SUSTAINABILITY PERFORMANCE AND CORPORATE FINANCIAL PERFORMANCE: EVIDENCE FROM THE G20 COUNTRIES

by

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Dalhousie University is located in Mi'kma'ki, the
ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

Table of Contents

List of Tables

Abstract

This study analyzes the relationship between sustainability and financial performance in a sample of G20 firms over a decade (2010-2021), while controlling for relevant variables. Results show a positive bidirectional relationship between sustainability and accounting-based financial performance, particularly during the COVID-19 pandemic. The study also examines the moderating effects of ESG-related compensation policies and CSR sustainability committees. It finds that ESG-related compensation policies positively moderate the relationship between sustainability and financial performance, while CSR sustainability committees positively moderate the impact of financial performance on sustainability performance and negatively moderate the effect of sustainability on financial performance. Furthermore, the study expands on the sustainability-CFP relationship by examining heavily polluted and less polluted industries and the Fama & French five industry sectors. It indicates that the positive bidirectional relationship between sustainability and financial performance is stronger for heavily polluted industries, and the relationship varies across industry sectors.

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Chapter 1 Introduction

Over the past few decades, sustainability and environmental-social-governance concerns have gained significant importance in business. The concept of ESG/CSR originates from ethical investment during the rise of religion. Adherents to some religions refuse to invest in industries contrary to their religious beliefs (e.g., earning profits from arms, tobacco, and slave trade), and the investment behaviour of believers is restricted and regulated by these social standards. In the 1960s, Rachel Carson's *Silent Spring* inspired anti-war protests, human rights movements, environmental protection movements, and anti-apartheid boycotts worldwide. Some investors began to express their values and demands in line with these movements through their investment behaviours, thus giving birth to the modern concept of socially responsible investment. In the 1990s, socially responsible investment transited from the moral aspect to the investment strategy aspect, incorporating firm-specific ESG/CSR performance into the investment decision-making process.

The rise of responsible investing and stakeholder pressure has led to increased recognition of ESG performance's potential impact on corporate financial performance. To address this context, this thesis explores the ESG-CFP association for a sample of G20 countries over the period 2010–2021. The primary objective of this research is to provide a comprehensive understanding of the ESG-CFP relationship, which could guide policymakers, investors, and the decision-making process of companies. Previous studies have produced mixed results on the ESG-CFP association, with some reporting a positive relationship and others reporting a negative impact. Some scholars even find a non-linear relationship between ESG and financial performance and some find positive bidirectional relationship. These mixed results indicate that the ESG-CFP association might vary depending on circumstantial factors such as the study

period, the region under examination, industry characteristics, and business regulatory environment. This study aims to shed light on this issue by examining the ESG-CFP relationship under several moderators and across different industry sectors. Furthermore, the unprecedented events of the coronavirus pandemic have highlighted the need to investigate whether the ESG-CFP association varies during the crisis, as the COVID period exposed the vulnerabilities of firms and emphasized the demand for companies to prioritize sustainability and ESG factors. As such, this study also aims to provide insights into the ESG-CFP association, which might be conducive to firms' crisis management strategies.

According to a recent paper on corporate social responsibility and sustainable finance by Liang and Renneboog (2020), the terms ESG (Environment, Social, and Governance) and CSR (Corporate Social Responsibility) are often used interchangeably in the literature, although there are fine distinctions between these two concepts. In my thesis, both terms are used to refer to a company's efforts to consider and address its impact on the environment, society, and governance issues. Moreover, Liang and Renneboog (2020) point out that the governance dimension is somehow ambiguous in the context of CSR, due to its traditional reference to corporate governance measures to enhance shareholders' value and its new mission of ensuring diversity and inclusion. Hence, the empirical investigation of my thesis puts more emphasis on sustainability performance as measured by environmental dimension and social dimension.

The thesis is structured as follows: Section 2 offers a review of the literature and develops the hypotheses. Section 3 discusses data and methodology employed. Section 4 presents empirical findings, and Section 5 concludes.

Chapter 2 Literature Review and Hypothesis Development

2.1 ESG/CSR and Firm Financial Performance and Value

The relationship between firms' CSR performance and firm financial performance is one of the most debated research areas in the literature related to sustainable finance and investment. This section will review several common theories that can potentially explain the causal effect of ESG/CSR on firm value, along with some representative literature published in the past.

A meta-analysis of available literature in the area of corporate finance (de Villiers et al., 2022) reveals the theories of 285 studies using Thomson Reuters Asset4 data. Among the total of 32 theories, stakeholder, agency, institutional, and legitimacy are the four most frequently used. Resource-based view, resource dependence theory, and voluntary disclosure theory also gain considerable exposure. Stakeholder theory suggests that the firm's managers should act to maximize shareholders' wealth subject to considering the interest of other stakeholders inside and outside the firm for its going concern (Freeman, 2011). Therefore, firms with better ESG/CSR performance have better external reputations, leading to better financial performance. Jensen and Meckling (1979) formalized the approach to principal-agent problems. From their agency perspective, managers might consider corporate goodness as a way to pursue private benefits at the expense of shareholders or the firm. Their view supports a negative association between ESG/CSR and firm value.

Any organization's behaviour runs in the framework of the social system, and only firms that conform to its rules can survive. The pressure from the institutional environment and impacting firms' going concerns are defined as firms' institutional pressure (Goodrick & Salancik, 1996). Based on institutional theory, early respondents to society's call for corporate social responsibility, at least in the short term, are expected to gain product market benefits

(increased customer stickiness and more diverse products), capital market benefits (higher market return, lower cost of capital, reduced information asymmetry), employee benefits (higher morale, job satisfaction, and productivity), regulatory benefits (decreased lawsuit cost, more positive media exposure, and better regulatory treatment), and operational benefits (higher management quality and better brand image), bringing about higher valuation (Malik, 2015). Therefore, a positive relationship between sustainability and financial performance can be postulated from the institutional theory.

Legitimacy is "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995, p. 574). Legitimacy theory explains organizational behaviours in implementing and developing voluntary ESG/CSR information disclosure, enabling them to fulfill the social contract and survive the uncertainty (Schiopoiu Burlea & Popa, 2013). On the contrary, firms with a paucity of legitimacy would experience downward pressure on their profitability, eventually leading to a loss of competitive advantage (Hybels, 1995). Hence, firms' worse ESG/CSR performance should directly contribute to weaker financial performance, and this impact should be more intense during crises.

The resource-based view established by Barney (1991) suggests that it is the strategic resources heterogeneously distributed across firms that give them a sustained competitive advantage. These differences in firm resources remain stable even in the long term. Barney (1991) further delineates the features of such resources in three dimensions: (1) valuable resources, allowing firms to conceive of or implement strategies for boosting firm efficiency; (2) rare resources, which enable companies can carry out specific strategies that others are unable to do; and (3) imperfectly imitable resources, featuring one or more of the following: (a) unique

history condition, namely certain historical events triggering the firm's subsequent actions on its strategies; (b) causal ambiguity, when the association between a firm's resources and its sustained competitive advantage is not fully understood; and (c) socially complexity, the typical examples of which might be interpersonal relationships among the management team and how the firm communicates its reputation to outside stakeholders such as customers and suppliers. From the resource-based perspective, a positive synergy can be predicted for the ESG-CFP relationship because sustainability initiatives can now be seen as investments in a firm's reputation in the public eye. Investments in CSR initiatives may be conducive to firms' development of new competencies and resources, reflected in firms' culture, organizational structure, human capital, and managerial competencies (Gonenc & Scholtens, 2017).

Resource dependence theory originated in 1978 and was formalized in Pfeffer and Salancik (2003) with the fundamental assumption that the going concern is something organizations worry about most, and organizations have to interact with the environment in which they operate to procure the resources they need, rather than acquiring them themselves. The theory suggests that organizations depend on others in the same environment to barter resources. To guarantee the reliability and stability of the resources, firms need to interact with the environment to fight for more resources consistently, and the rareness of the resources determines firms' reliance on the environment. In the process of interacting with the external environment, organizations with more or scarcer resources are more independent. However, from a different angle, organizations that attain more/rarer resources from the exterior environment can also be more dependent, exposing them to more constraints and risks. Thus, both the positive and negative impact of ESG/CSR practices on firm value can be displayed. Firms that proactively invest in ESG projects such as eco-friendly technology might reduce their reliance on

traditional energy, which leads to fewer constraints and risk for the firm; if firms invest in ESG projects that are expected to pay off in the very long run, however, financial performance and firm value might be compromised in the near and middle term.

Under the voluntary disclosure theory proposed by Dye (1985) and Verrecchia (1983), a firm's ESG/CSR performance can be considered the predictor of its disclosure quality. This is because a firm with outperformance in ESG might disclose its ESG activities more aggressively to further differentiate itself from the low ESG performers (Akerlof, 1970). In contrast, a firm with low ESG performance is prone to intentionally disclose less because shareholders may perceive the lower disclosure as unduly costly, jeopardizing their interests (Fatemi et al., 2018). Consequently, ESG/CSR engagement might positively affect the firm value through reinforced ESG disclosure. However, it is also possible that a firm discloses more ESG information to manage investors' perception of its CSR performance by elaborating on what caused its change in CSR performance. The archetypical example is that a firm enhances its ESG reporting to neutralize the negative influence of its ESG controversy on its reputation and market capitalization (Campbell et al., 2003; Deegan, 2002). A negative relationship between financial and ESG/CSR performance might be drawn from this point.

So far, several common theories have been discussed that help make inferences about the ESG-CFP relation. Further review of the extant literature on this topic is presented below.

2.1.1 Positive Effects

With a sample of 2,445 firms in North America during the period 2003–2010, El Ghoul et al. (2017) examine the ESG-CFP relation in the absence of market-supporting institutions and find the value-creation role of CSR initiatives is better played in countries with higher institutional voids (i.e., lack of market mechanisms that can lower the transaction costs). In their

theoretical framework, institutional voids are characterized by inefficient capital markets, lack of

business freedom, and unsound legal systems and property rights. Lacking these will cause firms

to face more significant transaction costs (e.g., agency costs and asymmetric information,

compliance costs and investment risks, and contracting costs), further limiting access to

resources. CSR is the key in this logic chain because CSR outperformance is anticipated to

reduce the types of transaction costs mentioned above and provide firms with excess growth

through external financing, the chance of survival, and future sales growth.

Another ESG-CFP study by Buchanan et al. (2018) separates the sample of Russell 3000

firms according to whether the firm-year observations were before or after the 2007–2008

financial crisis and based on the percentage of influential institutional ownership. They confirm

that CSR firms had more firm value before the crisis. However, their loss in valuation was more

significant during the global financial crisis (GFC), corroborating the overinvestment theory that

managers are more likely to waste money for their own benefit during the turmoil. When

bringing the influential institutional ownership variable into the regression models, it is evident

that the positive effect of CSR is higher for firms with lower institutional ownership, supporting

the CSR conflict-resolution theory that higher firm value is the consequence of better CSR

performance, as it is in favour of mitigating conflicts between managers and stakeholders,

enhancing firm reputation, and boosting profitability.

Inspired by a series of "doing well by doing good" studies (e.g., Bénabou & Tirole,

2010; Heal, 2005), Hong et al. (2012) study the reverse direction of ESG-CFP relationship by

using the financial constraint variable as a proxy for financial slack. They discover that less

financially constrained firms spend more on corporate goodness and have higher KLD scores.

Additionally, they consider the Internet bubble of 1996–2000 as an exogenous variation in the

firms' financial constraints and confirm the spillover effects of the valuation of technology firms. In other words, the overvaluation spread to non-technology firms, giving previously constrained firms a respite, as a consequence of which they have better performance in terms of ESG/CSR. Their study verifies a positive (negative) relationship between firm financial flexibility (financial constraints) and CSR performance.

A systematic review of ESG and CSR research in corporate finance summarizes that all the different mechanisms through which ESG/CSR activities create value for companies fall into one of the following categories (Gillan et al., 2021). The first category is increasing shareholders' wealth by injecting more positive cashflows into the firm (Borghesi et al., 2014) and lowering the discount rate (Hoepner et al., 2016; Ilhan et al., 2021). For example, customers would be more likely to buy goods and services from high CSR firms than firms refusing to undertake social responsibilities; employees working for ethical firms can acquire a sense of belonging and become more productive; and information asymmetry can be eased for firms to have more access to external capital. Second, the value-creating role of ESG/CSR initiatives can be interpreted that shareholders have more utility when holding more shares of high CSR firms, even if these firms have the same level of cashflows as firms with less CSR performance.

2.1.2 Negative Effects

Although, according to Friede et al. (2015), approximately 90% of research in the fields of management, accounting, finance, and economics document non-negative ESG-CFP relations, several studies report significantly negative associations between ESG and a variety of firm financial performance measures. Di Giuli and Kostovetsky (2014) expand the ESG-CFP study in the context of U.S. political parties and show that Democratic-leaning firms, compared to Republican-leaning firms, spend more on CSR activities. However, such spending fails to be

covered by increased sales revenue, contradicting several abovementioned studies. When regressing the firm financial performance (measured by stock return and ROA) on the KLD rating, they find a significantly negative coefficient, implying the benefits created from CSR activities for stakeholders are to the detriment of firm value.

Masulis and Reza (2015) explore the link between corporate philanthropy (i.e., firm charity donation) and firm value based on two competing hypotheses that corporate giving creates firm value because firms can build reputations among non-investing stakeholders (shareholder wealth maximization theory), while it can also hurt the firm value if managers of the firm use corporate funds to support their charity preferences and expand their social networks (agency theory). Their study discloses that as corporate donation increases, investors adjust the valuation of firms' cash holding downward because the internal cash enables firms to mitigate extra transaction costs by lowering information barriers when financing externally. It is also pointed out that firms with a non-independent board will exacerbate this negative impact.

2.1.3 Insignificant or Ambiguous Effects

Many prior studies on the "virtuous circle" effects of ESG-CFP relations show that increased CSR leads to better firm performance and vice versa (e.g., Hillman & Keim, 2001; McGuire et al., 1988; Waddock & Graves, 1997). Nelling and Webb (2009), however, use alternative statistical techniques (e.g., Granger causality and Tobit specification for models) and a narrower measure of firm social performance to test the "virtuous circle further." The result shows that the positive ESG-CFP relations are much weaker than those investigated in previous studies that use standard OLS regression models.

Using a sample of UK firms and the ESG ratings from Sustainability Asset Management Group GmbH, Humphrey et al. (2012) find no significant relationship between the risk-adjusted

performance (in terms of cost of capital) of firms and their ESG performance. They suggest that managers of these firms might be able to "implement an ESG strategy without incurring any high financial cost (or benefit) in terms of risk or return" (p. 638). This also reassures institutional investors with mandates to integrate ESG factors into their investment processes.

Lu et al. (2022) found a positive bidirectional relationship in their sample of G7 countries between 2004 and 2020 that ceteris paribus, firms with better past sustainability performance, measured as the average of Refinitiv's environmental and social pillar scores, have better current financial performance, which in turn positively contributes to sustainability performance in the future. Their result further supports good management theory and slack resources theory.

Through careful reviews of past ESG-CFP studies, where positive relationships have been documented more frequently than negative or insignificant ones, and following Lu et al. (2022), the first hypothesis is as follows:

H1 (a). There is a positive bidirectional ESG-CFP relationship.

In other words, firms with better environmental performance, social performance, and the average of them would have better financial performance in the future, and firms with better financial performance would have better subsequent ESG performance.

2.2 ESG/CSR and Firm Financial Performance and Value during COVID-19

Many studies have examined how the GFC affected the ESG-CFP relationships. Lins et al. (2017), for example, substantiates that U.S. firms' social capital, as measured by firm CSR intensity, paid off during the 2007–2008 financial crisis because firms' social capital helps build stakeholder trust and cooperation, which is consistent with the "insurance-like" property of CSR activity (Godfrey et al., 2009). Despite a short-term temporary negative impact of corporate sustainability and industry-related exposure to environmental and social risks on the market

value of MSCI world firms, the capital market perception of sustainability positively changed upon Lehman Brothers' collapse (Lopatta & Kaspereit, 2014). By using data points included in the KLD rating, Bansal et al. (2015) separate the total CSR into firm strategic CSR (i.e., "corporate social activities that require long time horizons, large resource commitments, and significant adjustments to organizational structures") and tactical CSR (i.e., "corporate social activities oriented towards improving stakeholder relationships in the short term, requiring fewer resources") (p. 70). They find that during the GFC firms dropped both their strategic and tactical CSR investments. However, this negative impact is more pronounced in tactical CSR. When testing the moderating effect of financial performance, they find that with better financial performance, firms can to some extent shield CSR from the negative impact of economic recession. This moderating effect is stronger for strategic CSR than for tactical CSR.

Likewise, the moderating effect of COVID-19 on the ESG-CFP relation has gained much attention recently. Broadstock et al. (2021) provide empirical evidence that in China, high ESG portfolios beat low ESG portfolios during the financial crisis triggered by COVID-19, supporting that ESG performance is considered a significant indicator of future stock performance and risk reduction by investors in China's stocks. Lu et al. (2022) test how the GFC and COVID-19 moderate the ESG-CFP bidirectional relationship and find that firms with higher ESG scores have better financial performance during COVID-19 but were hit harder during the GFC, implying sustainability provides firms with insurance-like protection only during COVID-19. Their study further explains the difference between the two types of the financial crisis in that the 2007–2008 financial crisis was caused by a battery of irresponsible behaviours in the subprime mortgage crisis, while the 2020 financial turbulence is, in essence, an ecological crisis. The lockdown and quarantine procedure during COVID-19 caused temporary reductions in global

carbon emissions, but the long-term effects on the low-carbon transition are unclear. Guérin and Suntheim (2021) postulate that the pandemic postponed the transition to a low-carbon economy, as the government will lower environmental objectives to support economic recovery post-COVID-19. The economic uncertainty in response to COVID-19 might indirectly cause the firms to decrease their spending on ESG-related R&D. Also, the government might no longer be persnickety about firms' long-term environmental goals to support the economic recovery at the firm level. COVID-19, on the other hand, might accelerate the transition process because most economic agents are likely to increase their expectations of the probability of other catastrophic events, facilitating a structural shift in consumption and investing preferences towards eco-friendly goods and services. Guérin and Suntheim (2021) also consider the oil price drop during the pandemic and find that tighter financial constraints and the economic downturn during COVID-19 harm firm environmental performance, especially by reducing green investments.

Based on the discussions above, whether the ESG-CFP association is stronger or weaker during COVID-19 cannot be postulated because other variables, including managerial and industry characteristics, business environment, stakeholder relationship, and intangible resources and capability, might affect the relationship between ESG and financial performance (Grewatsch & Kleindienst, 2017). Hence, the hypothesis follows a contingency-based perspective:

H1 (b). The COVID-19 crisis strengthens the positive bidirectional ESG-CFP relationship.

2.3 The Moderating Role of ESG-Related Compensation Policy

Due to the inconsistency in ESG-CFP studies in the past, researchers have shifted their attention to investigating the potential moderators in ESG-CFP relations, one of which is the ESG-related compensation policy. This policy ties executive compensation to ESG performance, encouraging managers to consider ESG factors when making business decisions and actively

engage in ESG activities to improve firm ESG performance and financial performance. Regarding the moderating role of ESG-related compensation policy, stakeholder theory and instructional theory provide insight into how companies adopt socially responsible practices in response to environmental pressures (Barrena Martínez et al., 2016). Since ESG-related compensation policies indirectly benefit outside stakeholders, firms that bond together executive compensation and ESG performance can outperform firms without the policy in place (Devers et al., 2007). Also, firms that have a compensation policy tied to ESG factors can demonstrate to stakeholders that their actions and behaviours align with stakeholder expectations, thus enhancing the firm's legitimacy (Barrena Martínez et al., 2016).

To the best of my knowledge, studies have yet to explore the moderating role of the ESG-related compensation policy in the relationship between ESG and financial performance. Most studies on this topic in the context of sustainability focus on the impact of ESG-related executive pay on firm ESG and financial performance. For example, using a sample of listed firms in several primary European countries from 2005 to 2015, Baraibar-Diez et al. (2019) find that when companies tie executive compensation to sustainability performance, it positively impacts their ESG scores. This effect is even more significant if the firm has a CSR committee acting as a control mechanism to support the achievement of sustainability objectives, leading to better nonfinancial performance. Thus, this leads to the following hypothesis:

H2 (a). Tying executive compensation to some ESG-related criteria moderates the relationship between ESG and financial performance.

H2 (b). The moderating effect of the ESG-related compensation policy in the ESG-CPF relationship is affected during COVID-19.

2.4 The Moderating Role of the CSR Sustainability Committee

The CSR sustainability committee is a board mechanism dedicated to promoting corporate social responsibility and encouraging firms to invest in and support sustainability initiatives to attain the desired level of ESG performance (Javeed et al., 2022). As a specialized small group of board members, the CSR sustainability committee enhances the functioning of corporate governance mechanisms (Jiraporn et al., 2019). The functions of the CSR committee are complementary to those of the audit committee on the board in that while the audit committee assesses corporate growth opportunities from a financial risk and accountability perspective, the CSR committee's goal is to improve firm performance by aligning corporate objectives with the interests of internal and external stakeholders and promoting better communication (Peters et al., 2019).

The role of the CSR committee in the context of CSR-firm performance is inconsistent. Rodrigue et al. (2013) suggest that the CSR committees are typically more symbolic than operational, as they tend to lack decision-making authority and are not directly involved in carrying out CSR initiatives. However, more recent studies have recognized CSR committees' impact on corporate performance. In the context of CSR, the committee is a pivotal component of the board because it is responsible for disseminating the stakeholder perspective in conjunction with other board responsibilities (Cucari et al., 2018). The appointment of the CSR committee to engage in business activities is viewed by stakeholders as an indicator of the firm's social legitimacy in the broader community (Mallin & Michelon, 2011). The presence of the CSR committee signifies a commitment to fostering sustainability (Fuente et al., 2017) and enhancing stakeholder-oriented management by deploying specialized governance mechanisms (Hussain et al., 2018). This brings us to the third hypothesis:

H3 (a). Establishing a CSR sustainability committee moderates the relationship between ESG and financial performance.

H3 (b). The moderating effect of the CSR sustainability committee in the ESG-CPF relationship is affected during COVID-19.

2.5 ESG/CSR and Firm Financial Performance and Value Across Different Industries

The ESG-CFP relationship can be affected by industry characteristics. Clarkson et al. (2011) tested this association in the most polluting firms (i.e., in the Pulp & Paper, Chemical, Oil & Gas, and Metals & Mining sectors). They found that the positive association is robust, supporting the resource-based view. However, whether this positive association still holds in less polluted firms and whether the relationship is amplified or sapped during COVID is yet to be explored. Therefore, the fourth hypothesis is as follows:

H4 (a). The positive ESG-CFP relationship should be in both heavily polluted and less polluted samples.

H4 (b). Compared to less polluted firms, the ESG-CFP relationship is stronger for firms in the heavily polluted industries.

H4 (c). The moderating effect of heavily/less polluted industries in the ESG-CFP relationship changed during COVID-19.

Gonenc and Scholtens (2017) shed light on the bidirectional relationship between the environmental performance of global fossil fuel firms and firm value. As compared to firms in other industries, they are more likely to participate in E-score boosting activities to limit their environmental exposure or improve their reputation. An overall significantly positive bidirectional association is revealed in their study when using Tobin's Q and ROE to measure firm performance. However, expanding their environmental performance indicators shows that

more emissions are associated with better financial performance, suggesting a trade-off between "doing well" and "doing good." When examining sub-categorical fossil fuel firms, they find environmental performance cannot explain and be explained by Tobin's Q, ROE, or stock returns for chemical and coal firms. The bidirectional effect remains valid only for oil and gas firms.

For the banking industry, Buallay et al. (2021) state that banks are responsible for two aspects of promoting sustainability in the corporate sector. The first aspect involves managing their own sustainability operations, similar to other businesses, where it has been proven that actively engaging in environmental-protection initiatives (Jo et al., 2015), social practice disclosure (Cornett et al., 2016), and corporate governance actions (Aebi et al., 2012) positively impacts banks' performance. The second aspect involves considering ESG risks in their lending and investment decisions to promote sustainability. Nizam et al. (2019) confirm this external role that including environmental risk in banks' lending practices significantly impacts ROE. However, Buallay et al. (2021) give different results of significantly negative relations between ESG score / ESG disclosure and ROE / ROA / Tobin's Q (sorted from most to least sensitive). However, when separating the international sample into banks in developed and developing countries and regressing lagged Tobin's Q on ESG score, ESG creates value for banks in developed countries.

Abdi et al. (2022) investigated the impact of the Thomson Reuters ESG score (formerly known as ASSET4) on the value and financial performance of airline companies, and observed that improving the governance pillar score can increase airline firms' market-based valuation while firms' environmental and social initiatives positively contribute to accounting-based performance. Hoepner and Yu (2008) witnessed that CSR did create value but only for health

care, industrials, and consumer discretionary sectors. Baron et al. (2011) uncover a positive CSR-CFP relation in the consumer industry sector and a negative relation in the industrial sector. Using the ESG performance disclosure score and Tobin's Q, Gholami et al. (2022) examine the ESG-CFP associations for Australian listed firms across ten industry categories based on the Bloomberg Industry Classification Systems and find the association between corporate ESG performance and corporate financial performance varies with different industry sectors.

Chapter 3 Data and Methodology

3.1 Data

This study uses a sample of firms from G20 countries, covering the period from 2010 to 2021. The G20 comprises 19 sovereign countries plus the European Union (EU). Because some countries, such as France, Germany, and Italy, are members of both the G20 and the EU, the initial sample contains 43 countries. The Datastream Worldscope List Mnemonic (Primary Class) was used to download the environmental and social pillar scores from the Refinitiv ESG database for each country. The number of firms with both environmental and social pillar scores was counted for each country, and countries with less than ten observations were dropped from the list. The final country list includes Argentina, Australia, Belgium, Brazil, Canada, China, Denmark, Finland, France, Germany, Greece, India, Indonesia, Ireland, Italy, Japan, Luxemburg, Mexico, Netherlands, Austria, Poland, Portugal, Russia, Saudi Arabia, South Africa, South Korea, Spain, Sweden, Turkey, United Kingdom, and the United States.

Accounting and corporate governance data were also collected from Refinitiv Eikon and matched with the environmental and social pillar scores. Due to missing control variables, the final sample comprises 36,334 firm-year observations from 5820 unique firms from 31 G20 member countries. Table 1 in the study presents the sample distribution by country and year.

3.2 Methodology

Traditional statistical methods, such as ordinary least square and two-stage least square assumes exogeneity (i.e., that the independent variables are not correlated with the error term in the regression equation). This assumption can lead to biased and inconsistent estimates when examining the relationship between sustainability and financial performance. It is possible that firms with better financial performance invest more in sustainability initiatives, leading to higher

sustainability performance, and vice versa: firms with higher sustainability performance attract more investors, leading to better financial performance. To address this issue, I followed Clarkson et al. (2011) and Lu et al. (2022) and used the three-stage least squares (3SLS) for this study. The 3SLS method captures the bidirectional relationship between ESG and financial performance by estimating a simultaneous equation model with endogenous variables in three stages: (1) Estimating the reduced-form equations for both sustainability and financial performance; (2) Estimating the first-stage regression of sustainability performance on financial performance; and (3) Estimating the second-stage regression of financial performance on the predicted sustainability performance from the first stage. The 3SLS method can be executed easily with the STATA command "reg3".

More specifically, in the following two regression models, Model (1) is to evaluate the impact of sustainability performance on corporate financial performance, and Model (2) is about the impact of corporate financial performance on sustainability performance. Because the investigation here is on the bidirectional relationship between sustainability and financial performance, one-period lag is taken for all the independent variables to address the issue of endogeneity and autocorrelation, that is, the problem of two variables being jointly determined. It also enables me to investigate whether past sustainability performance is related to current financial performance, while controlling for the effect of past financial performance on current sustainability performance. By using the lead-lag structure, the potential for omitted variable bias can be reduced and causal inference in the models can be improved.

$$CFP_{i,t} = \beta_1 CSR_{i,t-1} + \gamma' Firm\ Controls_{i,t-1} + \delta' Country\ Controls_{i,t-1} \\ + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t} \tag{1}$$

$$CSR_{i,t} = \beta_1 CFP_{i,t-1} + \gamma' Firm\ Controls_{i,t-1} + \delta' Country\ Controls_{i,t-1} \\ + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t} \tag{2}$$

where $CFP_{i,t}$ indicates the corporate financial performance measured by ROA and ROE separately. Refinitiv Eikon environmental pillar score (ASSET4 code: ENSCORE), social pillar score (SOSCORE), and the average of the former two scores are used for measuring $CSR_{i,t-1}$. The logarithm of total assets, long-term debt to total assets ratio, R&D expense to total assets ratio, net working capital to total assets ratio are included in $Firm\ Controls_{i,t-1}$. $Country\ Controls_{i,t-1}$ are GDP growth rate and Worldwide Governance Indicators for each country in the sample. Based on the two digits of SIC code and the number of sample years, $Year\ \&\ Industry\ Fixed\ Effects$ are included in the regression model.

Furthermore, to examine whether the bidirectional relationship between ESG and financial performance is stronger or weaker during COVID-19, a dummy variable named COVID is created, taking the value of one if observations are in 2020 or 2021 and zero otherwise. The interaction term between ESG or financial performance and the COVID dummy variable, as well as the COVID dummy itself, is added to each of the two linear models below.

$$CFP_{i,t} = \beta_1 CSR_{i,t-1} + \beta_2 COVID + \beta_3 CSR_{i,t-1} \times COVID + \gamma' Firm\ Controls_{i,t-1} \\ + \delta' Country\ Controls_{i,t-1} + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t} \tag{3}$$

$$CSR_{i,t} = \beta_1 CFP_{i,t-1} + \beta_2 COVID + \beta_3 CFP_{i,t-1} \times COVID + \gamma' Firm\ Controls_{i,t-1} \\ + \delta' Country\ Controls_{i,t-1} + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t} \tag{4}$$

where $COVID$ is a binary variable that indicates whether the firm observations are in the year of 2020 or 2021. All other variables are the same as in Models (1) and (2).

To test the moderating effect of the ESG-related compensation policy, a dummy variable Executive Compensation (equal to one if the firm in the sample has an ESG-related compensation policy, and zero otherwise) and its interactions with ESG and financial performance are added as showed in the following two equations.

$$CFP_{i,t} = \beta_1 CSR_{i,t-1} + \beta_2 Executive\ Compensation$$
$$+ \beta_3 CSR_{i,t-1} \times Executive\ Compensation + \gamma' Firm\ Controls_{i,t-1} \qquad (5)$$
$$+ \delta' Country\ Controls_{i,t-1} + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t}$$

$$CSR_{i,t} = \beta_1 CFP_{i,t-1} + \beta_2 Executive\ Compensation$$
$$+ \beta_3 CFP_{i,t-1} \times Executive\ Compensation + \gamma' Firm\ Controls_{i,t-1} \qquad (6)$$
$$+ \delta' Country\ Controls_{i,t-1} + Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t}$$

where *Executive Compensation* is a binary variable that indicates whether the sample firm has

an ESG-related compensation policy. All other variables are the same as in previous models.

Again, to test if having an ESG compensation policy has a favourable impact on the

ESG-CFP relationship during COVID-19, the Executive Compensation dummy and its triple

interaction are added to the models. See the following two equations.

$$CFP_{i,t} = \beta_1 CSR_{i,t-1} + \beta_2 COVID + \beta_3 CSR_{i,t-1} \times COVID$$
$$+ \beta_4 Executive\ Compensation$$
$$+ \beta_5 CSR_{i,t-1} \times Executive\ Compensation$$
$$+ \beta_6 COVID \times Executive\ Compensation \qquad (7)$$
$$+ \beta_7 CSR_{i,t-1} \times COVID \times Executive\ Compensation$$
$$+ \gamma' Firm\ Controls_{i,t-1} + \delta' Country\ Controls_{i,t-1}$$
$$+ Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t}$$

$$CSR_{i,t} = \beta_1 CFP_{i,t-1} + \beta_2 COVID + \beta_3 CFP_{i,t-1} \times COVID$$
$$+ \beta_4 Executive\ Compensation$$
$$+ \beta_5 CFP_{i,t-1} \times Executive\ Compensation$$
$$+ \beta_6 COVID \times Executive\ Compensation \qquad (8)$$
$$+ \beta_7 CFP_{i,t-1} \times COVID \times Executive\ Compensation$$
$$+ \gamma' Firm\ Controls_{i,t-1} + \delta' Country\ Controls_{i,t-1}$$
$$+ Year\ \&\ Industry\ Fixed\ Effects + \varepsilon_{i,t}$$

where all the variables are the same as in previous models.

Similarly, to examine the potential moderating effect of the CSR Sustainability

Committee and the affiliation with heavily polluted industries on the ESG-CFP relationship, I

have created relevant dummies accordingly and used similar empirical designs like those in

Models (5)–(8).

3.3 Variables

3.3.1 Measures of Financial Performance and Sustainability Performance

In line with Lu et al. (2022), this study utilizes ROA (calculated as net income divided by total assets) and ROE (calculated as net income divided by common equity) as proxies for corporate financial performance. Market-based financial performance measures, such as Tobin's Q or stock returns were not selected due to their sensitivity to stock price fluctuations. It should be noted that firms across different countries may have differing fiscal year-end dates, which can impact the calculation of market-based measures. Additionally, as pointed out by Lu et al. (2022), sustainability is a long-term strategy whereas stock market reactions are often short-term in nature.

Following El Ghoul et al. (2017), Gonenc and Scholtens (2017), Hsu et al. (2021), Lu et al. (2022), Nekhili et al. (2021) etc. sustainability performance is measured by the environmental pillar score, social pillar score, and the average of these two pillar scores respectively in this study. The exclusion of governance pillar score from sustainability performance measures can be attributed to multiple factors. Firstly, environmental and social pillars are considered to have a more direct relationship with a company's sustainability performance than the governance score ("G"). This is because environmental and social issues are more closely tied to a company's impact on society and the environment, while governance issues are more internally focused on a firm's management structure and practices. Moreover, a recent review by Liang and Renneboog (2020) point out that the governance dimension is somehow ambiguous in the context of CSR, due to its traditional reference to corporate governance measures to enhance shareholders' value and its new mission of ensuring diversity and inclusion. Secondly, investors and other stakeholders tend to place greater emphasis on "E" and "S" scores as they can have visible

impacts on the community and the natural environment. Thirdly, given that this study controls six corporate governance variables and aims to explore the moderating effects of ESG-related compensation policy and CSR sustainability committee, including the "G" pillar may lead to potential multicollinearity issues.

The environment pillar score is obtained from Refinitiv Eikon (ASSET4 code: ENSCORE), which was formerly known as Thomson Reuter Asset4 prior to 2017. The environmental pillar score is a relative sum of three category weights that vary by industry: resource use, emissions, and innovation. The emission category covers themes such as emissions, waste, biodiversity, and environmental management systems. The innovation category includes two themes: product innovation and green revenues, as well as research and development (R&D) and capital expenditures. The resource use category encompasses four themes, which are water, energy, sustainable packaging, and environmental supply. The social pillar score (ASSET4 code: SOSCORE) covers community, human rights, product responsibility, and workforce categories. The community category is equally important to all industry groups, therefore a median weight of five is assigned to all. The human rights category has the human rights as the theme. The product responsibility category includes responsible marking, product quality, and data privacy as themes. For the workforce category, it covers diversity and inclusion, career development and training, working conditions, and health and safety themes (Refinitiv, 2022).

3.3.2 Control Variables

In the regression models, I consider a list of control variables on corporate governance, firm characteristics, country-level factors. In the following paragraphs, I will provide a detailed explanation of these control variables and their potential effects on both the dependent and independent variables.

Board Size. Larger boards since its inception might benefit core board functions, but as time goes by, larger boards are subject to coordination and communication problems. Therefore, firm performance might decline due to the inefficient board (Jensen, 1993; Lipton & Lorsch, 1992). This is corroborated by Guest (2009) that in a sample covering 2746 UK-listed firms from 1981 to 2002, board size has a strong negative impact on firm financial performance, measured by ROA, Tobin's Q and share returns. Jizi (2017) states that ESG disclosures are linked to larger board sizes because board members with more diverse backgrounds and wider networks can highlight more environmentally and socially conscious factors. This is further supported by Bhatia and Marwaha (2022)**,** that board size and board gender diversity are the two significant factors positively impacting firms' ESG disclosure scores for a sample consisting of 327 Indian-listed firms over seven years.

Board Gender Diversity. The board of directors has recently received considerable attention in determining corporate financial performance and firm CSR/ESG engagements. Carter et al. (2003) present the first empirical evidence that after controlling for size, industry, and other corporate governance measures, there is a strong positive relation between the fraction of women directors or minorities on the board and the firm value. Bennouri et al. (2018) witness that having more women sit on board is linked to better ROA but not Tobin's Q. Francoeur et al. (2008) indicate that firms with a high proportion of female directors are those generating higher positive abnormal returns. Moreover, Erhardt et al. (2003) detect the oversight function in a more diversified board when facing conflicts, as a broader range of opinions tends to be carefully considered.

While the positive relationship between board gender diversity and corporate performance is widely accepted, some scholars assert that improperly increasing the fraction of

female directors in the boardroom jeopardizes corporate financial performance. For instance, Adams and Ferreira (2009) point out that female directors' positive impact on a firm's financial performance through the moderating mechanism is only practical when firms have weak corporate governance. This is consistent with Ahern and Dittmar (2012), who find the 2003 law promulgation in Norway mandating at least 40% of the board members must be females caused a significant drop in the share price of Norwegian firms since firms in Nordic nations, usually have better governance quality comparing to firms in other countries.

Many papers have found that board gender diversity has a positive impact on sustainability performance, and the gender social role theory can help explain it. Gender social role theory posits that women tend to exhibit communal behaviours and are more attuned to environment concerns compared to men, as supported by studies conducted by Liu (2018) and Nadeem et al. (2020). Consequently, women are more likely to demonstrate a stronger sense of ethical responsibility and prioritize social welfare (see Atif et al., 2021; Burkhardt et al., 2020). Drawing on this theory, Khatri (2022) analyzed 205 firms listed in Denmark, Finland, Norway, and Sweden from 2002 to 2020 and found a positive and statistically significant correlation between board gender diversity and sustainable performance. Additionally, the research revealed that a "critical mass" of at least 30% female board members is necessary to achieve a significant impact on sustainability performance.

Board Independence. The percentage of independent directors can also impact corporate financial performance and firm ESG/CSR investments. Huang (2010) suggests a positive association between the percentage of independent directors and financial and corporate social performance. Only the proportion of government shareholders is linked to firms' environmental outperformance because they are more likely to mandate firms to undertake social

responsibilities. On the other hand, Cavaco et al. (2017) find that the performance of a company is negatively associated with board independence, even after taking into account the individual skills of independent directors, suggesting that independent board members have less information compared to affiliated directors, leading to an information deficit.

R&D. Many papers document a positive lead-lag relationship between R&D investments and firm profitability. Lev and Sougiannis (1996) reported that firms' R&D capital positively correlates with subsequent stock returns. Eberhart et al. (2004) mentioned that abnormal stock returns significantly increased during 1951–2001 when firms unexpectedly increased their R&D expenditures. Several studies found a positive association between the level of measures of the R&D activities and subsequent excess returns (Chambers et al., 2002; Chan et al., 2001; Lev & Sougiannis, 1996). R&D investment can also influence the level of ESG ratings. In a sample of Chinese firms listed on the Shanghai and Shenzhen stock exchanges between 2015 and 2018, R&D investment had a positive impact on green innovation performance, which is consistent with Du et al. (2019) and Du and Li (2019) that R&D activities can improve the efficiency of natural resources and reduce the emission of pollutants.

Net Working Capital. Working capital management plays a crucial role in firms' profitability, as when firms heavily invest in current assets, the risk becomes lower, and so does the firms' profitability (Smith, 1980). Afza and Nazir (2009) find a negative relationship between firms' profitability and the degree of aggressiveness of working capital investment and financing policies, implying firms can reduce their financing costs and/or increase the funds available for expansion projects by minimizing the amount of investment tied up in current assets. Working capital management also has an impact on ESG scores. Since firms can use ESG score as a risk management tool to signal a perception of lower risk, firms do not have to operate

above the working capital requirements to fund operations (Barros et al., 2022). Their study tested a negative relation between the environmental or social pillar score and working capital requirements.

  Firm Size. Most studies that have examined the relationship between firm size and profitability have reported a positive association. These studies have generally utilized measures such as total assets, total sales, or number of employees to indicate firm size. Since in this study, the natural log of total assets is used as a proxy for firm size, the discussion here is also on firm size as measured by total assets. Using a sample of 200 Turkish listed firms from 2008 to 2011 Doğan (2013) found a positive relation between firm sized measured by total assets and firm profitability measured by ROA, and this result remained robust when using total sales and number of employees as alternative indicators of firm size. Also, consistent with this my finding here, Khatab et al. (2011) investigated the relationship between corporate governance and firm performance for 20 companies listed on Karachi Stock Exchange. Their study, which analyzed data from 2005 to 2009, found a positive correlation between total assets and ROA, but a negative correlation that was not statistically significant between total assets and ROE.

  According to Hausman's (2005) research, smaller companies tend to prioritize familial relationships over competence when hiring employees, which can affect their managerial ethos and perspective (Ghobadian & Gallear, 1997). This has important implications for implementing sustainability practices and achieving optimal performance. Russo and Tencati's (2009) study of corporate social responsibility practices also revealed that micro, small, and medium-sized enterprises exhibit diverse managerial approaches and responsible behaviours. This was further corroborated by Bourlakis et al. (2014) that in the context of food supply chains in Greek small

and medium-sized enterprises, smaller firms demonstrate superior performance in terms of sustainability across various measures.

Leverage. The long-term debt to total assets ratio is used in this study as an indicator of a company's financial leverage. This ratio can theoretically, affect the firm's profitability, as measured by ROA or ROE, in several ways. Firstly, according to the trade-off theory of capital structure by Modigliani and Miller (1958), when a firm takes on more long-term debt, it increases its financial leverage, which acts as a multiplier and amplifies the effects of changes in operating income on net income. If a company can earn a return that exceeds its cost of debt, it can increase its profitability. However, if the firm is unable to generate sufficient returns from the investment project financed with long-term debt, it may experience a decline in profitability. Secondly, from the perspective of income statement, a relatively higher long-term debt to total assets ratio might increase a firm's interest expense, which can then decrease its net income and, consequently, its profitability. And if the firm's operating income fails to cover its interest expense, it may experience negative profitability. Thirdly, past literature has verified that a high leverage ratio can signal to shareholders and debtholders that the firm is riskier, which can result in higher borrowing costs and lower stock prices (Fama & French, 1992; Frank & Goyal, 2003; Myers, 1977) .

The proportion of debt in a firm's capital structure serves as an indicator of the significance of the firm's financial stakeholders. According to stakeholder theory, a firm has various claimants, including both investing and non-investing stakeholders. Since these stakeholder groups differ in their levels of influence over the firm's resources (Ullmann, 1985), and debtholders, as the provider of funds for firms, are generally regarded as a powerful group of stakeholders, management is more inclined to prioritize their concerns over those of less

influential stakeholders such as employees or the wider community. Therefore, as firms undertake more debts, their sustainability performance should decrease. However, Artiach et al. (2010) conducted an empirical study on leading sustainability performance firms in the US from 2002 to 2006 and found that these firms did not have lower leverage, as measured by the total debt to total assets ratio.

Country-Level Measures. Since this is an international study covering all the constituents in the G20, the annual GDP growth rate and Worldwide Governance Indicators (WGI) are directly collected from the World Bank. The WGI for each nation in our sample has six data points, each of which ranges from the lowest –2.5 to the highest +2.5: (1) voice and accountability, (2) political stability and absence of violence/terrorism, (3) government effectiveness, (4) control of corruption, (5) regulatory quality, and (6) the rule of law. The equally weighted average scores are manually calculated for each country in our sample.

Based on the discussion, the percentage of female directors (ASSET4 Code: CGBSO03V) is collected to measure board gender diversity. The dummy variable CEO-Chairman separation (ASSET4 Code: CGBSO03V) is collected, indicating whether CEO and chairman are separated. The percentage of independent board members (ASSET4 Code: CGBSO07V) is obtained as a proxy for board independence. Following Lu and Wang (2021), the CSR sustainability committee (ASSET4 Code: CGVSDP005) and policy executive compensation ESG performance (ASSET4 Code: CGCPDP0013) are collected, with the former indicating whether the firm has a CSR committee or team and the latter denoting if the firm has an ESG related compensation policy. In line with the previous literature, firm size (smoothed by taking the natural log), R&D expense (scaled by the book value of total assets), financial leverage (calculated as long-term debt divided by total assets), and net working capital (defined

as the ratio of the difference between current assets and current liabilities to total assets) is added to the linear models as firm controls.

Table 2 provides a detailed description of the variables used in the analysis and their corresponding descriptive statistics. Financial ratios have been winsorized at the 1st and 99th percentiles to eliminate potential outlier effects.

Table 3 presents the correlation matrix of all the variables used in the analysis, from which it is evident that sustainability and financial performance measures are positively correlated.

In terms of the six corporate governance control variables, it was found that Board Size, Board Gender Diversity, CEO-Chairman Separation, Executive Compensation, and CSR Sustainability Committee have a positive correlation with financial performance, as measured by ROA and ROE. On the other hand, Board Independence shows a negative correlation with both ROA and ROE and is statistically significant at the 1% level. In addition, Board Size, Board Gender Diversity, Executive Compensation, and CSR Sustainability Committee are positively correlated with all sustainability performance measures. However, Board Independence is negatively correlated with the environmental pillar score (ENSCORE), positively correlated with social pillar score (SOSCORE), and insignificantly correlated with the average of "E" and "S" pillar scores. Furthermore, the CEO-Chairman Separation variable is negatively correlated with all sustainability measures.

Regarding the four firm-level controls, the findings indicate that firm size is positively correlated with both sustainability and financial performance. However, the leverage ratio shows a negative correlation with corporate financial performance, while it shows a positive correlation

with sustainability measures. In the case of R&D and NWC, both are found to be negatively

correlated with sustainability and financial performance.

Pertaining to country-level controls, it has been observed that the GDP growth rate is

positively correlated with financial performance but negatively correlated with sustainability

measures. On the other hand, the Country Governance score yields opposite results.

Chapter 4 Empirical Results

In this section, I present the empirical findings of my research. Starting with Section 4.1, I investigate the bidirectional relationship between sustainability and financial performance. As for robustness check, multiple measures are used for sustainability performance, including environmental and social pillar scores, as well as the average of them. ROA and ROE are both adopted for corporate financial performance. Then in Section 4.2, the COVID variable and its interaction terms are introduced to the baseline regression models for assessing the potential impact of COVID on the bidirectional relationship. Section 4.3, 4.4, and 4.5 discuss the empirical findings of the moderating roles of the ESG-related compensation policy, CSR sustainability committee, and heavily/less polluted industries. Finally, in Section 4.6, I extend the bidirectional relationship between sustainability and financial performance to five different industry sectors.

4.1 Sustainability Performance and Financial Performance

Table 4 reports the regression results of empirical models (1) and (2) that examine the bidirectional relationship between sustainability performance and corporate financial performance. In Columns (1) and (2), ROA and environmental performance/score (ENSCORE) are considered for the regressions, followed by examining the bidirectional relationship between ROA and social performance (SOSCORE) in Columns (3) and (4), and examining the bidirectional relationship between ROA and the average score of environmental and social scores (ENS) in Columns (5) and (6). Columns (7)–(12) follow the same order as Columns (1)–(6), but ROE is used as an alternative proxy for corporate financial performance.

In Column (1), the coefficient estimate of ENSCORE is 0.038 with statistical significance at 1% level, indicating that firms with better environmental performance tends to have better

financial performance as measured by ROA. In Column (2), the coefficient estimate of ROA is 0.089 with statistical significance at 1% level, suggesting that firms with better financial performance as measured by ROA are prone to have better environmental performance. Further, regression results reported in Columns (3) and (4) show the positive bidirectional relationship between ROA and social performance (SOSCORE), and what are reported in Columns (5) and (6) display the positive bidirectional relationship between ROA and sustainability performance as measured by the average of environmental and social scores (ENS). The results in Columns (7)–(12) confirms the results still hold when ROE is used as the measure for corporate financial performance. The results documented in my study for a broader sample of firms from G20 countries are consistent with several earlier investigations (Abban & Hasan, 2021; Ameer & Othman, 2012; Hichri & Ltifi, 2021; Lu et al., 2022; Martínez-Ferrero & Frías-Aceituno, 2015; Nakao et al., 2007).

Regarding the control variables in Table 4, the coefficient estimates of Board Size are negative and statistically significant in all the regressions on financial performance, indicating that a firm with larger board size tends to have worse financial performance measured by ROA or ROE. This is consistent with Guest (2009) who found board size has a strong negative impact on financial performance. Also, Cheng et al. (2008) point out that the possible reason for the negative impact of board size is the increased cost of coordination and communication, as well as the costs of directors who do not contribute fully. These costs make it difficult for the board to make timely and effective decisions. Consistent with Post et al. (2011) that a larger board might provide more information on environmental issues, with outside directors playing a key role in conveying such information, the regression results presented in Table 4 show that the coefficient estimates of Board Size reported are positive and statistically significant in all the regressions on

sustainability performance measures. This suggests that a firm with a larger board is more likely to exhibit better sustainability performance.

The coefficient estimates of Board Gender Diversity are positive and statistically significant in all regressions on financial performance as measured by ROA and in all the regressions on sustainability performance, indicating a firm with a more diverse board leans toward better sustainability performance and financial performance as measured by ROA. The positive impact of board gender diversity on ROA is consistent with Carmo et al. (2022), who in a sample of 29 Portuguese listed firms from 2010 to 2019 found female presence is positively related with ROA when there are at least two women on the board. Low et al. (2015) in a sample of firms from Hong Kong, South Korea, Malaysia, and Singapore, found having more female directors on the board is associated with better corporate financial performance, as measured by ROE. However, they also pointed out that the positive impact of gender diversity on performance is reduced in countries where women have higher levels of economic participation and empowerment. Therefore, the insignificant coefficient estimates of Board Gender Diversity in my regressions on ROE are not surprising because more than half of the G20 members in our sample are developed nations with relatively higher female labour force participation rates. The positive impact of board gender diversity on sustainability performance is in accordance with gender social role theory that corporate boards that have a higher number of female directors exhibit a greater sensitivity towards ethical behaviour and environmental concerns.

For the Board Independence variable, it has positive and statistically significant coefficients in all regressions on financial performance (ROA and ROE), social performance (SOSCORE), and sustainability performance (ENS), suggesting a firm with more independent directors on the board is likely to exhibit better financial, social, and sustainability performance.

This result supports that external directors can oversee the decision-making and conduct of senior executives on the board in order to prioritize the interests of shareholders, as they do not have any financial interest in the firm (Islam & Islam, 2022). The positive impact of the degree of board independence on social performance and sustainable performance is consistent with Deschênes et al. (2015). However, the significantly negative coefficient estimates in the regressions on environmental performance (ENSCORE) in Columns (2) and (8) implies a firm with higher fraction of independent board members is apt to have worse environmental performance. This can be possibly be interpreted that the appointment of outside directors depends heavily on social networks rather than individuals' competency (Alnabsha et al., 2018).

The coefficient estimates of CEO-Chairman Separation are positive and statistically significant in all regressions on financial performance as measured by ROA, indicating a firm subject to less CEO duality issues tends to have better ROA. This is consistent with Fadun (2018) and ONOFREI et al. (2019). However, the negative and statistically significant coefficient estimates in all regressions on sustainability performance suggests that firms separating their CEO and chairman tend to have worse sustainability performance (consistent with Lu et al., 2022; Van Hoang et al., 2021).

For the Executive Compensation variable, since the coefficient estimates of it are positive and statistically significant in all regressions on sustainability performance, it is inferable that firms tying their executive compensation to some ESG metrics are likely to have better sustainability performance. This result is in line with Mahoney and Thorn (2006) that executive compensation has the potential to align the interests of executives with the "common good," leading to more socially responsible firms. Also, this is consistent with previously mentioned study by Baraibar-Diez et al. (2019) that the incentives related to sustainability have positive

effects on ESG scores when. As for its impact on financial performance measures, only one negative coefficient estimate is observed in the regression on ROA in Column (5) with statistical significance at 10% level, implying companies with an ESG-related compensation policy in place may be more disposed to worse financial performance as measured by ROA.

Likewise, the coefficient estimates of CSR Sustainability Committee are positive and statistically significant in all regressions on sustainability performance, which is consistent with Radu and Smaili (2022) that in a sample of 164 Canadian listed firms during the period of 2012–2018, CSR committed positively impacts firms' CSR performance as measured by Bloomberg's environmental and social scores respectively. In addition, this evidence support Guo and Yu (2022), who found CSR committee and the members of the committee with past working experience as politicians are linked to higher sustainability performance as measured by KLD score ratings. This confirms that firms with a CSR sustainability committee favour better sustainability performance. In Columns (1) and (5), the CSR Sustainability Committee variable reports two negative coefficient estimates in regressions on ROA, and they are statistically significant at 5% and 1% level respectively, meaning firms by establishing CSR sustainability committee might suffer from worse financial performance as measured by ROA. This result to some extent supports my conjecture in the previous section that even if some CSR initiatives proposed by the CSR committee leads to long-term benefits for the society at large, they might cause a decrease in profitability in the short term due to upfront costs or opportunity costs.

For the firm Size factor, because the coefficient estimates of it are positive and statistically significant at 1% level in all regressions on financial and sustainability performance, it can be concluded larger firms tend to have both better financial and sustainability performance. This is evidenced by Doğan (2013) that larger firms have better sustainability performance and

Khatab et al. (2011) that larger-sized firms are associated with better financial performance as measured by both ROA and ROE.

The coefficient estimates of the Leverage variable are negative and statistically significant in all the regressions on environmental (ENSCORE), sustainability (ENS), and both financial performance measures, suggesting firms with higher ratios of long-term debt to total assets are more likely to have environmental, sustainability, and financial underperformance. This result is in line with Chandra and Juliawati (2020) that in a sample of 53 Indonesian listed manufacturing firms in consumer goods subsector, long-term debt to total assets ratio has a significant negative effect on ROA, while short-term debt does not have significant impact on ROA. In terms of the negative effects leverage has on sustainability performance, the result here supports that as a firm takes on more debt, the influence of creditors is expected to outweigh other non-investing stakeholders. As such, the firm's sustainability performance declines.

For the R&D expense, the coefficient estimates are positive and statistically significant in all the regressions on sustainability performance measures, suggesting firms with higher proportions of R&D expense in total assets tend to have better sustainability performance. The negative and statistically significant coefficient estimates in regressions on financial performance measures, however, implies that firms with higher R&D investments are prone to have worse financial performance. This might be attributed to the number of years lagged in my sample, as Reilly et al. (2016) mentioned that firms' investment in R&D projects usually needs longer time horizon to pay back.

The coefficient estimates of Net Working Capital (NWC) are all negative and statistically significant in all the regressions on sustainability performance measures, indicating firms with higher percentage of net working capital in total assets are susceptible to sustainability

underperformance. In terms of NWC's impact on financial performance measured by ROA, Column (1) shows a positive 0.009 coefficient estimate at 5% significance level, and Column (5) shows a positive 0.008 coefficient estimate with statistical significance at 10% level, indicating firms with higher NWC ratios tend to have better ROA, which is consistent with Charitou et al. (2010) that cash conversion cycle and net trade cycle are positively related to the firms profitability. However, the negative coefficient estimates in regressions on ROE in Columns (7), (9), and (11) suggests NWC ratio has a negative impact on ROE, which is consistent with Jose et al. (1996) that lower cash conversion cycle leads to higher profitability for natural resources, manufacturing, service, retail/wholesale, and professional services industries.

The last but not the least controls are the two country-level variables, GDP Growth Rate and Country Governance. For the GDP Growth Rate, it does not have statistically significant impact on financial performance measures, but the significantly negative coefficients in regressions on sustainability performance suggests that firms in countries having higher GDP growth rate tend to have worse sustainability performance. This is evidenced by Chowdhury and Islam (2017) that in a sample of BRICS countries from 2002 to 2016, there is a negative relationship between environmental performance index and GDP growth rate. According to their study, reducing pollution is comparatively easier for developed countries than for developing countries, which face significant challenges in this area. Developing countries often prioritize economic growth and development over environmental concerns, which can lead to the degradation of their environment despite their efforts to achieve high growth rates.

Regarding country governance score, the positive and statistically significant coefficient estimates in all the regressions on sustainability performance indicate that firms in countries with higher governance scores are more likely to have better sustainability performance. This is

evidenced by Handoyo (2018) that the public governance, as measured by Worldwide

Governance Indicators, has a positive impact on environmental sustainability performance in a

sample of 178 World Bank country members. However, the negative and statistically significant

coefficients in regressions on both financial performance measures point that firms in better

governed countries tend to perform worse financially. This might indicate that countries with

better governance, on the one hand, creates a stable and fair business environment for firms to

compete, but on the other hand, the stricter regulations requiring firms to follow certain ethical

and social responsibility standards may result in additional compliance costs for firms, which

would hurt their profitability. Similarly, good governance obliges firms to be more transparent in

financial reporting. This may cause extra scrutiny from stakeholders, which could negatively

impact firm profitability.

4.2 The Impact of COVID-19 on the Relationship between Sustainability and Financial Performance

Table 5 presents the results of a regression analysis examining the impact of the COVID-

19 pandemic on the relationship between ESG and financial performance. To account for the

impact of COVID-19, a COVID dummy variable was created, taking a value of one for

observations in 2020 and 2021 and zero otherwise. Columns (1)–(12) follow the same format as

in Table 4.

The coefficients of ENSCORE, SOSCORE, ENS, ROA, and ROE are all positive and

significant at the 1% level, indicating that the positive bidirectional relationship between

sustainability and financial performance holds before the onset of the pandemic. This finding is

consistent with the results in Table 4. The coefficient estimates of the COVID dummy variable

are positively in all regressions with sustainability performance as the dependent variable and

negative in all the regressions with accounting-based financial performance as the explained

variable. This is not surprising, as during the onset of the coronavirus disease, the temporary shutdown of business operations worldwide caused a short-term decline in global carbon emissions and firm profitability (Guérin & Suntheim, 2021).

Additionally, although COVID imposed negative impact on corporate financial performance, three positive and significant coefficient estimates are observed in the interactions between COVID and ENSCORE ($\beta = 0.063$***, SE = 0.006) in Column (1), COVID and SOSCORE ($\beta = 0.038$***, SE = 0.007) in Column (3), and COVID and ENS ($\beta = 0.062$***, SE = 0.007) in Column (5), suggesting that better sustainability performance can help a firm mitigate the negative impact of COVID-19 on ROA. However, when examining the set of three coefficients for the COVID * ROA interaction in Columns (2), (4), and (6), only the COVID * ROA interaction ($\beta = 0.034$**, SE = 0.013) has a positive and significant coefficient, indicating that the impact of corporate financial performance measured by ROA on firms' environmental performance is stronger during the COVID-19 pandemic.

Upon examining the COVID interactions in Columns (7)–(12), it is observed that only COVID * ENSCORE ($\beta = 0.076$***, SE = 0.021) and COVID * ENS ($\beta = 0.069$***, SE = 0.025) have significant positive coefficients. This implies that during COVID-19, firms with better environmental performance and those with a better average environmental and social performance score enjoy further profitability. However, improving social performance alone does not further lead to better financial performance measured by ROE during the pandemic. Together these observations corroborate that Garel and Petit-Romec (2021) that the financial turmoil in 2020 was owing to the health crisis raising an increase in awareness of sustainable and responsible investment, so the moderating role of COVID-19 is stronger for the impact of better environmental performance.

The COVID * ROE interaction shows three coefficients that are not statistically significant in Columns (8), (10), and (12), indicating that ROE's impacts on ESG performance are not strengthened nor weakened in the COVID years. Regarding the control variables, It is observed that Board Size, Board Gender Diversity, Board Independence, CEO-Chairman Separation, CSR Sustainability Committee, Size, Leverage, R&D, GDP Growth Rate, and Country Governance exhibit consistent directional patterns as in Table 4. Notably, the inclusion of the COVID dummy in the regression models leads to a change in the significance of some control variables. For instance, the Executive Compensation variable, which was previously insignificant in Table 4, now exhibits a negative coefficient at a 10% significance level in Columns (1) and (3) of Table 5. Moreover, the coefficient of NWC in Column (3) changes from insignificant in Table 4 to positive at a 10% significance level in Table 5.

4.3 The Moderating Effect of the ESG-Related Compensation Policy on the Relationship between Sustainability and Financial Performance

Table 6 presents the regression results examining the moderating effect of an ESG-related compensation policy on the relationship between ESG and financial performance. Specifically, the Executive Compensation dummy variable (equal to one if firms have an ESG-related compensation policy and zero otherwise) is introduced into the linear model as the key variable, along with its interaction terms with sustainability and financial performance respectively, while in Table 4 and Table 5, it is considered as a control.

The results are consistent with Table 4 and Table 5, with positive coefficients at a 1% significance level for the bidirectional relationship between sustainability and financial performance. Interestingly, the Executive Compensation dummy variable shows that all three ESG measures are positively associated with Executive Compensation, with the largest coefficients observed in Columns (4) and (10) for firms' social performance. This suggests that

having an ESG-related compensation policy boosts all ESG performance measures but with the strongest impact on social performance.

This can be interpreted that providing executives with appropriate ESG-related compensation can encourage them to prioritize social and environmental performance, leading to better social and environmental credibility for the organization (Haque, 2017). However, if viewing simultaneous equations together, that is, Columns (3) and (4) as well as Columns (9) and (10), it is found that having an ESG-related compensation policy decreases the value for ROA and has no impact on ROE.

In addition, the results in Table 6 suggest that the Executive Compensation dummy does not have a significant impact on ROA in Columns (1) and (5) and ROE in Column (9). However, the moderating effect of ESG-related compensation policy is evidenced by the significant positive coefficients for Executive Compensation * ENSCORE ($\beta = 0.041^*$, SE = 0.021) in Column (7), Executive Compensation * SOSCORE ($\beta = 0.015^{**}$, SE = 0.007) in Column (3), and Executive Compensation * ENS ($\beta = 0.042^*$, SE = 0.025) in Column (11), indicating that such a policy strengthens the relationship between environmental performance and ROE, social performance and ROA, and average environmental and social performance and ROE.

Additionally, the coefficients of Executive Compensation * ROA interaction in Column (2) ($\beta = 0.030^*$, SE = 0.016), Column (4) ($\beta = 0.087^{**}$, SE = 0.015), and Column (6) ($\beta = 0.059^{***}$, SE = 0.014) are all significantly positive, while the coefficients of Executive Compensation * ROE interaction in Column (10) ($\beta = 0.011^{**}$, SE = 0.004) and Column (12) ($\beta = 0.009^{**}$, SE = 0.004) are positive at a 5% significance level, indicating that having an ESG-related compensation policy positively moderates the relationship between ROA and all ESG

performance measures, as well as the relationship between ROE and social and average environmental and social performance.

Table 7 tests the relationship between ESG and financial performance during COVID-19 to see if the ESG-related compensation policy positively or negatively moderates the ESG-CFP association. It is noted that the coefficients on all the triple interactions are not significant, indicating that ESG-related compensation policy does not matter for firms' ESG-CFP relations during COVID-19. The COVID-19 pandemic has had an unparalleled effect on companies globally. It is conceivable that the pandemic's impact was so significant that it overshadowed any favourable consequences that an ESG-linked compensation policy could have had. For example, numerous businesses encountered issues such as supply chain disruptions, employee shortages, and decreased demand for their goods and services, which may have impacted their financial performance despite their adherence to ESG practices. Another explanation could be that ESG metrics are typically long-term oriented for a firm's sustainability and resilience, while COVID-19 demands immediate short-term action, such as implementing safety measures and adapting business models to stay afloat. As a result, firms may have prioritized short-term measures over long-term ESG strategies, thereby limiting the effectiveness of the ESG-related compensation policy.

4.4 The Moderating Effect of the CSR Sustainability Committee on the Relationship between Sustainability and Financial Performance

To capture the moderating role of the CSR sustainability committee, the CSR Sustainability Committee dummy is moved from the control variable to the explanatory variable, along with its interaction terms with financial and sustainability performance respectively, and the results have been presented in Table 8.

The coefficients on ENSCORE, SOSCORE, ENS, ROA, and ROE in the first five rows

of the table describe the ESG-CFP associations for firms without such a committee. These

coefficients are all positive and statistically significant, consistent with what has been reported in

Table 4 and Table 5, implying positive relationships between ESG and financial performance

after adding the CSR Sustainability Committee dummy and its interaction terms.

Looking solely at the coefficients on the CSR Sustainability Committee dummy across all

columns, we notice that ceteris paribus, firms that established a CSR sustainability committee

have higher ESG and financial performance. This is consistent with past literature that assigning

the CSR committee to handle business affairs is a potential indicator of the company's perceived

legitimacy in society (Mallin & Michelon, 2011). However, the negative coefficients on the CSR

Sustainability Committee's interactions with ENSCORE in Column (1) (β = -0.083***, SE =

0.015) and in Column (7) (β = -0.127***, SE = 0.027), SOSCORE in Column (3) (β = -0.019**,

SE = 0.008), and ENS in Column (5) (β = -0.071***, SE = 0.008) and Column (11) (β = -

0.103***, SE = 0.031) reveal that the impact of ESG performance on firm financial performance

is less prominent for firms with a CSR sustainability committee, which supports Rodrigue et al.

(2013) that CSR committees are mainly symbolic and do not have much operational function, as

they usually do not possess the authority to make decisions and are not involved in carrying out

CSR initiatives. The six positive and statistically significant coefficients on CSR Sustainability

Committee * ROA and * ROE interactions unveil that having such a committee strengthens

financial performance's impact on ESG performance.

Also, the triple effects of the CSR sustainability committee are examined in Table 9. The

negative coefficient of CSR Sustainability Committee * COVID * ENSCORE (β = -0.068***,

SE = 0.016) indicates that the committee reduces the impact of firms' environmental

performance on ROA during COVID-19. For the social score (β = 0.047***, SE = 0.017), its impact on ROA is more pronounced for firms with a CSR committee when the pandemic hits. The triple interaction terms of CSR Sustainability Committee * COVID * ROA and * ROE report positive coefficients in Column (2) (β = 0.064*, SE = 0.035), Column (8) (β = 0.030***, SE = 0.010), and Column (12) (β = 0.017**, SE = 0.008), denoting the increase in ROA further boost only environmental performance for firms having a CSR committee during COVID-19, and the increase in ROE further improve both environmental and average environmental and social.

4.5 The Moderating Effect of the Heavily/Less Polluted Industry on the Relationship between Sustainability and Financial Performance

As mentioned above, the industry is vital in explaining the CSR-CFP relation. Firms in more heavy-polluting industries usually face more pressure from stakeholders to engage in more sustainability activities (Lu et al., 2022). This is well supported by Brahmana and Kontesa (2021), who confirms the resource-based view by proving a strong positive correlation between environmental performance and the financial performance of global oil and gas firms. Garcia et al. (2017) authenticate that firms in environmentally sensitive industries in BRICS countries between 2010 and 2012 produced better ESG performance, which still holds even when controlling for firm size and country fixed effects.

Table 10 provides regression results to investigate whether heavily polluted firms have a stronger or weaker relationship between ESG and CFP. To accomplish this, we adopted the definition of the most polluting firms by Clarkson et al. (2011) and created the Heavily Polluted dummy variable, which takes the value of one if the sample firms belong to the Pulp & Paper (SIC = 26), Chemical (SIC = 28), Oil & Gas (SIC = 29), and Metals & Mining (SIC = 33) sectors, and zero otherwise. Across Columns (1)–(12), all coefficients linked to our key variables

(ENSCORE, SOSCORE, ENS, ROA, and ROE) are positive and significant, suggesting the positive relationships hold for less polluted firms. The coefficients on the Heavily Polluted dummy across Columns (1)–(12) indicate that firms in the heavily polluted sectors financially underperform those in less polluted sectors but have better "E" and "ENS" performance. As for the interaction terms, the coefficients in Columns (1)–(3), (5)–(9), and (11) are positive and significant, suggesting that the ESG-CFP relations are stronger for firms in the heavily polluted sectors, except for the impact of financial performance on social performance, as well as ROE's impact on the average environmental and social performance.

Regarding the triple effect in Table 11, all coefficients of three-item interactions are insignificant; therefore, there is no evidence of the moderating effect of firms in heavily/less polluted sectors on the ESG-CFP association during the COVID period.

4.6 Sustainability Performance and Financial Performance across Fama & French Five Industry Sectors

Table 12-Table 17 present the regression outputs for the ESG-CFP associations across five different sectors by Kenneth R. French: Cnsmr (Consumer Durables, Nondurables, Wholesale, Retail, and Some Services (Laundries, Repair Shops)), Manuf (Manufacturing, Energy, and Utilities), HiTec (Business Equipment, Telephone and Television Transmission), Hlth (Healthcare, Medical Equipment, and Drugs), and Other (Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment, Finance).

Table 12 and Table 13 contain the regression result when simultaneously regressing corporate financial performance measured by both ROA and ROE on the environmental pillar score and environmental pillar score on corporate financial performance measures. It is evident from the table that the positive bidirectional environmental-CFP bidirectional relationship holds for firms in Cnsmr, Manuf, HiTec, and Hlth sectors; however, the two insignificant coefficients

in Column (9) ($\beta = 0.006$, SE = 0.009) and Column (10) ($\beta = 0.035$, SE = 0.022) of both Table 12 and Table 13 indicates that the positive synergy does not show up for firms in the Other sector.

Table 14 and Table 15 show the regression result when simultaneously regressing the social pillar score on corporate financial performance and vice versa. For the relationship between social performance and ROA in Table 14, it is noticeable that firms in Cnsmr, Manuf, and Hlth have a positive association between social performance and ROA, but the bidirectional relationship does not hold for firms in HiTec and Other sectors. Specifically, looking at Columns (5) and (9), the coefficients on SOSCORE are both insignificant, meaning the improvement in social performance does not add value to ROA for firms in HiTec and Other sectors; however, the impact of ROA on social performance is positive and significant at the 5% for these firms. A subtle change is noticed in Column (10) of Table 15 that the positive synergy between ROE and social performance completely disappears for firms in the Other sector.

Table 16 and Table 17 display the relationship between the average of environmental and social performance and financial performance measures across five sectors. Apart from the insignificant coefficient on ENS in Column (9), all others are positive and significant, confirming the positive bidirectional relationship between the average "E" and "S" performance and ROA for firms in Cnsmr, Manuf, HiTec, and Hlth sectors. However, similar to what is reported in Table 14, there is a positive impact of ROA on firms' average "E" and "S" performance for firms in the Other sector. When using ROE as the alternative measure of financial performance in Table 17, firms in the Other sector fail to display a bidirectional relationship between ENS and ROE. In addition, HiTec firms' previously positive synergy between ENS and ROE is compromised, leaving only the positive impact of ROE on ENS.

Table 18-Table 23 report the 3SLS regression result for the ESG-CFP relationship during COVID-19.

It is found from Table 18 that positive coefficients on ENSCORE in Columns (1), (3), and (7) and on ROA in Columns (2), (4), (6), and (8), suggesting before the pandemic, the positive ENSCORE-ROA associations exist in the Cnsmr, Manuf, and Hlth sectors. For HiTec, we only see the positive impact of ROA on environmental performance, not the other way around. When running the regression for ENSCORE-ROE relations, it is observed in Table 19 that the positive coefficient on ROE becomes insignificant, suggesting the positive bidirectional ENSCORE-ROE relation holds only for firms in the Cnsmr, Manuf, and Hlth sectors. When observing the COVID interactions in Table 18 and Table 19, it is confirmed that the pandemic strengthens the impact of environmental performance on ROA for all sectors and the impact of ROA on environmental performance for firms in the HiTec sector. When using ROE for measuring financial performance in Table 19, the impact of environmental performance on ROE is stronger for firms in the Manuf and HiTec sectors. As for the impact of ROE on environmental performance, it is stronger during COVID-19 for firms in the HiTec sector. From Table 18 and Table 19, we notice that the COVID-19 pandemic strengthens the bidirectional relationship between ENSCORE and financial performance only for firms in the HiTec sector.

When it comes to the association between social and financial performance in Table 20 and Table 21, we find before the pandemic, the positive bidirectional relationship in the Cnsmr, Manuf, and Hlth sectors. For the Other sector, however, COVID-19 strengthens the impact of social performance on ROA and ROE but not ROA/ROE's impact on social performance.

Table 22 and Table 23 report the regression result of the ENS-CFP association. In Table 22 and Table 23, the positive bidirectional relationship between the average environmental and

social performance and corporate financial performance holds for firms in Cnsmr, Manuf, and Hlth pre-COVID-19, as reflected by the positive and significant coefficients on ENS, ROA/ROE in Columns (1)–(4) and Columns (7)–(8). However, for firms in the HiTec and Other sectors, it is found that before the pandemic, only ROA positively impacts their social performance. Observing the COVID interactions, it is found that the impact of ENS on ROA is stronger during COVID-19 for all sectors; however, the pandemic strengthens ROA's impact on the average environmental and social performance only for firms in the HiTec sector and weakens the impact only for firms in the Manuf sector. In Table 23, we see the positive moderating role of COVID-19 in the impact of ENS on ROE only for firms in the HiTec and Other sectors and the negative moderating effect of it in ROE's impact on the average environmental and social performance only for Cnsmr firms.

Chapter 5 Conclusion and Limitations

Using a sample of firms from the G20 countries spanning 2010–2021, this study undertakes a comprehensive investigation of the intricate interplay between sustainability and corporate financial performance, in the presence and absence of the COVID-19 factor. After controlling for a list of firm-level and country-level variables, including board size, board gender diversity, board independence, leadership duality, ESG-related compensation policy, CSR sustainability committee, firm size, leverage, R&D intensity, working capital ratio, country GDP growth rate, and Worldwide Governance Indicators, this study reveals a positive bidirectional relationship between sustainability and accounting-based financial performance. In essence, firms that demonstrate superior financial performance are more likely to exhibit better sustainability performance in the subsequent year, and conversely, firms that demonstrate superior sustainability performance are more likely to achieve better financial performance. Furthermore, the study's robustness is reinforced by its use of environmental pillar score, social pillar score, and the average of these scores for measuring sustainability performance, while financial performance is measured using the well-established metrics of ROA and ROE.

I have broadened the scope of the subcategory within the corporate sustainability framework by introducing three new attributes, namely the COVID-19 pandemic, ESG-related compensation policy, and CSR sustainability committee. The findings show that a positive bidirectional correlation between sustainability and financial performance is stronger during the pandemic years. Specifically, I find the positive impact of sustainability performance, as measured by the "E," "S," and their average, on ROA is more pronounced during the COVID-19 period, while the positive impact of ROA on solely environmental performance is stronger amidst the pandemic's impact. When using ROE as a proxy for financial performance, this study

establishes that positive impacts of environmental performance (ENSCORE) and sustainability performance (ENS) on ROE are further augmented during COVID-19.

As for the moderating effect of ESG-related compensation policy, I find that it exerts a positive influence on the relationship between sustainability and financial performance. Specifically, this policy demonstrates a positive moderating effect on the impact of social performance (SOSCORE) on ROA, as well as the effects of environmental performance (ENSCORE) and sustainability performance (ENS) on ROE. Moreover, ESG-related compensation policy has a positive moderating effect on the impact of ROA on all sustainability measures, and the impact of ROE on social performance (SOSCORE) and sustainability performance (ENS). However, the study also reveals that when considering the joint impact of COVID-19 and ESG-related compensation policy on regression models, the triple effect shows that the policy has no discernible impact on the bidirectional relationship during COVID-19.

With regards to the moderating effect of the CSR sustainability committee, this study finds it exerts a negative influence on the impact of sustainability performance on financial performance, except for the impact of social performance (SOSCORE) on ROE. Furthermore, the CSR sustainability committee positively moderates the impact of financial performance on sustainability performance. In other words, when a firm has a CSR sustainability committee in place, its financial performance is more likely to have positive impact on its sustainability performance.

This study also endeavours to investigate whether firms operating in heavily polluted industries can bolster the linkage between sustainability and financial performance. The results evince that the association between sustainability and financial performance is fortified for firms hailing from the pulp & paper, chemical, oil & gas, and metals & mining industries, albeit with

the exception of the influence of ROA on social performance (SOSCORE), the effect of ROE on social (SOSCORE), and sustainability performance (ENS). Correspondingly, when scrutinizing the collective impact of the COVID-19 pandemic and heavily polluted industry, I find that the latter does not affect the relationship between sustainability and financial performance during the pandemic.

Finally, I extended the scope of this study to investigate the two-way relationship between sustainability and financial performance across five different industry sectors: the consumer, manufacturing, technology, healthcare, and other. The findings reveal a significantly positive two-way association between environmental (ENSCORE) and financial performance for firms in the consumer, manufacturing, technology, and healthcare sectors, but not in the other sector. With regards to the association between social (SOSCORE) and financial performance, a bidirectional relationship is only found for firms in the consumer, manufacturing, and healthcare sectors, while technology firms exhibit a one-way relationship, where financial performance positively impacts social performance (SOSCORE). For firms in the other sector, a positive impact of ROA on social performance (SOSCORE) is noticed. Additionally, using the average of environmental and social pillar scores to measure sustainability performance, a positive correlation is observed between sustainability performance (ENS) and ROA for firms in the consumer, manufacturing, technology, and healthcare sectors. However, when ROE is used as the proxy for financial performance, the bidirectional relationship between sustainability performance (ENS) and ROE holds for firms in the consumer, manufacturing, healthcare sectors.

As to how COVID-19 impacts this bidirectional relationship between sustainability and financial performance across five sectors, results indicate that the bidirectional relationship between environmental (ENSCORE) and ROA is significantly heightened for firms across all

sectors during the pandemic, while the association between environmental performance and ROE is observed to be weaker for firms in the consumer sector and stronger for firms in the manufacturing and technology sectors. As for the social performance–ROA association, the pandemic weakens the impacts of ROA on social performance (SOSCORE) for firms in the consumer and manufacturing sectors but strengthens the reverse relationship for firms in the manufacturing, technology, healthcare, and other sectors. However, when financial performance is measured by ROE, the positive impact of social performance (SOSCORE) can only be observed for firms in the other sector. About the ENS–ROA relations, the impact of sustainability performance on ROA is enhanced for firms in all sectors, while the reverse impact is stronger only for firms in the technology sector and weaker only for firms in the manufacturing sector. By inspecting the ENS–ROE relations, the impact of sustainability performance on ROE is stronger for firms in the technology and other sectors, while the impact of ROE on sustainability is weakened for firms in the consumer sector during the pandemic.

This study represents a novel extension of the research conducted by Lu et al. (2022), who examined the relationship between sustainability and financial performance in G7 countries. By expanding their G7 countries to G20 countries, this study adds greater diversity to the sample and includes more developing nations, which enriches the dataset. One notable improvement over the previous study is that data for this study were collected in 2022, providing a more accurate reflection of the current situation. Lu et al. (2022), on the other hand, utilized year-end data from 2020, which does not fully capture the ongoing impact of the COVID-19 pandemic on the business world. Furthermore, this study is an innovative response to calls from leading scholars in the field who have urged for a more expansive approach to CSR–CFP studies by examining additional moderators that may influence this relationship. Specifically, this study

investigates the previously unexplored ESG-related compensation policy and CSR sustainability committee as potential moderators. Additionally, this study breaks new ground by examining the CSR–CFP relationship across a range of industry sectors, instead of focusing solely on specific industries, which can limit the number of observations. This approach provides a more comprehensive understanding of the relationship between sustainability and financial performance in various industries, thereby enhancing the generalizability of the study's findings.

This study, like any other, has limitations. One concerns the measures of financial and sustainability performance used. Specifically, the study utilized accounting-based financial performance measures such as ROA and ROE, which have displayed inconsistencies in various findings. To ensure the robustness of future studies on this topic, researchers are encouraged to employ a diverse range of financial performance measures. Furthermore, while the study provides empirical evidence for the sustainability-financial performance relationship across different industry sectors, it lacks adequate explanations for the observed variations. Therefore, future studies seeking to reexamine this relationship in various industries are encouraged to provide potential explanations for the discrepancies observed.

Table 1 Sample distributions by year and country

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	Percent
Argentina	-	-	-	-	-	1	7	9	12	12	11	6	58	0.16%
Australia	117	125	133	147	154	154	160	163	159	150	152	148	1,762	4.85%
Germany	54	56	55	55	61	64	65	78	115	124	176	123	1,026	2.82%
Belgium	9	9	10	10	10	10	12	16	20	22	21	18	167	0.46%
Brazil	17	17	19	19	17	18	17	17	17	24	24	11	217	0.60%
China	62	67	66	67	71	75	78	208	247	504	665	745	2,855	7.86%
Canada	130	126	121	129	137	146	149	154	157	195	216	148	1,808	4.98%
Denmark	16	16	16	16	16	16	17	18	23	28	31	31	244	0.67%
Spain	13	14	14	14	15	15	15	17	25	26	25	15	208	0.57%
Finland	20	21	21	22	20	20	20	21	27	29	48	41	310	0.85%
France	49	48	47	47	46	48	47	52	73	75	86	73	691	1.90%
Greece	7	7	6	6	6	6	6	6	8	9	9	3	79	0.22%
Indonesia	8	8	9	10	10	11	10	11	12	12	11	5	117	0.32%
India	39	49	52	54	59	63	65	65	73	93	99	124	835	2.30%
Ireland	8	8	9	9	11	12	11	11	11	11	11	9	121	0.33%
Italy	11	11	11	11	11	13	14	19	32	35	44	31	243	0.67%
Japan	292	289	287	293	296	299	304	301	310	323	332	291	3,617	9.95%
South Korea	67	69	71	75	80	87	88	102	106	118	108	16	987	2.72%
Luxemburg	4	5	5	5	5	5	7	7	7	8	9	4	71	0.20%
Mexico	2	3	3	3	4	4	5	6	6	6	5	9	56	0.15%
Netherlands	25	27	30	29	26	27	28	28	36	37	34	30	357	0.98%
Austria	9	8	8	8	9	9	9	10	16	19	19	17	141	0.39%
Poland	6	6	6	6	5	5	5	4	6	6	5	4	64	0.18%
Portugal	2	2	2	2	2	2	2	3	4	4	4	1	30	0.08%
Russia	9	9	9	9	10	10	9	9	11	13	13	6	117	0.32%
South Africa	20	27	48	46	42	41	42	43	42	40	39	36	466	1.28%
Sweden	24	25	25	24	25	33	35	37	57	72	115	103	575	1.58%
Saudi Arabia	2	2	2	2	2	3	3	5	15	18	18	13	85	0.23%
Turkey	12	13	13	14	15	15	14	19	34	39	47	40	275	0.76%
United Kingdom	115	120	116	117	112	125	125	126	142	159	202	162	1,621	4.46%
United States	917	925	917	908	890	1,217	1,573	1,860	1,957	2,053	2,173	1,741	17,131	47.15%
Total	2,066	2,112	2,131	2,157	2,167	2,554	2,942	3,425	3,760	4,264	4,752	4,004	36,334	100.00%
Percent	5.69%	5.81%	5.87%	5.94%	5.96%	7.03%	8.10%	9.43%	10.35%	11.74%	13.08%	11.02%	100.00%	

Table 2 Descriptive statistics

Variable	Description	Obs.	Mean	Sd	Min	Max
ROA	Net income to total assets	36,334	0.982	17.22	-91.31	32.88
ROE	Net income to common equity	36,334	3.969	51.22	-292.7	206.1
ENSCORE	Refinitiv Environment Pillar Score	36,334	37.33	30.3	0	99.22
SOSCORE	Refinitiv Social Pillar Score	36,334	46.49	24.71	0.26	99.56
ENS	Average of "E" and "S" pillar score	36,334	41.91	25.63	0.13	97.48
Board Size	Total number of board members at the end of the fiscal year	36,334	9.708	3.603	1	130
Board Gender Diversity	Percentage of female or foreign culture representation on the board	36,334	16.48	13.47	0	100
Board Independence	Percentage of independent board members	36,334	60.1	25.75	0	100
CEO-Chairman Separation	Dummy variable, 1 if CEO/Chairman are separated, 0 otherwise	36,334	0.382	0.486	0	1
Executive Compensation	Dummy variable, 1 if the firm has an ESG related compensation policy, 0 otherwise	36,334	0.276	0.447	0	1
CSR Sustainability Committee	Dummy variable, 1 if the firm has a CSR committee or team, 0 otherwise	36,334	0.519	0.5	0	1
Size	Natural log of total assets	36,334	14.91	1.898	4.127	20.44
Leverage	Long-term debt to total assets	36,334	17.92	16.67	0	76.66
RND	R&D expense to total assets	36,334	4.345	8.6	0	51.92
NWC	Net working capital over total assets	36,334	20.69	22.48	-23.49	88.6
GDP Growth Rate	Annual GDP growth rate from World Bank	36,334	2.11	3.001	-10.82	25.18
Country Governance	Average of Worldwide Governance Indicators from World Bank	36,334	6.291	3.433	-4.722	11.2

Note: All variables except country-level GDP growth and country governane are collected from Eikon database. All financial ratios are winsorized at 1% and 99% to remove the impact of outliers.

Table 3 Pairwise correlation

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) ROA	1.000																
(2) ROE	0.510***	1.000															
(3) ENSCORE	0.263***	0.151***	1.000														
(4) SOSCORE	0.143***	0.092***	0.733***	1.000													
(5) ENS	0.225***	0.134***	0.945***	0.916***	1.000												
(6) Board Size	0.151***	0.094***	0.397***	0.298***	0.379***	1.000											
(7) Board Gender Diversity	0.018***	0.009*	0.169***	0.317***	0.253***	0.048***	1.000										
(8) Board Independence	-0.087***	-0.035***	-0.110***	0.129***	-0.003	-0.215***	0.329***	1.000									
(9) CEO-Chairman Separation	0.028***	0.015***	-0.030***	-0.009*	-0.022***	0.041***	-0.018***	0.104***	1.000								
(10) Executive Compensation	0.056***	0.030***	0.246***	0.289***	0.285***	0.050***	0.246***	0.225***	-0.056***	1.000							
(11) CSR Sustainability Committee	0.201***	0.112***	0.684***	0.561***	0.675***	0.294***	0.128***	-0.079***	-0.054***	0.251***	1.000						
(12) Size	0.384***	0.203***	0.647***	0.492***	0.620***	0.508***	0.040***	-0.120***	0.063***	0.154***	0.487***	1.000					
(13) Leverage	-0.032***	-0.001	0.104***	0.137***	0.127***	0.113***	0.100***	0.190***	0.068***	0.117***	0.079***	0.225***	1.000				
(14) RND	-0.609***	-0.287***	-0.257***	-0.063***	-0.182***	-0.169***	0.024***	0.151***	0.005	-0.129***	-0.240***	-0.403***	-0.133***	1.000			
(15) NWC	-0.223***	-0.138***	-0.312***	-0.191***	-0.277***	-0.218***	-0.054***	0.063***	0.029***	-0.173***	-0.268***	-0.434***	-0.304***	0.452***	1.000		
(16) GDP Growth Rate	0.082***	0.052***	-0.069***	-0.115***	-0.097***	0.013**	-0.082***	-0.050***	0.002	-0.069***	-0.065***	0.045***	-0.063***	-0.031***	-0.029***	1.000	
(17) Country Governance	-0.083***	-0.052***	0.055***	0.130***	0.095***	-0.065***	0.097***	0.244***	0.014***	0.183***	0.063***	-0.082***	0.111***	0.071***	0.022***	-0.344***	1.000

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

Table 4 Main results: ESG and financial performance (3SLS)

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.038***						0.098***					
	(0.004)						(0.016)					
SOSCORE				0.037***						0.076***		
				(0.004)						(0.016)		
ENS					0.050***						0.116***	
					(0.005)						(0.018)	
ROA		0.089***		0.096***		0.093***						
		(0.009)		(0.008)		(0.007)						
ROE								0.015***		0.014***		0.015***
								(0.002)		(0.002)		(0.002)
Board Size	-0.190***	0.503***	-0.189***	0.542***	-0.196***	0.523***	-0.339***	0.490***	-0.327***	0.527***	-0.349***	0.508***
	(0.028)	(0.039)	(0.028)	(0.037)	(0.028)	(0.033)	(0.105)	(0.039)	(0.105)	(0.037)	(0.105)	(0.033)
Board Gender Diversity	0.033***	0.206***	0.030***	0.271***	0.029***	0.238***	0.035	0.210***	0.035	0.275***	0.028	0.243***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)	(0.025)	(0.009)	(0.025)	(0.009)	(0.025)	(0.008)
Board Independence	0.021***	-0.065***	0.015***	0.095***	0.018***	0.015***	0.056***	-0.063***	0.042***	0.097***	0.047***	0.017***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.013)	(0.005)	(0.013)	(0.005)	(0.013)	(0.004)
CEO-Chairman Separation	0.325**	-0.722***	0.343**	-1.390***	0.348**	-1.056***	0.402	-0.737***	0.420	-1.405***	0.446	-1.071***
	(0.160)	(0.221)	(0.160)	(0.208)	(0.160)	(0.188)	(0.591)	(0.221)	(0.592)	(0.209)	(0.591)	(0.188)
Executive Compensation	-0.252	2.918***	-0.308	4.356***	-0.333*	3.637***	-0.025	2.884***	-0.066	4.318***	-0.179	3.601***
	(0.191)	(0.264)	(0.192)	(0.249)	(0.192)	(0.225)	(0.708)	(0.265)	(0.711)	(0.249)	(0.710)	(0.225)
CSR Sustainability Committee	-0.432**	23.620***	-0.158	17.245***	-0.558***	20.433***	-0.565	23.594***	0.523	17.223***	-0.611	20.408***
	(0.214)	(0.258)	(0.203)	(0.243)	(0.215)	(0.220)	(0.792)	(0.259)	(0.751)	(0.244)	(0.794)	(0.220)
Size	1.399***	6.598***	1.463***	4.838***	1.360***	5.717***	2.194***	6.732***	2.462***	4.992***	2.168***	5.862***
	(0.066)	(0.085)	(0.064)	(0.080)	(0.067)	(0.073)	(0.246)	(0.084)	(0.238)	(0.079)	(0.247)	(0.071)
Leverage	-0.093***	-0.059***	-0.096***	0.003	-0.094***	-0.028***	-0.045**	-0.068***	-0.052***	-0.007	-0.048**	-0.038***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.019)	(0.007)	(0.019)	(0.007)	(0.019)	(0.006)
RND	-0.922***	0.218***	-0.930***	0.476***	-0.929***	0.348***	-1.193***	0.137***	-1.206***	0.385***	-1.209***	0.261***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.016)	(0.043)	(0.015)	(0.043)	(0.014)
NWC	0.009**	-0.074***	0.007	-0.021***	0.008*	-0.047***	-0.029*	-0.067***	-0.034**	-0.014**	-0.031*	-0.041***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.060	-0.616***	-0.055	-0.800***	-0.048	-0.708***	-0.058	-0.616***	-0.063	-0.799***	-0.036	-0.707***
	(0.050)	(0.070)	(0.050)	(0.065)	(0.050)	(0.059)	(0.186)	(0.070)	(0.186)	(0.066)	(0.186)	(0.059)
Country Governance	-0.266***	0.471***	-0.258***	0.346***	-0.268***	0.409***	-0.747***	0.464***	-0.719***	0.337***	-0.745***	0.400***
	(0.030)	(0.042)	(0.030)	(0.040)	(0.030)	(0.036)	(0.112)	(0.042)	(0.112)	(0.040)	(0.112)	(0.036)
Constant	-9.068***	-79.100***	-9.783***	-58.998***	-8.534***	-69.040***	-11.513	-80.401***	-14.706*	-60.485***	-11.081	-70.442***
	(2.174)	(2.978)	(2.166)	(2.805)	(2.177)	(2.529)	(8.041)	(2.976)	(8.011)	(2.805)	(8.051)	(2.529)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.37	0.639	0.37	0.517	0.371	0.635	0.096	0.639	0.096	0.515	0.096	0.634

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 5 Main results: ESG and financial performance (3SLS) during COVID-19

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.022*** (0.004)						0.080*** (0.016)					
SOSCORE			0.028*** (0.005)						0.067*** (0.017)			
ENS					0.035*** (0.005)						0.099*** (0.019)	
ROA		0.075*** (0.010)		0.100*** (0.009)		0.088*** (0.008)						
ROE								0.014*** (0.003)		0.016*** (0.003)		0.015*** (0.002)
COVID	-6.074*** (0.559)	1.628** (0.728)	-5.590*** (0.606)	2.227*** (0.686)	-6.315*** (0.585)	1.929*** (0.618)	-11.805*** (2.072)	1.328* (0.728)	-10.851*** (2.240)	1.869*** (0.686)	-11.963*** (2.168)	1.599*** (0.618)
COVID * ENSCORE	0.063*** (0.006)						0.076*** (0.021)					
COVID * SOSCORE			0.038*** (0.007)						0.035 (0.026)			
COVID * ENS					0.062*** (0.007)						0.069*** (0.025)	
COVID * ROA		0.034** (0.013)		-0.012 (0.012)		0.011 (0.011)						
COVID * ROE								0.003 (0.004)		-0.007 (0.004)		-0.002 (0.004)
Board Size	-0.176*** (0.028)	0.505*** (0.039)	-0.186*** (0.028)	0.541*** (0.037)	-0.187*** (0.028)	0.523*** (0.033)	-0.323*** (0.105)	0.490*** (0.039)	-0.323*** (0.105)	0.526*** (0.037)	-0.339*** (0.105)	0.508*** (0.033)
Board Gender Diversity	0.034*** (0.007)	0.206*** (0.009)	0.031*** (0.009)	0.271*** (0.009)	0.029*** (0.007)	0.239*** (0.008)	0.037 (0.025)	0.210*** (0.009)	0.035 (0.025)	0.275*** (0.009)	0.029 (0.025)	0.243*** (0.008)
Board Independence	0.021*** (0.003)	-0.064*** (0.005)	0.015*** (0.004)	0.095*** (0.005)	0.018*** (0.003)	0.015*** (0.004)	0.055*** (0.013)	-0.063*** (0.005)	0.042*** (0.013)	0.097*** (0.005)	0.047*** (0.013)	0.017*** (0.004)
CEO-Chairman Separation	0.338** (0.160)	-0.717*** (0.221)	0.346** (0.160)	-1.392*** (0.208)	0.356** (0.160)	-1.055*** (0.188)	0.418 (0.591)	-0.737*** (0.221)	0.423 (0.592)	-1.405*** (0.209)	0.456 (0.591)	-1.071*** (0.188)
Executive Compensation	-0.318* (0.191)	2.906*** (0.264)	-0.329* (0.192)	4.360*** (0.249)	-0.382** (0.192)	3.633*** (0.225)	-0.105 (0.708)	2.883*** (0.265)	-0.087 (0.711)	4.320*** (0.249)	-0.236 (0.710)	3.602*** (0.225)
CSR Sustainability Committee	-0.404* (0.214)	23.614*** (0.258)	-0.160 (0.203)	17.248*** (0.243)	-0.547** (0.214)	20.431*** (0.220)	-0.543 (0.792)	23.594*** (0.259)	0.517 (0.751)	17.223*** (0.244)	-0.607 (0.794)	20.409*** (0.220)
Size	1.369*** (0.066)	6.598*** (0.085)	1.451*** (0.064)	4.840*** (0.080)	1.336*** (0.067)	5.718*** (0.073)	2.154*** (0.246)	6.731*** (0.084)	2.451*** (0.238)	4.994*** (0.079)	2.139*** (0.247)	5.863*** (0.071)
Leverage	-0.095*** (0.005)	-0.060*** (0.007)	-0.097*** (0.005)	0.003 (0.007)	-0.096*** (0.005)	-0.028*** (0.006)	-0.047** (0.019)	-0.068*** (0.007)	-0.053*** (0.019)	-0.007 (0.007)	-0.049*** (0.019)	-0.038*** (0.006)
RND	-0.915*** (0.012)	0.220*** (0.019)	-0.929*** (0.012)	0.475*** (0.018)	-0.925*** (0.012)	0.348*** (0.016)	-1.185*** (0.043)	0.138*** (0.016)	-1.205*** (0.043)	0.384*** (0.016)	-1.204*** (0.043)	0.261*** (0.014)
NWC	0.010** (0.004)	-0.074*** (0.006)	0.007* (0.004)	-0.021*** (0.006)	0.009** (0.004)	-0.047*** (0.005)	-0.028* (0.016)	-0.067*** (0.006)	-0.034** (0.016)	-0.014** (0.006)	-0.030* (0.016)	-0.041*** (0.005)
GDP Growth Rate	-0.030 (0.050)	-0.615*** (0.070)	-0.032 (0.051)	-0.800*** (0.065)	-0.015 (0.050)	-0.708*** (0.059)	-0.022 (0.186)	-0.616*** (0.070)	-0.042 (0.187)	-0.799*** (0.066)	0.001 (0.187)	-0.707*** (0.059)
Country Governance	-0.266*** (0.030)	0.471*** (0.042)	-0.262*** (0.030)	0.346*** (0.040)	-0.271*** (0.030)	0.409*** (0.036)	-0.747*** (0.112)	0.464*** (0.042)	-0.722*** (0.112)	0.337*** (0.040)	-0.748*** (0.112)	0.400*** (0.036)
Constant	-8.369*** (2.171)	-79.068*** (2.978)	-9.282*** (2.167)	-59.024*** (2.805)	-7.782*** (2.175)	-69.039*** (2.529)	-10.645 (8.044)	-80.392*** (2.976)	-14.232* (8.018)	-60.505*** (2.805)	-10.208 (8.056)	-70.448*** (2.529)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.373	0.639	0.370	0.517	0.372	0.635	0.097	0.639	0.096	0.515	0.097	0.634

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6 Main results: ESG and financial performance (3SLS) – the moderating role of ESG-related compensation policy

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.038***						0.086***					
	(0.005)						(0.017)					
SOSCORE			0.032***						0.067***			
			(0.005)						(0.018)			
ENS					0.047***						0.104***	
					(0.005)						(0.020)	
ROA		0.080***		0.071***		0.076***						
		(0.010)		(0.009)		(0.008)						
ROE								0.014***		0.011***		0.012***
								(0.003)		(0.002)		(0.002)
Executive Compensation	-0.085	3.658***	-1.022**	5.017***	-0.484	4.338***	-2.336**	3.667***	-2.425	5.137***	-2.734**	4.402***
	(0.313)	(0.261)	(0.415)	(0.245)	(0.374)	(0.221)	(1.157)	(0.260)	(1.535)	(0.245)	(1.384)	(0.221)
Executive Compensation * ENSCORE	-0.002						0.041*					
	(0.006)						(0.021)					
Executive Compensation * SOSCORE			0.015**						0.034			
			(0.007)						(0.026)			
Executive Compensation * ENS					0.004						0.042*	
					(0.007)						(0.025)	
Executive Compensation * ROA		0.030*		0.087***		0.059***						
		(0.016)		(0.015)		(0.014)						
Executive Compensation * ROE								0.006		0.011**		0.009**
								(0.005)		(0.004)		(0.004)
Board Size	-0.189***	0.507***	-0.191***	0.546***	-0.197***	0.527***	-0.346***	0.493***	-0.333***	0.531***	-0.357***	0.512***
	(0.028)	(0.039)	(0.028)	(0.037)	(0.029)	(0.033)	(0.105)	(0.039)	(0.105)	(0.037)	(0.105)	(0.033)
Board Gender Diversity	0.033***	0.200***	0.030***	0.264***	0.028***	0.232***	0.034	0.203***	0.036	0.268***	0.028	0.236***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)	(0.025)	(0.009)	(0.025)	(0.009)	(0.025)	(0.008)
Board Independence	0.021***	-0.067***	0.015***	0.092***	0.017***	0.013***	0.055***	-0.065***	0.044***	0.095***	0.048***	0.015***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.013)	(0.005)	(0.013)	(0.005)	(0.013)	(0.004)
CEO-Chairman Separation	0.324**	-0.666***	0.348**	-1.326***	0.350**	-0.996***	0.409	-0.682***	0.411	-1.339***	0.445	-1.011***
	(0.160)	(0.221)	(0.160)	(0.208)	(0.160)	(0.187)	(0.591)	(0.221)	(0.592)	(0.208)	(0.592)	(0.188)
CSR Sustainability Committee	-0.436**	23.481***	-0.121	17.083***	-0.534**	20.282***	-0.396	23.452***	0.634	17.057***	-0.461	20.254***
	(0.215)	(0.258)	(0.203)	(0.243)	(0.215)	(0.219)	(0.794)	(0.258)	(0.752)	(0.243)	(0.796)	(0.219)
Size	1.403***	6.590***	1.451***	4.827***	1.360***	5.707***	2.154***	6.724***	2.424***	4.984***	2.125***	5.854***
	(0.067)	(0.085)	(0.065)	(0.080)	(0.067)	(0.072)	(0.247)	(0.084)	(0.240)	(0.079)	(0.248)	(0.071)
Leverage	-0.094***	-0.059***	-0.095***	0.003	-0.094***	-0.028***	-0.044**	-0.068***	-0.051***	-0.007	-0.046**	-0.038***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.019)	(0.007)	(0.019)	(0.007)	(0.019)	(0.006)
RND	-0.921***	0.214***	-0.930***	0.458***	-0.929***	0.337***	-1.202***	0.139***	-1.211***	0.386***	-1.216***	0.263***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.016)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.009**	-0.071***	0.007	-0.017***	0.008*	-0.044***	-0.031*	-0.066***	-0.035**	-0.012**	-0.032**	-0.039***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.061	-0.602***	-0.055	-0.777***	-0.048	-0.690***	-0.053	-0.603***	-0.061	-0.781***	-0.033	-0.692***
	(0.050)	(0.069)	(0.050)	(0.065)	(0.050)	(0.059)	(0.186)	(0.069)	(0.186)	(0.065)	(0.186)	(0.059)
Country Governance	-0.268***	0.456***	-0.254***	0.328***	-0.266***	0.393***	-0.724***	0.449***	-0.701***	0.319***	-0.723***	0.384***
	(0.030)	(0.042)	(0.030)	(0.039)	(0.030)	(0.036)	(0.113)	(0.042)	(0.113)	(0.040)	(0.113)	(0.036)
Constant	-9.122***	-78.833***	-9.456***	-58.645***	-8.461***	-68.730***	-10.695	-80.157***	-13.984*	-60.240***	-10.212	-70.197***
	(2.179)	(2.973)	(2.173)	(2.796)	(2.182)	(2.522)	(8.057)	(2.972)	(8.036)	(2.797)	(8.072)	(2.522)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.37	0.64	0.37	0.52	0.371	0.637	0.097	0.64	0.096	0.518	0.096	0.636

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 7 Main results: ESG and financial performance (3SLS) – the moderating role of ESG-related compensation policy during COVID-19

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.023*** (0.005)						0.071*** (0.018)					
SOSCORE			0.026*** (0.005)						0.067*** (0.019)			
ENS					0.033*** (0.006)						0.093*** (0.021)	
ROA		0.068*** (0.011)		0.077*** (0.011)		0.073*** (0.010)						
ROE								0.013*** (0.003)		0.014*** (0.003)		0.013*** (0.003)
COVID	-6.339*** (0.574)	1.285* (0.742)	-5.495*** (0.638)	1.838*** (0.697)	-6.497*** (0.610)	1.563** (0.629)	-11.528*** (2.125)	0.948 (0.741)	-9.991*** (2.360)	1.492** (0.697)	-11.439*** (2.261)	1.220* (0.629)
COVID * ENSCORE	0.064*** (0.007)						0.066** (0.027)					
COVID * SOSCORE			0.026*** (0.009)						0.007 (0.033)			
COVID * ENS					0.060*** (0.009)						0.053 (0.032)	
COVID * ROA		0.024* (0.015)		-0.022 (0.014)		0.001 (0.012)						
COVID * ROE								0.001 (0.005)		-0.009* (0.005)		-0.004 (0.004)
Executive Compensation	-0.492 (0.357)	3.343*** (0.297)	-1.189** (0.468)	4.667*** (0.279)	-0.821* (0.424)	4.005*** (0.252)	-2.073 (1.321)	3.303*** (0.294)	-1.735 (1.731)	4.760*** (0.277)	-2.226 (1.569)	4.032*** (0.249)
Executive Compensation * ENSCORE	-0.000 (0.007)						0.032 (0.025)					
Executive Compensation * SOSCORE			0.010 (0.008)						0.016 (0.030)			
Executive Compensation * ENS					0.005 (0.008)						0.029 (0.029)	
Executive Compensation * ROA		0.022 (0.020)		0.074*** (0.019)		0.048*** (0.017)						
Executive Compensation * ROE								0.005 (0.006)		0.009* (0.005)		0.007 (0.005)
Executive Compensation * COVID	1.576** (0.687)	1.273** (0.527)	1.098 (0.940)	1.529*** (0.496)	1.561* (0.835)	1.400*** (0.447)	-1.114 (2.545)	1.476*** (0.524)	-2.626 (3.479)	1.542*** (0.494)	-1.962 (3.093)	1.509*** (0.445)
Executive Compensation * COVID * ENSCORE	-0.016 (0.013)						0.028 (0.048)					
Executive Compensation * COVID * SOSCORE			0.008 (0.016)						0.068 (0.059)			
Executive Compensation * COVID * ENS					-0.012 (0.015)						0.045 (0.056)	
Executive Compensation * COVID * ROA		0.039 (0.033)		0.049 (0.031)		0.044 (0.028)						
Executive Compensation * COVID * ROE								0.009 (0.010)		0.007 (0.010)		0.008 (0.009)
Board Size	-0.177*** (0.028)	0.507*** (0.039)	-0.189*** (0.028)	0.544*** (0.037)	-0.189*** (0.028)	0.525*** (0.033)	-0.331*** (0.105)	0.492*** (0.039)	-0.332*** (0.105)	0.528*** (0.037)	-0.347*** (0.106)	0.510*** (0.033)
Board Gender Diversity	0.034*** (0.007)	0.199*** (0.009)	0.029*** (0.007)	0.262*** (0.009)	0.029*** (0.007)	0.231*** (0.008)	0.036 (0.025)	0.203*** (0.009)	0.035 (0.025)	0.267*** (0.009)	0.028 (0.025)	0.235*** (0.008)
Board Independence	0.021*** (0.004)	-0.066*** (0.005)	0.016*** (0.004)	0.093*** (0.005)	0.018*** (0.003)	0.013*** (0.004)	0.055*** (0.013)	-0.065*** (0.005)	0.044*** (0.013)	0.095*** (0.005)	0.048*** (0.013)	0.015*** (0.005)
CEO-Chairman Separation	0.338** (0.160)	-0.662*** (0.221)	0.349** (0.160)	-1.328*** (0.208)	0.357** (0.160)	-0.995*** (0.187)	0.416 (0.591)	-0.684*** (0.221)	0.409 (0.592)	-1.341*** (0.208)	0.447 (0.592)	-1.013*** (0.188)
CSR Sustainability Committee	-0.407* (0.214)	23.470*** (0.258)	-0.123 (0.203)	17.080*** (0.243)	-0.521** (0.215)	20.275*** (0.219)	-0.384 (0.794)	23.447*** (0.258)	0.615 (0.752)	17.054*** (0.243)	-0.469 (0.796)	20.250*** (0.219)
Size	1.378*** (0.067)	6.590*** (0.085)	1.447*** (0.065)	4.829*** (0.080)	1.342*** (0.067)	5.709*** (0.072)	2.114*** (0.247)	6.722*** (0.084)	2.415*** (0.240)	4.984*** (0.079)	2.096*** (0.249)	5.853*** (0.071)
Leverage	-0.095*** (0.005)	-0.060*** (0.007)	-0.097*** (0.005)	0.003 (0.007)	-0.096*** (0.005)	-0.029*** (0.006)	-0.046** (0.019)	-0.069*** (0.007)	-0.052*** (0.019)	-0.008 (0.007)	-0.048** (0.019)	-0.038*** (0.006)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RND	-0.914***	0.215***	-0.929***	0.456***	-0.925***	0.336***	-1.195***	0.140***	-1.210***	0.386***	-1.212***	0.263***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.017)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.010**	-0.071***	0.007*	-0.017***	0.009**	-0.044***	-0.029*	-0.065***	-0.035**	-0.012**	-0.031*	-0.039***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.030	-0.594***	-0.031	-0.769***	-0.014	-0.681***	-0.017	-0.595***	-0.043	-0.773***	0.003	-0.684***
	(0.050)	(0.069)	(0.051)	(0.065)	(0.050)	(0.059)	(0.186)	(0.070)	(0.187)	(0.065)	(0.187)	(0.059)
Country Governance	-0.269***	0.452***	-0.261***	0.324***	-0.272***	0.388***	-0.725***	0.445***	-0.706***	0.315***	-0.728***	0.380***
	(0.030)	(0.042)	(0.030)	(0.039)	(0.030)	(0.036)	(0.113)	(0.042)	(0.113)	(0.040)	(0.113)	(0.036)
Constant	-8.436***	-78.698***	-9.066***	-58.552***	-7.762***	-68.618***	-9.884	-80.006***	-13.703*	-60.117***	-9.451	-70.060***
	(2.175)	(2.973)	(2.174)	(2.796)	(2.181)	(2.522)	(8.059)	(2.972)	(8.044)	(2.797)	(8.078)	(2.522)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.373	0.641	0.371	0.52	0.372	0.637	0.097	0.64	0.096	0.518	0.097	0.636

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 8 Main results: ESG and financial performance (3SLS) – the moderating role of CSR sustainability committee

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.085***						0.172***					
	(0.006)						(0.023)					
SOSCORE			0.041***						0.079***			
			(0.007)						(0.024)			
ENS					0.085***						0.171***	
					(0.007)						(0.027)	
ROA		0.023**		0.031***		0.027***						
		(0.010)		(0.009)		(0.008)						
ROE								0.010***		0.006**		0.008***
								(0.003)		(0.003)		(0.002)
CSR Sustainability Committee	2.689***	23.604***	1.212***	17.025***	2.566***	20.314***	4.366***	24.222***	2.253*	17.642***	4.142***	20.932***
	(0.296)	(0.263)	(0.364)	(0.249)	(0.353)	(0.223)	(1.095)	(0.256)	(1.345)	(0.243)	(1.308)	(0.218)
CSR Sustainability Committee * ENSCORE	-0.083***						-0.127***					
	(0.007)						(0.027)					
CSR Sustainability Committee * SOSCORE			-0.019**						-0.017			
			(0.008)						(0.029)			
CSR Sustainability Committee * ENS					-0.071***						-0.103***	
					(0.008)						(0.031)	
CSR Sustainability Committee * ROA		0.177***		0.185***		0.181***						
		(0.017)		(0.017)		(0.015)						
CSR Sustainability Committee * ROE								0.014***		0.019***		0.016***
								(0.005)		(0.004)		(0.004)
Board Size	-0.180***	0.504***	-0.185***	0.539***	-0.183***	0.521***	-0.327***	0.500***	-0.325***	0.533***	-0.334***	0.516***
	(0.028)	(0.039)	(0.029)	(0.037)	(0.028)	(0.033)	(0.105)	(0.039)	(0.105)	(0.037)	(0.105)	(0.033)
Board Gender Diversity	0.030***	0.199***	0.031***	0.265***	0.029***	0.232***	0.030	0.204***	0.034	0.271***	0.027	0.237***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)	(0.025)	(0.009)	(0.025)	(0.009)	(0.025)	(0.008)
Board Independence	0.022***	-0.067***	0.016***	0.093***	0.019***	0.013***	0.058***	-0.065***	0.044***	0.095***	0.049***	0.015***
	(0.003)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.013)	(0.005)	(0.013)	(0.005)	(0.013)	(0.004)
CEO-Chairman Separation	0.370**	-0.712***	0.356**	-1.385***	0.374**	-1.048***	0.485	-0.720***	0.455	-1.394***	0.501	-1.057***
	(0.159)	(0.219)	(0.160)	(0.207)	(0.160)	(0.185)	(0.591)	(0.219)	(0.591)	(0.207)	(0.591)	(0.186)
Executive Compensation	-0.228	3.211***	-0.292	4.562***	-0.269	3.886***	-0.028	3.185***	-0.099	4.526***	-0.133	3.855***
	(0.191)	(0.261)	(0.193)	(0.246)	(0.192)	(0.221)	(0.707)	(0.261)	(0.712)	(0.247)	(0.710)	(0.222)
Size	1.434***	6.652***	1.460***	4.891***	1.393***	5.771***	2.202***	6.715***	2.412***	4.978***	2.168***	5.846***
	(0.066)	(0.084)	(0.064)	(0.079)	(0.067)	(0.071)	(0.246)	(0.083)	(0.238)	(0.078)	(0.247)	(0.070)
Leverage	-0.095***	-0.064***	-0.096***	0.001	-0.095***	-0.031***	-0.047**	-0.072***	-0.051***	-0.009	-0.049**	-0.040***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.019)	(0.007)	(0.019)	(0.007)	(0.019)	(0.006)
RND	-0.903***	0.171***	-0.927***	0.425***	-0.920***	0.298***	-1.165***	0.151***	-1.202***	0.390***	-1.195***	0.270***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.016)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.011**	-0.069***	0.008*	-0.018***	0.009**	-0.043***	-0.026	-0.064***	-0.033**	-0.012**	-0.029*	-0.038***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.059	-0.662***	-0.050	-0.834***	-0.046	-0.748***	-0.047	-0.660***	-0.047	-0.831***	-0.024	-0.746***
	(0.050)	(0.069)	(0.050)	(0.065)	(0.050)	(0.058)	(0.186)	(0.069)	(0.186)	(0.065)	(0.186)	(0.058)
Country Governance	-0.256***	0.496***	-0.261***	0.370***	-0.270***	0.433***	-0.735***	0.474***	-0.723***	0.346***	-0.750***	0.410***
	(0.030)	(0.042)	(0.030)	(0.039)	(0.030)	(0.035)	(0.112)	(0.042)	(0.112)	(0.039)	(0.112)	(0.035)
Constant	-11.051***	-80.691***	-10.392***	-60.326***	-10.458***	-70.507***	-14.102*	-81.167***	-14.925*	-61.007***	-13.425*	-71.086***
	(2.175)	(2.940)	(2.174)	(2.780)	(2.182)	(2.494)	(8.057)	(2.942)	(8.042)	(2.783)	(8.076)	(2.498)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.373	0.648	0.37	0.525	0.372	0.645	0.097	0.647	0.096	0.522	0.097	0.642

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 9 Main results: ESG and financial performance (3SLS) – the moderating role of CSR sustainability committee during COVID-19

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.062*** (0.007)						0.152*** (0.026)					
SOSCORE			0.050*** (0.007)						0.103*** (0.028)			
ENS					0.074*** (0.008)						0.170*** (0.031)	
ROA		0.014 (0.011)		0.032*** (0.011)		0.023** (0.009)						
ROE								0.012*** (0.003)		0.009*** (0.003)		0.010*** (0.003)
COVID	-6.855*** (0.583)	1.256* (0.762)	-4.716*** (0.700)	1.153 (0.721)	-6.691*** (0.661)	1.205* (0.647)	-12.535*** (2.166)	0.779 (0.760)	-8.981*** (2.594)	0.742 (0.719)	-11.634*** (2.451)	0.761 (0.645)
COVID * ENSCORE	0.098*** (0.014)						0.090* (0.050)					
COVID * SOSCORE			-0.030** (0.014)						-0.084 (0.052)			
COVID * ENS					0.052*** (0.016)						0.011 (0.060)	
COVID * ROA		0.036** (0.015)		-0.005 (0.014)		0.015 (0.013)						
COVID * ROE								-0.005 (0.005)		-0.007 (0.005)		-0.006 (0.005)
CSR Sustainability Committee	1.901*** (0.346)	24.139*** (0.296)	0.906** (0.416)	16.863*** (0.280)	1.815*** (0.409)	20.501*** (0.251)	3.379*** (1.284)	24.684*** (0.284)	2.096 (1.542)	17.574*** (0.269)	3.340** (1.517)	21.129*** (0.241)
CSR Sustainability Committee * ENSCORE	-0.067*** (0.008)						-0.113*** (0.031)					
CSR Sustainability Committee * SOSCORE			-0.032*** (0.009)						-0.044 (0.033)			
CSR Sustainability Committee * ENS					-0.065*** (0.010)						-0.107*** (0.036)	
CSR Sustainability Committee * ROA		0.152*** (0.021)		0.201*** (0.020)		0.176*** (0.018)						
CSR Sustainability Committee * ROE								0.004 (0.006)		0.018*** (0.005)		0.011** (0.005)
CSR Sustainability Committee * COVID	3.043*** (0.631)	-1.955*** (0.502)	1.484* (0.832)	0.506 (0.475)	3.008*** (0.783)	-0.724* (0.426)	3.723 (2.341)	-1.679*** (0.486)	0.949 (3.083)	0.321 (0.460)	3.079 (2.904)	-0.679* (0.413)
CSR Sustainability Committee * COVID * ENSCORE	-0.068*** (0.016)						-0.054 (0.060)					
CSR Sustainability Committee * COVID * SOSCORE			0.047*** (0.017)						0.099 (0.065)			
CSR Sustainability Committee * COVID * ENS					-0.024 (0.019)						0.019 (0.072)	
CSR Sustainability Committee * COVID * ROA		0.064* (0.035)		-0.042 (0.033)		0.011 (0.030)						
CSR Sustainability Committee * COVID * ROE								0.030*** (0.010)		0.003 (0.009)		0.017** (0.008)
Board Size	-0.166*** (0.028)	0.504*** (0.039)	-0.178*** (0.028)	0.539*** (0.037)	-0.175*** (0.028)	0.521*** (0.033)	-0.312*** (0.105)	0.498*** (0.039)	-0.317*** (0.105)	0.533*** (0.037)	-0.325*** (0.105)	0.516*** (0.033)
Board Gender Diversity	0.032*** (0.007)	0.199*** (0.009)	0.032*** (0.007)	0.265*** (0.009)	0.030*** (0.007)	0.232*** (0.008)	0.032 (0.025)	0.204*** (0.009)	0.034 (0.025)	0.271*** (0.009)	0.027 (0.025)	0.237*** (0.008)
Board Independence	0.022*** (0.003)	-0.066*** (0.005)	0.016*** (0.004)	0.093*** (0.005)	0.018*** (0.003)	0.014*** (0.004)	0.057*** (0.013)	-0.064*** (0.005)	0.043*** (0.013)	0.095*** (0.005)	0.048*** (0.013)	0.016*** (0.004)
CEO-Chairman Separation	0.393** (0.159)	-0.713*** (0.218)	0.357** (0.160)	-1.383*** (0.207)	0.390** (0.159)	-1.048*** (0.185)	0.510 (0.591)	-0.731*** (0.219)	0.451 (0.591)	-1.394*** (0.207)	0.514 (0.591)	-1.063*** (0.186)
Executive Compensation	-0.292 (0.191)	3.198*** (0.260)	-0.318* (0.192)	4.568*** (0.246)	-0.312 (0.192)	3.883*** (0.221)	-0.103 (0.707)	3.179*** (0.261)	-0.133 (0.712)	4.526*** (0.247)	-0.182 (0.711)	3.852*** (0.222)
Size	1.392*** (0.066)	6.649*** (0.084)	1.440*** (0.064)	4.893*** (0.080)	1.360*** (0.067)	5.771*** (0.071)	2.149*** (0.246)	6.718*** (0.083)	2.387*** (0.238)	4.977*** (0.078)	2.128*** (0.247)	5.848*** (0.070)
Leverage	-0.096*** (0.005)	-0.063*** (0.007)	-0.097*** (0.005)	0.001 (0.007)	-0.097*** (0.005)	-0.031*** (0.006)	-0.048** (0.019)	-0.071*** (0.007)	-0.052*** (0.019)	-0.009 (0.007)	-0.051*** (0.019)	-0.040*** (0.006)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
RND	-0.895***	0.177***	-0.921***	0.424***	-0.915***	0.300***	-1.156***	0.149***	-1.194***	0.390***	-1.189***	0.269***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.016)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.013***	-0.069***	0.009**	-0.018***	0.010**	-0.044***	-0.024	-0.064***	-0.031*	-0.012**	-0.028*	-0.038***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.023	-0.678***	-0.015	-0.832***	-0.003	-0.755***	0.001	-0.675***	-0.008	-0.827***	0.029	-0.751***
	(0.050)	(0.069)	(0.050)	(0.065)	(0.050)	(0.058)	(0.186)	(0.069)	(0.187)	(0.065)	(0.187)	(0.058)
Country Governance	-0.255***	0.494***	-0.258***	0.370***	-0.270***	0.432***	-0.733***	0.473***	-0.716***	0.346***	-0.749***	0.409***
	(0.030)	(0.041)	(0.030)	(0.039)	(0.030)	(0.035)	(0.112)	(0.042)	(0.112)	(0.039)	(0.112)	(0.035)
Constant	-10.075***	-80.724***	-10.279***	-60.314***	-9.629***	-70.518***	-12.962	-81.301***	-15.148*	-60.998***	-12.678	-71.149***
	(2.171)	(2.939)	(2.174)	(2.780)	(2.181)	(2.494)	(8.060)	(2.941)	(8.054)	(2.783)	(8.086)	(2.498)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.376	0.648	0.372	0.525	0.374	0.645	0.098	0.647	0.096	0.522	0.097	0.642

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 10 Main results: ESG and financial performance (3SLS) – the moderating role of heavily polluted industries

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.023***						0.066***					
	(0.004)						(0.016)					
SOSCORE			0.023***						0.041**			
			(0.005)						(0.017)			
ENS					0.033***						0.078***	
					(0.005)						(0.019)	
ROA		0.070***		0.100***		0.085***						
		(0.009)		(0.009)		(0.008)						
ROE								0.012***		0.014***		0.013***
								(0.003)		(0.002)		(0.002)
Heavily Polluted	-9.743***	8.634***	-8.317***	2.313	-9.710***	5.476**	-19.535***	8.403***	-17.728**	1.875	-20.092***	5.139**
	(1.995)	(2.734)	(2.000)	(2.577)	(2.001)	(2.323)	(7.393)	(2.737)	(7.402)	(2.580)	(7.410)	(2.326)
Heavily Polluted * ENSCORE	0.082***						0.171***					
	(0.007)						(0.025)					
Heavily Polluted * SOSCORE			0.063***						0.163***			
			(0.008)						(0.028)			
Heavily Polluted * ENS					0.087***						0.196***	
					(0.008)						(0.028)	
Heavily Polluted * ROA		0.074***		-0.015		0.030**						
		(0.015)		(0.014)		(0.012)						
Heavily Polluted * ROE								0.014***		-0.002		0.006
								(0.005)		(0.005)		(0.004)
Board Size	-0.183***	0.504***	-0.186***	0.542***	-0.191***	0.523***	-0.324***	0.489***	-0.317***	0.527***	-0.335***	0.508***
	(0.028)	(0.039)	(0.028)	(0.037)	(0.028)	(0.033)	(0.105)	(0.039)	(0.105)	(0.037)	(0.105)	(0.033)
Board Gender Diversity	0.031***	0.206***	0.030***	0.271***	0.027***	0.238***	0.033	0.210***	0.033	0.275***	0.025	0.243***
	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.008)	(0.025)	(0.009)	(0.025)	(0.009)	(0.025)	(0.008)
Board Independence	0.022***	-0.064***	0.015***	0.095***	0.018***	0.015***	0.057***	-0.063***	0.041***	0.097***	0.048***	0.017***
	(0.003)	(0.005)	(0.004)	(0.005)	(0.003)	(0.004)	(0.013)	(0.005)	(0.013)	(0.005)	(0.013)	(0.004)
CEO-Chairman Separation	0.306*	-0.735***	0.358**	-1.388***	0.349**	-1.061***	0.361	-0.736***	0.459	-1.405***	0.448	-1.071***
	(0.159)	(0.221)	(0.160)	(0.208)	(0.160)	(0.188)	(0.591)	(0.221)	(0.591)	(0.209)	(0.591)	(0.188)
Executive Compensation	-0.293	2.901***	-0.360*	4.359***	-0.394**	3.630***	-0.104	2.884***	-0.203	4.318***	-0.313	3.601***
	(0.191)	(0.264)	(0.192)	(0.249)	(0.192)	(0.225)	(0.708)	(0.265)	(0.711)	(0.249)	(0.710)	(0.225)
CSR Sustainability Committee	-0.424**	23.585***	-0.093	17.252***	-0.518**	20.419***	-0.508	23.579***	0.676	17.225***	-0.501	20.402***
	(0.214)	(0.258)	(0.203)	(0.244)	(0.214)	(0.220)	(0.792)	(0.259)	(0.751)	(0.244)	(0.794)	(0.220)
Size	1.373***	6.597***	1.455***	4.839***	1.338***	5.717***	2.149***	6.732***	2.438***	4.992***	2.124***	5.862***
	(0.066)	(0.085)	(0.064)	(0.080)	(0.067)	(0.073)	(0.246)	(0.084)	(0.238)	(0.079)	(0.247)	(0.071)
Leverage	-0.090***	-0.058***	-0.094***	0.003	-0.091***	-0.027***	-0.038**	-0.068***	-0.046**	-0.007	-0.040**	-0.038***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.019)	(0.007)	(0.019)	(0.007)	(0.019)	(0.006)
RND	-0.904***	0.237***	-0.927***	0.472***	-0.919***	0.355***	-1.156***	0.142***	-1.200***	0.384***	-1.184***	0.263***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.017)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.012***	-0.072***	0.008*	-0.021***	0.011**	-0.047***	-0.023	-0.067***	-0.032**	-0.014**	-0.026	-0.040***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.068	-0.619***	-0.065	-0.799***	-0.059	-0.709***	-0.076	-0.617***	-0.089	-0.799***	-0.062	-0.708***
	(0.050)	(0.069)	(0.050)	(0.065)	(0.050)	(0.059)	(0.186)	(0.070)	(0.186)	(0.066)	(0.186)	(0.059)
Country Governance	-0.285***	0.472***	-0.268***	0.346***	-0.285***	0.409***	-0.786***	0.464***	-0.744***	0.337***	-0.783***	0.401***
	(0.030)	(0.042)	(0.030)	(0.040)	(0.030)	(0.036)	(0.112)	(0.042)	(0.112)	(0.040)	(0.112)	(0.036)
Constant	-8.299***	-79.039***	-9.199***	-59.014***	-7.696***	-69.019***	-10.048	-80.375***	-13.158	-60.488***	-9.251	-70.431***
	(2.170)	(2.977)	(2.165)	(2.805)	(2.173)	(2.529)	(8.038)	(2.976)	(8.011)	(2.805)	(8.049)	(2.529)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.374	0.64	0.371	0.517	0.373	0.635	0.098	0.639	0.097	0.515	0.098	0.634

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 11 Main results: ESG and financial performance (3SLS) – the moderating role of heavily polluted industries during COVID-19

Dependent variable	(1) ROA	(2) ENSCORE	(3) ROA	(4) SOSCORE	(5) ROA	(6) ENS	(7) ROE	(8) ENSCORE	(9) ROE	(10) SOSCORE	(11) ROE	(12) ENS
ENSCORE	0.008* (0.005)						0.048*** (0.017)					
SOSCORE			0.014*** (0.005)						0.033* (0.019)			
ENS					0.019*** (0.005)						0.061*** (0.020)	
ROA		0.051*** (0.011)		0.100*** (0.010)		0.076*** (0.009)						
ROE								0.011*** (0.003)		0.017*** (0.003)		0.014*** (0.003)
COVID	-5.884*** (0.570)	1.531** (0.737)	-5.487*** (0.632)	2.199*** (0.694)	-6.142*** (0.604)	1.867*** (0.626)	-12.338*** (2.116)	1.345* (0.736)	-11.397*** (2.340)	1.854*** (0.694)	-12.498*** (2.238)	1.600** (0.626)
COVID * ENSCORE	0.061*** (0.006)						0.073*** (0.024)					
COVID * SOSCORE			0.039*** (0.008)						0.035 (0.029)			
COVID * ENS					0.061*** (0.008)						0.068** (0.028)	
COVID * ROA		0.048*** (0.016)		-0.002 (0.015)		0.023* (0.013)						
COVID * ROE								0.004 (0.005)		-0.009* (0.005)		-0.002 (0.004)
Heavily Polluted	-9.188*** (2.000)	8.556*** (2.739)	-8.062*** (2.012)	2.263 (2.582)	-9.253*** (2.010)	5.411** (2.327)	-20.162*** (7.425)	8.454*** (2.742)	-18.330** (7.451)	1.848 (2.584)	-20.690*** (7.454)	5.151** (2.330)
Heavily Polluted * ENSCORE	0.078*** (0.008)						0.172*** (0.028)					
Heavily Polluted * SOSCORE			0.064*** (0.009)						0.164*** (0.033)			
Heavily Polluted * ENS					0.084*** (0.009)						0.197*** (0.033)	
Heavily Polluted * ROA		0.090*** (0.018)		-0.001 (0.017)		0.045*** (0.016)						
Heavily Polluted * ROE								0.015** (0.006)		-0.005 (0.006)		0.005 (0.005)
Heavily Polluted * COVID	-1.654** (0.704)	0.211 (0.615)	-1.213 (0.940)	0.103 (0.580)	-1.712** (0.852)	0.157 (0.523)	2.318 (2.613)	-0.200 (0.609)	2.209 (3.481)	0.114 (0.574)	2.050 (3.159)	-0.043 (0.518)
Heavily Polluted * COVID * ENSCORE	0.018 (0.014)						0.010 (0.053)					
Heavily Polluted * COVID * SOSCORE			0.001 (0.017)						-0.004 (0.064)			
Heavily Polluted * COVID * ENS					0.014 (0.017)						0.006 (0.062)	
Heavily Polluted * COVID * ROA		-0.038 (0.029)		-0.037 (0.027)		-0.037 (0.024)						
Heavily Polluted * COVID * ROE								-0.004 (0.010)		0.008 (0.010)		0.002 (0.009)
Board Size	-0.170*** (0.028)	0.506*** (0.039)	-0.182*** (0.028)	0.542*** (0.037)	-0.181*** (0.028)	0.524*** (0.033)	-0.309*** (0.105)	0.490*** (0.039)	-0.314*** (0.105)	0.525*** (0.037)	-0.325*** (0.105)	0.508*** (0.033)
Board Gender Diversity	0.033*** (0.007)	0.206*** (0.009)	0.030*** (0.007)	0.271*** (0.009)	0.028*** (0.007)	0.239*** (0.008)	0.034 (0.025)	0.210*** (0.009)	0.033 (0.025)	0.275*** (0.009)	0.026 (0.025)	0.243*** (0.008)
Board Independence	0.022*** (0.003)	-0.064*** (0.005)	0.015*** (0.004)	0.095*** (0.005)	0.018*** (0.003)	0.016*** (0.004)	0.057*** (0.013)	-0.063*** (0.005)	0.041*** (0.013)	0.097*** (0.005)	0.048*** (0.013)	0.017*** (0.004)
CEO-Chairman Separation	0.315** (0.159)	-0.730*** (0.221)	0.356** (0.160)	-1.390*** (0.208)	0.352** (0.159)	-1.060*** (0.188)	0.388 (0.591)	-0.737*** (0.221)	0.470 (0.591)	-1.404*** (0.209)	0.467 (0.591)	-1.071*** (0.188)
Executive Compensation	-0.361* (0.191)	2.883*** (0.264)	-0.383** (0.192)	4.358*** (0.249)	-0.446** (0.191)	3.621*** (0.225)	-0.187 (0.708)	2.883*** (0.265)	-0.222 (0.711)	4.321*** (0.710)	-0.372 (0.710)	3.602*** (0.225)
CSR Sustainability Committee	-0.406* (0.213)	23.577*** (0.258)	-0.106 (0.203)	17.254*** (0.244)	-0.519** (0.214)	20.416*** (0.220)	-0.478 (0.792)	23.577*** (0.259)	0.688 (0.751)	17.226*** (0.244)	-0.482 (0.794)	20.402*** (0.220)
Size	1.341*** (0.066)	6.596*** (0.085)	1.441*** (0.064)	4.841*** (0.080)	1.311*** (0.067)	5.718*** (0.073)	2.111*** (0.246)	6.732*** (0.084)	2.431*** (0.238)	4.994*** (0.079)	2.097*** (0.247)	5.863*** (0.071)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Leverage	-0.091***	-0.058***	-0.095***	0.003	-0.092***	-0.028***	-0.039**	-0.068***	-0.047**	-0.007	-0.041**	-0.038***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.005)	(0.006)	(0.019)	(0.007)	(0.019)	(0.007)	(0.019)	(0.006)
RND	-0.897***	0.241***	-0.926***	0.472***	-0.914***	0.357***	-1.148***	0.142***	-1.200***	0.383***	-1.181***	0.263***
	(0.012)	(0.019)	(0.012)	(0.018)	(0.012)	(0.016)	(0.043)	(0.017)	(0.043)	(0.016)	(0.043)	(0.014)
NWC	0.014***	-0.072***	0.008*	-0.021***	0.012***	-0.047***	-0.021	-0.067***	-0.032**	-0.014**	-0.025	-0.041***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.004)	(0.005)	(0.016)	(0.006)	(0.016)	(0.006)	(0.016)	(0.005)
GDP Growth Rate	-0.038	-0.619***	-0.042	-0.799***	-0.024	-0.709***	-0.041	-0.617***	-0.068	-0.799***	-0.024	-0.708***
	(0.050)	(0.069)	(0.050)	(0.065)	(0.050)	(0.059)	(0.186)	(0.070)	(0.187)	(0.066)	(0.187)	(0.059)
Country Governance	-0.285***	0.471***	-0.273***	0.346***	-0.288***	0.409***	-0.785***	0.464***	-0.747***	0.336***	-0.785***	0.400***
	(0.030)	(0.042)	(0.030)	(0.040)	(0.030)	(0.036)	(0.112)	(0.042)	(0.112)	(0.040)	(0.112)	(0.036)
Constant	-7.669***	-78.982***	-8.741***	-59.027***	-7.009***	-68.999***	-8.968	-80.385***	-12.569	-60.494***	-8.229	-70.439***
	(2.166)	(2.977)	(2.166)	(2.806)	(2.172)	(2.529)	(8.041)	(2.976)	(8.021)	(2.805)	(8.056)	(2.529)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433	30,433
Adjusted R-squared	0.376	0.64	0.372	0.517	0.375	0.635	0.098	0.639	0.097	0.515	0.098	0.634

Note: Columns (1) and (2) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS with ROA as the proxy of financial performance and the average score of environmental and social pillars as the measure for ESG performance. Columns (7)–(12) follows the same order as in Column (1)–(6) but uses ROE as the proxy of financial performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.

*** p<0.01, ** p<0.05, * p<0.1

Table 12 ENSCORE and ROA across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE
ENSCORE	0.024***		0.020***		0.032***		0.085***		0.006	
	(0.006)		(0.005)		(0.010)		(0.020)		(0.009)	
ROA		0.118***		0.073***		0.071***		0.089***		0.035
		(0.029)		(0.020)		(0.014)		(0.017)		(0.022)
Board Size	0.047	0.515***	-0.125***	0.538***	-0.456***	0.472***	-0.492***	0.458***	0.075	0.460***
	(0.038)	(0.083)	(0.032)	(0.063)	(0.072)	(0.084)	(0.135)	(0.118)	(0.065)	(0.098)
Board Gender Diversity	0.008	0.212***	0.036***	0.193***	0.046***	0.149***	0.016	0.162***	0.037**	0.296***
	(0.010)	(0.022)	(0.008)	(0.016)	(0.015)	(0.018)	(0.029)	(0.025)	(0.016)	(0.024)
Board Independence	0.028***	-0.024**	0.025***	-0.061***	0.022***	-0.050***	-0.006	-0.160***	0.019**	-0.054***
	(0.005)	(0.012)	(0.004)	(0.008)	(0.008)	(0.009)	(0.017)	(0.015)	(0.008)	(0.012)
CEO-Chairman Separation	0.653***	0.193	-0.295	-2.429***	-0.646*	-0.291	0.967	0.251	0.550	-0.495
	(0.242)	(0.527)	(0.570)	(0.386)	(0.361)	(0.418)	(0.676)	(0.590)	(0.379)	(0.570)
Executive Compensation	-0.896***	3.936***	-1.461***	0.941**	-0.002	4.308***	2.091**	2.211***	1.210***	5.241***
	(0.285)	(0.617)	(0.223)	(0.435)	(0.485)	(0.558)	(0.891)	(0.776)	(0.413)	(0.617)
CSR Sustainability Committee	0.489	25.623***	-0.643***	19.031***	-0.520	28.864***	0.779	24.728***	-1.299***	19.666***
	(0.316)	(0.587)	(0.245)	(0.433)	(0.555)	(0.530)	(1.060)	(0.803)	(0.449)	(0.608)
Size	-0.076	6.184***	1.049***	7.622***	1.904***	5.343***	2.473***	6.462***	1.422***	7.227***
	(0.098)	(0.199)	(0.086)	(0.151)	(0.149)	(0.165)	(0.296)	(0.240)	(0.150)	(0.209)
Leverage	-0.036***	0.074***	-0.084***	-0.122***	-0.086***	-0.051***	-0.138***	-0.080***	-0.048***	-0.064***
	(0.008)	(0.018)	(0.007)	(0.014)	(0.012)	(0.013)	(0.019)	(0.017)	(0.011)	(0.017)
RND	-0.910***	0.233**	-0.285***	0.677***	-0.664***	0.271***	-0.969***	0.216***	-0.477***	0.225**
	(0.041)	(0.094)	(0.046)	(0.090)	(0.022)	(0.029)	(0.031)	(0.035)	(0.063)	(0.096)
NWC	0.065***	-0.039**	0.040***	-0.050***	0.016*	-0.068***	-0.044***	-0.070***	0.056***	-0.063***
	(0.008)	(0.017)	(0.007)	(0.014)	(0.009)	(0.010)	(0.016)	(0.014)	(0.010)	(0.016)
GDP Growth Rate	0.044	-0.697***	-0.121**	-0.610***	0.010	-0.575***	0.451*	-0.579***	-0.483***	-1.585***
	(0.069)	(0.150)	(0.056)	(0.108)	(0.134)	(0.155)	(0.245)	(0.214)	(0.107)	(0.160)
Country Governance	-0.244***	-0.158*	-0.295***	0.725***	-0.054	0.498***	-0.423***	0.673***	-0.273***	0.190**
	(0.042)	(0.092)	(0.033)	(0.064)	(0.088)	(0.102)	(0.158)	(0.137)	(0.061)	(0.092)
Constant	5.923***	-75.999***	-9.403***	-84.423***	-16.069***	-63.538***	-20.747***	-74.183***	-17.712***	-77.659***
	(1.956)	(4.126)	(1.491)	(2.787)	(2.582)	(2.906)	(4.582)	(3.797)	(2.213)	(3.213)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.152	0.61	0.156	0.557	0.473	0.679	0.501	0.711	0.108	0.603

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 13 ENSCORE and ROE across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE
ENSCORE	0.084***		0.091***		0.063*		0.205***		0.042	
	(0.027)		(0.021)		(0.037)		(0.072)		(0.033)	
ROE		0.018***		0.019***		0.013***		0.012***		0.010
		(0.006)		(0.005)		(0.004)		(0.004)		(0.006)
Board Size	-0.190	0.524***	-0.211	0.532***	-0.457*	0.449***	-1.551***	0.417***	0.019	0.460***
	(0.175)	(0.083)	(0.131)	(0.063)	(0.258)	(0.084)	(0.477)	(0.118)	(0.235)	(0.098)
Board Gender Diversity	0.019	0.215***	0.063*	0.194***	-0.012	0.154***	0.087	0.167***	0.044	0.298***
	(0.046)	(0.022)	(0.035)	(0.016)	(0.054)	(0.018)	(0.103)	(0.025)	(0.057)	(0.024)
Board Independence	0.083***	-0.021*	0.112***	-0.061***	0.045	-0.048***	-0.024	-0.160***	0.024	-0.055***
	(0.024)	(0.011)	(0.017)	(0.008)	(0.029)	(0.009)	(0.060)	(0.015)	(0.029)	(0.012)
CEO-Chairman Separation	0.572	0.189	-0.349	-2.464***	-1.664	-0.345	-0.025	0.291	1.892	-0.496
	(1.108)	(0.527)	(0.807)	(0.386)	(1.285)	(0.418)	(2.387)	(0.592)	(1.366)	(0.570)
Executive Compensation	0.731	3.833***	-3.947***	0.914**	-1.132	4.320***	3.855	2.308***	2.608*	5.245***
	(1.302)	(0.616)	(0.906)	(0.434)	(1.729)	(0.559)	(3.143)	(0.778)	(1.489)	(0.617)
CSR Sustainability Committee	-0.283	25.702***	-1.924*	19.000***	1.691	28.791***	3.448	24.782***	-2.150	19.637***
	(1.446)	(0.587)	(0.996)	(0.433)	(1.978)	(0.530)	(3.740)	(0.805)	(1.619)	(0.608)
Size	0.360	6.211***	2.213***	7.675***	1.603***	5.488***	3.955***	6.739***	3.678***	7.246***
	(0.449)	(0.199)	(0.349)	(0.149)	(0.532)	(0.161)	(1.045)	(0.232)	(0.540)	(0.207)
Leverage	-0.171***	0.070***	-0.089***	-0.125***	0.052	-0.060***	0.155**	-0.098***	-0.097**	-0.064***
	(0.037)	(0.018)	(0.028)	(0.013)	(0.041)	(0.013)	(0.068)	(0.017)	(0.041)	(0.017)
RND	-1.194***	0.137	-0.152	0.639***	-0.979***	0.221***	-0.950***	0.121***	-1.128***	0.207**
	(0.186)	(0.089)	(0.186)	(0.089)	(0.079)	(0.026)	(0.109)	(0.028)	(0.226)	(0.095)
NWC	0.081**	-0.028*	0.048*	-0.045***	-0.029	-0.063***	-0.116**	-0.063***	0.113***	-0.061***
	(0.035)	(0.017)	(0.028)	(0.014)	(0.031)	(0.010)	(0.056)	(0.014)	(0.038)	(0.016)
GDP Growth Rate	-0.216	-0.688***	-0.155	-0.607***	0.481	-0.574***	-0.255	-0.556***	-0.352	-1.594***
	(0.315)	(0.150)	(0.227)	(0.108)	(0.479)	(0.155)	(0.865)	(0.214)	(0.387)	(0.160)
Country Governance	-0.617***	-0.177*	-0.778***	0.721***	-0.001	0.499***	-2.000***	0.673***	-0.596***	0.188**
	(0.192)	(0.091)	(0.134)	(0.064)	(0.315)	(0.102)	(0.556)	(0.137)	(0.221)	(0.092)
Constant	11.918	-76.138***	-21.900***	-85.047***	-10.437	-65.057***	-20.340	-76.887***	-47.370***	-77.902***
	(8.937)	(4.128)	(6.053)	(2.773)	(9.197)	(2.888)	(16.172)	(3.758)	(7.983)	(3.186)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.61	0.059	0.557	0.141	0.678	0.146	0.709	0.062	0.603

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 14 SOSCORE and ROA across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE
SOSCORE	0.037***		0.068***		0.011		0.091***		-0.014	
	(0.007)		(0.005)		(0.011)		(0.020)		(0.010)	
ROA		0.145***		0.278***		0.034**		0.100***		0.044**
		(0.026)		(0.020)		(0.014)		(0.017)		(0.020)
Board Size	0.034	0.680***	-0.142***	0.429***	-0.443***	0.455***	-0.469***	0.244**	0.085	0.436***
	(0.038)	(0.074)	(0.032)	(0.062)	(0.072)	(0.081)	(0.135)	(0.115)	(0.065)	(0.089)
Board Gender Diversity	0.002	0.300***	0.017**	0.335***	0.049***	0.190***	0.012	0.171***	0.043***	0.287***
	(0.010)	(0.019)	(0.009)	(0.016)	(0.015)	(0.017)	(0.029)	(0.025)	(0.016)	(0.022)
Board Independence	0.023***	0.103***	0.018***	0.077***	0.020**	0.104***	-0.028*	0.089***	0.019**	0.037***
	(0.005)	(0.010)	(0.004)	(0.008)	(0.008)	(0.009)	(0.017)	(0.014)	(0.008)	(0.011)
CEO-Chairman Separation	0.660***	-0.196	-0.123	-3.246***	-0.662*	0.086	1.047	-0.702	0.541	-0.511
	(0.242)	(0.470)	(0.198)	(0.382)	(0.361)	(0.402)	(0.677)	(0.573)	(0.379)	(0.521)
Executive Compensation	-1.037***	6.310***	-1.754***	4.228***	0.105	3.527***	1.924**	3.422***	1.357***	7.553***
	(0.287)	(0.551)	(0.223)	(0.430)	(0.485)	(0.538)	(0.894)	(0.754)	(0.417)	(0.563)
CSR Sustainability Committee	0.458	17.691***	-1.410***	16.528***	0.221	19.604***	1.286	17.355***	-0.947**	15.575***
	(0.297)	(0.525)	(0.238)	(0.428)	(0.509)	(0.510)	(0.994)	(0.780)	(0.434)	(0.556)
Size	-0.075	3.881***	0.842***	4.964***	2.021***	4.707***	2.475***	5.736***	1.529***	4.639***
	(0.095)	(0.178)	(0.081)	(0.150)	(0.147)	(0.159)	(0.292)	(0.233)	(0.144)	(0.191)
Leverage	-0.037***	0.078***	-0.081***	-0.039***	-0.088***	0.005	-0.142***	-0.017	-0.048***	0.015
	(0.008)	(0.016)	(0.007)	(0.013)	(0.012)	(0.013)	(0.019)	(0.017)	(0.011)	(0.016)
RND	-0.913***	0.282***	-0.319***	0.944***	-0.659***	0.215***	-0.989***	0.458***	-0.471***	0.313***
	(0.041)	(0.084)	(0.046)	(0.089)	(0.022)	(0.028)	(0.032)	(0.034)	(0.063)	(0.088)
NWC	0.065***	-0.051***	0.039***	-0.022	0.014*	-0.028***	-0.048***	-0.019	0.055***	-0.078***
	(0.008)	(0.015)	(0.007)	(0.013)	(0.009)	(0.010)	(0.016)	(0.013)	(0.010)	(0.015)
GDP Growth Rate	0.064	-1.033***	-0.052	-1.242***	-0.003	-0.627***	0.403*	0.096	-0.509***	-1.061***
	(0.069)	(0.134)	(0.056)	(0.107)	(0.134)	(0.150)	(0.245)	(0.208)	(0.107)	(0.146)
Country Governance	-0.239***	-0.209**	-0.283***	0.104*	-0.042	0.456***	-0.474***	1.386***	-0.268***	0.233***
	(0.042)	(0.082)	(0.033)	(0.063)	(0.088)	(0.098)	(0.159)	(0.133)	(0.061)	(0.084)
Constant	5.764***	-41.256***	-7.241***	-51.220***	-17.527***	-54.210***	-20.336***	-73.303***	-18.815***	-44.083***
	(1.923)	(3.685)	(1.448)	(2.758)	(2.562)	(2.799)	(4.579)	(3.687)	(2.148)	(2.934)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.152	0.538	0.161	0.485	0.472	0.506	0.5	0.603	0.107	0.518

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 15 SOSCORE and ROE across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE
SOSCORE	0.099***		0.137***		0.010		0.291***		-0.043	
	(0.030)		(0.021)		(0.038)		(0.072)		(0.036)	
ROE		0.018***		0.036***		0.006*		0.014***		0.007
		(0.006)		(0.005)		(0.004)		(0.004)		(0.006)
Board Size	-0.212	0.689***	-0.219*	0.400***	-0.426*	0.443***	-1.507***	0.198*	0.063	0.436***
	(0.176)	(0.074)	(0.131)	(0.062)	(0.258)	(0.080)	(0.476)	(0.115)	(0.235)	(0.089)
Board Gender Diversity	0.006	0.303***	0.034	0.341***	-0.005	0.193***	0.069	0.177***	0.068	0.289***
	(0.047)	(0.019)	(0.035)	(0.016)	(0.055)	(0.017)	(0.103)	(0.025)	(0.057)	(0.021)
Board Independence	0.070***	0.107***	0.096***	0.081***	0.040	0.105***	-0.085	0.089***	0.024	0.038***
	(0.024)	(0.010)	(0.017)	(0.008)	(0.029)	(0.009)	(0.059)	(0.014)	(0.029)	(0.011)
CEO-Chairman Separation	0.597	-0.193	-0.130	-3.368***	-1.693	0.060	0.237	-0.656	1.850	-0.503
	(1.108)	(0.471)	(0.807)	(0.383)	(1.285)	(0.402)	(2.386)	(0.575)	(1.367)	(0.521)
Executive Compensation	0.445	6.183***	-4.451***	3.975***	-0.869	3.533***	3.135	3.531***	3.188**	7.567***
	(1.312)	(0.551)	(0.910)	(0.432)	(1.728)	(0.538)	(3.151)	(0.755)	(1.506)	(0.563)
CSR Sustainability Committee	0.174	17.791***	-2.450**	16.441***	3.404*	19.569***	3.378	17.409***	-0.576	15.529***
	(1.358)	(0.525)	(0.971)	(0.430)	(1.812)	(0.511)	(3.504)	(0.782)	(1.566)	(0.555)
Size	0.481	3.919***	2.181***	5.258***	1.888***	4.776***	3.532***	6.045***	4.166***	4.692***
	(0.434)	(0.177)	(0.329)	(0.148)	(0.525)	(0.155)	(1.029)	(0.226)	(0.518)	(0.189)
Leverage	-0.172***	0.072***	-0.091***	-0.060***	0.048	0.000	0.147**	-0.037**	-0.098**	0.013
	(0.037)	(0.016)	(0.028)	(0.013)	(0.041)	(0.013)	(0.068)	(0.016)	(0.041)	(0.016)
RND	-1.200***	0.158**	-0.189	0.791***	-0.967***	0.191***	-1.022***	0.351***	-1.106***	0.284***
	(0.186)	(0.080)	(0.186)	(0.089)	(0.079)	(0.025)	(0.112)	(0.027)	(0.227)	(0.086)
NWC	0.083**	-0.037**	0.045	-0.002	-0.031	-0.026***	-0.124**	-0.012	0.108***	-0.074***
	(0.035)	(0.015)	(0.028)	(0.013)	(0.031)	(0.010)	(0.056)	(0.013)	(0.038)	(0.014)
GDP Growth Rate	-0.176	-1.020***	-0.055	-1.232***	0.449	-0.627***	-0.371	0.121	-0.470	-1.074***
	(0.316)	(0.134)	(0.227)	(0.108)	(0.479)	(0.150)	(0.863)	(0.208)	(0.385)	(0.146)
Country Governance	-0.605***	-0.233***	-0.714***	0.067	0.029	0.457***	-2.221***	1.386***	-0.574***	0.229***
	(0.192)	(0.082)	(0.133)	(0.063)	(0.315)	(0.098)	(0.561)	(0.133)	(0.221)	(0.084)
Constant	9.960	-41.452***	-21.890***	-54.496***	-13.959	-54.939***	-13.810	-76.302***	-52.539***	-44.793***
	(8.791)	(3.688)	(5.897)	(2.756)	(9.127)	(2.781)	(16.137)	(3.649)	(7.749)	(2.910)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.537	0.06	0.481	0.141	0.505	0.148	0.6	0.062	0.518

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 16 ENS and ROA across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	ENS	ROA	ENS	ROA	ENS	ROA	ENS	ROA	ENS
ENS	0.038***		0.059***		0.029**		0.121***		-0.004	
	(0.007)		(0.006)		(0.012)		(0.024)		(0.011)	
ROA		0.132***		0.177***		0.053***		0.095***		0.040**
		(0.025)		(0.018)		(0.012)		(0.015)		(0.019)
Board Size	0.036	0.597***	-0.143***	0.483***	-0.453***	0.464***	-0.492***	0.351***	0.080	0.448***
	(0.038)	(0.071)	(0.032)	(0.055)	(0.072)	(0.071)	(0.135)	(0.100)	(0.065)	(0.083)
Board Gender Diversity	0.004	0.256***	0.024***	0.264***	0.046***	0.169***	0.010	0.167***	0.040**	0.291***
	(0.010)	(0.019)	(0.009)	(0.014)	(0.015)	(0.015)	(0.029)	(0.022)	(0.016)	(0.020)
Board Independence	0.026***	0.039***	0.023***	0.008	0.020**	0.027***	-0.016	-0.035***	0.018**	-0.008
	(0.005)	(0.010)	(0.004)	(0.007)	(0.008)	(0.008)	(0.017)	(0.012)	(0.008)	(0.010)
CEO-Chairman Separation	0.654***	-0.002	-0.175	-2.837***	-0.657*	-0.102	1.022	-0.226	0.544	-0.503
	(0.242)	(0.448)	(0.198)	(0.336)	(0.361)	(0.354)	(0.676)	(0.500)	(0.379)	(0.486)
Executive Compensation	-0.999***	5.124***	-1.618***	2.587***	0.017	3.917***	1.890**	2.816***	1.272***	6.397***
	(0.286)	(0.525)	(0.223)	(0.378)	(0.486)	(0.473)	(0.893)	(0.657)	(0.416)	(0.525)
CSR Sustainability Committee	0.280	21.656***	-1.340***	17.780***	-0.307	24.234***	0.293	21.041***	-1.096**	17.621***
	(0.315)	(0.500)	(0.248)	(0.377)	(0.554)	(0.449)	(1.060)	(0.680)	(0.451)	(0.519)
Size	-0.118	5.032***	0.821***	6.291***	1.926***	5.025***	2.266***	6.097***	1.487***	5.933***
	(0.098)	(0.169)	(0.085)	(0.132)	(0.152)	(0.140)	(0.304)	(0.203)	(0.149)	(0.178)
Leverage	-0.037***	0.076***	-0.080***	-0.080***	-0.087***	-0.023**	-0.137***	-0.049***	-0.048***	-0.025*
	(0.008)	(0.015)	(0.007)	(0.012)	(0.012)	(0.011)	(0.019)	(0.015)	(0.011)	(0.015)
RND	-0.912***	0.259***	-0.311***	0.811***	-0.663***	0.243***	-0.987***	0.337***	-0.474***	0.269***
	(0.041)	(0.080)	(0.046)	(0.078)	(0.022)	(0.024)	(0.031)	(0.029)	(0.063)	(0.082)
NWC	0.065***	-0.045***	0.041***	-0.036***	0.015*	-0.048***	-0.045***	-0.044***	0.055***	-0.070***
	(0.008)	(0.015)	(0.007)	(0.012)	(0.009)	(0.009)	(0.016)	(0.012)	(0.010)	(0.014)
GDP Growth Rate	0.059	-0.865***	-0.077	-0.926***	0.009	-0.601***	0.437*	-0.242	-0.498***	-1.323***
	(0.069)	(0.127)	(0.056)	(0.094)	(0.134)	(0.132)	(0.245)	(0.181)	(0.107)	(0.136)
Country Governance	-0.241***	-0.183**	-0.304***	0.415***	-0.052	0.477***	-0.485***	1.030***	-0.271***	0.212***
	(0.042)	(0.078)	(0.033)	(0.055)	(0.088)	(0.086)	(0.159)	(0.116)	(0.061)	(0.078)
Constant	6.393***	-58.625***	-6.908***	-67.800***	-16.365***	-58.870***	-17.938***	-73.728***	-18.417***	-60.868***
	(1.948)	(3.511)	(1.481)	(2.425)	(2.599)	(2.462)	(4.679)	(3.217)	(2.200)	(2.738)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.153	0.619	0.159	0.578	0.473	0.658	0.501	0.716	0.107	0.613

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 17 ENS and ROE across FF5 sectors

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	ENS	ROE	ENS	ROE	ENS	ROE	ENS	ROE	ENS
ENS	0.114***		0.151***		0.051		0.343***		0.005	
	(0.032)		(0.024)		(0.043)		(0.084)		(0.039)	
ROE		0.018***		0.027***		0.010***		0.013***		0.009
		(0.005)		(0.004)		(0.003)		(0.004)		(0.005)
Board Size	-0.215	0.607***	-0.235*	0.466***	-0.448*	0.446***	-1.567***	0.307***	0.040	0.448***
	(0.176)	(0.071)	(0.131)	(0.055)	(0.258)	(0.071)	(0.476)	(0.100)	(0.235)	(0.083)
Board Gender Diversity	0.007	0.259***	0.041	0.268***	-0.011	0.173***	0.066	0.172***	0.055	0.293***
	(0.047)	(0.019)	(0.035)	(0.014)	(0.055)	(0.015)	(0.103)	(0.022)	(0.057)	(0.020)
Board Independence	0.076***	0.043***	0.105***	0.010	0.040	0.029***	-0.047	-0.036***	0.022	-0.008
	(0.024)	(0.010)	(0.017)	(0.007)	(0.029)	(0.008)	(0.059)	(0.012)	(0.029)	(0.010)
CEO-Chairman Separation	0.579	-0.002	-0.137	-2.916***	-1.687	-0.143	0.136	-0.182	1.870	-0.500
	(1.107)	(0.449)	(0.807)	(0.336)	(1.285)	(0.354)	(2.385)	(0.502)	(1.367)	(0.486)
Executive Compensation	0.468	5.008***	-4.285***	2.445***	-1.058	3.927***	3.185	2.919***	2.814*	6.406***
	(1.308)	(0.525)	(0.908)	(0.379)	(1.731)	(0.474)	(3.148)	(0.660)	(1.501)	(0.526)
CSR Sustainability Committee	-0.613	21.746***	-2.932***	17.720***	2.314	24.180***	1.163	21.095***	-1.338	17.583***
	(1.439)	(0.500)	(1.007)	(0.377)	(1.975)	(0.450)	(3.737)	(0.683)	(1.627)	(0.518)
Size	0.299	5.065***	1.924***	6.466***	1.685***	5.132***	3.138***	6.391***	3.941***	5.969***
	(0.447)	(0.169)	(0.347)	(0.130)	(0.540)	(0.137)	(1.072)	(0.197)	(0.539)	(0.176)
Leverage	-0.173***	0.071***	-0.085***	-0.093***	0.049	-0.030***	0.160**	-0.067***	-0.099**	-0.026*
	(0.037)	(0.015)	(0.028)	(0.012)	(0.041)	(0.011)	(0.068)	(0.014)	(0.041)	(0.015)
RND	-1.200***	0.147*	-0.194	0.715***	-0.976***	0.206***	-1.005***	0.236***	-1.119***	0.246***
	(0.186)	(0.076)	(0.186)	(0.078)	(0.079)	(0.022)	(0.111)	(0.023)	(0.226)	(0.081)
NWC	0.083**	-0.033**	0.048*	-0.023**	-0.030	-0.044***	-0.116**	-0.038***	0.111***	-0.067***
	(0.035)	(0.014)	(0.028)	(0.012)	(0.031)	(0.009)	(0.056)	(0.012)	(0.038)	(0.013)
GDP Growth Rate	-0.176	-0.854***	-0.073	-0.919***	0.475	-0.600***	-0.274	-0.218	-0.414	-1.334***
	(0.316)	(0.127)	(0.227)	(0.094)	(0.479)	(0.132)	(0.863)	(0.182)	(0.387)	(0.136)
Country Governance	-0.609***	-0.205***	-0.770***	0.394***	0.006	0.478***	-2.206***	1.029***	-0.586***	0.208***
	(0.192)	(0.078)	(0.133)	(0.055)	(0.315)	(0.087)	(0.560)	(0.116)	(0.221)	(0.078)
Constant	12.477	-58.794***	-18.831***	-69.769***	-11.488	-59.998***	-9.576	-76.591***	-50.307***	-61.347***
	(8.903)	(3.514)	(6.024)	(2.417)	(9.257)	(2.448)	(16.505)	(3.187)	(7.937)	(2.716)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.619	0.06	0.576	0.141	0.658	0.148	0.714	0.062	0.612

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 18 ENSCORE and ROA across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE	ROA	ENSCORE
ENSCORE	0.018***		0.011**		0.005		0.066***		-0.006	
	(0.006)		(0.005)		(0.011)		(0.021)		(0.010)	
ROA		0.107***		0.076***		0.044***		0.083***		0.024
		(0.034)		(0.023)		(0.017)		(0.019)		(0.025)
COVID	-2.662***	-0.043	-4.753***	4.484***	-6.118***	-1.269	-3.937	5.963***	-7.840***	-5.728***
	(0.823)	(1.662)	(0.719)	(1.208)	(1.350)	(1.520)	(2.575)	(2.183)	(1.189)	(1.666)
COVID * ROA		0.033		-0.016		0.057***		0.011		0.042
		(0.057)		(0.042)		(0.020)		(0.022)		(0.048)
COVID * ENSCORE	0.026***		0.044***		0.093***		0.068***		0.056***	
	(0.009)		(0.008)		(0.013)		(0.024)		(0.014)	
Board Size	0.050	0.515***	-0.120***	0.537***	-0.432***	0.476***	-0.480***	0.457***	0.093	0.464***
	(0.038)	(0.083)	(0.098)	(0.063)	(0.072)	(0.084)	(0.135)	(0.118)	(0.065)	(0.098)
Board Gender Diversity	0.009	0.212***	0.037***	0.193***	0.049***	0.150***	0.015	0.162***	0.036**	0.296***
	(0.010)	(0.022)	(0.008)	(0.016)	(0.015)	(0.018)	(0.029)	(0.025)	(0.016)	(0.024)
Board Independence	0.028***	-0.024**	0.025***	-0.061***	0.022***	-0.050***	-0.005	-0.159***	0.019**	-0.054***
	(0.005)	(0.012)	(0.004)	(0.008)	(0.008)	(0.009)	(0.017)	(0.015)	(0.008)	(0.012)
CEO-Chairman Separation	0.665***	0.202	-0.301	-2.427***	-0.574	-0.278	0.961	0.258	0.591	-0.489
	(0.242)	(0.527)	(0.198)	(0.386)	(0.360)	(0.417)	(0.676)	(0.590)	(0.378)	(0.570)
Executive Compensation	-0.899***	3.929***	-1.494***	0.940**	-0.144	4.246***	1.981**	2.211***	1.167***	5.238***
	(0.285)	(0.617)	(0.223)	(0.435)	(0.484)	(0.559)	(0.891)	(0.776)	(0.412)	(0.617)
CSR Sustainability Committee	0.514	25.621***	-0.630**	19.033***	-0.335	28.849***	0.664	24.725***	-1.284***	19.660***
	(0.316)	(0.587)	(0.245)	(0.433)	(0.554)	(0.530)	(1.060)	(0.803)	(0.448)	(0.608)
Size	-0.091	6.181***	1.027***	7.625***	1.870***	5.354***	2.482***	6.463***	1.378***	7.218***
	(0.098)	(0.199)	(0.086)	(0.152)	(0.149)	(0.165)	(0.296)	(0.240)	(0.150)	(0.209)
Leverage	-0.036***	0.073***	-0.085***	-0.122***	-0.087***	-0.051***	-0.139***	-0.081***	-0.049***	-0.064***
	(0.008)	(0.018)	(0.007)	(0.014)	(0.012)	(0.013)	(0.019)	(0.017)	(0.011)	(0.017)
RND	-0.906***	0.233**	-0.279***	0.676***	-0.655***	0.274***	-0.967***	0.215***	-0.465***	0.237**
	(0.041)	(0.094)	(0.046)	(0.090)	(0.022)	(0.029)	(0.031)	(0.035)	(0.063)	(0.097)
NWC	0.065***	-0.039**	0.040***	-0.050***	0.018**	-0.067***	-0.041***	-0.070***	0.055***	-0.064***
	(0.008)	(0.017)	(0.007)	(0.014)	(0.009)	(0.010)	(0.016)	(0.014)	(0.010)	(0.016)
GDP Growth Rate	0.058	-0.697***	-0.106*	-0.610***	0.072	-0.574***	0.465*	-0.579***	-0.457***	-1.583***
	(0.069)	(0.150)	(0.056)	(0.108)	(0.134)	(0.155)	(0.245)	(0.214)	(0.107)	(0.160)
Country Governance	-0.240***	-0.158*	-0.300***	0.725***	-0.057	0.501***	-0.402**	0.675***	-0.277***	0.189**
	(0.042)	(0.092)	(0.033)	(0.064)	(0.088)	(0.102)	(0.157)	(0.137)	(0.061)	(0.092)
Constant	6.284***	-75.914***	-8.728***	-84.480***	-15.117***	-63.673***	-20.534***	-74.161***	-16.820***	-77.533***
	(1.958)	(4.128)	(1.495)	(2.789)	(2.578)	(2.904)	(4.579)	(3.799)	(2.221)	(3.217)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.154	0.610	0.158	0.557	0.476	0.679	0.502	0.711	0.111	0.604

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 19 ENSCORE and ROE across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE	ROE	ENSCORE
ENSCORE	0.073**		0.077***		0.024		0.198***		0.029	
	(0.029)		(0.022)		(0.039)		(0.075)		(0.035)	
ROE		0.026***		0.017***		0.007		0.014**		0.008
		(0.008)		(0.006)		(0.005)		(0.006)		(0.007)
COVID	-11.275***	0.082	-9.678***	4.304***	-3.974	-1.659	-18.548**	5.508**	-14.367***	-5.812***
	(3.764)	(1.648)	(2.924)	(1.203)	(4.823)	(1.520)	(9.098)	(2.187)	(4.296)	(1.661)
COVID * ROE		-0.026*		0.006		0.016**		-0.005		0.009
		(0.014)		(0.011)		(0.007)		(0.008)		(0.014)
COVID * ENSCORE	0.056		0.066**		0.145***		0.029		0.062	
	(0.039)		(0.033)		(0.047)		(0.086)		(0.049)	
Board Size	-0.186	0.522***	-0.204	0.532***	-0.421	0.452***	-1.547***	0.416***	0.039	0.462***
	(0.175)	(0.083)	(0.131)	(0.063)	(0.258)	(0.084)	(0.477)	(0.118)	(0.236)	(0.098)
Board Gender Diversity	0.018	0.215***	0.065*	0.194***	-0.008	0.155***	0.087	0.167***	0.043	0.297***
	(0.046)	(0.022)	(0.035)	(0.016)	(0.054)	(0.018)	(0.103)	(0.025)	(0.057)	(0.024)
Board Independence	0.082***	-0.022*	0.112***	-0.061***	0.044	-0.048***	-0.024	-0.160***	0.025	-0.055***
	(0.024)	(0.012)	(0.017)	(0.008)	(0.029)	(0.009)	(0.060)	(0.015)	(0.029)	(0.012)
CEO-Chairman Separation	0.596	0.220	-0.358	-2.469***	-1.551	-0.334	-0.027	0.286	1.938	-0.488
	(1.107)	(0.527)	(0.806)	(0.386)	(1.285)	(0.418)	(2.387)	(0.592)	(1.367)	(0.571)
Executive Compensation	0.712	3.861***	-3.996***	0.917**	-1.364	4.306***	3.805	2.311***	2.556*	5.247***
	(1.302)	(0.616)	(0.906)	(0.434)	(1.729)	(0.559)	(3.147)	(0.778)	(1.489)	(0.617)
CSR Sustainability Committee	-0.304	25.698***	-1.899*	18.999***	1.908	28.787***	3.379	24.777***	-2.150	19.630***
	(1.446)	(0.587)	(0.996)	(0.433)	(1.977)	(0.530)	(3.744)	(0.805)	(1.619)	(0.608)
Size	0.309	6.224***	2.181***	7.674***	1.539***	5.491***	3.954***	6.741***	3.624***	7.245***
	(0.450)	(0.199)	(0.350)	(0.149)	(0.532)	(0.161)	(1.045)	(0.232)	(0.542)	(0.207)
Leverage	-0.172***	0.070***	-0.090***	-0.125***	0.050	-0.061***	0.155**	-0.098***	-0.098**	-0.064***
	(0.037)	(0.018)	(0.028)	(0.013)	(0.041)	(0.013)	(0.068)	(0.017)	(0.041)	(0.017)
RND	-1.186***	0.141	-0.142	0.638***	-0.965***	0.224***	-0.949***	0.121***	-1.115***	0.208**
	(0.186)	(0.089)	(0.186)	(0.089)	(0.079)	(0.026)	(0.109)	(0.028)	(0.227)	(0.095)
NWC	0.082**	-0.027	0.049*	-0.045***	-0.025	-0.062***	-0.115**	-0.063***	0.112***	-0.060***
	(0.035)	(0.017)	(0.028)	(0.014)	(0.031)	(0.010)	(0.056)	(0.014)	(0.038)	(0.016)
GDP Growth Rate	-0.183	-0.686***	-0.132	-0.607***	0.579	-0.573***	-0.249	-0.554***	-0.322	-1.593***
	(0.316)	(0.150)	(0.227)	(0.108)	(0.479)	(0.155)	(0.865)	(0.214)	(0.387)	(0.160)
Country Governance	-0.609***	-0.178*	-0.785***	0.721***	-0.008	0.501***	-1.991***	0.672***	-0.601***	0.190**
	(0.192)	(0.091)	(0.134)	(0.064)	(0.315)	(0.102)	(0.556)	(0.137)	(0.221)	(0.092)
Constant	12.907	-76.369***	-20.902***	-85.027***	-8.804	-65.137***	-20.188	-76.939***	-46.322***	-77.909***
	(8.954)	(4.128)	(6.077)	(2.774)	(9.209)	(2.888)	(16.176)	(3.759)	(8.024)	(3.186)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.610	0.059	0.557	0.142	0.678	0.146	0.709	0.063	0.603

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and environmental pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 20 SOSCORE and ROA across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE	ROA	SOSCORE
SOSCORE	0.037***		0.064***		-0.008		0.076***		-0.026**	
	(0.007)		(0.005)		(0.011)		(0.022)		(0.011)	
ROA		0.192***		0.328***		0.020		0.097***		0.051**
		(0.031)		(0.023)		(0.016)		(0.019)		(0.023)
COVID	-1.646*	-3.752**	-3.339***	-0.402	-6.597***	4.340***	-5.046*	15.652***	-8.319***	-1.161
	(0.881)	(1.483)	(0.730)	(1.195)	(1.490)	(1.465)	(2.763)	(2.120)	(1.293)	(1.521)
COVID * ROA		-0.146***		-0.182***		0.030		0.005		-0.030
		(0.051)		(0.041)		(0.019)		(0.021)		(0.044)
COVID * SOSCORE	0.003		0.020**		0.063***		0.050*		0.054***	
	(0.010)		(0.009)		(0.016)		(0.028)		(0.017)	
Board Size	0.034	0.678***	-0.142***	0.427***	-0.437***	0.457***	-0.462***	0.244**	0.096	0.434***
	(0.038)	(0.074)	(0.032)	(0.062)	(0.072)	(0.081)	(0.135)	(0.115)	(0.065)	(0.089)
Board Gender Diversity	0.002	0.299***	0.017**	0.334***	0.051***	0.191***	0.011	0.171***	0.042***	0.287***
	(0.010)	(0.019)	(0.009)	(0.016)	(0.015)	(0.017)	(0.029)	(0.025)	(0.016)	(0.022)
Board Independence	0.023***	0.102***	0.018***	0.076***	0.020**	0.104***	-0.027	0.089***	0.019**	0.037***
	(0.005)	(0.010)	(0.004)	(0.008)	(0.008)	(0.009)	(0.017)	(0.014)	(0.008)	(0.011)
CEO-Chairman Separation	0.660***	-0.234	-0.131	-3.213***	-0.634*	0.093	1.045	-0.699	0.584	-0.515
	(0.242)	(0.470)	(0.198)	(0.382)	(0.361)	(0.402)	(0.677)	(0.573)	(0.379)	(0.521)
Executive Compensation	-1.043***	6.340***	-1.768***	4.230***	0.047	3.494***	1.910**	3.422***	1.355***	7.556***
	(0.287)	(0.551)	(0.223)	(0.430)	(0.485)	(0.538)	(0.894)	(0.754)	(0.417)	(0.563)
CSR Sustainability Committee	0.446	17.698***	-1.407***	16.544***	0.278	19.597***	1.229	17.354***	-0.967*	15.579***
	(0.297)	(0.524)	(0.238)	(0.428)	(0.508)	(0.510)	(0.995)	(0.780)	(0.434)	(0.556)
Size	-0.078	3.895***	0.838***	4.988***	1.986***	4.713***	2.489***	5.738***	1.510***	4.647***
	(0.095)	(0.177)	(0.081)	(0.150)	(0.148)	(0.159)	(0.292)	(0.233)	(0.144)	(0.191)
Leverage	-0.037***	0.078***	-0.082***	-0.041***	-0.090***	0.005	-0.144***	-0.017	-0.049***	0.015
	(0.008)	(0.016)	(0.007)	(0.013)	(0.012)	(0.013)	(0.019)	(0.017)	(0.011)	(0.016)
RND	-0.913***	0.279***	-0.316***	0.936***	-0.658***	0.217***	-0.988***	0.457***	-0.466***	0.304***
	(0.041)	(0.084)	(0.046)	(0.089)	(0.022)	(0.028)	(0.032)	(0.034)	(0.063)	(0.089)
NWC	0.065***	-0.052***	0.039***	-0.020	0.014*	-0.028***	-0.047***	-0.019	0.054***	-0.078***
	(0.008)	(0.015)	(0.007)	(0.013)	(0.009)	(0.010)	(0.016)	(0.013)	(0.010)	(0.015)
GDP Growth Rate	0.066	-1.033***	-0.040	-1.242***	0.035	-0.627***	0.440*	0.096	-0.479***	-1.063***
	(0.069)	(0.134)	(0.056)	(0.107)	(0.135)	(0.150)	(0.246)	(0.208)	(0.107)	(0.146)
Country Governance	-0.238***	-0.211***	-0.285***	0.105*	-0.066	0.458***	-0.465***	1.387***	-0.273***	0.234***
	(0.042)	(0.082)	(0.033)	(0.063)	(0.089)	(0.098)	(0.159)	(0.133)	(0.061)	(0.084)
Constant	5.827***	-41.635***	-7.045***	-51.702***	-16.196***	-54.280***	-20.093***	-73.301***	-18.188***	-44.191***
	(1.927)	(3.685)	(1.451)	(2.758)	(2.586)	(2.798)	(4.580)	(3.689)	(2.155)	(2.938)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.152	0.538	0.161	0.486	0.474	0.506	0.501	0.603	0.109	0.518

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and social pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 21 SOSCORE and ROE across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE	ROE	SOSCORE
SOSCORE	0.100***		0.135***		-0.000		0.299***		-0.073*	
	(0.032)		(0.022)		(0.041)		(0.078)		(0.039)	
ROE		0.027***		0.041***		0.005		0.013**		0.010
		(0.007)		(0.006)		(0.005)		(0.005)		(0.007)
COVID	-9.083**	-4.385***	-6.696**	-1.585	-2.186	4.151***	-19.639**	15.160***	-18.127***	-1.386
	(4.027)	(1.473)	(2.975)	(1.195)	(5.312)	(1.464)	(9.743)	(2.123)	(4.666)	(1.517)
COVID * ROE		-0.028**		-0.021*		0.002		0.001		-0.012
		(0.012)		(0.011)		(0.007)		(0.008)		(0.012)
COVID * SOSCORE	0.007		0.015		0.038		-0.026		0.129**	
	(0.047)		(0.036)		(0.058)		(0.098)		(0.060)	
Board Size	-0.214	0.687***	-0.219*	0.400***	-0.422	0.444***	-1.511***	0.198*	0.090	0.433***
	(0.176)	(0.074)	(0.131)	(0.062)	(0.258)	(0.080)	(0.476)	(0.115)	(0.235)	(0.089)
Board Gender Diversity	0.005	0.303***	0.034	0.341***	-0.004	0.193***	0.069	0.177***	0.066	0.289***
	(0.047)	(0.019)	(0.035)	(0.016)	(0.055)	(0.017)	(0.103)	(0.025)	(0.057)	(0.021)
Board Independence	0.070***	0.106***	0.096***	0.081***	0.040	0.105***	-0.086	0.089***	0.025	0.038***
	(0.024)	(0.010)	(0.017)	(0.008)	(0.029)	(0.009)	(0.059)	(0.014)	(0.029)	(0.011)
CEO-Chairman Separation	0.597	-0.160	-0.132	-3.352***	-1.676	0.062	0.238	-0.655	1.953	-0.515
	(1.108)	(0.471)	(0.807)	(0.383)	(1.286)	(0.402)	(2.386)	(0.575)	(1.367)	(0.521)
Executive Compensation	0.423	6.213***	-4.468***	3.966***	-0.906	3.531***	3.144	3.530***	3.190**	7.564***
	(1.312)	(0.551)	(0.910)	(0.432)	(1.729)	(0.538)	(3.151)	(0.755)	(1.505)	(0.563)
CSR Sustainability Committee	0.118	17.787***	-2.471**	16.443***	3.430*	19.568***	3.413	17.410***	-0.609	15.538***
	(1.358)	(0.525)	(0.971)	(0.430)	(1.812)	(0.511)	(3.507)	(0.782)	(1.565)	(0.555)
Size	0.468	3.932***	2.171***	5.262***	1.865***	4.777***	3.526***	6.044***	4.126***	4.694***
	(0.434)	(0.178)	(0.329)	(0.148)	(0.527)	(0.155)	(1.030)	(0.226)	(0.518)	(0.189)
Leverage	-0.172***	0.072***	-0.092***	-0.061***	0.047	0.000	0.148**	-0.037**	-0.101**	0.013
	(0.037)	(0.016)	(0.028)	(0.013)	(0.041)	(0.013)	(0.068)	(0.016)	(0.041)	(0.016)
RND	-1.200***	0.162**	-0.187	0.796***	-0.967***	0.192***	-1.022***	0.351***	-1.093***	0.283***
	(0.186)	(0.080)	(0.186)	(0.089)	(0.079)	(0.025)	(0.112)	(0.027)	(0.226)	(0.086)
NWC	0.083**	-0.036**	0.045	-0.002	-0.031	-0.026***	-0.124**	-0.012	0.107***	-0.074***
	(0.035)	(0.015)	(0.028)	(0.013)	(0.031)	(0.010)	(0.056)	(0.013)	(0.038)	(0.014)
GDP Growth Rate	-0.169	-1.018***	-0.044	-1.231***	0.472	-0.626***	-0.391	0.120	-0.399	-1.075***
	(0.317)	(0.134)	(0.228)	(0.108)	(0.480)	(0.150)	(0.866)	(0.208)	(0.387)	(0.146)
Country Governance	-0.604***	-0.234***	-0.716***	0.067	0.014	0.457***	-2.225***	1.386***	-0.586***	0.226***
	(0.192)	(0.082)	(0.133)	(0.063)	(0.316)	(0.098)	(0.561)	(0.133)	(0.221)	(0.084)
Constant	10.182	-41.702***	-21.665***	-54.566***	-13.136	-54.951***	-13.959	-76.289***	-51.082***	-44.787***
	(8.808)	(3.688)	(5.911)	(2.755)	(9.221)	(2.781)	(16.149)	(3.650)	(7.778)	(2.910)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.537	0.060	0.482	0.141	0.505	0.148	0.600	0.063	0.518

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and social pillar score as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 22 ENS and ROA across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROA	ENS	ROA	ENS	ROA	ENS	ROA	ENS	ROA	ENS
ENS	0.034***		0.051***		0.002		0.100***		-0.018	
	(0.007)		(0.006)		(0.013)		(0.025)		(0.011)	
ROA		0.150***		0.203***		0.032**		0.091***		0.038*
		(0.029)		(0.020)		(0.014)		(0.017)		(0.022)
COVID	-2.355***	-1.894	-4.292***	2.048*	-7.132***	1.536	-5.226*	10.808***	-8.364***	-3.444**
	(0.857)	(1.414)	(0.738)	(1.051)	(1.416)	(1.288)	(2.671)	(1.849)	(1.246)	(1.420)
COVID * ROA		-0.057		-0.099***		0.044**		0.008		0.006
		(0.049)		(0.036)		(0.017)		(0.019)		(0.041)
COVID * ENS	0.019*		0.036***		0.096***		0.070**		0.062***	
	(0.010)		(0.009)		(0.016)		(0.028)		(0.016)	
Board Size	0.038	0.597***	-0.140***	0.482***	-0.436***	0.466***	-0.481***	0.351***	0.097	0.449***
	(0.038)	(0.071)	(0.032)	(0.055)	(0.072)	(0.071)	(0.135)	(0.100)	(0.065)	(0.084)
Board Gender Diversity	0.004	0.256***	0.025***	0.264***	0.049***	0.170***	0.009	0.167***	0.039**	0.291***
	(0.010)	(0.019)	(0.009)	(0.014)	(0.015)	(0.015)	(0.029)	(0.022)	(0.016)	(0.020)
Board Independence	0.026***	0.039***	0.023***	0.007	0.020**	0.027***	-0.015	-0.035***	0.019**	-0.008
	(0.005)	(0.010)	(0.004)	(0.007)	(0.008)	(0.008)	(0.017)	(0.012)	(0.008)	(0.010)
CEO-Chairman Separation	0.659***	-0.016	-0.185	-2.819***	-0.599*	-0.093	1.019	-0.221	0.592	-0.502
	(0.242)	(0.448)	(0.198)	(0.336)	(0.360)	(0.354)	(0.675)	(0.500)	(0.378)	(0.486)
Executive Compensation	-1.006***	5.135***	-1.645***	2.587***	-0.101	3.870***	1.821**	2.816***	1.249***	6.397***
	(0.286)	(0.525)	(0.223)	(0.378)	(0.485)	(0.473)	(0.892)	(0.657)	(0.416)	(0.525)
CSR Sustainability Committee	0.280	21.659***	-1.329***	17.789***	-0.173	24.223***	0.191	21.039***	-1.093**	17.619***
	(0.315)	(0.500)	(0.247)	(0.376)	(0.553)	(0.449)	(1.060)	(0.680)	(0.450)	(0.519)
Size	-0.128	5.038***	0.809***	6.304***	1.881***	5.033***	2.278***	6.099***	1.454***	5.932***
	(0.098)	(0.169)	(0.085)	(0.132)	(0.151)	(0.140)	(0.304)	(0.203)	(0.150)	(0.178)
Leverage	-0.037***	0.076***	-0.081***	-0.081***	-0.089***	-0.023**	-0.139***	-0.049***	-0.049***	-0.025*
	(0.008)	(0.015)	(0.007)	(0.012)	(0.012)	(0.011)	(0.019)	(0.015)	(0.011)	(0.015)
RND	-0.911***	0.257***	-0.306***	0.807***	-0.658***	0.245***	-0.985***	0.336***	-0.465***	0.271***
	(0.041)	(0.080)	(0.046)	(0.078)	(0.022)	(0.025)	(0.031)	(0.029)	(0.063)	(0.083)
NWC	0.066***	-0.046***	0.041***	-0.035***	0.016*	-0.047***	-0.043***	-0.045***	0.055***	-0.071***
	(0.008)	(0.015)	(0.007)	(0.012)	(0.009)	(0.009)	(0.016)	(0.012)	(0.010)	(0.014)
GDP Growth Rate	0.070	-0.865***	-0.060	-0.926***	0.070	-0.600***	0.470*	-0.242	-0.467***	-1.323***
	(0.069)	(0.127)	(0.056)	(0.094)	(0.135)	(0.132)	(0.245)	(0.181)	(0.107)	(0.136)
Country Governance	-0.239***	-0.184**	-0.308***	0.415***	-0.072	0.479***	-0.468***	1.031***	-0.276***	0.212***
	(0.042)	(0.078)	(0.033)	(0.055)	(0.088)	(0.086)	(0.159)	(0.116)	(0.061)	(0.078)
Constant	6.655***	-58.773***	-6.457***	-68.071***	-14.848***	-58.975***	-17.633***	-73.722***	-17.585***	-60.861***
	(1.951)	(3.513)	(1.485)	(2.426)	(2.607)	(2.461)	(4.678)	(3.218)	(2.208)	(2.742)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.153	0.620	0.160	0.578	0.475	0.659	0.502	0.717	0.110	0.613

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROA as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** p<0.01, ** p<0.05, * p<0.1

Table 23 ENS and ROE across FF5 sectors during COVID-19

	Cnsmr		Manuf		HiTec		Hlth		Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	ROE	ENS	ROE	ENS	ROE	ENS	ROE	ENS	ROE	ENS
ENS	0.108***		0.142***		0.018		0.339***		-0.018	
	(0.034)		(0.025)		(0.046)		(0.088)		(0.041)	
ROE		0.027***		0.029***		0.006		0.014***		0.009
		(0.006)		(0.005)		(0.004)		(0.005)		(0.006)
COVID	-10.589***	-2.151	-8.459***	1.361	-4.662	1.246	-20.374**	10.334***	-16.346***	-3.599**
	(3.917)	(1.403)	(3.002)	(1.049)	(5.054)	(1.288)	(9.432)	(1.854)	(4.499)	(1.416)
COVID * ROE		-0.027**		-0.007		0.009		-0.002		-0.001
		(0.012)		(0.010)		(0.006)		(0.007)		(0.012)
COVID * ENS	0.042		0.047		0.122**		0.013		0.100*	
	(0.045)		(0.037)		(0.056)		(0.097)		(0.057)	
Board Size	-0.214	0.604***	-0.233*	0.466***	-0.428*	0.448***	-1.565***	0.307***	0.066	0.448***
	(0.176)	(0.071)	(0.131)	(0.055)	(0.258)	(0.071)	(0.476)	(0.100)	(0.236)	(0.084)
Board Gender Diversity	0.006	0.259***	0.041	0.268***	-0.008	0.174***	0.065	0.172***	0.053	0.293***
	(0.047)	(0.019)	(0.035)	(0.014)	(0.055)	(0.015)	(0.103)	(0.022)	(0.057)	(0.020)
Board Independence	0.076***	0.042***	0.105***	0.010	0.039	0.029***	-0.047	-0.036***	0.023	-0.008
	(0.024)	(0.010)	(0.017)	(0.007)	(0.029)	(0.008)	(0.059)	(0.012)	(0.029)	(0.010)
CEO-Chairman Separation	0.588	0.030	-0.148	-2.911***	-1.613	-0.136	0.135	-0.184	1.947	-0.501
	(1.107)	(0.449)	(0.807)	(0.336)	(1.285)	(0.354)	(2.385)	(0.502)	(1.367)	(0.486)
Executive Compensation	0.439	5.037***	-4.323***	2.442***	-1.217	3.919***	3.171	2.921***	2.777*	6.405***
	(1.308)	(0.525)	(0.908)	(0.379)	(1.732)	(0.473)	(3.150)	(0.660)	(1.501)	(0.526)
CSR Sustainability Committee	-0.674	21.743***	-2.933***	17.721***	2.435	24.177***	1.136	21.093***	-1.332	17.584***
	(1.439)	(0.500)	(1.007)	(0.377)	(1.974)	(0.449)	(3.743)	(0.683)	(1.627)	(0.518)
Size	0.264	5.078***	1.903***	6.468***	1.619***	5.134***	3.138***	6.392***	3.888***	5.970***
	(0.447)	(0.169)	(0.347)	(0.130)	(0.541)	(0.137)	(1.072)	(0.197)	(0.540)	(0.176)
Leverage	-0.174***	0.071***	-0.087***	-0.093***	0.048	-0.030***	0.159**	-0.067***	-0.101**	-0.026*
	(0.037)	(0.015)	(0.028)	(0.012)	(0.041)	(0.011)	(0.068)	(0.014)	(0.041)	(0.015)
RND	-1.196***	0.152**	-0.187	0.717***	-0.969***	0.208***	-1.005***	0.236***	-1.104***	0.245***
	(0.186)	(0.076)	(0.186)	(0.078)	(0.079)	(0.022)	(0.111)	(0.023)	(0.227)	(0.081)
NWC	0.083**	-0.032**	0.048*	-0.023**	-0.029	-0.044***	-0.116**	-0.038***	0.110***	-0.067***
	(0.035)	(0.014)	(0.028)	(0.012)	(0.031)	(0.009)	(0.056)	(0.012)	(0.038)	(0.013)
GDP Growth Rate	-0.150	-0.852***	-0.049	-0.919***	0.553	-0.600***	-0.268	-0.217	-0.363	-1.334***
	(0.317)	(0.127)	(0.228)	(0.094)	(0.480)	(0.132)	(0.864)	(0.182)	(0.388)	(0.136)
Country Governance	-0.604***	-0.206***	-0.776***	0.394***	-0.020	0.479***	-2.203***	1.029***	-0.594***	0.208***
	(0.192)	(0.078)	(0.133)	(0.055)	(0.315)	(0.087)	(0.560)	(0.116)	(0.221)	(0.078)
Constant	13.224	-59.036***	-18.191***	-69.794***	-9.449	-60.044***	-9.492	-76.611***	-48.964***	-61.348***
	(8.922)	(3.514)	(6.044)	(2.418)	(9.308)	(2.447)	(16.517)	(3.187)	(7.975)	(2.716)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,107	6,107	10,335	10,335	7,340	7,340	3,368	3,368	5,340	5,340
Adjusted R-squared	0.036	0.619	0.060	0.576	0.142	0.658	0.148	0.714	0.063	0.612

Note: Columns (1) and (2) are regressed simultaneously using 3SLS for the Cnsmr subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (3) and (4) are regressed simultaneously using 3SLS for the Manuf subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (5) and (6) are regressed simultaneously using 3SLS for the HiTec subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (7) and (8) are regressed simultaneously using 3SLS for the Hlth subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Columns (9) and (10) are regressed simultaneously using 3SLS for the Other subsample with ROE as the proxy of financial performance and the average of environmental and social pillar scores as the measure for ESG performance. Numbers in parentheses are standard errors. All independent variables except COVID-19 (2020-2021) are lagged.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

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