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ESG Score and Analyst Forecast Accuracy: Evidence from Korea

ESG 점수가 애널리스트 예측 정확도에 미치는 영향: 한국시장을 중심으로

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지도 교수 황 인 이

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위 원 장 백 복 현 (인)

부위원장 김 종 호 (인)

위 원 황 인 이 (인)

Abstract

ESG Score and Analyst Forecast Accuracy: Evidence from Korea

Sunwoong Jang
College of Business Administration
The Graduate School
Seoul National University

Using KCGS ESG (Environmental, Social, Governance) data, I examine the relationship between ESG score and analyst forecast accuracy. I find that as a firm's ESG score increases, the accuracy in analyst earnings forecasts is likely to increase. In addition, I find that industry-specific ESG priorities are taken into account by analysts when making earnings forecasts, leading to variations in the magnitude of forecast accuracy. I also document that the relationship between governance-related score and analyst forecast accuracy is weaker for chaebol firms. These results provide evidence of the relationship between non-financial indicators, specifically ESG, and financial indicators.

Keywords: ESG; CSR; analyst forecast accuracy; uncertainty; sustainability
Student Number: 2019-21959

Table of Contents

I. INTRODUCTION

ESG and CSR (Corporate Social Responsibility) have emerged as crucial research areas in both academic and professional spheres. This increased focus can be attributed to the growing volume of assets being invested based on ESG principles, which now constitute more than a quarter of the $88 trillion in global assets under management (Bernow, Klempner, and Magnin, 2017; Larcker and Watts, 2020). Furthermore, it is projected that global ESG assets will surpass $53 trillion by the end of 2025, accounting for over a third of the estimated total assets under management of $140.5 trillion (Bloomberg, 2021). This remarkable growth underscores the significance of ESG considerations in investment decision-making and highlights the shift toward sustainable and socially responsible practices in the financial sector.

South Korea is also aligning with this global trend. In 2021, the Financial Services Commission (FSC) mandated that companies listed on the KOSPI exchange must disclose ESG reports by 2025, with the consequence of delisting for non-compliance (Financial Services Commission, 2021). Furthermore, in May 2023, the FSC announced its consideration of introducing mandatory ESG disclosure for large-cap companies, including those listed on the Kosdaq exchange, due to their substantial asset size (Kim So-young, 2023). The Korea Sustainability Investing Forum reported that the size of ESG finance in the domestic market witnessed a significant 29% increase in 2021 compared to 2020, reaching 786.9 trillion won, up from 611 trillion won. This growth encompassed various forms of ESG finance, including 340 trillion won in ESG loans, 272 trillion won in ESG investments, 77 trillion won in ESG financial products, and 98 trillion won in ESG bond issuances. These figures underscore the substantial expansion of sustainable finance by at least 15% across all categories compared to 2020 (The Korea Sustainability Investing Forum, 2022). These recent developments in the financial sector and the policy direction set by the FSC reflect the profound impact of ESG on South Korea's domestic economy.

In line with this trend, ESG has emerged as a prominent research theme in the field of accounting. Previous studies have primarily focused on exploring the relationship between a firm's financial performance and its ESG practices. Jiao (2010) demonstrates the crucial role of ESG in

creating shareholder value. The findings of Mishra and Suar (2010) suggest that high-CSR (ESG) firms tend to exhibit better financial performance compared to low-CSR (ESG) firms in India. Additionally, Jiraporn, Jiraporn, Boeprasert, and Chang (2013) find that socially responsible firms tend to receive higher credit ratings. These studies contribute to our understanding of the association between ESG and financial outcomes, highlighting the positive impact of ESG practices on firm performance and creditworthiness.

More recent studies have shifted their focus to exploring the relationship between stock prices and ESG issues. Kim, Li, and Li (2014) uncover a negative relationship between firms' CSR performance and the risk of future stock price crashes. Serafeim and Yoon (2022) investigate how stock prices respond to different types of ESG news, revealing that stock prices only react to ESG issues that are identified as financially material within a specific industry.

Given the significant influence of analyst forecasts on businesses, several studies have examined the link between analyst forecasts and ESG factors. Bernardi and Stark (2006) investigate the impact of changes in reporting regimes on analyst forecast accuracy, finding that the effects of investor relations (IR) activities are more pronounced when firms provide greater disclosures of their ESG performance. Dhaliwal, Radhakrishnan, Tsang, and Yang (2012) examine the association between the issuance of stand-alone CSR (or ESG) reports and analyst forecast accuracy, finding that the presence of such reports is associated with lower forecast errors. They further reveal that this relationship is stronger in countries where CSR (or ESG) performance is more likely to affect firm financial performance. These studies shed light on the interplay between analyst forecasts, ESG information, and stock market reactions, emphasizing the importance of ESG disclosures in influencing market perceptions and analyst predictions.

Based on the studies mentioned earlier, which highlight the impact of ESG on firms' business environment and performance, it is reasonable to hypothesize a relationship between ESG scores and analyst forecast accuracy. In the business context, it is commonly observed that when a firm performs well, uncertainties surrounding the firm decrease. Improved financial indicators, resulting from strong performance, can reduce uncertainties such as the company's survival and management turnover.

According to the earlier studies, firms with good financial performance tend to invest less aggressively (Cleary, 1999) and have lower CEO turnover (Murphy and Zimmerman, 1993; Kaplan and Minton, 2006) which are the factors of lower uncertainty.

Previous research show that firms with lower uncertainty are easier for analysts to forecast in terms of earnings (Eames and Glover, 2003; Ramnath, Rock, and Shane, 2008). These studies highlight the importance of access to managers' information when forecasting earnings, and the forecasting process becomes easier when the firm's uncertainty is lower. Considering these findings, it can be inferred that as a firm's ESG score increases, the accuracy in analyst earnings forecasts is likely to increase. This hypothesis is based on the notion that higher ESG scores are indicative of better firm performance, reduced uncertainties, and improved access to information for analysts, leading to more accurate earnings forecasts. The results are statistically significant, and more detailed information can be found in Section 4.

Furthermore, it is important to consider that different industries may exhibit varying ESG priorities and outcomes. Previous research suggests that manufacturing firms are more likely to prioritize environmental concerns over social and governance issues, driven by pressures from environmentally conscious consumers, investors, employees, local communities, and regulations. Conversely, retailing firms tend to prioritize governance over environmental and social factors due to stakeholder pressure, reputation, and brand value considerations.

Given this industry-specific variation in ESG priorities, it is reasonable to expect that analysts are fully aware of these nuances and incorporate them when forecasting earnings. Therefore, I hypothesize that the relationship between the environmental (E) score and analyst forecast accuracy is stronger for manufacturing firms. This implies that manufacturing firms' environmental performance, as reflected in their ESG scores, will have a greater impact on the accuracy of earnings forecasts made by analysts. Similarly, I anticipate that the relationship between the governance (G) score and analyst forecast accuracy is stronger for retailing firms. In other words, retailing firms' governance practices, captured by their ESG scores, are likely to exert a more significant influence on the accuracy of earnings forecasts. These hypotheses suggest that industry-specific ESG priorities are

taken into account by analysts when making earnings forecasts, leading to variations in the magnitude of forecast accuracy. The statistical significance of the results provide evidence supporting the notion that analysts consider industry-specific ESG factors in their earnings forecasts, ultimately influencing the accuracy of their predictions.

I also anticipate that the unique characteristics of Korean firms, such as chaebol firms, can influence analyst forecast accuracy. Chaebol firms are a typical feature of South Korean companies, characterized by centralized ownership structures primarily dominated by family members of the company's founder. When calculating the G score, factors such as the composition of the board of directors and the relationships with partner firms are taken into account. However, corporate governance practices in chaebol firms may differ from those in non-chaebol firms, which can pose challenges for analysts in using governance-related ESG scores to forecast earnings (Oh, Chang, and Martynov, 2011). Therefore, I hypothesize that the relationship between the G score and analyst forecast accuracy will be stronger for chaebol firms compared to the E score and S score, and this result is statistically significant.

The ESG data used in this study is collected from KCGS, while the financial accounting data and analyst forecast data are obtained from DataGuide or TS2000, depending on availability. The final sample size of 2,092 is smaller than the original sample size of 15,080. This reduction in sample size is attributed to the focus of analyst forecasts on larger firms.

Previous studies have utilized different proxies, such as EPS or abnormal earnings, to represent earnings. However, in this study, EPS is used as a proxy for several reasons. Firstly, EPS is a widely recognized and easily understandable measure of a company's profitability. It provides a per-share indication of the earnings generated by a company, allowing for straightforward comparisons across different companies and industries. Secondly, EPS is a key financial metric used by investors, analysts, and stakeholders to assess a company's profitability and make investment decisions. It is commonly included in financial reports, making it readily available and accessible for research purposes (Brown, 2001). Furthermore, using EPS as a proxy for earnings allows for consistency and comparability across studies. By employing a common measure, researchers can more easily compare

and aggregate findings from different studies, thereby enhancing the generalizability and cumulative knowledge in the field of accounting (Degeorge, Patel, and Zeckhauser, 1999; Shim and Choi, 2011). Lastly, EPS is also employed in various accounting frameworks and regulations, such as Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS), further contributing to its popularity as a proxy for earnings in accounting research (Brown, 2001; Lee and Li, 2006).

However, this paper has several limitations. First, the low credibility of analyst forecasts can impact the reliability of the results. Previous studies have shown that analyst forecasts tend to be overly optimistic compared to actual outcomes (Dugar and Nathan, 1995). This is attributed to factors such as the relationship between analysts and firms, as well as the impact of sell-side reports on stock price declines and brokerage fees (Choi, 2009). Considering these research findings, fundamental doubts may arise regarding analyst forecasts, which could potentially influence this paper that utilizes analyst forecasts as dependent variables.

Second, the credibility of ESG scores. It is often observed that even for the same company, different ESG rating agencies assign different scores. Previous studies attribute this to factors such as the magnitude of ESG disclosure (Christensen, Serafeim, and Sikochi, 2021) and voluntary ESG reporting (Kimbrough, Wang, Wei, and Zhang, 2022). While KCGS is recognized as the largest ESG rating agency in Korea, the inclusion of ESG data from other rating agencies could have impacted the credibility of the research results. Overall, these limitations should be considered when interpreting the findings of this paper.

Despite these limitations, this paper makes the following contributions: it provides evidence of the relationship between non-financial indicators, specifically ESG, and financial indicators. While the importance of ESG for creating a sustainable society is widely recognized, the significance of its financial impact has been relatively less mainstream. Through the results of this paper, it is demonstrated that analysts' earnings forecasts are significantly influenced by ESG scores, highlighting the effects of ESG on financial indicators. This can serve as compelling evidence to refute the recent skepticism surrounding ESG's efficacy.

The remainder of the paper consists of five sections. The next section develops hypotheses. Section 3 describes the sample construction, data sources, and measures used in the empirical analyses. Section 4 discusses results. Finally, Section 5 provides an interpretation of the results and concluding remarks.

II. HYPOTHESES DEVELOPMENT

Firms with high ESG scores are predicted to have lower business uncertainty. Prior research show that firms with high ESG scores tend to perform better financially in the long term (Sassen, Hinze, and Hardeck, 2016; Almeyda and Darmansya, 2019; Giese, Lee, Melas, and Nagy, 2019), which supports this prediction. In the business context, it is commonly observed that strong firm performance reduces uncertainties surrounding the company. When a firm's financial indicators improve, it diminishes uncertainties related to survival and management turnover (Murphy and Zimmerman, 1993; Kaplan and Minton, 2006). Prior research has indicated that firms with lower uncertainty are more straightforward for analysts to forecast in terms of earnings. Eames and Glover (2003) revisit the correlation between earnings forecast error and earnings predictability as previous evidence indicates that intentional optimism in earnings forecasts is not an efficient strategy for acquiring insights into managers' information (Matsumoto, 2002). They find out that firms with lower uncertainty are easier for analysts to forecast in terms of earnings. Ramnath et al. (2008) highlight similar result in their study. These studies emphasize that forecasting process becomes easier when the firm's uncertainty is lower. Based on these findings, it can be inferred that an increase in a firm's ESG score is likely to result in a increase in the accuracy of analyst earnings forecasts. This hypothesis stems from the idea that higher ESG scores reflect better firm performance, reduced uncertainties, and improved access to information for analysts, ultimately leading to more accurate earnings forecasts. Therefore, the first and main hypothesis is:

H1: Analyst forecast accuracy is higher for firms with higher ESG scores.

Different industries can have varying effects on analyst forecasts due to their specific characteristics and dynamics. Factors such as industry competitiveness, regulatory environment, market volatility, and business cycles can influence the accuracy and reliability of analyst forecasts (Groysberg, Healy, Nohria, and Serafeim, 2011; Das, Schaberl, and Sen, 2022). Additionally, industry-specific risks, opportunities, and performance metrics can shape the expectations and projections made by analysts. For example, in technology-driven industries, rapid innovation and disruptive changes may pose challenges for accurate forecasting, while in stable and mature industries, forecasts may be more predictable. Moreover, industries with high regulatory scrutiny or sensitivity to environmental and social factors may require analysts to incorporate additional considerations into their forecasts (Groysberg et al., 2011). Overall, industry-specific factors play a crucial role in shaping the way analysts perceive and forecast the future performance of companies within those industries.

In the same vein, ESG priorities can vary across industries. For instance, manufacturing firms are more likely to prioritize environmental concerns due to pressures from environmentally conscious consumers, investors, and employees (Braun and Grotz, 2002), local communities (Ruiz-Tagle, 2006), and regulations (Henriques and Sadorsky, 1996). Similarly, retailing firms may prioritize governance due to stakeholder pressure (Barnett and Salomon, 2012), reputation (Toffel and Short, 2010), and brand value (Cohen, Holder-Webb, Nath, and Wood, 2011). Analysts may be aware of these industry-specific ESG priorities and incorporate them into their earnings forecasts. Based on these considerations, the second set of hypotheses are:

H2a: The relationship between E scores and analyst forecast accuracy will be stronger for manufacturing firms.

H2b: The relationship between G scores and analyst forecast accuracy will be stronger for retailing firms.

Chaebol firms are a unique type of South Korean companies characterized by centralized ownership structures predominantly controlled by family members of the founder (Park and Yuhn,

2012). Corporate governance practices in chaebol firms may differ from those in non-chaebol firms (Oh et al., 2011). Corporate governance is composed of key elements such as a company's board of directors, management team, and shareholders' rights and responsibilities (Shleifer and Vishny, 1997). In addition to these elements, the relationship with business partners can be relevant to a company's corporate governance, particularly in terms of transparency and ethical considerations in transactions or contracts with partners. Therefore, companies should adhere to appropriate corporate governance principles and values in their relationships with business partners (Monks and Minow, 2011).

Although the corporate governance of Korean chaebol firms has improved compared to the past, it is widely known through various sources and studies that the characteristics of chaebol firms, specifically the influence of the founding families, affect corporate governance. Campbell and Keys (2003) find that chaebol firms experienced more frequent management turnover based on the preferences of the founding families, which were unrelated to performance. Furthermore, Lee (1999) points out that minority shareholders could face unfair practices, such as agency problems, due to the ownership structure influenced by the founding families. Additionally, as chaebol firms can exert significant influence on the board of directors and relationships with partner companies, there are distinct differences in corporate governance between chaebol and non-chaebol firms (Park and Yuhn, 2012).

These extraordinary factors could make it difficult for analysts to use governance-related ESG scores to forecast earnings. Therefore, the next hypothesis is:

H3: The relationship between G scores and analyst forecast accuracy will be weaker than E scores and S scores for chaebol firms.

III. DATA AND METHODOLOGY

3.1 Data

In this study, ESG score data is obtained from KCGS, from 2011 to 2020 for over 17,388

firm years across 19 industries. However, 216 observations with non-December fiscal year-end are excluded. EPS, analyst forecast, and control variable data are obtained from either DataGuide or TS2000, depending on availability. After removing 15,080 observations with no analyst forecast (EPS) or control variable data, the remaining sample size used for the research is 2,092. About 85% of initial observations are removed during the procedure, because analyst forecasts are focused on large firms. The sample construction is presented in Table 1.

[Insert Table 1 Here]

3.2 Methodology

The main model of the research is as follows:

$$FORECAST\_ ACCURACY = \alpha + \beta_1 ESG\_SCORE + \beta_2 E\_SCORE + \beta_3 S\_SCORE + \beta_4 G\_SCORE + \beta_5 ROA + \beta_6 SALES\_ASSET + \beta_7 CAPEX\_ASSET + \beta_8 LOSS + \beta_9 LEV + \beta_{10} EMPLOYEENUMBER + \varepsilon$$

The variable FORECAST_ACCURACY represents the absolute difference between analyst forecast on a firm's EPS and the firm's actual EPS. ESG_SCORE is the total ESG score that a firm received from KCGS in year t. Additionally, E_SCORE, S_SCORE, and G_SCORE represent the E score, S score, and G score that a firm received from KCGS, respectively. The accounting variables, including total assets, total liabilities, and net income, are generated from TS2000. Control variables are also generated, including return on assets (ROA), sales to asset (SALES_ASSET), CAPEX to asset (CAPEX_ASSET), a loss dummy (LOSS), leverage (LEV), and total employee number (EMPLOYEENUMBER), which is an additional variable that can measure firm size (Bhat, Hope, and Kang, 2006; Dhaliwal, Radhakrishnan, Tsang, and Yang, 2012; Bernardi and Stark, 2018). The Appendix describes variable definitions, and Table 2 represents the summary of the sample used. Descriptive statistics and Pearson correlation for main categories and subcategories are included.

It is important to note that KCGS rates firms' ESG score based on their previous year activities, and most firms provide information to KCGS from November to May. Most Korean firms

also publish ESG reports between June and July, which are based on their previous year activities. KCGS refers to both the information that firms provide and the ESG report that firms publish and announces ESG scores between August and September. In contrast, analyst forecast data can be announced irregularly. Additionally, using earnings forecast data within a relatively short timeframe ensures that the information is recent and reflects the most up-to-date expectations of analysts. It allows researchers to capture the current market sentiment and expectations regarding a company's future performance. Hence, to ensure the timeliness and relevance of the analyst earnings forecast data, this study exclusively incorporates forecasts announced within 90 days of the annual report's release.

[Insert Table 2 Here]

IV. RESULTS

Table 3 presents the main findings of the study. The four columns test the relationship between analyst forecast accuracy and ESG score, E score, S score, and G score, respectively. The results show significant and negative coefficients for all four scores, supporting the main hypothesis that high ESG score is associated with higher analyst forecast accuracy. It is noteworthy that not only the total score, but also the individual scores (E, S, and G) have a negative relationship with analyst forecast accuracy (coefficients of -2.69, -2.84, -2.49, respectively). This suggests that analysts consider not only the total ESG score but also individual scores when forecasting firms' earnings. The control variables also show significant coefficients. ROA, sales to asset ratio, and leverage have a positive sign, while CAPEX to asset ratio, loss, and the number of employees have a negative sign, which is consistent with prior studies.

[Insert Table 3 Here]

Table 4 presents the results of testing hypothesis 2a and 2b separately for manufacturing

firms (columns 1 to 4) and retail firms (columns 5 to 8). The order of the columns is the same as in Table 3 (ESG score, E score, S score, and G score). The results show that for both manufacturing and retail firms, higher ESG scores lead to better analyst predictions, as seen in columns 1 and 5. However, the relationship between forecast accuracy and E score is significant only for manufacturing firms in column 2, while it is insignificant for retail firms (column 5). This supports hypothesis 2a, which states that the relationship between E scores and analyst forecast accuracy is stronger for manufacturing firms than for retail firms. On the other hand, the relationship between forecast accuracy and G score is significant only for retail firms in column 8, while it is insignificant for manufacturing firms (column 4). This is because firms in the retail industry are more sensitive to governance due to stakeholder pressure, reputation, and brand value. Analysts take this into account when predicting earnings, supporting hypothesis 2b, which states that the relationship between G scores and analyst forecast accuracy is stronger for retail firms than for manufacturing firms.

[Insert Table 4 Here]

Table 5 presents the results of testing hypothesis 3 for chaebol firms (columns 1 to 4) and non-chaebol firms (columns 5 to 8). The results show that E score and S score are negative and statistically significant (-1.60, -1.85, respectively) for chaebol firms, indicating that high ESG scores in these areas help analysts make better predictions. However, the result of G score is negative but statistically insignificant (-1.63), which supports the third hypothesis that the relationship between G score and analyst forecast accuracy will be weaker than E score and S score for chaebol firms. The complex corporate governance practices of chaebol firms could make it difficult for analysts to use G score to forecast earnings (Oh et al., 2011).

In general, chaebol firms' results show higher significance levels than non-chaebol firms. One possible explanation for this is that chaebol firms are relatively larger and have prepared for ESG issues longer than non-chaebol firms. Therefore, analysts are likely to perceive the ESG scores of chaebol firms as more reliable and trustworthy compared to non-chaebol firms, leading them to

incorporate these scores into their earnings forecasts. This is supported by the significant results observed in this study, suggesting that chaebol firms' ESG scores are perceived to have a greater impact on earnings forecasts. Future research can be conducted on this topic.

To verify the absence of overlap with Hypothesis 2, the ratio of manufacturing and retailing companies within chaebol firms is examined. Among the 13 chaebol owners and 55 chaebol-related companies listed in Appendix B, 35 companies are identified as manufacturing companies (approximately 64%), while 20 companies are identified as retailing companies (approximately 36%). Out of a total of 420 observations, there are 258 manufacturing company observations (approximately 61%) and 162 retailing company observations (approximately 39%). Thus, the distribution of chaebol industries does not significantly favor one side, either manufacturing or retailing. Consequently, concerns about overlap with Hypothesis 2 can be alleviated.

Because stakeholders tend to focus more on ESG grades rather than ESG scores, I conduct a parallel analysis using ESG grades instead of ESG scores in Tables 3, 4, 5, and 6. The grades range from A, B, B+, C, to D, and are converted into numerical values from 5 to 1, respectively. The results from this analysis demonstrated similar findings to those obtained using ESG scores in Tables 3, 4, 5, and 6, confirming the robustness of the results (untabulated).

[Insert Table 5 Here]

V. CONCLUSION

It is difficult to explain the current business landscape without considering ESG and CSR. In the past, financial metrics such as revenue, net profit, or asset size represented a company's value, but non-financial indicators related to a company's environment, society, and governance have increasingly become important in evaluating companies. I anticipate that as ESG scores increase, a company's uncertainty would decrease, leading to higher analyst earnings forecast accuracy, and I obtain significant results supporting this hypothesis. Additionally, drawing on the characteristics of the manufacturing industry, which emphasizes environmental aspects, and the retail industry, which

prioritizes governance, I analyze the differences between them and found that analysts consider these industry-specific characteristics and incorporate them into earnings forecasts. Furthermore, considering the unique characteristics of chaebol firms in terms of governance, which are associated with high uncertainty, I anticipate that analysts would have limited predictive assistance, and the results confirmed this expectation.

This study has the following limitations. First, the low credibility of analyst forecasts can affect the reliability of the results. Due to the nature of their profession, analysts maintain close relationships with companies, and their forecast reports can be overly optimistic, potentially influenced by factors that could negatively impact stock prices. This raises doubts about the reliability of their forecasts, which are used as the main dependent variable in this study. Second, the credibility of ESG scores is a limitation. The rationality of ESG scores and the effectiveness of evaluation methods, including variations in scores among ESG rating agencies, can also impact the study.

Notwithstanding these limitations, this research offers valuable contributions. It presents empirical evidence establishing a connection between non-financial indicators, particularly ESG factors, and financial performance indicators. While the importance of ESG in fostering a sustainable society is widely acknowledged, its influence on financial outcomes has received less attention. By demonstrating the significant impact of ESG scores on analysts' earnings forecasts, this study highlights the financial implications of ESG factors. Consequently, it provides compelling evidence that counters recent doubts regarding the effectiveness of ESG considerations.

RERFERENCES

Almeyda, Raisa, and Asep Darmansya. "The influence of environmental, social, and governance (ESG) disclosure on firm financial performance." IPTEK Journal of Proceedings Series 5 (2019): 278-290.

Asia Time. “Kim So-Young, Deputy Chairman, ‘Considering the Mandatory Implementation of “ESG Disclosure” for Large Kosdaq Companies.’” 12 May 2023.

Barnett, Michael L., and Robert M. Salomon. "Does it pay to be really good? Addressing the shape of the relationship between social and financial performance." Strategic management journal 33.11 (2012): 1304-1320.

Becchetti, Leonardo, and Jaime Sierra. "Bankruptcy risk and productive efficiency in manufacturing firms." Journal of banking & finance 27.11 (2003): 2099-2120.

Bernardi, Cristiana, and Andrew W. Stark. "Environmental, social and governance disclosure, integrated reporting, and the accuracy of analyst forecasts." The British accounting review 50.1 (2018): 16-31.

Bhat, Gauri, Ole-Kristian Hope, and Tony Kang. "Does corporate governance transparency affect the accuracy of analyst forecasts?." Accounting & Finance 46.5 (2006): 715-732.

Braun, Boris, and Reinhold Grotz. "Environmental management in manufacturing industry: A comparison between British and German firms." Technological change and regional development in Europe (2002): 273-292.

Brown, Lawrence D. "A temporal analysis of earnings surprises: Profits versus losses." Journal of accounting research 39.2 (2001): 221-241.

Campbell II, Terry L., and Phyllis Y. Keys. "Corporate governance in South Korea: the chaebol experience." Journal of corporate Finance 8.4 (2002): 373-391.

Choi, Jong Hag. (by Professor Choi Jong-Hag from Seoul National University) Managing by Numbers / Choi JH (2009). Print.

Christensen, Dane M., George Serafeim, and Anywhere Sikochi. "Why is corporate virtue in the eye of the beholder? The case of ESG ratings." The Accounting Review 97.1 (2022): 147-175.

Cleary, Sean. "The relationship between firm investment and financial status." The journal of finance 54.2 (1999): 673-692.

Cohen, Jeffrey, et al. "Retail investors’ perceptions of the decision-usefulness of economic performance, governance, and corporate social responsibility disclosures." Behavioral Research in Accounting 23.1 (2011): 109-129.

Das, Somnath, Philipp D. Schaberl, and Pradyot K. Sen. "Analysts’ use of dividends in earnings forecasts." Review of Accounting Studies (2022): 1-43.

Dawley, David D., James J. Hoffman, and Bruce T. Lamont. "Choice situation, refocusing, and post-bankruptcy performance." Journal of Management 28.5 (2002): 695-717.

Degeorge, Francois, Jayendu Patel, and Richard Zeckhauser. "Earnings management to exceed thresholds." The journal of business 72.1 (1999): 1-33.

Dhaliwal, Dan S., et al. "Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure." The accounting review 87.3 (2012): 723-759.

Dugar, Amitabh, and Siva Nathan. "The effect of investment banking relationships on financial analysts' earnings forecasts and investment recommendations." Contemporary accounting research 12.1 (1995): 131-160.

Eames, Michael J., and Steven M. Glover. "Earnings predictability and the direction of analysts' earnings forecast errors." The accounting review 78.3 (2003): 707-724.

ESG Assets May Hit $53 Trillion by 2025, a Third of Global Aum | Insights | Bloomberg Professional Services. Bloomberg.Com, 23 Mar. 2021, www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/.

Giese, Guido, et al. "Foundations of ESG investing: How ESG affects equity valuation, risk, and performance." The Journal of Portfolio Management 45.5 (2019): 69-83.

Green, Jessica F. "Does carbon pricing reduce emissions? A review of ex-post analyses." Environmental Research Letters 16.4 (2021): 043004.

Groysberg, Boris, et al. "What factors drive analyst forecasts?." Financial Analysts Journal 67.4 (2011): 18-29.

Henriques, Irene, and Perry Sadorsky. "The determinants of an environmentally responsive firm: An empirical approach." Journal of environmental economics and management 30.3 (1996): 381-395.

Jiao, Yawen. "Stakeholder welfare and firm value." Journal of Banking & Finance 34.10 (2010): 2549-2561.

Jiraporn, Pornsit, et al. "Does corporate social responsibility (CSR) improve credit ratings? Evidence from geographic identification." Financial Management 43.3 (2014): 505-531.

Kaplan, Steven N., and Bernadette Minton. "How has CEO turnover changed? Increasingly performance sensitive boards and increasingly uneasy CEOs." (2006).

Kim, Yongtae, Haidan Li, and Siqi Li. "Corporate social responsibility and stock price crash risk." Journal of Banking & Finance 43 (2014): 1-13.

Kimbrough, Michael D., et al. "Does voluntary ESG reporting resolve disagreement among ESG rating agencies?." European Accounting Review (2022): 1-33.

Klenert, David, et al. "Making carbon pricing work for citizens." Nature Climate Change 8.8 (2018): 669-677.

Korea Sustainability Investing Forum, pp. 1–32, “2022 Korean ESG Finance White Paper: Embarking on the Journey of Sustainable Finance.”

Lee Eunchul and Li WanYong. "What is an appropriate proxy for expected earnings in the Korean stock market? - A comparison between the random walk model and analyst forecast model." Journal of Korean Academy of Management 19 (2006): 909-932.

Lee, Keun. "Corporate Governance and Growth in the Korean Chaebols: A Microeconomic Foundation for the 1997 Crisis." Seoul National University (1999).

LPL Morningstar. “Sustainable Investing Year in Review from LPL Research.” Sustainable Investing Year in Review from LPL Research, 31 Jan. 2022

Matsumoto, Dawn A. "Management's incentives to avoid negative earnings surprises." The accounting review 77.3 (2002): 483-514.

Mishra, Supriti, and Damodar Suar. "Does corporate social responsibility influence firm performance of Indian companies?." Journal of business ethics 95 (2010): 571-601.

Monks, Robert AG, and Nell Minow. Corporate governance. John Wiley & Sons, 2011.

Murphy, Kevin J., and Jerold L. Zimmerman. "Financial performance surrounding CEO turnover." Journal of Accounting and Economics 16.1-3 (1993): 273-315.

Oh, Won Yong, Young Kyun Chang, and Aleksey Martynov. "The effect of ownership structure on corporate social responsibility: Empirical evidence from Korea." Journal of business ethics 104 (2011): 283-297.

Park, Seung-Rok, and Ky-hyang Yuhn. "Has the Korean chaebol model succeeded?." Journal of Economic Studies 39.2 (2012): 260-274.

Ramnath, Sundaresh, Steve Rock, and Philip Shane. "The financial analyst forecasting literature: A taxonomy with suggestions for further research." International Journal of Forecasting 24.1 (2008): 34-75.

Ruiz-Tagle, María Teresa. Why do Manufacturing Plants Invest in Environmental Management?. No. 20.2006. University of Cambridge, Department of Land Economics, 2006.

Sassen, Remmer, Anne-Kathrin Hinze, and Inga Hardeck. "Impact of ESG factors on firm risk in Europe." Journal of business economics 86 (2016): 867-904.

Serafeim, George, and Aaron Yoon. "Stock price reactions to ESG news: The role of ESG ratings and disagreement." Review of accounting studies (2022): 1-31.

Shleifer, Andrei, and Robert W. Vishny. "A survey of corporate governance." The journal of finance 52.2 (1997): 737-783.

Short, Jodi L., and Michael W. Toffel. "Making self-regulation more than merely symbolic: The critical role of the legal environment." Administrative Science Quarterly 55.3 (2010): 361-396.

We Will Pursue Measures to Reduce the Burden on Businesses While Enhancing Investor Protection through Improvements in the Corporate Disclosure System., Financial Services Commission, 14 Jan. 2021.

Shim Ho-Seok, and Choi Jong-Seo. "Beating Financial Analyst Earnings Forecasts: Earnings/Expectations Management." Korean Accounting Journal 20.4(2011):91-121.

https://www.fsc.go.kr/no010101/75176?srchCtgry=&curPage=1&srchKey=&srchText=&srchBeginDt=&srchEndDt.

Appendix A

Variable definitions

Variables	Definition
DIFFERENCE	Analyst forecast earnings per share – Actual earnings per share;
ESG_SCORE	ESG total score;
E_SCORE	Environment score;
S_SCORE	Social score;
G_SCORE	Governance score;
ROA	Net income to total assets;
SALES_ASSET	Total sales to total assets;
CAPEX_ASSET	CAPEX to total assets;
LOSS	Dummy variable equal to 1 if ROA is negative and zero otherwise;
LEVERAGE	Total liabilities to total assets;
EMPLOYEENUMBER	Total firm-level employee number

Appendix B

List of chaebol firms

Chaebol	Related firm
CJ	CJ Inc., CJ CGV, CJ E&M, CJ Cheiljedang
Doosan	Doosan Group, Doosan E&C, Doosan Infracore, Doosan Enerbility
GS	GS Holdings, GS E&C, GS Retail, GS Home shopping
Hanhwa	Hanhwa Inc., Hanhwa Chemical, Hanhwa Life, Hanwha Aerospace, Hanwha Galleria Timeworld
Hanjin	Hanjin Inc., Hanjin Kal, Hanjin E&C, Hanjin Shipping
Hyosung	Hyosung ITX, Hyosung Chemical
Hyundai	Hyundai Motors, Hyundai Mobis, Hyundai department store, Hyundai E&C, Hyundai Mipo Dockyard, Hyundai Home shopping, Hyundai Greenfood, Handsome, Hyundai Heavy Industries, Hyundai Development Company, HDC Labs
Kumho	Kumho Asiana, Kumho Electric, Kumho Tire
LG	LG Electronics, LG Display, LG Chem
LS	LS Holdings, LS Networks, LS Electric, LS CNS Asia
Samsung	Samsung Electronics, Samsung SDI, Samsung Engineering, Samsung C&T
Shinsegae	Shinsegae Inc., Shinsegae International, Shinsegae Food, Gwangju Shinsegae
SK	SK Inc., SK Telecom, SK Hynix

TABLE 1

Sample construction

Description	No. of observations
Initial observations from 2011 to 2020 (KOSPI + KOSDAQ)	17,388
Exclusion:	
Non-December fiscal year-end	216
Missing observations for analyst forecast	14,915
Missing observations for control variables	165
Final observations	2,092

TABLE 2

Summary of the sample used

Panel A: Descriptive statistics

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
FORECAST_ACCURACY	2,092	3.17	1.60	1.69	2.57	3.24
ESG_SCORE	2,092	3.10	0.98	2.40	3.00	3.75
E_SCORE	2,092	37.04	24.52	15.33	37.67	55.22
S_SCORE	2,092	36.15	19.78	21.65	30.33	48.00
G_SCORE	2,092	32.17	10.61	24.33	31.33	38.33
ROA	2,092	0.04	0.05	0.01	0.04	0.06
SALES_ASSET	2,092	0.96	0.44	0.65	0.88	1.17
CAPEX_ASSET	2,092	0.05	0.04	0.01	0.03	0.07
LOSS	2,092	0.13	0.33	0.00	0.00	0.00
LEVERAGE	2,092	0.46	0.18	0.30	0.48	0.60
EMPLOYEENUMBER	2,092	2549	4822	366	860	2582

Panel B: Pearson correlation: Main Categories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) ESG_SCORE	1.00									
(2) E_SCORE	0.66*	1.00								
(3) S_SCORE	0.80*	0.70*	1.00							
(4) G_SCORE	0.63*	0.39*	0.56*	1.00						
(5) ROA	-0.16*	-0.14*	-0.13*	-0.03*	1.00					
(6) SALES_ASSET	0.05*	0.09*	0.05*	0.02	0.10*	1.00				
(7) CAPEX_ASSET	-0.002	0.13*	0.09*	0.02	0.14*	0.03	1.00			
(8) LOSS	0.06*	0.08*	0.05*	0.005	-0.60*	-0.08*	-0.08*	1.00		
(9) LEVERAGE	0.20	0.25*	0.24*	0.11*	-0.50*	0.18*	-0.01	0.27*	1.00	
(10) EMPLOYEENUMBER	0.43*	0.45	0.51*	0.30*	-0.09*	-0.01	0.15*	0.07*	0.16*	1.00

* Denotes statistical significance at 0.05 or greater level.

Panel C: Pearson correlation: Subcategories

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) ESG_SCORE	1.00													
(2) E_STRATEGY	0.62*	1.00												
(3) E_ORG	0.64*	0.85*	1.00											
(4) E_MGT	0.62*	0.80*	0.89*	1.00										
(5) E_OUTCOME	0.61*	0.44*	0.57*	0.70*	1.00									
(6) E_STAKEHOLDER	0.68*	0.61*	0.68*	0.76*	0.63*	1.00								
(7) S_EMPLOYEE	0.73*	0.53*	0.60*	0.69*	0.64*	0.69	1.00							
(8) S_PARTNER	0.77*	0.49*	0.54*	0.62*	0.63*	0.66*	0.81*	1.00						
(9) S_CONSUMER	0.65*	0.46*	0.52*	0.55*	0.55*	0.54*	0.70*	0.68*	1.00					
(10) S_LOCAL	0.73*	0.42*	0.47*	0.54*	0.63*	0.60*	0.74*	0.78*	0.69*	1.00				
(11) G_OWERRIGHT	0.33*	0.03	0.14*	0.22*	0.36*	0.11*	0.24*	0.31*	0.23*	0.33*	1.00			
(12) G_BOD	0.64*	0.29*	0.35*	0.40*	0.57*	0.43*	0.55*	0.62*	0.51*	0.67*	0.46*	1.00		
(13) G_DISCLOSURE	0.67*	0.32*	0.33*	0.45*	0.48*	0.47*	0.60*	0.64*	0.56*	0.64*	0.28*	0.64*	1.00	
(14) G_ AUDITCOMM	0.58*	0.28*	0.31*	0.37*	0.41*	0.40*	0.47*	0.55*	0.40*	0.49*	0.28*	0.57*	0.45*	1.00

* Denotes statistical significance at 0.05 or greater level.

TABLE 3
ESG Score and Analyst Forecast Accuracy

Dependent variable = FORECAST_ACCURACY

	Pooled Sample			
Variables	(1)	(2)	(3)	(4)
Intercept	3.08**	3.02**	3.13***	2.80
	(2.41)	(2.17)	(2.55)	(1.28)
ESG_SCORE	**-2.70*****	-	-	-
	(-4.01)			
E_SCORE	-	**-2.69*****	-	-
		(-3.38)		
S_SCORE	-	-	**-2.84*****	-
			(-4.98)	
G_SCORE	-	-	-	**-2.49****
				(-2.15)
ROA	2.40**	2.43**	2.41**	2.45**
	(2.11)	(2.22)	(2.14)	(2.31)
SALES_ASSET	2.44**	2.46**	2.43**	2.42**
	(2.38)	(2.46)	(2.35)	(2.26)
CAPEX_ASSET	-2.37**	-2.34**	-2.31**	-2.35**
	(-2.45)	(-2.31)	(-2.23)	(-2.35)
LOSS	-2.53***	-2.50***	-2.53***	-2.51***
	(-2.86)	(-2.68)	(-2.90)	(-2.74)
LEVERAGE	2.42**	2.40**	2.48***	2.34*
	(2.27)	(2.18)	(2.58)	(1.88)
EMPLOYEENUMBER	-2.65***	-2.67***	-2.51**	-2.75***
	(-2.98)	(-3.08)	(-2.06)	(-3.94)
Year	Included	Included	Included	Included
Industry	Included	Included	Included	Included
Observations	2,092	2,092	2,092	2,092
Adjusted R^2	0.152	0.149	0.160	0.145

TABLE 4
ESG Score and Analyst Forecast Accuracy by Industry

Dependent variable = FORECAST_ACCURACY

	Manufacturing				Retail			
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-2.64	-3.10**	-3.01*	-3.16*	-2.88	-3.35***	-3.14**	-2.98
	(-0.63)	(-2.42)	(-1.79)	(-1.86)	(-0.94)	(-4.00)	(-2.19)	(-1.13)
ESG_SCORE	**-2.71*** **	-	-	-	**-2.65** **	-	-	-
	(-3.27)				**(-2.23)**			
E_SCORE	-	**-1.43*** **	-	-	-	**-1.00**	-	-
		(-4.09)				**(-1.12)**		
S_SCORE	-	-	**-1.53*** **	-	-	-	**-1.52*** **	-
			(-3.83)				**(-2.92)**	
G_SCORE	-	-	-	**-1.26**	-	-	-	**-1.50***
				(-1.13)				**(-1.69)**
ROA	3.91***	3.89**	3.93***	3.94***	3.73	3.81*	3.75	3.76*
	(2.55)	(2.40)	(2.61)	(2.67)	(1.48)	(1.77)	(1.53)	(1.63)
SALES_ASSET	2.43	2.46	2.36	2.39	2.81**	2.78**	2.84**	2.78**
	(1.01)	(1.09)	(0.88)	(0.92)	(2.24)	(2.12)	(2.40)	(2.12)
CAPEX_ASSET	-3.41	-3.31	-3.35	-3.38	2.48	2.76	3.03	1.97
	(-0.94)	(-0.76)	(-0.83)	(-0.88)	(0.10)	(0.18)	(0.34)	(0.03)
LOSS	-2.31	-2.31	-2.22	-2.41	-2.78	-2.68	-2.78	-2.74
	(-0.48)	(-0.49)	(-0.39)	(-0.60)	(-1.01)	(-0.79)	(-1.00)	(-0.91)
LEVERAGE	2.81	2.81	2.92	2.54	3.06	3.09	3.15**	2.94
	(0.85)	(0.86)	(1.10)	(0.45)	(1.33)	(1.41)	(1.62)	(1.00)
EMPLOYEENUMBER	-1.05**	-1.03**	-1.15*	-0.89***	-1.30	-1.22	-1.52	-1.17
	(-2.54)	(-2.44)	(-1.69)	(-3.57)	(-0.90)	(-1.06)	(-0.63)	(-1.20)
Year	Included	Included	Included	Included	Included	Included	Included	Included
Industry	Not Included	Not Included	Not Included	Not Included	Not Included	Not Included	Not Included	Not Included
Observations	1,340	1,340	1,340	1,340	752	752	752	752
Adjusted R^2	0.075	0.080	0.084	0.066	0.069	0.061	0.080	0.064

TABLE 5
ESG Score and Analyst Forecast Accuracy of Chaebol and Non-Chaebol Firms

Dependent variable = FORECAST_ACCURACY

	Chaebol				Non-Chaebol			
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-3.22	-3.76**	-3.39	-3.52	3.16*	3.05	3.15*	2.98
	(-0.57)	(-2.27)	(-0.93)	(-0.97)	(1.61)	(1.53)	(1.74)	(1.06)
ESG_SCORE	**-3.05*****	-	-	-	**-2.21**	-	-	-
	(-3.10)				**(-1.13)**			
E_SCORE	-	**-1.60****	-	-	-	**-0.78**	-	-
		(-2.42)				**(-0.95)**		
S_SCORE	-	-	**-1.85*****	-	-	-	**-1.10**	-
			(-4.23)				**(-1.53)**	
G_SCORE	-	-	-	**-1.63**	-	-	-	**-0.56**
				(-1.18)				**(-0.23)**
ROA	4.50***	4.50***	4.51***	4.48***	3.52	3.53	3.51	3.54
	(2.95)	(3.01)	(3.09)	(2.80)	(1.33)	(1.35)	(1.32)	(1.40)
SALES_ASSET	-2.00	-2.77	-2.50	-1.86	-2.85***	-2.84***	-2.85***	-2.82**
	(-0.10)	(-0.18)	(-0.33)	(-0.07)	(2.63)	(2.65)	(2.69)	(2.54)
CAPEX_ASSET	-4.05	-4.04	-3.92	-3.99	-3.84***	-3.83***	-3.83***	-3.82***
	(-1.20)	(-1.21)	(-0.95)	(-1.05)	(-3.13)	(-3.07)	(-3.07)	(-3.06)
LOSS	-2.87	-2.77	-2.96	-2.77	-3.02***	-3.01***	-3.02***	-3.01***
	(-0.79)	(-0.63)	(-0.98)	(-0.63)	(-2.78)	(-2.75)	(-2.78)	(-2.76)
LEVERAGE	3.82**	3.90***	3.87***	3.77**	2.77	2.74	2.80	2.73
	(2.52)	(2.76)	(2.87)	(2.19)	(0.88)	(0.83)	(0.95)	(0.80)
EMPLOYEENUMBER	-1.68	-2.04	-2.06	-1.36	-0.69**	-0.70**	-0.71**	-0.65**
	(-0.40)	(-0.17)	(0.17)	(-0.83)	(-2.25)	(-2.21)	(-2.09)	(-2.52)
Year	Included	Included	Included	Included	Included	Included	Included	Included
Industry	Included	Included	Included	Included	Included	Included	Included	Included
Observations	420	420	420	420	1,672	1,672	1,672	1,672
Adjusted R^2	0.201	0.092	0.084	0.183	0.166	0.165	0.167	0.164

국문 초록

ESG 점수가 애널리스트 예측 정확도에 미치는 영향: 한국시장을 중심으로

본 연구는 KCGS ESG 데이터를 활용하여, 2011년부터 2020년까지 국내 기업들의 ESG 점수와 애널리스트의 이익 예측 정확도 사이의 관계를 조사했다. 그 결과 기업의 ESG 점수가 증가함에 따라, 애널리스트의 이익 예측 정확도 역시 증가하는 경향을 발견했다. 또한 산업별 ESG 우선순위가 애널리스트들이 이익 예측을 할 때 고려되어, 예측 정확도에 변동성이 있음을 관찰했다. 추가적으로, 지배구조 관련 점수와 애널리스트의 이익 예측 정확도 사이의 관계가 재벌 기업에서는 더 약하다는 것으로 나타났다. 이러한 결과들은 비금융 지표인 ESG와 금융 지표 사이의 관계에 대한 증거를 제공한다.

주요어: ESG; CSR; 애널리스트 예측 정확도; 불확실성; 지속가능성
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