebol companies are rated around 59 out of 100 in all three sustainability ratings. It shows that despite the considerable size and amount of resources that chaebol companies have, they receive industry average scores in these three aspects.

Table 2. Descriptive statistics (Study 1)

Variables	n	Mean	SD	Min	Max
ROA	246	4.355	5.195	-24.653	28.924
ROE	246	8.685	7.539	-22.352	38.244
E	246	59.550	14.113	31.000	92.810
S	246	58.474	13.306	31.260	89.810
G	246	59.259	9.014	39.180	83.500
LVG	246	22.525	14.091	0.000	60.378
LMC	246	8.129	26.910	-41.226	105.426
REV	246	5.871	16.811	-33.363	160.152

Table 3 shows the comparison of average ESG scores of several Asian countries, including South Korea as a whole. The average score of all three components in six countries is between 46 and 61. Japan has the highest environmental score at 58.95, India scored the highest in both social and governance aspects, scoring 57.69 and 60.59 respectively. The chaebol companies have higher environmental and social scores compared to the highest average of the six countries. Furthermore, in comparison to South Korea as a whole, chaebol companies scored higher than average in all three aspects of ESG.

Table 3. Comparison of average ESG scores of companies in Asia

Country	N	Average		
		E	S	G
China	13,089	46.18	49.95	51.26
Japan	32,461	58.95	54.93	56.26
South Korea	8,338	54.47	57.37	58.25
Hong Kong	9,420	49.88	53.37	54.51
India	7,742	54.66	57.69	60.59
Singapore	3,241	54.14	53.80	59.30

We also analyze the effects of board of directors (BOD) characteristics in the second study. Table 4 shows the descriptive statistics of the variables in the second study. Based on the results of the board characteristics of the sample, it can be seen that the majority of the companies have CEO duality and no women board member. As this study adopts considerably large set of sample, it raises a concern regarding the functioning of the companies' governance systems.

Table 4. Descriptive statistics (Study 2)

Variables	Mean	Median	SD	Min	Max
CEO	0.708	1.000	0.456	0.000	1.000
DIR	7.521	7.000	1.373	2.000	12.000
WOM	0.021	0.000	0.050	0.000	0.200
AGE	59.160	59.230	2.963	47.330	65.857

CEO duality creates a conflict of interest which affects the strategic decision-making process. A previous study found that the dominance of the CEO is significantly related to lower voluntary disclosures [65]. Furthermore, it has been found that women directors are more likely to invest in CSR [66]. Therefore, the effect of these characteristics on governance score as well as financial performance is examined.

Table 5. Correlation matrix (Study 1)

	E	S	G	LVG	LMC	REV
E	1					
S	0.57	1				
G	0.60	0.47	1			
LVG	-0.19	-0.17	-0.03	1		
LMC	0.01	0.08	0.06	0.04	1	
REV	-0.10	-0.07	-0.04	-0.02	0.06	1

Table 5 and 6 show the Pearson correlation matrix of all the variables used in the study. It is important to make sure that multicollinearity problem does not exist to satisfy the regression assumption. The results indicate that the independent variables do not highly correlate with each other. It can be seen that none of the correlations between the independent variables are above 0.7, therefore the multicollinearity problem does not exist in the analysis process.

Table 6. Correlation matrix (Study 2)

	AGE	WOM	DIR	CEO	LVG	LMC	REV
AGE	1						
WOM	-0.15	1					
DIR	0.05	0.11	1				
CEO	0.19	-0.18	0.16	1			
LVG	0.13	0.04	-0.12	-0.49	1		
LMC	0.16	0.09	0.26	0.01	-0.14	1	
REV	-0.12	0.14	0.22	0.05	-0.03	-0.21	1

To determine whether Common Effect or Fixed Effect is preferable, Chow test was first conducted, and all results (0.000) suggested that the Fixed Effect is preferable. Therefore, additional Durbin-Wu-Hausman tests were conducted to determine whether Fixed Effect or Random Effect is more appropriate to estimate the panel data. All equations are run using random effects model. The regression results shown in Table 7 are analyzed using the appropriate model as indicated by the Durbin-Wu-Hausman test results.

The first two regressions examine the effects of the three individual dimensions of sustainability ratings on the financial performance of the firms. The environment and social performance scores do not show any significant effect. Some previous research argued that the costs of ESG reporting and practice reduce the firm's competency and worsen its financial performance [67]. Further, some studies on emerging markets found negative effects of ESG on a firm's performance. For example, a recent study on emerging markets showed that there is a negative effect on firm value and profitability in Indian firms [68]. Similar results were found in the study of Malaysian firms [33] and Latin

American countries with 104 firms [69]. Moreover, the study of the ESG effects and stock value in nine Asian emerging markets also reported that except for the ‘social’ dimension, insignificant relationships were found in the sample [70].

Table 7. Main results

	ROA (1)	**ROE (2)**	**G (3)**	**ROE (4)**	**ROE (5)**
E	-0.010 (0.035)	-0.044 (0.055)			
S	0.029 (0.044)	0.037 (0.057)			
G	0.048 (0.034)	0.136** (0.061)			0.149*** (0.059)
LVG	-0.161*** (0.049)	-0.245*** (0.063)	-0.00*** (0.000)	-0.000 (0.000)	0.000 (0.000)
LMC	0.002 (0.066)	0.008 (0.012)	0.162 (0.580)	2.220*** (0.531)	1.780*** (0.560)
REV	0.066** (0.032)	0.134*** (0.036)	0.026 (0.020)	0.163*** (0.043)	0.145*** (0.044)
CEO			-2.904** (1.485)	-0.727 (1.107)	
DIR			-0.764** (0.381)	-0.920*** (0.341)	
WOM			7.734 (15.64)	-7.857 (14.273)	
AGE			-0.484** (0.238)	-0.400* (0.235)	
Constant	3.613 (2.329)	5.739 (4.240)	95.31*** (15.79)	18.270 (14.007)	-17.790*** (7.023)
n	246	246	192	192	192
Prob > F	0.001	0.000	0.053	0.000	0.0000
R-squared	0.178	0.242	0.072	0.278	0.258

Heteroscedasticity-consistent standard errors in parentheses, *** denotes significant at 0.01 confidence level, ** denotes significance at 5% confidence level, * denotes significant at 10% confidence level.

Nevertheless, in this study, we found that the governance score shows a significant positive effect on financial performance (ROE). As expected, the corporate governance of the multi business group indeed appears to be a significant factor affecting the financial performance. An additional robustness check was carried out and the results shown in Table 8 indicate that the governance score is highly significant in all four regression models with a one-year and two-year lag of independent variables. It stresses the importance of governance in improving Korean chaebol firms’ financial performance. Thus, it is crucial to further study governance and the factors affecting it.

The third regression was carried out to find out the board of directors’ characteristics that significantly affect governance. In our third study, three variables showed significant results, namely, CEO duality, number of board directors, and average age, all of which have negative effects on the governance scores of the firms. This implies that to increase governance, the CEO should not have two roles, there should be a smaller number of board directors, and the average age of the directors should be younger. The negative effect of CEO duality is expected and consistent with past studies. In a similar vein, previous studies found that CEO duality had a negative effect on ESG scores in Latin America [55] and the Gulf Cooperation Council countries [54].

Table 8. Robustness results

	ROE (t-1)	**ROE (t-1)**	**ROE (t-2)**	**ROE (t-2)**
E	0.0403 (0.0916)		0.0074 (0.1157)	
S	0.0637 (0.0818)		-0.0171 (0.1085)	
G	0.2191*** (0.0650)	0.2474*** (0.0566)	0.1886** (0.0918)	0.1843* (0.0970)
LVG	0.1941 (0.1471)	0.1853 (0.1318)	0.4268*** (0.1342)	0.4252*** (0.1274)
LMC	0.0535*** (0.0195)	0.0541*** (0.0193)	-0.0141 (0.0131)	-0.1433 (0.0128)
REV	-0.0371 (0.0474)	-0.0366 (0.0488)	-0.0702 (0.0548)	-0.0704 (0.0539)
Constant	-15.0590* (8.3670)	-10.4106** (4.5939)	-11.1711 (11.3502)	-11.4379* (5.8416)
n	205	205	164	164
Prob > F	0.0014	0.0005	0.0056	0.0016

Heteroscedasticity-consistent standard errors in parentheses, ***denotes significant at 0.01 confidence level, **denotes significant at 5% confidence level, * denotes significant at 10% confidence level.

Numerous studies have found that board size positively affects governance [71], yet this is not the case with chaebol companies. The results show that there is a negative relationship between the number of directors and governance. It means that the higher the number of board members, the lower the governance score. One possible explanation is that when the board size is larger, it is more difficult for them to come to a solid decision [37]. Issues regarding governance can be controversial, therefore more opinions can lead to indecisive and weaker strategic plans in improving governance. When there are fewer board members, they can come to terms with governance issues more efficiently and effectively [54].

Interestingly, the finding also suggests that there is a negative relationship between the average age of board members and the governance score of the firm. Similar to board size, prior research has found a positive relationship between these two variables. However, conflicting results in this study support the aforementioned hypothesis implying that younger directors are more concerned about governance issues [39]. The younger directors are more aware of current trends and better understand what the public likes and dislikes. The younger generation on the board are less conservative and show proactive attitudes on sustainability issues [72].

However, it is also relatively easier for companies to build a good brand image by being more transparent to the public. This is true in the case of chaebol companies who are likely run by family members. The older members of the board tend to be more conservative and less adaptable to the rapid changes of the market and expectations of the stakeholders. Part of the old ways of doing business can spark ethical issues in the current society, thus having younger generations in strategic positions can increase the governance performance score of the firm.

The last regression was carried out to ensure that governance in itself affects financial performance without the presence of environmental and social scores. The result shows that the governance score is highly significant. It suggests that governance is a mediator between board characteristics and financial performance. Thus, it is interesting to find out whether governance is a full or partial mediator in this relationship. Hence, the last regression was carried out to investigate the nature of the mediating effect. As reported from table 8, out of the three significant factors affecting governance, only two of them show significant results on financial performance and one of them is only significant at the 10% confidence level. These two are the number of board directors and average age. The nature of all relationships is consistent, all three board characteristics negatively affect financial performance. This shows that governance is a full mediator for CEO duality, but a partial mediator for the number of board directors and average age. In other words, CEO duality does not affect financial performance directly, but it decreases the governance score, which then reduces financial performance, while board size and average age directly affect financial performance even without the presence of governance.

Overall, all the F tests are significant and the R2 degrees are satisfactory. The data are all balanced with 41 companies over six years amounting to a total of 246 observations for the first study and 32 companies across six years creating a total of 192 observations for the second study.

5 Conclusion

A large portion of the literature has shown the positive effects of sustainability reporting (ESG reporting) on a firm’s performance based on the stakeholder theory implying that satisfying the stakeholders of the firm results in better performances [21,26,69,73]. However, there has been little research on ESG in multi-business groups such as the Korean conglomerates (Chaebols). This research specifically addresses this concern and fills the gap in the literature by providing interesting findings.

Although there are challenges in establishing the relationship between ESG and firm performance of multi-business groups, in this paper we found that, out of the three sustainability-rating dimensions (environmental, social, and governance), governance score has a significant positive effect on financial performance of Chaebols and the results were consistent even after robustness checks. We further analyzed governance and the factors affecting it in the case of chaebols.

The corporate governance system in emerging markets is distinctive from advanced markets such as Japan and the US as it is often dominated and controlled by multi-business groups [74]. Since chaebol companies are commonly led and controlled by family, the characteristics of the leaders, in this case, the board members are interesting to study. Four characteristics were analyzed comprising CEO duality, number of board members, proportion of women on the board, and the average age of board members. Three characteristics were found to be significant and inversely related to governance—CEO duality, number of board members, and the average age of board members. The empirical findings are interesting since it shows that chaebol companies do have distinct properties compared to other companies. The majority of the literature found that the average age and the number of board members had a positive effect on governance, yet our study found the opposite.

Moreover, it has been tested that these two board characteristics also have direct effects on the financial performance of the firm. Therefore, having a smaller board size and younger board directors not only increases the governance score but also directly improves the financial performance of the company. This substantiates the role of board characteristics in firm performance.

Finally, most of the studies focused on either the effect of ESG on financial performance or determinants of ESG ratings independently. This research has combined the two and presented insights into family owned multi business groups. Thus, this study contributes to the field of knowledge by presenting anecdotal evidence regarding the ESG and firm performance of multi-business groups as well as present issues for considerations for practitioners.

The results of this study provide insights for future research. It has been shown that board characteristics play important roles in multi-business groups’ financial performance and that the governance score is a significant mediator between the two. Therefore, future research should focus on specific types of businesses rather than studying aggregate data across different business forms and industries. Generalization can result in inappropriate decision-making. Taking the result of this research as an example, if chaebols were to take decisions based on results derived from generalized data, they will most likely increase the number of board members. This goes against the result of this research and this decision can decrease the firm's governance score and negatively affect financial performance. Thus, future research is advised to study specific business types such as state-owned, royal family-owned, and religion-based businesses.

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