

**EXAMINING FIRMS' ESG GRADES DETERMINANTS THROUGH
FINANCIAL AND NON-FINANCIAL CHARACTERISTICS DURING
COVID-19 IN KOREA***

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This study employs Ordinary Least Squares (OLS) and quantile regression analyses to examine the determinants of Environmental, Social, and Governance (ESG) grades based on financial and non-financial characteristics of Korean companies amidst the global economic recession triggered by the COVID-19 pandemic. We investigate whether different determinants exist for varying levels of ESG grades (lower, middle, and higher groups). Analyzing cross-sectional data from 660 Korean companies, we find that both financial and non-financial characteristics significantly impacted ESG grades during the pandemic. Key determinants include firm value, size, and cash liquidity in financial characteristics, while firm age and industry type are vital non-financial determinants. Furthermore, the results highlight distinctions among ESG sub-dimensions, revealing that financial attributes predominantly influence environmental grades, whereas both financial and non-financial aspects shape social and governance grades. The findings elucidate ESG grade determinants and their differential relationships with various company characteristics during the challenging COVID-19 period in Korea.

Keywords: ESG grades, Economic Recession, Financial Characteristics, Non-Financial Characteristics, COVID-19 Pandemic, Korean Firms

JEL Classification: F20, F69, G32, M14, O44, O53

1. INTRODUCTION

The COVID-19 pandemic triggered a profound global economic recession, leading to widespread anticipation among experts that, unlike past economic crises characterized by short-term fluctuations, this outbreak might result in permanent structural changes in

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the economy and society (Cho and Kim, 2020). National restrictions to prevent the spread of COVID-19, such as social distancing and lockdowns restricting personal movement between countries led to serious negative financial consequences for most global industries. In Korea, shocks to the economy from the COVID-19 pandemic hit a low point in 2020, before gradually recovering - in terms of GDP growth - from the first quarter of 2021. The vaccination completion rate in Korea exceeded 70% early in November 2021 with strict quarantine; thus, the economic crisis eased with the government aggressively pushing for the resumption of economic activity (Kim, 2021).

Countries and companies made various efforts to survive the global economic crisis caused by COVID-19. Companies are urged to enhance their financial performance (FP) not only for their own survival but also to aid the recovery of other companies. This is especially crucial during periods of recession. The environmental, social, and governance (ESG) activities of companies were emphasized before the COVID-19 pandemic as important practices that can ensure the FP of companies. Many studies have found that ESG activities increase firm value and performance. Therefore, many companies have actively engaged in ESG practices, increasing investments in various ESG aspects prior to the COVID-19 pandemic (Rau and Yu, 2023).

Most previous studies on companies' ESG activities have focused on examining the impact of ESG practices on firm value, performance, and risk. However, although relatively scarce, some studies have attempted to address the determinants of ESG grades. ESG performance evaluation agencies use their own standards, which consist of numerous qualitative assessment elements, resulting in late evaluation result provision. Identifying the determinants of ESG performance using firms' financial and non-financial characteristics for stockholders and investors becomes more important because ESG disclosures, in reality, do not provide enough quantitative financial and non-financial information on companies (Kim et al., 2023). Therefore, a clear understanding of the determinants of ESG performance is essential for ordinary stockholders and potential investors to make appropriate decisions without relying on overdue ESG evaluations.

Furthermore, prior studies on the determinants of ESG grades have primarily investigated the relationship between firms' financial and non-financial characteristics based solely on the firms' ESG grades, without considering the specific levels within the ESG grade spectrum. Hence, new research is needed to capture a more accurate relationship between determinants and different levels of ESG grades, as the relationship is expected to differ as the level of ESG grade changes from low to middle to high. This study adopts quantile regression analysis to examine whether different levels of ESG grades relate differently to each independent variable from the financial and non-financial characteristics of companies in Korea. Specifically, this analysis is conducted within the context of the economic recession triggered by the COVID-19 pandemic.

Thus, the objectives of this study are as follows:

- (1) To identify the determinants of ESG grades based on firms' financial and

non-financial characteristics for companies in Korea during the COVID-19 pandemic.

(2) To identify the determinants of each sub-dimension of ESG grades with firms' financial and non-financial characteristics for companies in Korea during the COVID-19 pandemic.

(3) To examine whether different levels (e.g., upper, middle, and lower) of ESG grades are differently related to selected variables from both financial and non-financial characteristics of companies in Korea during the COVID-19 pandemic.

2. LITERATURE REVIEW

ESG principles were developed and presented in a 2004 report by 20 financial institutions in response to a call from the United Nations. It provides information on sustainable, ethical, and responsible investments in firms' business activities (Hill, 2020). One difference between ESG and Corporate Social Responsibility (CSR) is that ESG explicitly includes governance, whereas CSR treats governance issues as indirectly related to environmental and social issues; thus, ESG may be said to be more expansive than CSR (Gillan et al., 2021). Every firm uses energy and resources; therefore, every business inevitably affects and is affected by the environment and works within society, while requiring governance to function legally. The environmental aspect of ESG includes the energy a firm takes in, waste it discharges, resources it needs, and the consequences for living beings. Carbon emissions and climate change are some examples. The social aspect addresses relationships and reputation; hence, labor relations, diversity, and inclusivity are included. The governance aspect relates to the internal system of practices, controls, and procedures adopted by firms to govern and make effective decisions to meet the needs of external stakeholders. ESG grades are based on company reported data and score between 0 and 100, indicating the implementation of ESG related matters within a company. They are meant to objectively portray ESG implementation (Gyönyöröová et al., 2023). The following evaluation agencies provide ESG grades for Korean companies: Morgan Stanley Capital International, Korea Corporate Governance Service (KCGS), and Refinitiv. However, it seems foreign providers tend to undervalue Korean companies compared to Korean providers, perhaps due to the lack of information (Kim and Koo, 2023).

Research on COVID-19's relationship with ESG is growing, especially in its capacity to analyze how external factors, such as the impact of COVID-19, can affect ESG performance. This suggests that the effect of COVID-19 may be considered an external shock capable of potentially altering corporate decisions regarding ESG practices (Savio et al., 2023). Nevertheless, the magnitude of investment made during the COVID-19 pandemic suggests that ESG initiatives extend beyond being merely a passing trend or a superficial feel-good exercise (Henisz et al., 2019). Additionally, the corporate social performance (CSP)–FP relationship is affected by a myriad of

contextual factors, such as firm size, industry, economic conditions, and regulatory environments (Peloza, 2009). Thus, different CSR initiatives may exhibit different impacts on FP.

2.1. Theoretical Framework

How ESG is reflected in firm performance and value has been explained mainly by two theories: Stakeholder theory and slack resources theory. Stakeholder theory emerged in response to the increasing need for sustainability initiatives to connect firms' interactions with stakeholders; hence, it is considered meaningful for interpreting firms' financial benefits. Slack resources theory states that firms are destined to strive for efficiency and surplus assets. Thus, investigating the influence of firms' slack resources on their performance is one significant way to address ESG, performance, and the value of firms (Abdi et al., 2022).

Slack resources include a wide range of firms' assets, from economic, human, strategic, and managerial capital. From the perspective of slack resources theory, financial resources may enhance or they can be predictors of ESG performance, as well as key drivers of firms' practices (McGuire et al., 1988; Scholtens, 2008; Shahzad et al., 2016; Chams et al., 2021). The slack resources theory suggests that firms with high FP tend to have excess resources to invest in various dimensions of social responsibility (Ali et al., 2022), therefore, it could be predicted that higher ESG grades are determined by the higher firm performance. Additionally, slack resources theory treats financial resources as firms' slack availability, which enhances environmental and social performance (McGuire et al., 1988; Chams et al., 2021). Nevertheless, previous studies have reported mixed findings regarding the relationship between ESG-FP and value (Gillan et al., 2021). Peloza (2009) reviewed both academic and practitioner reports and found that the majority of studies showed a positive relationship between CSP and FP (63%), while only 15% showed negative relationships, and 22% showed neutral or mixed relationships. Interestingly, the relationship between CSP and FP tended to be less positive in the academic literature than practitioner reports. Bnoui's (2011) findings showed that FP is positively related to CSR, suggesting that CSR depends on FP, lending support to the slack resource theory.

While many studies have focused on the influence of CSP on corporate financial performance (CFP), some studies have also focused on the inverse relationship. Crespi and Migliavacca (2020) studied this inverse relationship for financial firms and found that the bigger the size of a firm, the higher its ESG score. Common equity and return on equity (ROE) seem to have a strong, positive impact on ESG scores, while leverage exhibited a negative impact on ESG scores. Buallay (2019) used each ESG indicator to examine its relationship with performance and the results showed a significant positive impact of ESG on performance. In particular, the environmental aspect was positively associated with ROE and TQ, which may mean that financial and market profitability was created more by published information on environmental issues than social or

governance issues. Chams et al. (2021) used a six-year (2012-2018) panel dataset of multinational organizations from 20 industries located in Europe, the United States, and Asia. The results indicated that FP has a higher statistical effect on ESG, particularly the environmental and social pillars of sustainability practices, compared to the governance pillar. Ali et al. (2022) found that a firm's social performance is a consequence of its FP in all four countries where the study was conducted. Hence, according to the slack resources theory, the relationship between ESG efficiency and FP is a virtuous cycle, and these empirical findings confirm that a firm's social performance can be measured by its FP variables. Hewton and Aboagy (2023) investigated the mutual relationship between firm performance and ESG grades in European companies. They found no significant relationship between earnings per share and ESG grades, while there was a significant positive relationship between ESG grades and market value. However, a significant negative relationship was observed between return on assets (ROA) and ESG grades. Thus, firms investing in ESG may face challenges in generating sufficient returns on their assets because of the costs of ESG investments. Therefore, this study's grounding in the slack resource theory concerning ESG performance could be substantiated by previous studies on the reverse relationship between performance and ESG.

2.2. The Economy and ESG During the COVID-19 Crisis

The World Health Organization declared the COVID-19 outbreak a pandemic in March 2020. Beyond being solely a healthcare issue, COVID-19 also triggered an unprecedented disruption in global economies and societies. The modern world is highly connected, and trade and foreign investments are globalized. With the majority of the global population residing in urban areas, this increased urbanization renders international business more vulnerable during epidemics such as COVID-19.

The global surge of COVID-19 prompted countries worldwide to implement preventive measures such as social distancing and lockdowns to limit its spread. However, these measures necessitated closing businesses and prohibiting travel and mass gatherings. Thus, despite the necessity of these actions and the numerous lives saved, COVID-19, social distancing, and lockdowns resulted in a considerable slowdown in economic activities (Thunström et al., 2020). In 2020, the World Bank projected a global GDP decline of 5.2%, whereas the OECD estimated a decline ranging between 6 to 7.6% (Brodeur et al., 2021). The COVID-19 pandemic impacted not only supply but also demand, influencing aspects such as consumption and investment. Consequently, the International Monetary Fund projected that the world economy would contract sharply by 3% in 2020, a downturn surpassing the severity of the 2008–2009 financial crisis (Feyisa, 2020). The impact of the COVID-19 pandemic on macroeconomics was also devastating, and data from Europe showed an average of 7.4% reduction in GDP in 2020 as well as drops in employment rates in regions that rely on tourism. Hence, governments worldwide struggled in balancing the trade-offs

between controlling the spread of the virus and mitigating the unintended economic consequences (Richards et al., 2022).

As Korea is a trade- and export-oriented country, disruptions in international trade and global value chains became a major threat to the Korean economy (Liu et al, 2020) during the pandemic. To boost the domestic market and export industries, the Korean government implemented a total of US\$122.8 billion in stimulus packages and made advance payments for public investment projects that were slated for the second half of 2020.

Despite the unforeseen and unpredictable changes and circumstances imposed by COVID-19, the momentum and focus on ESG initiatives alongside investor interest appeared to persist and endure. For instance, Bioy (2020) reported a substantial increase with US\$45.6 billion inflows into ESG focused funds in Q1 of 2020, in contrast, overall fund universally outflowed about US\$384.7 billion during the same period based on the Morningstar Global Sustainable Fund Flows Report (Bioy, 2020).

2.3. ESG Studies Before and During the COVID-19 Pandemic

First, as this study focuses on issues related to ESG-CFP during an extraordinary period such as the COVID-19 pandemic, it is important to review the findings from studies before the pandemic. Friede et al. (2015) reviewed more than 2,000 empirical studies on the ESG-CFP relationship published since the 1970s and found that approximately 90% of them exhibited non-negative ESG-CFP relationships, with the majority reporting positive findings. Additionally, some studies found that developed markets, excluding North America, exhibited relatively smaller numbers of positive results compared to emerging markets (65.4%). Baldini et al. (2018) analyzed whether there was any particular shift during the financial crisis of 2008 by splitting their sample into before and after the crisis subsamples. Their findings showed that during the non-crisis period, country-specific characteristics such as labor protection was not correlated with social or governance pillars, and average unemployment was not correlated with environmental and governance pillars. In addition, during the 2008 economic crisis, the effect of corruption on governance disclosure levels was insignificant. Børing's (2019) study on firms in the manufacturing sector in Norway specifically focused on the relationship between CSR objectives and productivity, with differences in firm size. The results showed that small firms with high average capital intensity had a higher productivity level, but this was not the case for large firms. Furthermore, environmental CSR activities had a significantly negative effect on productivity levels among large firms and a non-significant effect among small firms.

ESG emerged based on a strong belief or claims that it would reduce financial risk and simultaneously improve the financial performance of firms in the long run. As such, many studies were quick to investigate whether external shocks, such as COVID-19, had any significant role in the relationship between performance and ESG. Many studies on ESG related matters were conducted during the COVID-19 pandemic, some simply

looking at the relationship between corporate performance and ESG, while others went further, investigating how firm characteristics might have contributed to the impacts.

Zhang (2022) conducted a study on Chinese manufacturing companies, and the results indicated that ESG performance played a positive role in the creation of firm value. However, because of the increased importance of cash flow to business operations during the COVID-19 pandemic, the influence of ESG during the pandemic seemed to weaken. In this study, variables such as company size, asset-liability ratio, corporate growth, and operating cash flow were controlled for both financial and management levels. Broadstock et al. (2021) confirmed the positive association of ESG performance with crises such as COVID-19 by using a dataset covering China's CSI300 constituents. Specifically, the study confirmed high-ESG portfolios generally outperformed low-ESG portfolios and ESG performance mitigated financial risk during the COVID-19 crisis. The results of Engelhardt et al. (2021) study on European firms indicated that high-ESG-grade firms were more immune to the economic impact of COVID-19. Specifically, a one-standard-deviation increase in ESG scores was associated with an average of 2.59% higher abnormal returns and lower stock volatility in their study. The results showed that the ESG coefficient was significantly positive during normal times and during COVID-19. There was a positive effect of good ESG practices on stock price as proper commitment to ESG values may provide insurance-like roles due to the moral capital created among company stakeholders or a faithful relationship built with stakeholders (Savio et al., 2023).

2.4. ESG Studies with Characteristics of Firms

Three categories of firm characteristics are used for ESG grade and CFP studies: structure-related (i.e., firm size and leverage), market-related (i.e., industry type), and performance-related (i.e., liquidity and profit margins) (Zhou et al., 2023). The composition of ESG grades seem to inadequately reflect biases related to company size, regional differences, and industry-sectors. This may become problematic as larger companies tend to have better access to resources, potentially leading to better ESG grades. Moreover, there appears to be a trend where companies in Europe receive much higher ESG grades than their peers in the United States (Gyönyöröová et al., 2023). The large size of a company often correlates with larger market capitalization, substantial book values, and higher profits, while smaller companies exhibit the opposite characteristics. Thus, larger companies have greater flexibility in obtaining the funds needed for various opportunities. Large firms usually have the ability to absorb extra costs and monitor their investors more intensively. As such, they tend to have a more positive correlation with firm performance (Zhou et al., 2023).

Leverage is a measure of the extent to which a company is financed by debt (Putri and Pusyawati, 2023). Furthermore, firm leverage is considered a central issue in corporate finance, and the debt maturity of short- and long-term debt is also a non-price term that determines the aspects of corporate performance (Benlemlih, 2017). Leveraged

firms are believed to disclose more information to meet the needs of creditors, and firms with higher debt tend to show a positive relationship between voluntary disclosure levels and leverage. However, empirical evidence of the direction of the relationship between debt and disclosure is not clearly established (Zhou et al., 2023). Camfferman and Cooke (2002) claimed that age should be considered in the relationship between CSP and firm ROE as old firms might have improved their reporting systems and practices over time. Industry specifics have been identified as one of the causes of divergence between ratings, as target investors are the primary customers of ESG data providers (Gyönyörövá et al., 2023). Even within the same industry, different companies have different ESG profiles depending on their corporate life cycle positions. For instance, attackers typically have a high upside potential to drive growth from ESG initiatives, and ESG is more effective in maintaining community ties and prioritizing risk avoidance (Henisz et al, 2019).

Khanchel (2007) conducted empirical research using samples from 624 United States firms of all sizes, excluding banks and financial firms, for ten years of data from 1994 to 2003. The study found that larger firms with high investment opportunities, external financing needs, and intangible assets tend to have stronger governance. There was also a significant positive association between governance and firm size, investment opportunities, intangible assets, and director/officer ownership. Institutional ownership and external financing needs also exhibited positive associations with firm governance, whereas growth opportunities and performance had no significant effect on governance quality. Baldini et al. (2018) used 21,775 firms from 2005 to 2012 data provided by Bloomberg to identify the impact of firm-specific characteristics on ESG disclosure. The results showed that firm size and structural country factors such as political, labor, and cultural systems positively affected ESG disclosure, while country-level variables such as corruption and unemployment rate had a heterogeneous effect, and firm-level variables were homogeneously and positively related to each ESG pillar. Crespi and Migliavacca (2020) used data from 727 financial firms from 2006 to 2017 to identify the determinants of CSP as part of ESG. The results indicated that the size and profitability of firms strengthened their ESG scores when operating in economically and socially developed countries. In other words, big, solid, and profitable financial firms seem to have high CSP, especially when they are in socially developed countries. Interestingly, the governance pillar of ESG showed a strong positive trend, leading to an overall increase in ESG scores over time, yet reacted almost oppositely compared to the environmental and social pillars in terms of firm and country factors.

Khoury et al. (2023) found the determinants of ESG in the banking sector to be performance, firm size, level of economic development, and corruption only at the country level. Specifically, ESG was negatively affected by performance and positively affected by size. Economic development negatively affected the environmental pillar, and social development positively affected the governance pillar. Horbach et al. (2022) used a sample of 12,729 firms from 24 countries provided by the World Bank and considered environmental regulations, competitive landscape, and family ownership to identify the determinants of firms' greenness. The results showed that a highly

competitive environment is negatively connected to firms' greenness, whereas innovativeness and family ownership are positively connected to greenness. In addition, environmental regulations seemed to be the best way to foster firm greenness. Adeneye and Kammoun (2022) studied non-financial firms (communication services, consumer discretionary, consumer staples, energy, health care, industrials, information technology, materials, real estate, and utilities) listed on the main stock exchanges in Indonesia, Malaysia, the Philippines, Singapore, and Thailand, covering the period from 2014 to 2019. They found the impacts of real earning management (REM) on leverage to be insignificant in high-ESG performing firms while significant with low-ESG performance. In other words, REM-intensive firms are characterized by low sustainable practices and, subsequently, lower future cash flows (Chouaibi and Zouari, 2022; Kim and Sohn, 2013).

Yoon and Chun (2022) used 1,534 samples of firms in Korea with ESG grades disclosed by the KCGS from the period of 2019 to 2020, with the findings suggesting that ESG activities can be negative in terms of efficiency. Additionally, the impact of ESG may vary depending on the characteristics of the corporation; in other words, ESG activities do not work equally positively; thus, the moderating effect of corporate characteristics on the relationship between ESG and corporate performance must be taken into consideration. Bissoondoyal-Bheenick et al. (2023) focused on the possible differences between industries as different industries also mean different stakeholder compositions. The results showed that only the retail industry has a strong positive effect on all ESG pillars. The service industry showed all three pillars to have negative effects, while the finance, insurance, and real estate industries exhibited negative effects from the social pillar. Li et al. (2022) conducted an empirical study on ESG in China, including 11 primary industries (i.e., information technology, public affairs, health and medicine, manufacturing, materials, telephone and communication, energy, construction, and finance). The period was from 2015 to 2020, and the results showed that both manufacturing and non-manufacturing industries were significantly impacted by ESG grades. Their results suggested that firms with good performance in terms of monthly market value, stock price volatility, and leverage exhibited lower financing costs than those of lower ESG-rated firms in the same industry.

Benlemlih (2017) investigated the relationship between CSR and firms' debt maturity (the percentage of debt maturing in more than three years) using data from 2,735 individual firms from 1991 to 2009 (totaling 14,815 observations). The results were consistent throughout the study period in that firms with high CSR had higher growth opportunities, better earnings performance, lower leverage ratios, and shorter asset maturity compared to firms with low CSR. In addition, firms with high CSR used less long-term debt to fund investments, and firm size increased debt maturity. Li et al. (2024) used 4,571 firm observations from Chinese data for the period 2011–2020 and found that the relationship between ESG scores and long-term debt was negative for firms with relatively low ESG scores and positive for firms with relatively high ESG scores, and that ESG on long-term debt was stronger for firms within polluting industries when compared to less polluting industries. Abdi et al. (2022) used a dataset

from 38 airlines retrieved from Eikon from 2009 to 2019 to investigate the consequences of ESG disclosure for airlines' FP and value, and the size and age of firms were used as moderators. The study found that ESG initiatives affect firms' market-to-book ratio and FP in opposite directions; that is, the outcome for funding social and environmental operations showed a decline in the market-to-book ratio and an increase in Tobin's Q. Additionally, the direction for both environmental and governance pillars was negative for the market-to-book ratio, which means that efforts to improve the value by larger firms through environmental and governance pillars had a negative effect. For both large and small companies, the size of the firm as a moderator was expected to decrease the FP of the relevant airlines. For larger companies, governance activities negatively influenced the association between sustainability measures and FP, whereas for smaller firms, it was a positive moderator. Size was not a moderator in the case of the social pillar, but was significant for environmental and governance pillars for both big and small firms; thus, the size of a firm was found to be a significant moderator. Meanwhile, for firm age as a moderator, the result was the opposite; that is, it was found to be non-significant for all ESG pillars.

Engelhardt et al. (2021) conducted a study of 1,452 firms from 16 European countries to examine whether firms with higher ESG grades performed better during COVID-19. Their results show that better ESG performance led to significantly higher cumulative abnormal returns and lower idiosyncratic volatility. This suggests that firms with good-quality CSR are more resilient to uncertain markets, such as during pandemic crises, because CSR engagement pays off with better stock performance.

3. METHODOLOGY

3.1. Research Model and Variable Selection

The model in this study utilizes Equations (1), (2), and (3) below to conduct ordinary least squares (OLS) regression and quantile regression analyses. Equation (1) is used to conduct an OLS regression analysis to identify the determinants of the ESG grade of a company. As shown in Equation (1), the dependent variable is ESG, which indicates the ESG grade score for each sample company. The independent variables consist of two parts: a firm's financial structure and its nonfinancial characteristics. A firm's financial structure includes its value (FV: Tobin's Q), risk (Risk: Beta), size (FS: Logged value of market capitalization), profitability (PT: ROA), debt (Debt: Debt ratio), growth (SG: Growth rate of sales), and liquidity (Cash: Quick ratio). Non-financial characteristics include firm age (Age), the firm's foreign investor ratio (FO), and the type of industry the firm is categorized in (IND_A, IND_B). Because the ESG evaluation results provided by the KCGS are given as grades, they were converted into ESG scores based on previous studies (Cha, 2022; Yang, 2022). More specifically, the ESG grade consists of seven grades (S, A+, A, B+, B, C, and D), which are converted into 1–7 points (S= 7,

$A^+=6, A=5, B^+=4, B=3, C=2,$ and $D=1$).

$$ESG_i = \beta_1 + \beta_2 FV_i + \beta_3 Risk_i + \beta_4 FS_i + \beta_5 PT_i + \beta_6 Debt_i + \beta_7 SG_i + \beta_8 Cash_i + \beta_9 Age_i + \beta_{10} FO_i + \beta_{11} IND_A_i + \beta_{12} IND_B_i + \varepsilon_i, \quad (1)$$

where ESG_i is the ESG grade of the firm i ; FV_i is the value of the firm i (Tobin's Q of the firm i); $Risk_i$ is the risk of the firm i (Systematic risk (β) of the firm i); FS_i is the size of the firm i (Logged total market price of the firm i); PT_i is the profitability of the firm i (ROA of the firm i); $Debt_i$ is the debt of the firm i (Debt ratio of the firm i); SG_i is the Growth of the firm i (Sales growth ratio of the firm i); $Cash_i$ is the liquidity of the firm i (Quick ratio of the firm i); Age_i is the Age of the firm i (the business years after IPO of the firm i); FO_i is the Foreign investor of the firm i (the Foreign investors ratio of the firm i); IND_A_i is the types industry of the firm i (the Dummy of Manufacture Industry); IND_B_i is the types industry of the firm i (the Dummy of Service Industry).

In general, OLS regression analysis is estimated using conditional mean functions, whereas quantile regression analysis is based on minimizing the weighted absolute deviation to estimate differentiated functions by conditional quantiles. This implies that quantile regression analysis enables to examine the relationship between covariates and each quantile level of the dependent variable (Koenker and Basset, 1978; Hao and Naiman, 2007). For this study, if the percentage of companies with lower ESG grades is τ , the percentage of companies with higher grades is automatically $(1 - \tau)$ among all sample companies. Therefore, a company's ESG grade would be ranked τ^{th} quantile in the overall ESG grade distribution. Based on the above, the research model of the quantile regression analysis for this study is presented in Equations (2) and (3):

As shown in Equation (2), all dependent and independent variables for the quantile regression analysis are the same as in Equation (1), where ESG_i is the dependent variable, which denotes the ESG grade of firm i . X_i is composed of a firm's financial structure in terms of firm value, risk, size, profitability, debt, growth, and liquidity, as well as its non-financial characteristics in terms of firm age, foreign investor ratio, and the industry the firm is categorized in. ε_i represents the error term. Thus, β_τ represents the regression coefficient of τ quantile level. $Q_\tau(ESG_i|X_i)$ denotes the τ^{th} conditional quantile function of ESG in the given X . The primary assumption of $Q_\tau(\varepsilon_{\tau,i}|X_i) = 0$ is established for all firm i , as in the OLS regression analysis. Finally, the estimated value of each β_τ coefficient is calculated by the following minimization Equation (3).

$$ESG_i = \beta_1 + \beta_\tau X_i + \varepsilon_i,$$

$$Q_\tau(ESG_i|X_i) = \beta_\tau X_i (i = 1, \dots, n), \quad (2)$$

$$Min \frac{1}{n} (\sum_{ESG_i \geq \beta X_i} \tau |ESG_i - \beta X_i| + \sum_{ESG_i < \beta X_i} (1 - \tau) |ESG_i - \beta X_i|). \quad (3)$$

3.2. Data Collection Procedure and Analysis

The data collection process for this study consisted of two main steps: collecting ESG grade data from the Korea Institute of Corporate Governance and Sustainability (KCGS) database and gathering firms' financial and non-financial data from secondary datasets, namely the FnGuide and KRX databases. If a firm's data were not available for any of the following procedures, observations were eliminated from the sample. First, the ESG grade data were retrieved from the KCGS database; after excluding companies that did not have ESG grades for either 2021 or 2022, 780 companies remained in the sample. Second, the 780 companies in the sample were matched based on the availability of financial data. After the matching process, 99 companies that were not listed on the stock market or had no financial data available in the FnGuide database were eliminated from the sample. After excluding the 99 companies, 681 remained in the sample. Third, with a total of 681 companies' data remaining, the data were matched again, removing those with no data availability regarding both company's age and foreign investor ratios. The number of companies in the sample decreased from 681 to 660. Finally, 660 samples were used for empirical analysis.

This study was designed as a cross-sectional data analysis to examine how each company's financial and non-financial characteristics were linked to its ESG grade in Korea. Descriptive analysis was conducted to show the characteristics of the variables in the samples. Next, OLS analysis was used to investigate the determinants of ESG performance, with ESG grade as the dependent variable (Y) and all financial and non-financial characteristics as independent variables (X_s). In addition, quantile regression analysis was adopted to investigate whether different levels of ESG grades are related differently to each independent variable from the companies' characteristics.

4. EMPIRICAL RESULTS

In this study, OLS and quantile regression analyses were performed to verify the determinants of ESG grades using the firm's financial and non-financial factors, as well as to examine whether different determinants exist for different levels of ESG grade (lower, middle, and higher groups). In addition, robust standard errors were used in the standard error estimation of the OLS regression analysis to reduce the effect of heteroscedasticity on the estimation coefficient. Similarly, quantile regression also utilized bootstrap verifications to confirm whether the difference in the estimated regression coefficients for each quantile was statistically significant.

4.1. The Results of the Descriptive Analysis

Table 1 presents the results of the descriptive analysis of the variables used in this

study. As shown in Table 1, the dependent variables of the descriptive statistics indicate that the average of the total ESG grade is 2.4439 with a standard deviation of 1.4413, the average of the environmental pillar (ESG E) is 2.2106 with a standard deviation of 1.4044, the average of the social pillar (ESG S) is 2.9000 with a standard deviation of 1.7531, and the average of the governance pillar (ESG G) is 2.5894 with a standard deviation of 1.3671. This indicates that the averages of the Total, Environmental, Social, and Governance grades are located between grades B and C, with appropriate spreads. Next, looking at the independent variables from the perspective of financial characteristics, most of the independent variables are appropriate to conduct the statistical analysis for this study, with an average Firm value (Tobin's Q) of 1.0246 with a standard deviation of 0.9791, the average of Firm risk (Systematic risk of firm) is 1.0139 with a standard deviation of 0.3680, Firm profitability (ROA of firm) is 3.6250 with a standard deviation of 7.1766, Firm size (logged total value of market capitalization) is 19.5177 with a standard deviation of 1.5272, and so on. Some financial characteristic variables showed relatively high mean values and standard deviations, however, it would be good to conduct a statistical analysis. In addition, because the independent variables from the non-financial characteristics are appropriate values, these variables can be included in the statistical analysis.

Table 1. The Results of Descriptive Analysis (n=660)

Variables	Mean	Std.	Min	Max
ESG	2.4439	1.4413	1.0000	6.0000
ESG E	2.2106	1.4044	1.0000	6.0000
ESG S	2.9000	1.7531	1.0000	6.0000
ESG G	2.5894	1.3671	1.0000	6.0000
FV	1.0246	0.9791	0.2213	20.6618
Risk	1.0139	0.3680	-0.0100	2.3800
PT	3.6250	7.1766	-35.0600	45.3900
lnFS	19.5177	1.5272	16.5434	26.6413
Debt	132.7630	166.8662	-341.0900	1780.1700
SG	19.2152	30.4239	-94.9400	239.1200
Cash	153.7391	201.3949	5.3100	2326.4700
Age	27.5947	14.6047	0.1589	66.8740
FO	8.8508	12.2381	0.0000	79.7600
IND_A	0.6318	0.4827	0.0000	1.0000
IND_B	0.2924	0.4552	0.0000	1.0000

4.2. The Results of OLS Regression Analysis

Tables 2, 3, 4, and 5 show the results of the OLS regression analysis used to identify the determinants of the ESG grade for the Total and each pillar of ESG, respectively.

First, the results of the OLS regression analysis on Total ESG grades are shown in Table 2. The R^2 value is 0.4834 as an explanatory power for the model, and the F-value representing the goodness-of-fit of the model is 75.6400. Thus, the regression model are significant at a level of 0.01.

Among the financial characteristics, Firm value ($\beta_2 = -0.1813$) is negatively related to Total grade of ESG at a significance level of 0.05. Firm risk ($\beta_3 = -0.1832$) also has a negative weak relationship with Total grade of ESG at a significance level of 0.1. However, Firm size ($\beta_5 = 0.5757$) has a significant positive effect on Total ESG grade at a significance level of 0.01. In addition, Cash is negatively related to the Total ESG grade at a significance level of 0.01, with a coefficient value (β_8) of -0.0004. Other variables such as PT, Debt, and SG are not statistically related to the Total ESG grade. Regarding non-financial characteristics, Age is found to have a significant negative relationship with Total ESG grade at the 0.01 level ($\beta_9 = -0.0104$), and the dummy of service industry is positively related to the Total ESG grade at a 0.01 significance level ($\beta_{12} = 0.4739$).

Table 2. The Result of OLS Regression for Total ESG Grade

Variables	Coefficient	Robust std. err.	p-value	
Financial Characteristics	FV	-0.1813**	0.0768	0.0190
	Risk	-0.1832*	0.1029	0.0760
	PT	0.0085	0.0056	0.1310
	lnFS	0.5757***	0.0344	0.0000
	Debt	0.0003	0.0003	0.2200
	SG	-0.0015	0.0014	0.2930
	Cash	-0.0004**	0.0002	0.0230
Non-Financial Characteristics	Age	-0.0104***	0.0030	0.0010
	FO	0.0039	0.0037	0.2980
	IND_A	-0.0013	0.1525	0.9930
	IND_B	0.4739***	0.1699	0.0050
constant	-8.2883	-8.2883	0.6575	
F-value / P-value	75.6400***/ 0.0000			
R^2	0.4834			

Note: *p < 0.1, **p < 0.05, ***p < 0.01

Table 3 shows the results of the OLS regression analysis of the environmental pillar (E) using firms' financial and non-financial variables. The R^2 value is 0.5127 as the explanatory power for the model, and the F-value representing the fit of the model is 70.1200, confirming that the fit of the model is good at a significant level of 0.01.

As shown in Table 3, the variables of Firm value, Firm size, Debt, and Cash among the financial characteristics are significantly related to the environmental grade of firms. Specifically, Firm value ($\beta_2 = -0.1984$) is negatively related to the environmental

grade of firms at a significance level of 0.05. However, Firm size ($\beta_5 = 0.6059$) has a significant positive effect on the environmental grade at a significance level of 0.01. In addition, Debt ($\beta_6 = 0.0005$) also has a positive weak relation to the environmental grade at a significance level of 0.1. Cash is negatively related to the environmental grade at a significance level of 0.01, showing a coefficient value (β_8) of -0.0005. Other variables, including Risk, PT, and SG are not statistically related to the environmental grade of firms. Regarding non-financial characteristics, all variables are not statistically related to the environmental grades of firms, unlike the Total ESG grade.

Table 3. The Result of OLS Regression for Environment(E) Grade

Variables	Coefficient	Robust std. err.	p-value	
FV	-0.1984**	0.0986	0.0450	
Risk	-0.0842	0.1002	0.4010	
PT	0.0054	0.0059	0.3670	
Financial Characteristics	InFS	0.6059***	0.0324	0.0000
	Debt	0.0005*	0.0003	0.0660
	SG	-0.0014	0.0014	0.3220
	Cash	-0.0005***	0.0002	0.0050
Non Financial Characteristics	Age	-0.0017	0.0028	0.5380
	FO	0.0050	0.0038	0.1910
	IND_A	-0.1051	0.1401	0.4530
	IND_B	0.2325	0.1585	0.1430
constant		-9.3095	0.6021	0.0000
F-value / P-value			70.1200*** / 0.0000	
R ²			0.5127	

Note: *p < 0.1, **p < 0.05, ***p < 0.01

Table 4 presents the results of the OLS regression analysis on social (S) grades using firms' financial and non-financial variables. The explanatory power and the goodness-of-fit for the model have appropriate values, showing an R² of 0.4859 and an F-value of 77.2800 at a significance level of 0.001. Similar to the results of the environmental grade, the variables of Firm value, Firm size, Debt, and Cash among the financial characteristics are significantly related to the social grade of firms. More specifically, Firm value ($\beta_2 = -0.2429$) is negatively related to the social grade of firms at a significance level of 0.05. However, Firm size ($\beta_5 = 0.7210$) has a significant positive effect on the social grade at a significance level of 0.01. In addition, Debt ($\beta_6 = 0.0006$) also has positive weak relation with the social grade at a significance level of 0.1. Cash is negatively related to social grade at a significance level of 0.01,

with a coefficient value (β_8) of -0.001. Other variables, including Risk, PT, and SG are not statistically related to the social grade of firms. Regarding non-financial characteristics, Age is found to have a significant negative relationship with the social grade at a 0.01 significance level ($\beta_9 = -0.0083$). The other variables are not statistically related to the social grade of firms.

Table 4. The Result of OLS Regression for Social (S) Grade

Variables		Coefficient	Robust std. err.	p-value
Financial Characteristics	FV	-0.2429**	0.1077	0.0250
	Risk	-0.1655	0.1261	0.1900
	PT	0.0101	0.0076	0.1850
	lnFS	0.7210***	0.0413	0.0000
	Debt	0.0006*	0.0003	0.0710
	SG	-0.0014	0.0019	0.4620
	Cash	-0.0010***	0.0002	0.0000
Non Financial Characteristics	Age	-0.0083***	0.0036	0.0230
	FO	0.0028	0.0044	0.5250
	IND_A	-0.2192	0.1841	0.2340
	IND_B	0.2235	0.2015	0.2680
constant	-10.4123	-10.4123	0.7706	
F-value / P-value	77.2800*** / 0.0000			
R ²	0.4859			

Note: *p < 0.1, **p < 0.05, ***p < 0.01

Finally, the results of the OLS regression analysis on the governance grade using firms' financial and non-financial variables are shown in Table 5. Regarding the explanatory power of this model, R² is 0.3485. In addition, the F-value is 37.2400, confirming the goodness-of-fit of the model at a significance level of 0.01.

As shown in Table 5, Firm value ($\beta_2 = -0.1481$) has a significant negative effect on the governance grade at a significance level of 0.05 in financial variables, and Firm risk ($\beta_3 = -0.2066$) has a significant negative effect on the governance grade at a significance level of 0.1. However, Firm size ($\beta_5 = 0.4318$) has a significant positive effect on the governance grade at a significance level of 0.01. Regarding non-financial variables, the results are similar to those of the Total ESG grade; that is, Age ($\beta_9 = -0.0141$) has a significant negative effect at a 0.01 significance level, but the dummy of service industry ($\beta_{12} = 0.3936$) has a significant positive effect at a 0.05 significance level.

Table 5. The Result of OLS Regression for Governance (G) Grade

Variables		Coefficient	Robust std. err.	p-value
Financial Characteristics	FV	-0.1481**	0.0570	0.0100
	Risk	-0.2066*	0.1126	0.0670
	PT	0.0099	0.0061	0.1030
	lnFS	0.4318***	0.0366	0.0000
	Debt	0.0004	0.0004	0.2790
	SG	-0.0009	0.0015	0.5690
	Cash	0.0000	0.0002	0.8750
No- Financial Characteristics	Age	-0.0141***	0.0031	0.0000
	FO	0.0053	0.0043	0.2170
	IND_A	-0.0073	0.1854	0.9690
	IND_B	0.3936**	0.1967	0.0460
constant	-5.3220	-5.3220	0.7247	
F-value / P-value		37.2400*** / 0.0000		
R ²		0.3485		

Note: *p < 0.1, **p < 0.05, ***p < 0.01

4.3. The Results of the Quantile Regression Analysis

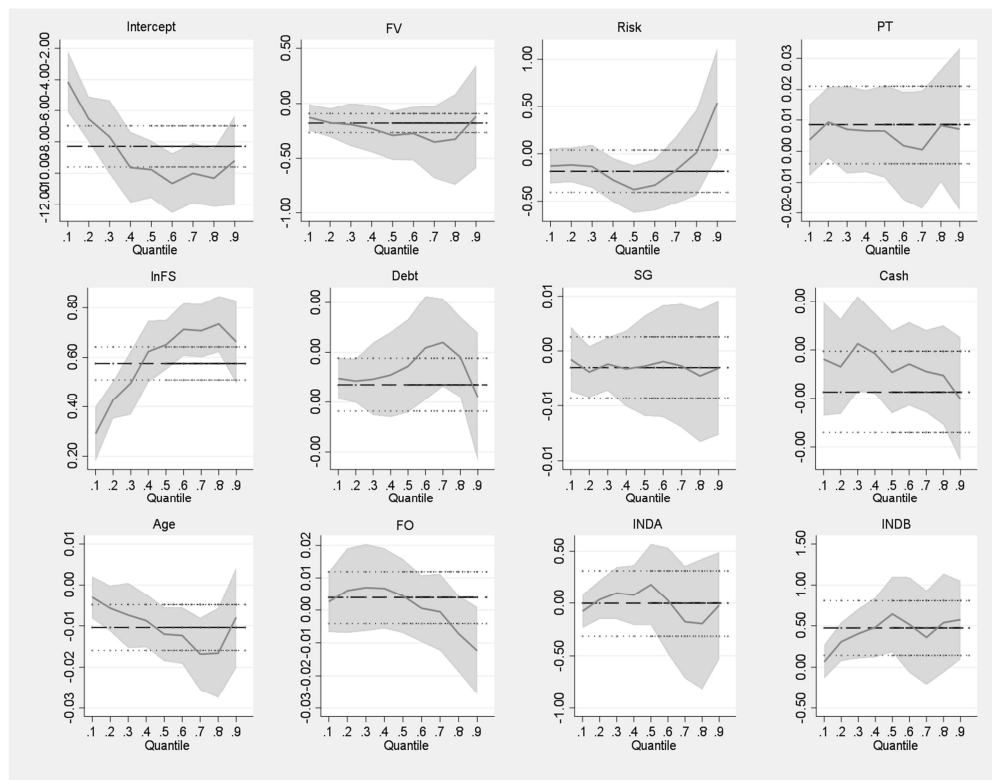
Table 6 and Figure 1 show the results of the quantile regression analysis, which examined whether the determinants of ESG grades are related differently to the Total ESG grade level of companies based on financial and non-financial characteristics. As shown in Table 5 and Figure 1, for the aspects of financial characteristics as determinants of ESG grade, firm value is negatively related to the ESG grade for the lower and middle groups of ESG grades (quantile range from 0.1 to 0.7), but with no effect on the ESG grade for the upper group (upper quantile from 0.8 to 0.9). This result differs from that of the OLS regression. In addition, as shown in Figure 1, the trend of the coefficient for Firm value decreases as the quantile level of the ESG grade increases in most sections, except the quantile with the higher ESG grade. Second, Firm Risk is also found to have a weak negative effect on ESG grade, similar to the results of the OLS regression analysis. However, the result of the quantile regression analysis shows that there is no significant effect of Firm risk on the ESG grade when it is in the lower quantile (0.1-0.3) and the upper quantile (0.7-0.9). That is, Firm risk has a significant effect on ESG grade only for the middle quantile (0.4-0.6), indicating a significant negative effect at a significance level of 0.05. Third, the quantile regression analysis also shows that Firm size has a significant positive effect on the ESG grade for all quantile levels of the ESG grade at the 0.01 significance level. However, as shown in Figure 1, the trend of the coefficient for Firm size increases in all deciles, except the upper deciles. This means that the influence on the ESG grade increases as the size of the company increases.

Table 6. The Results of Quantile Regression on Total ESG Grade

Variables	Quantile Regression (%)										
	10	20	30	40	50	60	70	80	90		
FV	Coefficient	-0.1301**	-0.1780***	-0.1950**	-0.2320**	-0.2929**	-0.2754**	-0.3533**	-0.3271	-0.1220	
	Bootstrap std. err.	0.0619	0.0663	0.0994	0.1086	0.1131	0.1244	0.1671	0.2101	0.2381	
Risk	Coefficient	-0.1282	-0.1163	-0.1327	-0.2759**	-0.3758***	-0.3292**	-0.1756	0.0125	0.5419*	
	Bootstrap std. err.	0.0936	0.0923	0.1149	0.1175	0.1289	0.1390	0.1777	0.2300	0.2921	
PT	Coefficient	0.0036	0.0093	0.0070	0.0065	0.0065	0.0018	0.0005	0.0083	0.0071	
	Bootstrap std. err.	0.0059	0.0059	0.0072	0.0067	0.0076	0.0089	0.0097	0.0092	0.0133	
Financial Variables	Coefficient	0.2907***	0.4279***	0.4965***	0.6237***	0.6508***	0.7128***	0.7079***	0.7350***	0.6623***	
	Bootstrap std. err.	0.0556	0.0390	0.0657	0.0631	0.0511	0.0541	0.0547	0.0580	0.0853	
Debt	Coefficient	0.0005**	0.0004*	0.0005	0.0005	0.0007	0.0011**	0.0012***	0.0009**	0.0001	
	Bootstrap std. err.	0.0002	0.0002	0.0004	0.0004	0.0005	0.0005	0.0004	0.0004	0.0007	
SG	Coefficient	-0.0008	-0.0019	-0.0012	-0.0016	-0.0014	-0.0010	-0.0014	-0.0023	-0.0016	
	Bootstrap std. err.	0.0015	0.0012	0.0012	0.0018	0.0023	0.0026	0.0029	0.0031	0.0031	
Cash	Coefficient	-0.0001	-0.0002	0.0001	0.0000	-0.0002	-0.0001	-0.0002	-0.0003	-0.0005	
	Bootstrap std. err.	0.0003	0.0002	0.0003	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	
Age	Coefficient	-0.0031	-0.0058**	-0.0074*	-0.0088***	-0.0120***	-0.0123***	-0.0168***	-0.0166***	-0.0080	
	Bootstrap std. err.	0.0026	0.0028	0.0040	0.0033	0.0033	0.0035	0.0044	0.0055	0.0062	
FO	Coefficient	0.0026	0.0061	0.0070	0.0067	0.0044	0.0005	-0.0005	-0.0072	-0.0124*	
Non Financial Variables	Bootstrap std. err.	0.0047	0.0066	0.0068	0.0063	0.0058	0.0052	0.0060	0.0059	0.0068	
IND_A	Coefficient	-0.0773	0.0344	0.0972	0.0783	0.1796	0.0256	-0.1775	-0.1953	-0.0217	
	Bootstrap std. err.	0.0813	0.0949	0.1276	0.1466	0.1983	0.2587	0.2729	0.3171	0.2608	
IND_B	Coefficient	0.0672	0.3079**	0.4052***	0.4823***	0.6425***	0.5148*	0.3601	0.5382*	0.5737**	
	Bootstrap std. err.	0.1027	0.1184	0.1523	0.1840	0.2353	0.2961	0.2907	0.3067	0.2433	
Sample Size		N=660	N=660	N=660	N=660	N=660	N=660	N=660	N=660	N=660	

Note: *p < 0.1, **p < 0.05, ***p < 0.01

Fourth, the results of the OLS regression analysis regarding Debt show no effect on the ESG grade. However, looking at the results of the quantile regression analysis, we see that the lower (0.1-0.2) and the upper-middle quantiles (0.6-0.8) have significant positive (+) effects of firms' debt on ESG grade at the 0.1 significance level. This implies that companies with lower and middle ESG grades are influenced by their debt ratios, which has a positive effect on the ESG grade. However, the OLS regression analysis results regarding Cash show that it is significantly related to the ESG grade with a negative effect, but the result of the quantile regression does not show any effect on the ESG grade at all quantile levels. In addition, other financial variables such as PT and SG do not affect all quantiles of ESG grade in the same way as the OLS results.



Note: X-axis: quantile of dependent variable; Y-axis: β -coefficient of independent variable for each quantile.
 — . . . : Beta coefficient of each independent variable (OLS regression)
 : 95% confidence interval of the beta coefficients of each independent variable (OLS regression)
 _____ : Beta coefficients by quantile for each independent variable (quantile regression)
 Black shadows: 95% confidence interval of beta coefficients by quantile of each independent variable (quantile regression)

Figure 1. The Trend of Beta Coefficient of Independent Variables by Each Quantile Level

The quantile regression results for the nonfinancial characteristics are as follows. First, the OLS regression analysis of Age exhibits a negative effect on ESG grade, the results of quantile regression analysis show similar results as a negative effect on ESG grade from the low to upper quantiles (0.2-0.8). However, as shown in Figure 1, the trend of the coefficient for Age increases because of the negative effect as it goes up, except in the upper quantiles. This implies that the influence of Age on ESG grades decreases as the age of the company increases. Second, the OLS regression analysis results for FO show no effect on the ESG grade, but the results of the quantile regression analysis show a negative effect on the highest quantile level (0.9) of ESG grade, with a significance level of 0.1. Finally, among the two dummy variables that represent the type of industry companies operate in, only the dummy of the service industry is found as a determinant of the ESG grade for low and middle groups, as it is from the 0.2 to 0.5 quantile level of ESG grade at the 0.05 level. This suggests a different result from the OLS regression, which implies that a firm that operates in the service industry has an effect only on the low and middle groups of ESG grades, not on all levels of companies.

5. CONCLUSION

This study was designed to identify the determinants of ESG grades using firms' financial and non-financial characteristics, and to examine whether different levels (e.g., upper, middle, and lower) of ESG grades are differently related to selected variables for firms in Korea during the COVID-19 pandemic. OLS and quantile regression analyses with annual data from 660 sample companies in Korea were used for empirical analysis. According to the results of the OLS regression analysis, both financial and non-financial characteristics of firms were important determinants of the ESG grades of Korean companies during the pandemic. Specifically, the determinants of ESG grades in this study were a company's value, size, and cash liquidity from the financial characteristics, and firm age and industry type from the non-financial characteristics. In addition, the results of the OLS regression analysis by sub-dimension of the ESG grade showed different results for the environmental grade from the social and governance grades. Only the financial characteristics of companies were found to be determinants of environmental grades, whereas both financial and nonfinancial characteristics of companies were determinants of social and governance grades.

These results are different from those of Crespi and Migliavacca (2020) regarding the direction of the relationship between CFP-ESG grades and non-financial characteristics such as the age of firms and ESG grades. In Crespi and Migliavacca (2020), large firms and firms with good FP showed higher ESG grades, and governance elements led to higher Total ESG over time; however, the study in Korea during the COVID-19 pandemic showed that smaller, younger firms had higher ESG grades, and good FP does not necessarily have an impact on the ESG grade. The results of the

quantile regression analysis also indicated meaningful findings; that is, the determinants of ESG grade differed for different ESG grade levels in Korea during the COVID-19 pandemic. More specifically, companies with lower ESG grades mostly exhibited financial characteristics as determinants, whereas both financial and non-financial characteristics were found to be determinants for the middle group of ESG grade companies. Unlike the lower and middle groups, the upper group of ESG grade companies showed only two determinants: company size and firm age. Additionally, the effects of the determinants on the ESG grade increased.

The findings of this study have both theoretical and practical implications useful for practitioners and researchers. The most important theoretical contribution of this study is that it extends the theoretical evidence of the extant ESG studies on economic recession periods. Furthermore, this study divided the characteristics of firms into financial and non-financial and found that they both played important roles as determinants of companies' ESG grades. In addition, the findings revealed the specific determinants for each pillar of ESG. Hence, the theoretical basis for CFP-ESG relations has been expanded by identifying the determining factors according to ESG grade.

As the importance of corporate ESG activities increases, ESG grades are becoming increasingly important to investors and stakeholders in terms of investment decision-making. The criteria for determining the ESG grade differ among different agencies, and it is difficult for investors and/or stakeholders to obtain such information. Meanwhile, companies' financial and non-financial information is more publicly available and relatively easier to obtain, and if such information is proven to be a good indicator of ESG grades, then investors and/or stakeholders can make more rational and reliable decisions depending on such information.

Using the results of the determinants from this study, one source of information ultimately shows a company's financial characteristics directly, but it is also an important factor in the non-financial characteristics of ESG activities. In other words, the integrated information of both financial and non-financial characteristics is the basic formula of the ESG grade determinants, confirming that non-financial activities such as ESG activities are crucial for non-financial characteristics. Small, young companies were highly evaluated for their ESG activities during the economic crisis caused by COVID-19. This is an unexpected outcome because companies with good FP or with high transparency governance were not included in the high level of ESG grades; rather, the exteriority of firms, such as their size and age, had more to do with allocating the level of ESG grade. Based on this outcome, companies with high FP and those trying to achieve better governance should be convinced to engage in more ESG activities.

However, there are Korean companies with an export-oriented industrial structure that try to avoid ESG-related policy regulations (e.g., carbon tax imposition) while carrying out mandatory disclosure by the government (emphasizing the importance). Consequently, it is important for Korean firms to accept ESG as an investment rather than a cost. When ESG activities are considered merely as a cost, they can induce vulnerability. However, ESG initiatives can yield effectiveness and success when consistently and persistently implemented and nurtured over time. Global investors use

ESG grades to make better investment decisions, and ESG is believed to be a potentially strong risk reducer that has become increasingly important for investors and stakeholders as the world is confronted with various unpredictable and uncontrollable circumstances, such as wars or pandemics. Meanwhile, because the results of this study indicate that non-financial characteristics are more visible as determinants than financial characteristics, negative messages may be sent to investors and stakeholders. Also, low-quality ESG information may foster greenwashing. In other words, although firms' exteriority may explain who they are, financial characteristics can explain much more about what they have done and what they are. Thus, once ESG grades can be fully trusted by investors and stakeholders as symbolic and trustworthy indications of firms' status quo and potential for growth, more reliable investments will be awarded to companies with sincere ESG attitudes to match ESG practices within their business paradigms and strategies, especially in the global business world.

Although this study has important academic and practical implications, it has some limitations. First, we conducted a cross-sectional analysis using annual data for only 2022 in Korea to examine the effect of the economic recession period caused by the COVID-19 pandemic. Future research should expand the time range of the samples before and after the COVID-19 period. Second, the ESG grade data used in this study were collected from only one ESG evaluation agency, the KCGS. Although there may be differences in grades from different ESG evaluation institutions and countries, this was not considered in this study. Thus, we suggest that future research compare and analyze differences between countries during the COVID-19 period, for instance, companies belonging to developed and developing countries. Finally, it should be noted that the ESG grades from KCGS were converted to rating scores in this study to meet the purpose of the study. Consequently, the issue of operational convenience may arise from the conversion of the equidistant scale to the rational scale. Future studies should be more inclusive in the selection of evaluation agencies so that the actual ESG evaluation scores may be reflected and used for comparison.

REFERENCES

- Abdi, Y., X. Li and X. Càmara-Turull (2022), "Exploring the Impact of Sustainability (ESG) Disclosure on Firm Value and Financial Performance (FP) in Airline Industry: The Moderating Role of Size and Age," *Environment, Development and Sustainability*, 24(4), 5052-5079.
- Adeneye, Y. and I. Kammoun (2022), "Real Earnings Management and Capital Structure: Does Environmental, Social and Governance (ESG) Performance Matter?" *Cogent Business & Management*, 9(1), 2130134.

- Ali, H., A. Rahim, M. Yahya and F. Kamarudin (2022), "Efficiency in Giving Back to the Masses: Insights from ESG and Non-ESG Firms in Selected East Asian Countries," *Asia-Pacific Management Accounting Journal*, 17(2), 247-277.
- Baldini, M., L. Maso, G. Liberatore, F. Mazzi and S. Terzani (2018), "Role of Country- and Firm-Level Determinants in Environmental, Social, and Governance Disclosure," *Journal of Business Ethics*, 150(1), 79-98.
- Benlemlih, M. (2017), "Corporate Social Responsibility and Firm Debt Maturity," *Journal of Business Ethics*, 144(3), 491-517.
- Bissoondoyal-Bheenick, E., R. Brooks and H. X. Do (2023). "ESG and Firm Performance: The Role of Size and Media Channels," *Economic Modelling*, 121, 106203.
- Bioy, H. (2020), "Investors Back ESG in the Crisis," Morningstar Archive, Available at <https://www.morningstar.co.uk/uk/news/202274/investors-back-esg-in-the-crisis.aspx>.
- Bnoui, I. (2011), "Corporate Social Responsibility (CSR) and Financial Performance (FP): Case of French SEMs," *Conference: ICSB 2011 - 56th International Council for Small Business*, 1-23.
- Børing, P. (2019), "The Relationship between Firm Productivity, Firm Size and CSR Objectives for Innovations," *Eurasian Business Review*, 9, 269-297.
- Broadstock, D.C., K. Chan, L.T. Cheng and X. Wang (2021). "The Role of ESG Performance during Times of Financial Crisis: Evidence from COVID-19 in China," *Finance Research Letters*, 38, 101716.
- Brodeur, A., D. Gray, A. Islam and S. Bhuiyan (2021), "A Literature Review of the Economics of COVID-19," *Journal of Economic Surveys*, 35(4), 1007-1044.
- Buallay, A. (2019), "Is Sustainability Reporting (ESG) Associated with Performance? Evidence from the European Banking Sector," *Management of Environmental Quality: An International Journal*, 30(1), 98-115.
- Camfferman, K. and T. Cooke (2002), "An Analysis of Disclosure in the Annual Reports of UK and Dutch Companies," *Journal of International Accounting Research*, 1(1), 3-30.
- Cha, D.K. (2022), "The Effect of Ownership Structure and ESG Performance on Investment Efficiency," *International Business Education Review*, 19(5), 91-112.
- Chams, N., J. García-Blandón and K. Hassan (2021), "Role Reversal! Financial Performance as an Antecedent of ESG: The Moderating Effect of Total Quality Management," *Sustainability*, 13(13), 7026.
- Cho, D. H. and J. J. Kim (2020), "The Impact of the COVID-19 Pandemic on the Domestic Economy and Future Challenges," *Journal of Humanities and Social Science*, 11(6), 2597-2612.
- Chouaibi, Y. and G. Zouari (2022), "The Mediating Role of Real Earnings Management in the Relationship between CSR Practices and Cost of Equity: Evidence from European ESG Data," *EuroMed Journal of Business*.
- Crespi, F. and M. Migliavacca (2020), "The Determinants of ESG Rating in the Financial Industry: The Same Old Story or a Different Tale?" *Sustainability*, 12(16), 6398.

- Engelhardt, N., J. Ekkenga and P. Posch (2021), "ESG Ratings and Stock Performance during the COVID-19 Crisis," *Sustainability*, 13(13), 7133.
- Feyisa, H. (2020). "The World Economy at COVID-19 Quarantine: Contemporary Review," *International Journal of Economics, Finance and Management Sciences*, 8(2), 63-74.
- Friede, G., T. Busch and A. Bassen (2015), "ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies," *Journal of Sustainable Finance and Investment*, 5(4), 210-233.
- Gillan, S.L., A. Koch and L. T. Starks (2021), "Firms and Social Responsibility: A review of ESG and CSR Research in Corporate Finance," *Journal of Corporate Finance*, 66, 101889.
- Gyönyöröová, L., M. Stachoň and D. Stašek (2023), "ESG Ratings: Relevant Information or Misleading Clue? Evidence from the S&P Global 1200," *Journal of Sustainable Finance & Investment*, 13(2), 1075-1109.
- Hao, L. and D.Q. Naiman (2007). *Quantile Regression*, Thousand Oaks, California: SAGE Publications, Inc.
- Henisz, W., T. Koller and R. Nuttall (2019), "Five Ways that ESG Creates Value," *McKinsey Quarterly*, 4, 1-12.
- Hewton, K.E. and E. Aboagy (2023), "ESG and Firm Performance: Evidence from Selected Countries in Europe," Master's thesis, Stavanger, Norway: University of Stavanger Business School.
- Hill, J. (2020), *Environmental, Social, and Governance (ESG) Investing: A Balanced Analysis of the Theory and Practice of a Sustainable Portfolio*, London, England: Academic Press.
- Horbach, J., V. Prokop and J. Stejskal (2023), "Determinants of Firms' Greenness Towards Sustainable Development: A Multi-Country Analysis," *Business Strategy and the Environment*, 32(6), 2868-2881.
- Khanchel, I. (2007), "Corporate Governance: Measurement and Determinant Analysis," *Managerial Auditing Journal*, 22(8), 740-760.
- Khoury, R., N. Nasrallah and B. Alareeni (2023), "The Determinants of ESG in the Banking Sector of MENA Region: A Trend or Necessity?" *Competitiveness Review*, 33(1), 7-29.
- Kim, D.H. (2021), "The Challenges to Korean Economy in the Post-COVID-19 era," *Future Growth Studies*, 7(2), 133-152.
- Kim, J.B. and B.C. Sohn (2013), "Real Earnings Management and Cost of Capital," *Journal of Accounting and Public Policy*, 32(6), 518-543.
- Kim, M.S., S.H. Moon and S.W. Choi (2023), "Predicting Future ESG Performance Using Past Corporate Financial Information: Application of Deep Neural Networks," *Journal of Intelligence and Information Systems*, 29(2), 85-100.
- Kim, R. and B. Koo (2023), "The Impact of ESG Rating Disagreement on Corporate Value," *Journal of Derivatives and Quantitative Studies*, 31(3), 219-241.
- Koenker, R. and G. Basset Jr (1978), "Regression Quantiles," *Econometrica*, 46(1), 33-50.

- Li, H., X. Zhang and Y. Zhao (2022), "ESG and Firm's Default Risk," *Finance Research Letters*, 47(B), 102713.
- Li, W., P. Padmanabhan and C. Huang (2024), "ESG and Debt Structure: Is the Nature of this Relationship Nonlinear?" *International Review of Financial Analysis*, 91, 10327.
- Liu, Y., J. Lee and C. Lee. (2020), "The Challenges and Opportunities of a Global Health Crisis: The Management and Business Implications of COVID-19," *Asian Business & Management*, 19, 277-297.
- McGuire, J.B., S. Alison and T. Schneeweis (1988), "Corporate Social Responsibility and Firm Financial Performance," *Academy of Management Journal*, 31(4), 854-872.
- Pelozo, J. (2009). "The Challenge of Measuring Financial Impacts from Investments in Corporate Social Performance," *Journal of Management*, 35(6), 1518-1541.
- Putri, C.M. and D. Puspawati (2023), "The Effect of ESG Disclosure, Company Size, and Leverage on Company's Financial Performance in Indonesia," *International Journal of Business Management and Technology*, 7(2), 252-262.
- Rau, P. and T. Yu (2023), "A Survey on ESG: Investors, Institutions and Firms," *China Finance Review International*, 14(1), 3-33
- Richards, F., P. Kodjamanova, X. Chen, N. Li, P. Atanasov, L. Bennetts, B. Patterson, B. Yektashenas, M. Mesa-Frias, K. Tronczynski, N. Buyukkaramikli and A.C. El Khoury (2022), "Economic Burden of COVID-19: A Systematic Review," *Clinico Economics and Outcomes Research*, 14, 293-307.
- Savio, R., E. D'Andrassi and F. Ventimiglia (2023), "A Systematic Literature Review on ESG during the COVID-19 Pandemic," *Sustainability*, 15(3), 2020.
- Scholten, B. (2008), "A Note on the Interaction between Corporate Social Responsibility and Financial Performance," *Ecological Economics*, 68(1-2), 46-55.
- Shahzad, A.M., F.T. Mousa and M.P. Sharfman (2016), "The Implications of Slack Heterogeneity for the Slack-Resources and Corporate Social Performance Relationship," *Journal of Business Research*, 69(12), 5964-5971.
- Thunström, L., S. Newbold, D. Finnoff, M. Ashworth and J. Shogren (2020), "The Benefits and Costs of Using Social Distancing to Flatten the Curve for COVID-19," *Journal of Benefit-Cost Analysis*, 11(2), 179-195.
- Yang, J. S. (2022), *The Effect of a Company's ESG Management Level on its Corporate Value when the Capital Market Fluctuates*, Seoul, Korea: Graduate School of Knowledge Service Consulting, Hansung University.
- Yoon, S. and D. Chun (2022), "The Effect of ESG on Management Efficiency: Focusing on the Moderating Effect of the Firm Size," *Korean Management Review*, 51(5), 1221-1241.
- Zhang, S. (2022), "Firm Value and ESG Performance During the Covid-19 Pandemic," Proceedings of the 2022 2nd International Conference on Enterprise Management and Economic Development (ICEMED 2022), *Advances in Economics, Business and Management Research*, 219, 200-205.

Zhou, R., J. Hou and F. Ding (2023), “Understanding the Nexus between Environmental, Social, and Governance (ESG) and Financial Performance: Evidence from Chinese-Listed Companies,” *Environmental Science and Pollution Research*, 30(29), 73231-73253.

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