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RESEARCH ARTICLE

ESG performance in the time of COVID-19 pandemic: cross-country evidence

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Abstract

The purpose of this paper is to compare the performance of environmental, social, and governance (ESG) in developing and developed countries prior to and during the COVID-19 pandemic; the study also seeks to reveal the impact of the COVID-19 on the performance of ESG during the pandemic period. Based on a large international panel dataset of 12,325 company-year observations covering 2016–2021, panel regression analysis examined the study hypotheses and achieved the study objectives. The findings indicate that companies have taken precautions against the threats of the COVID-19 pandemic by ensuring compliance with ESG performance to prove their ethical behavior during a crisis. Our findings call into question the notion that companies in developed countries outperform companies in developing countries in terms of ESG performance. As a result, companies in emerging markets outperform companies in developed markets regarding environmental performance, while developed markets focus on social performance. Besides, the ESG performance is positively and significantly affected by the COVID-19, which indicates that during crises, it is important for companies to comply with ethical behavior and the most acceptable in societies. Also, the pandemic has a positive impact on both environmental and social performance, while it has a negative impact on governance performance alone. A considerable body of the literature has addressed the effect of the COVID-19 pandemic on various aspects of a company's financial and non-financial practices. However, limited effort was given to ESG performance. The current study fills this gap by evaluating the direct effect of the COVID-19 crisis on the ESG performance in developing and developed countries. It also provides insight into the ESG performance and corporate behavior and obligations.

Keywords ESG performance · Environmental score · Social score · Governance score · COVID-19

Introduction

The world experiences various disturbances from time to time, such as wars and economic and health crises, that change the course of human life and have disastrous economic and political consequences. Recently, the world witnessed a crisis caused by the coronavirus (COVID-19) spread, which revealed major imbalances in many countries' health and economic governance systems, supply chains, and even political systems. On January 30, 2020, the World Health Organization declared COVID-19 a global health emergency, accompanied by strict measures by governments to limit the spread of the coronavirus, such as restrictions on citizen movement, closures, and social distancing.

The COVID-19 pandemic has dealt a severe blow to the global economy, suffering from accumulated crises (Aneja and Ahuja 2021). Where the economic effects of the pandemic included various countries and sectors, it affected the level of macroeconomics and microeconomics and the process of trade exchange, and the decision-making process became complicated in the conditions of uncertainty in the world. The economic effects included stakeholders' interests, such as employees, consumers, shareholders, suppliers, and community, and companies

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faced additional pressures to protect their interests (Mao et al. 2021). Stakeholders evaluate the performance of organizations in emergencies such as the world is currently experiencing (Ramya and Baral 2021). This pandemic has put companies' social commitment in times of crisis to the test. As a result, from an ethical standpoint, businesses should provide reasonable support to help mitigate the impact of the pandemic on affected communities while also meeting stakeholder expectations.

In times of crisis, ethical issues become more pressing, and societies scrutinize corporate performance more closely; as a result, companies must be more socially responsible in exceptional circumstances. During a crisis, stakeholders highly value social convergence (Miller et al. 2021). Correspondingly, companies closest to society maintain their ethical commitment in various circumstances; this is part of a long-term strategy that includes the post-crisis period (Hassan et al. 2021). This idea may stem from the fact that some businesses may seek to strengthen their relationships with their stakeholders in the long run by demonstrating compliance with their ethical responsibilities and enhancing the company's reputation over time. As a result, this sheds light on how companies manage their non-financial performance, such as environmental, social, and governance (ESG), which refers to a set of practices and activities undertaken by companies to highlight their social role to satisfy different stakeholder groups (Al Amosh et al. 2022; Bazhair et al. 2022). Environmental aspects including carbon emission are one of the most ongoing concerns in the world community (Aneja et al. 2017; Banday and Aneja 2019). Accordingly, the performance of ESG reflects the extent to which companies comply with their social responsibility and the aspirations of stakeholders such as investors, suppliers, lenders, and the surrounding community. Also, ESG's performance is an important indicator of how well companies consider the ethical consequences of their actions during periods of various crises. Ranjbari et al. (2021) stated that the literature on the effects of COVID-19 on sustainability is fragmented and insufficient and that more research on the direct impact of COVID-19 on sustainability with its three pillars is required.

The purpose of this paper is twofold: Firstly, provide an overview of ESG performance before the COVID-19 period and during the pandemic period. Secondly, we measure the impact of COVID-19 on ESG performance separately and collectively. Thus, we investigate the levels of ESG disclosure in natural conditions that preceded the COVID-19 pandemic and the levels of disclosure of ESG after the pandemic. Moreover, we are also testing the impact of the COVID-19 pandemic by the number of cases on the ESG performance of a group of developed and developing countries.

Our study adds to the growing body of literature on ESG performance by comparing those practices in a group of developing countries and another group of developed countries in the context of the COVID-19 pandemic. Moreover, most of the literature has investigated the impact of ESG during the pandemic period and its impact on corporate performance. Contrary to the literature, we are investigating the impact of COVID-19 on ESG performance separately and collectively. Thus, we make an empirical contribution by testing the number of COVID-19 cases across countries and its impact on ESG practices. As the high number of COVID-19 cases is associated with closures and thus restricts the growth of economic performance, which will affect the activities of companies operating in different countries, from the theoretical side, our study expands the theoretical lens of the stakeholder perspective in managing health crises in light of the emerging COVID-19 pandemic, which is the first health crisis to test the stakeholder theory.

The rest of this paper is structured as follows. The "Theoretical perspective" section provides the theoretical lens. In the "Literature review and hypotheses development" section, we review the literature and hypotheses development. The research methodology is described in the "Methodology" section. The "Results and discussion" section presents the empirical results and robustness check. Finally, the "Conclusions" section concludes the paper, outlines limitations, and offers further research ideas.

Theoretical perspective

Stakeholder theory is one of the business ethics theories proposed by economist Edward Freeman in his book *Strategic Management* in 1984, which was later called the "stakeholder theory." Stakeholder theory has been widely discussed in the disclosure and social and ethical literature (e.g., Al Amosh 2021; Popkova et al. 2021; Qiu et al. 2021; Khatib et al. 2022; Zamil et al. 2021). Additionally, the stakeholder theory refers to groups of influencers and those who are affected by the performance of companies (Phillips et al. 2003). Stakeholder groups include, but are not limited to, investors, governments, shareholders, employees, suppliers, and communities, as these groups can constitute pressure tools on companies to achieve their demands (Al Amosh and Mansor 2021). According to Tullberg (2013), the stakeholder theory establishes a perspective to address any conflict between both parties by balancing the demands of influential stakeholders' influencers, such as shareholders and claimants more likely to be victimized by companies' actions.

During crises, stakeholders question the ability of companies to meet their ethical obligations (Coombs and Holladay 2015). Also, stakeholder behavior may be characterized by skepticism, which may be akin to Cartesian skepticism, which stakeholders seek as a tool for finding facts about the role of companies in the COVID-19 crisis. Consequently,

stakeholders will feel that their interests are threatened. Then, the pressure will increase on companies to consider the demands of stakeholders during the crisis, during which the company suffers from various effects. Over time, the consequences will be dire. Nevertheless, if companies consider social responsibility and sustainability a priority, they will avoid more pressure from stakeholders and get their support (Kramer 2007).

According to Alpaslan et al. (2009), companies practice crisis management in two stages: the first is to identify and interact with stakeholders affected by the crisis, and the second is the response stage, in which companies aim to reduce stakeholder losses caused by crises. Managers are also expected to consider taking proactive steps to respond quickly to stakeholder needs in the event of a crisis (Gromis di Trana et al. 2022) to fill any gap or shortcoming that may occur in the behavior of companies (Shabana et al. 2017). As a result, this strategy may effectively gain stakeholder trust during the COVID-19 pandemic, as it plays on stakeholders' emotions, with stakeholders' fears and needs increasing during crises. Also, management may enhance, maintain, or reduce ESG's performance according to its expectations from the reaction of stakeholders, as strong stakeholders strongly influence companies' response to their aspirations. However, companies may choose an ethical stance during crises by investing in ESG's performance to demonstrate their commitment to all stakeholders.

Emergencies, such as the COVID-19 pandemic, necessitate effective management and communication with various stakeholders to meet their goals (Obrenovic et al. 2020). Managers are expected to take proactive steps to respond quickly to stakeholder needs in a crisis (Gromis di Trana et al. 2022) to fill gaps or shortfalls that may occur in company behavior (Shabana et al. 2017). As a result, companies can take an ethical stance during a crisis by investing in ESG performance. During the COVID-19 crisis, many contemporary companies responded largely to their ethical responsibility, which was a positive gesture toward various stakeholders (Asante Antwi et al. 2021). During a crisis, companies may demonstrate a high commitment to their ethical responsibility to minimize potential risks to attract more stakeholders' attention and enhance their reputation.

After all, we step toward developing a stakeholder theory of world health crisis management. We also contend that crises in general, and health crises in particular, drive businesses toward social work because it is the most acceptable in critical situations or, at the very least, maintain the same levels of compliance to dispel doubts about companies' intentions. During a crisis, stakeholders pay closer attention to corporate behavior, as the need for environmental and social activities drives them to increase pressure on companies to respond more to voluntary action. After all, stakeholder theory may provide a reasonable explanation for our findings by explaining companies' responses to stakeholders' growing concern about sustainability and the risks of noncompliance, as well as how companies in different countries respond to stakeholder demands during their unquestioningly supporting efforts to tackle the COVID-19.

During the COVID-19 crisis, we are assuming three corporate scenarios. To begin, the administration's position during health threats may be ethical and supportive of social responsibility, which may impress stakeholders and increase their support. Second, it may be conservative in the sense that it will not take additional measures or alter the current pattern. In contrast, companies may bet on the stability of stakeholders' positions as they become accustomed to the current pattern before the health crisis. Third, the administration is expected to reduce its performance in order to reduce the accumulated costs as a result of the epidemic, and it may be here on stakeholders' understanding of their difficult situation in dealing with the pandemic.

Literature review and hypotheses development

After the pandemic, many scholars have been evaluating the performance of companies from different sides during the COVID-19 pandemic period, where crises attract more academic attention, which aims to provide views and evidence on voluntary practices and corporate performance. Indeed, the novels presented differed regarding the relationship between the COVID-19 pandemic and the performance of ESG and the financial performance of companies during the pandemic period. The authors previously tested the impact of ESG on financial performance (e.g., Folger-Laronde et al. 2020; Rossi et al. 2021), and others went on to link it to economic performance and studied the impact of disclosure on GDP (Aneja, and Mathpal 2022; Diaye et al. 2021; Buallay 2019), as Diaye et al. (2021) provided arguments stating that there is a positive relationship between ESG's performance and GDP, in terms of per capita over the long term, while Buallay (2019) pointed out that countries with low GDP tend to have high-performing ESG.

During a period of crisis, the literature has presented different perspectives. For example, during the global financial crisis of 2008–2009, Dias et al. (2016) pointed out that there was increased attention to stakeholder expectations during the global financial crisis. Berkman et al. (2021) also found that the financial crisis pushed American companies to introduce more activities related to social responsibility. Additionally, corporate management seeks to enhance social responsibility investments during crises to reduce the risks that companies may face (Chintrakarn et al. 2021). Besides, companies' compliance with their responsibilities toward society during crises is considered an asset that extends

the company's after-crisis value and enhances its reputation (Coombs and Holladay 2015). Therefore, many companies may base their strategy on attracting the attention of stakeholders by highlighting their active role in environmental and social governance during crises.

The continuing impact of the pandemic will lead to a negative effect on stock returns (Hoang et al. 2022). At the same time, the impact of the pandemic is likely to be less harmful to companies with high ESG performance (Mousa et al. 2022). Also, the strength of the company's financial performance enhances ESG performance (Sharma et al. 2020). Additionally, Popkova et al. (2021) pointed out that many companies in different countries have maintained social responsibility activities during the COVID-19 pandemic to attract stakeholders' interest. Hannah et al. (2021) added that companies' commitment to their social responsibility during the crisis protects their value. Investing in voluntary activities increases stock returns during the pandemic and brings more stakeholder support (Qiu et al. 2021). While Bae et al. (2021) did not find any relationship between the practice of corporate social responsibility and stock returns during the COVID-19 pandemic, they also argued that protecting stakeholder interests during the pandemic has not provided any support to the company's performance. Therefore, the company's value is still threatened by the epidemic crisis. Also, Folger-Laronde et al. (2020) claimed that ESG practices do not work to stop the bleeding of financial losses caused by the pandemic. Thus, negative views may distract companies from non-financial performance because it does not help enhance financial performance.

On the other hand, Carroll (2021) warns that the COVID-19 pandemic threatens corporate social responsibility, putting it to the test. Tampakoudis et al. (2021) claimed that the costs of investing in ESG activities outweigh the potential gains during the COVID-19 pandemic. Additionally, financial pressures may limit companies' ability to spend on sustainability activities during the COVID-19 pandemic (Humphreys and Trotman 2021). These arguments indicate that companies affected economically by the pandemic may find it challenging to invest in sustainability activities and do not care about the long-term perspective as they look at the quick return during the crisis period. This is consistent with Klymenko and Lillebrygfjeld Halse's (2021) arguments that companies focus on the short term in their strategies and may distract from sustainability activities for the time being until economic conditions improve. These challenges may be exacerbated by neglecting sustainability issues and not taking positive attitudes toward them. The negative social and environmental impacts such as carbon emissions, humanitarian crises, and the collapse of health systems may increase (Grant and Wunder 2021; Banday and Aneja 2020).

Another view is that larger companies with a stronger financial position will continue to support social responsibility activities during the COVID-19 pandemic, but this will be a difficult challenge for smaller companies (Panagiotopoulos 2021). Thus, this indicates the need for companies and smaller sectors to obtain external support to enhance their ability to carry out their main activities and sustainability activities to improve the economic recovery process after the pandemic. Therefore, these strategies need government support by providing financing facilities to companies (Caldecott 2020).

In the societies of developing and poorer countries, ESG practices may enhance value because those societies need support more than developed countries (Engelhardt et al. 2021). Mandatory and voluntary rules may enhance environmental, social, and government performance during the pandemic. According to Singhania and Saini (2021), mandatory policies will raise the level of ESG in developing countries, as the higher the ESG level, the lower the financial risk during the pandemic (Broadstock et al. 2021), as the preferences of stakeholders, such as consumers and investors, toward companies that have demonstrated their ESG commitment during the crisis will be positive and thus will improve the company's performance in the future (Palma-Ruiz et al. 2020) and also enhance transparency and governance in sustainability disclosure practices in reducing the impact of volatility on companies (Singh et al. 2021). Thus, companies may use sustainability activities as a preventive factor to reduce the impact of the COVID-19 pandemic and the accompanying market fluctuations.

A country and its stakeholders tend to impose greater pressures on their companies to contribute more toward ESG. Therefore, we believe that the COVID-19 pandemic will push companies to improve their ESG performance as part of their crisis management and recovery strategies by maintaining the relationship with various stakeholders and demonstrating their commitment to their ethical responsibility during health crises as a long-term investment to improve their performance in the future. Furthermore, companies may understand the needs of stakeholders in critical situations. Thus, companies may respond to the impact of the pandemic to ensure stakeholders' interests during the crisis and avoid any reaction that may result from noncompliance. Therefore, we hypothesize the following:

H1: COVID-19 pandemic has a significant positive impact on ESG performance.
H1a: COVID-19 pandemic has a significant positive impact on environmental performance.
H1b: COVID-19 pandemic has a significant positive impact on social performance.
H1c: COVID-19 pandemic has a significant positive impact on governance performance.

Given the complexity of the relationship between companies and their surrounding communities, it is natural for

responses to differ at the level of countries and companies, depending on their understanding of the nature and consequences of the COVID-19 crisis (Bapuji et al. 2020), as there is a well-established stereotype that there are differences in social performance commitment between developing and developed countries (Tashman et al. 2019). On the other hand, in a normal situation, ESG practices differ between developing and developed countries, where legislation and regulations, the level of pressure from the state and stakeholders, and the degrees of voluntary compliance play a crucial role in promoting the difference. Furthermore, preferences in ESG performance may differ across countries. Thus, with the occurrence of the COVID-19 pandemic, different responses to the performance of ESG may occur between developing and developed countries; additionally, the capabilities of the health sector differ for each country, which may affect the level of closures, restrictions imposed, and recovery from the pandemic, which in turn affects the performance of companies and the economic performance of countries. From this standpoint, we propose the following hypothesis:

H2: There is a difference in ESG performance between developing and developed countries as a result of the COVID-19 pandemic.
H2a: There is a difference in environmental performance between developing and developed countries as a result of the COVID-19 pandemic.
H2b: There is a difference in social performance between developing and developed countries as a result of the COVID-19 pandemic.
H3c: There is a difference in governance performance between developing and developed countries as a result of the COVID-19 pandemic.

Methodology

Sample and data sources

The study is based on secondary data related to the study sample, where we used Thomson Reuter's database to obtain ESG disclosure indicators for all listed companies in those countries, where disclosure trends were monitored for the four years preceding the COVID-19 pandemic, which are the years 2016, 2017, 2018, 2019; the year of the pandemic 2020; and the year following the occurrence of the pandemic, which is the year 2021. Data on COVID-19 cases were also obtained from the World Health Organization website. Table 1 presents the distribution of the sample among counties included in the study. Our study is based on a cross-country sample, where we selected a group of developing and developed countries (Australia, China, Canada, Germany, Italy, Jordan, Kuwait, New Zealand, Qatar, Saudi Arabia, Singapore, South Africa, Taiwan, Thailand, Turkey, United Arab Emirates, and the UK). Besides, countries are categorized into developing and developed according to the United Nations Development Programme's (UNDP) Country Classification System, based on the Human Development Index (HDI). The countries listed are included among the top 20 countries with a high Human Development Index as developed (Australia, Canada, Germany, New Zealand, Singapore, and UK), while the rest of the countries were classified as developing (China, Italy, Jordan, Kuwait, Qatar, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey, United Arab Emirates). This is similar to other comparative studies that utilized a dataset of several countries (i.e., Miralles-Quirós et al. 2019; Buallay 2020).

Research models and variable measurement

We employed the ESG performances as dependent variables and measured them according to the score reported in Thomson Reuters' database. This database has been widely utilized by prior studies (e.g., Shakil et al. 2019; Demers et al. 2021). Following prior research, we also used the sub-dimensions of ESG performance (i.e., El Khoury et al. 2021; Engelhardt et al. 2021), namely, environmental score, social score, and governance score. To measure the effect of the independent variable (COVID-19), we adopted the annual number of cases for each country as a primary measure (e.g., Mousa et al. 2022; Hoang et al. 2022), and then, we applied the natural logarithm to it. The scale of COVID-19 cases was used because the international health trend of increasing or decreasing the number of

Table 1 The country description of the research sample

Country	Observations	Percent
Australia	1981	0.161
Canada	1632	0.132
China	1872	0.152
Germany	832	0.068
Italy	406	0.033
Jordan	45	0.004
Kuwait	59	0.005
New Zealand	327	0.027
Qatar	118	0.010
Saudi Arabia	138	0.011
Singapore	317	0.026
South Africa	675	0.055
Taiwan	725	0.059
Thailand	362	0.029
Turkey	243	0.020
United Arab Emirates	74	0.006
United Kingdom	2519	0.204
Total	12,325	1.000

cases is accompanied by closures or openness, which affects business organizations' performance. Concerning the control variables, total assets were adopted as a proxy for the company size; financial leverage was measured by total debt; the market value was measured by Tobin's *Q*, audit committee independence, audit committee expertise, and auditor tenure score which were used to control the difference between companies; and the GDP variable was used to control the difference between countries. Also, we used the Global Health Security Index to control a country's medical capacity.

In our study, four models were set to estimate the relationship between the variables and to examine the hypotheses of the study according to the following equations:

(Model 1)

$$\begin{aligned}\text{ENV\_Score}_{it} = {} & \beta_0+\beta_1\text{COVID\_19}_{it} + \beta_2\text{CSIZE}_{it} + \beta_3\text{LEVER}_{it} \\ & + \beta_4\text{TQ}_{it} + \beta_5\ \text{AC\_Ind}_{\ it} + \beta_5\text{AC\_Exp}_{\ it} + \beta_5\text{AT\_Score}_{\ it} \\ & + \beta_5\text{GDP}_{it} + \beta_5\ \text{GHS\_Index}_{\ it} + \text{Year} + \text{Count} + \varepsilon_{it}\end{aligned}$$

(Model 2)

$$\begin{aligned}\text{SOC\_Score}_{it} = {} & \beta_0+\beta_1\text{COVID\_19}_{it} + \beta_2\text{CSIZE}_{it} + \beta_3\text{LEVER}_{it} \\ & + \beta_4\text{TQ}_{it} + \beta_5\ \text{AC\_Ind}_{\ it} + \beta_5\text{AC\_Exp}_{\ it} + \beta_5\text{AT\_Score}_{\ it} \\ & + \beta_5\text{GDP}_{it} + \beta_5\ \text{GHS\_Index}_{\ it} + \text{Year} + \text{Count} + \varepsilon_{it}\end{aligned}$$

(Model 3)

$$\begin{aligned}\text{GOV\_Score}_{it} = {} & \beta_0+\beta_1\text{COVID\_19}_{it} + \beta_2\text{CSIZE}_{it} + \beta_3\text{LEVER}_{it} \\ & + \beta_4\text{TQ}_{it} + \beta_5\ \text{AC\_Ind}_{\ it} + \beta_5\text{AC\_Exp}_{\ it} + \beta_5\text{AT\_Score}_{\ it} \\ & + \beta_5\text{GDP}_{it} + \beta_5\ \text{GHS\_Index}_{\ it} + \text{Year} + \text{Count} + \varepsilon_{it}\end{aligned}$$

(Model 4)

$$\begin{aligned}\text{ESG\_Score}_{it} = {} & \beta_0+\beta_1\text{COVID\_19}_{it} + \beta_2\text{CSIZE}_{it} + \beta_3\text{LEVER}_{it} \\ & + \beta_4\text{TQ}_{it} + \beta_5\ \text{AC\_Ind}_{\ it} + \beta_5\text{AC\_Exp}_{\ it} + \beta_5\text{AT\_Score}_{\ it} \\ & + \beta_5\text{GDP}_{it} + \beta_5\ \text{GHS\_Index}_{\ it} + \text{Year} + \text{Count} + \varepsilon_{it}\end{aligned}$$

where ESG_Score is the total ESG performance; ENV_Score is the environmental performance; SOC_Score is the social performance; GOV_Score is the governance performance; COVID_19 is the natural logarithm of the total number of coronavirus cases per year; CSIZE is the natural logarithm of total assets; LEVER is the natural logarithm of total debt; TQ is Tobin's *Q*; AC_Ind is the audit committee independence; AC_Exp is the audit committee expertise; AT_Score is the auditor tenure score; GDP is the gross domestic product; GHS_Index is the Global Health Security Index; Year is the year dummies; Sector is the sector type dummies; ε is the error term; i is the company, and t is the year.

Results and discussion

Descriptive statistics

Table 2 provides descriptive statistics for the study variables; the results indicate that all companies in the study sample have an average corporate governance performance amounting to mean = 48.855%, environmental performance is mean = 33.966%, and social performance is mean = 44.06%, while ESG performance collectively appears in a percentage (mean = 42.965). These ratios indicate reasonable performance ratios to some extent and agree with much previous literature (e.g., Al Amosh and Khatib 2021; Rossi et al. 2021; Sharma et al. 2020). The mean value for the market value index (Tobin's *Q*) is 4.774, and the audit committee independence means 83.976 with a range (min = 0, max = 100). Also, the descriptive analysis indicates that the average audit committee experience is 73.2%. This suggests that the audit committees have a high degree of independence and expertise, and they are

Table 2 Descriptive statistics

Variables	Obs	Mean	Std. Dev	Min	Max	Skew	Kurt
ESG_Score	10,861	42.965	20.841	.665	94.267	.211	2.192
ENV_Score	10,859	33.966	27.632	0	98.914	.441	2.038
SOC_Score	10,859	44.06	24.128	.309	98.242	.213	2.089
GOV_Score	12,323	48.855	22.916	.294	99.376	− .034	2.051
COVID_19	4104	12.68	2.281	6.687	15.994	− .742	3.127
CSIZE	12,307	21.646	2.041	11.251	29.095	.26	3.872
LEVER	12,307	.243	.813	.002	86.364	.585	4.262
TQ	12,265	4.774	34.299	− 1852.249	1247.427	− 2.054	1246.362
AC_Ind	10,187	83.976	25.976	0	100	− 1.821	5.684
AC_Exp	10,861	.732	.443	0	1	− 1.05	2.103
AT_Score	10,854	50.198	28.754	.119	99.671	− .021	1.79
GDP	12,325	28.264	1.141	24.409	30.32	.094	2.777
GHS_Index	12,325	64.295	8.707	36.8	71.1	− 1.341	3.241

Table 3 Tabulation of year developing

Year	Developed/ing		
	Developed	Developing	Total
2016	482	1072	1554
2017	692	1143	1835
2018	827	1294	2121
2019	1194	1516	2710
2020	1336	1858	3194
2021	98	813	911
Total	4629	7696	12,325

expected to carry out their duties effectively, enhancing good governance and accountability, which is in the best interests of stakeholders. The auditor tenure range indicates an average result of mean = 50.198. On the other hand, the study sample's health capacity range is (mean = 64.295), and the average GDP index is 28.264, with a minimum of 24.409 and a maximum of 30.32.

Table 3 presents the number of companies included in our research sample. The results presented in the table show that developing countries cover the largest proportion of the study sample by approximately 62%, while developed countries show a percentage of 38%. On the other hand, it is noticeable that there is an increase in the number of companies listed on the capital markets in both developed and developing countries until 2020, while the trend appears to decrease in 2021, and this indicates the exit of many companies from the global market as a result of the damages related to the COVID-19 pandemic, which prevented the sustainability of its activities. Appendix Table 10 provides the distribution of our sample among different sectors.

Univariate analysis

Table 4 shows that there is great convergence between the developing and developed countries in terms of social performance, governance, and sustainability performance collectively while developing countries are ahead of the developed in environmental performance by a small difference of almost 4 scores. Although the emerging market and developing economies are the hardest hit economically from the pandemic (World Bank 2020), the performance of ESG has a special interest on the part of the stakeholders there, and therefore, companies take into account these demands even in times of crisis. This result is consistent with what Popkova et al. (2021) suggested that social responsibility has great value to societies in emerging countries. Interestingly, against the general notion that the ESG performance of companies operating in the developed market is higher than those in developing countries, we found that companies in emerging markets have superior environmental performance.

Table 4 Descriptive comparison between developed and developing countries

Variable	Obs		Mean		Std. Dev		Min		Max	
	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries	Developed countries	Developing countries
ESG_Score	7083	3778	42.99	42.919	20.843	20.84	.772	.665	94.267	93.242
GOV_Score	7696	4627	48.981	48.645	23.601	21.729	.294	.312	99.376	97.287
ENV_Score	7081	3778	32.576	36.573	27.837	27.054	0	0	98.494	98.914
SOC_Score	7081	3778	45	42.299	22.857	26.257	.594	.309	98.242	97.911
COVID_19	2671	1433	1,990,633	584,361	2,676,208	857,944	1807	802	8,828,790	6,976,847
GDP	7696	4629	12.318	12.784	11.984	12.816	11.276	11.536	12.599	13.171

The results of the univariate analysis presented in Table 5 highlight the differences between the two sub-samples of ESG performance in developed and emerging markets using the *t* test. This test has been widely utilized in environmental and financial studies (i.e., Gros et al. 2017; Hoang et al. 2020; Ferriani and Natoli 2021). Based on the results presented in Table 5, companies operating in developing markets reported lower ESG, governance, and social performance. Social performance is the only high and significant ESG pillar in developed countries. At the same time, these companies report higher environmental performance, and this difference is reported to be significant (at *p* value = 0.00). Based on the results of the *t* test, it can be concluded that companies' ESG performance is significantly different between both developed and developing markets. In contrast, the former focus on social performance, and the latter on environmental issues. Furthermore, the higher standard deviation of environmental and social performance is also noted among companies in developed countries compared to developing countries, indicating higher volatility. These findings contradict the conclusion of Singhania and Saini (2021) that country-level environmental commitment was vital for both developed and emerging markets for solving information asymmetry issues and establishing resilient business operations and reporting practices.

Theoretically, the findings suggest that during health crises such as the COVID-19 pandemic, stakeholders prefer environmental performance over social performance, implying that they are concerned about the environmental risks that may threaten them during the pandemic, owing to the lack of environmental regulations and control in developing countries. On the other hand, in developed countries, stakeholders' expectations are primarily focused on social performance. This could explain the decline in environmental concerns in developed countries due to strict environmental regulations. As a result, stakeholders concentrate on corporate social responsibility, which is, of course, voluntary and has no regulatory or legal controls to motivate it.

Contrary to expectations, the results indicate that ESG performance was not significantly different before and after the COVID-19 pandemic (as mentioned in Table 6); even for the ESG dimensions, the results are insignificant. This can be attributed to companies that received the first shock of the pandemic without reducing their ESG activities, implying that companies have a high level of compliance with stakeholder expectations. However, it is betting on the stakeholders' acceptance of the current situation and its acceptance of the usual performance. These findings are inconsistent with the perspective that companies adhere to their stakeholder responsibilities during crises and become more involved in social activities (Dias et al. 2016). At the same time, this finding is consistent with Berkman et al. (2021) who suggest that companies tend to maintain their ESG performance as part of their ethical responsibility to stakeholders during crises. On the other hand, our findings contradict Carroll's (2021) claims that the coronavirus pandemic will endanger companies' non-financial performance. However, the sample size varies before and after the pandemic, with a drop of nearly half during the pandemic, indicating that many companies were affected by the epidemic and were forced to exit the market. Appendix Table 11 provides a detailed descriptive analysis of the sample before and during the COVID-19 crisis.

Correlation matrix

Table 7 reports the pairwise correlation matrix of the main variables. As shown, we find that a company's ESG performance and all of its dimensions, namely, environmental, social, and governance, are positively correlated with

Table 5 Two-sample *t* test with equal variances (developed and developing countries)

Items	obs1 developed markets	obs2 developing markets	Mean developed markets	Mean developing markets	Dif	St Err	*t* value	*p* value
ESG_Score	3778	7083	42.919	42.99	−0.071	0.42	−0.15	0.866
GOV_Score	4627	7696	48.645	48.98	−0.336	0.426	−0.8	0.431
ENV_Score	3778	7081	36.572	32.575	3.997	0.555	7.2	0.000
SOC_Score	3778	7081	42.299	45	−2.702	0.485	−5.55	0.000

Table 6 Two-sample *t* test with equal variances (before and after COVID-19)

Items	Obs. after COVID-19	Obs. before COVID-19	Mean after COVID-19	Mean before COVID-19	Dif	St Err	*t* value	*p* value
ESG_Score	3704	7157	42.963	42.966	−.003	.422	0	.995
GOV_Score	4105	8218	48.386	49.089	−.703	.438	−1.6	.108
ENV_Score	3702	7157	33.680	34.114	−.434	.559	−.8	.438
SOC_Score	3702	7157	44.034	44.074	−.041	.488	−.1	.934

COVID-19 cases, company size, leverage level, earning per share, and dividends per share but negatively correlated with the GDP. These simple pairwise correlations confirm our expectations that companies operating in highly affected markets from COVID-19 have higher ESG performance. The results of the VIF test show no sign of multicollinearity problem between the variables.

Regression analysis

Based on our sample, the Hausman test suggests that the random effects model is more suitable than the fixed effects model (the p value of the Hausman test is > 0.05). The findings in Table 8 showed that the ESG performance of corporations is positively and significantly affected by COVID-19. However, when it comes to the ESG dimensions, we found that the pandemic, especially governance performance, influences not all ESG. The analysis revealed a positive impact of the COVID-19 pandemic on the ESG performance of companies, and hence, hypothesis H1 is supported. The COVID-19 pandemic improves ESG performance, companies appear to be highly responsive to their ethical obligations in environmental and social governance during the pandemic, and it follows the premise that their compliance will enhance their performance in the future by satisfying various stakeholders and proving their ability to fulfill its obligations during the pandemic. Furthermore, our findings show that the COVID-19 pandemic positively impacts corporate environmental performance, as it appears that companies are attempting to demonstrate commitment to environmental performance to various stakeholders and also demonstrate that they practice their environmental activities more efficiently during health crises.

The table shows that social performance is positively affected by the COVID-19 pandemic due to the fact that companies invest in social activities to mitigate the severity of the epidemic on the economy and prove their social contribution during the pandemic, and therefore, this will be widely accepted by various stakeholders, in addition to that this measure may enhance the position of companies among investors that closely monitor the performance of companies during the pandemic so that potential investors may pick up on that signal and head to companies with higher compliance during the pandemic. Therefore, hypotheses H1a and H1b are supported. On the other hand, the investigation failed to support hypothesis H1c and showed that the COVID-19 pandemic negatively affects governance performance. This is due to the fact that the pandemic imposed a new pattern on businesses, as closures and restrictions of movement negatively affected holding meetings for administrative committees that enhance corporate governance. As a result, communication and performance oversight will be weakened, as the critical nature of the pandemic and

Table 7 Matrix of correlations

Variables	VIF	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) ESG_Score	–	1.000												
(2) ENV_Score	–	0.856	1.000											
(3) SOC_Score	–	0.901	0.741	1.000										
(4) GOV_Score	–	0.672	0.429	0.425	1.000									
(5) COVID_19	1.251	0.052	0.045	0.068	0.021	1.000								
(6) CSIZE	1.177	0.543	0.534	0.456	0.385	0.005	1.000							
(7) LEVER	1.022	0.100	0.102	0.081	0.090	0.011	0.123	1.000						
(8) TQ	1.018	−0.048	−0.051	−0.038	−0.027	0.011	−0.120	−0.003	1.000					
(9) AC_Ind	1.116	0.223	0.128	0.177	0.225	−0.012	0.033	0.039	−0.048	1.000				
(10) AC_Exp	1.27	0.134	0.060	0.127	0.110	0.193	−0.016	−0.000	−0.011	0.214	1.000			
(11) AT_Score	1.008	−0.022	−0.047	−0.046	0.042	0.037	−0.065	0.008	0.006	−0.028	−0.011	1.000		
(12) GDP	2.268	−0.068	−0.058	−0.148	0.078	0.307	0.107	−0.025	0.017	−0.240	−0.147	0.032	1.000	
(13) GHS_Index	1.953	−0.158	−0.194	−0.181	0.004	0.086	−0.169	−0.010	0.015	−0.050	0.148	0.011	0.585	1.000

Table 8 Panel regression results of the impact of COVID-19 on ESG performance

Variables	Model 1 ENV_Score	Model 2 SOC_Score	Model 3 GOV_Score	Model 4 ESG_Score
COVID-19 (cases)	.687*** (3.734)	1.175*** (7.177)	− .338* (− 2.072)	.477*** (3.563)
CSIZE	7.196*** (33.46)	5.713 (29.859)	4.232 (22.172)	− 5.59* (35.753)
LEVER	− 4.394* (2.173)	1.483 (.824)	4.449** (2.48)	2.444* (1.663)
TQ	.021 (1.266)	.027* (1.811)	.027* (1.791)	.024* (1.934)
AC_Ind	.087*** (5.483)	.091*** (6.507)	.191*** (13.646)	.132*** (11.457)
AC_Exp	2.83** (2.574)	3.456*** (3.532)	5.319*** (5.455)	4.721*** (5.911)
AT_Score	− .01 (− .702)	− .007 (− .608)	.055*** (4.54)	.013 (1.363)
GDP	− 1.576*** (− 2.783)	− 4.695*** (− 9.317)	2.509*** (4.991)	− 1.318*** (− 3.202)
GHS Index	− .25*** (− 3.844)	.02 (.354)	− .005 (− .081)	− .091* (− 1.931)
Constant	− 77.905*** (− 6.02)	28.793** (2.501)	− 129.825*** (− 11.305)	− 54.573*** (− 5.801)
Year dummies	Include	Include	Include	Include
Country dummies	Include	Include	Include	Include
Chi-square	807.704	958.913	245.370	889.136
Prob > chi^2	0.000	0.000	0.000	0.000
R-squared	.316	.281	.217	.358
Observations	3312	3312	3314	3314

***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. *t* values are in parentheses

the deep economic stagnation accompanying it will most likely impose governance and institutional challenges with the growing impact of the COVID-19 pandemic. Moreover, stakeholder theory may explain the negative impact of governance during health crises by the fact that management also considers it an internal institutional affair and that the interests of stakeholders during the pandemic focus on environmental and social performance, and thus, companies will tend to direct their activities toward the targeted interest of most stakeholders.

From the above, the causality relationship between the pandemic crisis and the performance of ESG shows that the pandemic has a positive impact on environmental and social performance, meaning that companies took into account the direct interests associated with external stakeholders to show their goodwill toward them and their commitment to their moral responsibility toward them, while the pandemic has weakened governance, which is not directly related to the interests of stakeholders.

Regarding the control variables, the company size is an essential factor that explains the behavior of companies in the ESG during the pandemic. This finding agrees with Al Amosh and Khatib's (2021) argument that larger companies comply more with ESG requirements. The larger companies have a stronger financial position and therefore are the least affected by the pandemic and have a more remarkable ability to bear the burdens of environmental, social, and environmental activities. In addition, it is more susceptible to accountability by stakeholders. Also, financial leverage affects only the governance factor. Overall, this conclusion is consistent with Sharma et al.'s (2020) findings that financial leverage does not play an essential role in improving the performance of ESG.

Nonetheless, the findings show that the market value factor plays a critical role in improving social performance, governance, and ESG performance collectively during the pandemic, implying that companies with higher market values comply more during health crises, which may also be attributed to companies with the strong market performance; it tries to maintain its market value by satisfying various stakeholders such as investors, shareholders, and customers, who play an important role in enhancing it. However, we discovered that Tobin's *Q* does not affect environmental performance. Furthermore, the results show that governance factors improve ESG performance during crises, as it appears that the independence and expertise of the audit committee have a significant impact on ESG performance. Thus, the level of governance is considered a decisive factor in improving, supervising, and controlling the management of companies to ensure the efficiency of managing the expectations of shareholders and stakeholders during the pandemic. On the other hand, the auditor's tenure period only positively impacts governance performance. This is because the length of time of the auditor's work will enhance the consolidation of the principles of good governance in the company, which is reflected positively in governance performance.

The results also show that GDP significantly negatively affects ESG performance in all its dimensions, indicating that companies in countries with weak economic performance tend to comply more with ESG performance. These results are consistent with Buallay's (2019) arguments, as it appears from our evidence that the economy's general capacity in terms

of GDP does not promote maintaining ESG's performance during volatile and abnormal conditions, as the weakness of the general capacity of the economy motivates stakeholders such as societies to enhance their demands and monitor the performance of companies, especially in times of crisis.

Robustness analysis

This section provides a test for estimating the core regression coefficients when modifying the model specifications by adding or removing some variables (Lu and White 2014). Hence, we performed two tests to evaluate the robustness of our findings reported in Table 9. First, we used the time of COVID-19 as an alternative indicator of the independent variable and ordinary least square estimation, and second, we added two variables to the original regression models. We identified book value per share (BVPS), which has been relied upon in previous studies (e.g., Chouaibi et al. 2021; Broadstock et al. 2021), and total liabilities (TOTLIAB) and added them to the regression model as control variables; then, we re-estimate the random effects model.

The table shows the regression results of the robustness tests. The reported results align with previous results, as we found that the results were not affected during the two tests. The positive effect of COVID-19 remained at the 1% significance level. Also, the significance level of the company size variable has stayed the same (1%). The results were identical to the GDP variable at the significance level (1%). On the other hand, the results indicate that the added variables do not affect the main model. Overall, these findings refer to the robustness of a statistical model used in a study and confirm our findings' strength.

Finally, the robustness analysis yielded interesting results, where the COVID-19 time significantly affected ESG performance collectively and environmental and social performance. In contrast, the severity of the negative impact on governance performance increased at the significance level (1%). This demonstrates that the longer the epidemic persists, the weaker the corporate governance performance which will result in significant failures of governance systems. At the same time, our findings show that total liabilities significantly negatively impact ESG performance, both collectively and separately. This is due to the fact that increasing liabilities burden companies, limiting their ability

Table 9 Robust analysis

Variables	(1) ENV_Score	(2) SOC_Score	(3) GOV_Score	(4) ESG_Score	(5) ENV_Score	(6) SOC_Score	(7) GOV_Score	(8) ESG_Score
COVID-19 (time)	3.059***	3.212***	-1.621***	2.938***	–	–	–	–
	(6.198)	(7.262)	(-3.747)	(8.131)	–	–	–	–
COVID-19 (cases)	–	–	–	–	.684***	1.465***	-.074**	.603***
	–	–	–	–	(2.777)	(6.49)	(-.329)	(3.303)
CSIZE	6.952***	5.321***	3.777***	5.24***	8.435***	6.013***	4.405***	6.041***
	(57.414)	(49.022)	(35.577)	(59.096)	(25.649)	(19.955)	(14.679)	(24.795)
LEVER	−.626*	.266	.563	−.375**	−6.374**	−5.908**	2.063	−3.918*
	(2.413)	(1.145)	(2.476)	(1.976)	(−2.168)	(−2.193)	(.769)	(−1.8)
TQ	.016***	.012**	.012**	.015***	.015	.064	.002	.032
	(2.624)	(2.237)	(2.205)	(3.344)	(.284)	(1.366)	(.039)	(.847)
AC_Ind	.099***	.092***	.196***	.13***	.063***	.057***	.157***	.1***
	(10.781)	(11.175)	(24.231)	(19.251)	(3.236)	(3.162)	(8.783)	(6.865)
AC_Exp	5.747***	7.82***	6.241***	7.1***	2.133	2.208*	4.225***	3.67***
	(9.674)	(14.684)	(11.983)	(16.324)	(1.535)	(1.734)	(3.337)	(3.571)
AT_Score	−.009	−.003	.066***	.019***	−.014	−.008	.057***	.009
	(−1.069)	(−.48)	(9.406)	(3.198)	(−.787)	(−.496)	(3.51)	(.72)
GDP	.196	−2.028***	−.906	−.397*	−1.825***	−5.28***	−1.225	−2.021***
	(.634)	(−7.314)	(3.34)	(−1.753)	(−2.676)	(−8.448)	(1.968)	(−3.999)
GHS_Index	−.355***	−.103***	.04	−.153***	−.415***	−.193***	.071	−.2***
	(−9.954)	(−3.209)	(1.281)	(−5.866)	(−5.401)	(−2.742)	(1.015)	(−3.51)
BVPS	–	–	–	–	11.387	10.123	−25.061	9.619
	–	–	–	–	(.556)	(.539)	(−1.34)	(.633)
TOTLIAB	–	–	–	–	0***	0***	0***	0***
	–	–	–	–	(−4.413)	(−2.7)	(−4.29)	(−4.339)
Constant	−112.54***	−21.56***	−84.34***	−67.29***	−80.563***	−56.56***	−98.55***	−32.46***
	(−15.316)	(−3.273)	(−13.091)	(−12.507)	(−4.921)	(3.77)	(−6.597)	(−2.677)
Obs	10,137	10,137	10,137	10,139	1845	1845	1847	1847
R-squared	.305	.244	.193	.327	.381	.307	.176	.369

***Significant at the 1% level; **significant at the 5% level; *significant at the 10% level. *t* values are in parentheses

to engage in ESG activities. Therefore, rapid government assistance may be required at this critical stage to help facilitate recovery in the aftermath of the COVID-19 pandemic.

Conclusions

This study sheds light on ESG aspects and how the COVID-19 pandemic has affected them. It also investigated the ESG performance before and during the COVID-19 period, as well as the impact of the COVID-19 pandemic on the performance of the ESG from a cross-country sample. Taking advantage of access to a timely and novel dataset and the unique environmental setting of the COVID-19 crisis, univariate and multivariate analyses were applied. The findings show a significant difference in performance levels between markets. Interestingly, we discovered that companies operating in developing markets focused on environmental performance while developed markets focused on social performance. Besides, the performance levels were largely similar in terms of governance, with environmental issues raising concerns among stakeholders in developing countries and social performance raising concerns among stakeholders in developed countries. This suggests that businesses are especially interested in managing stakeholder relationships during health crises by paying attention to stakeholder preferences. Furthermore, stakeholders understand the difficulties companies face during the pandemic and, as a result, do not put additional pressure on companies to deliver more ESG performance, which explains companies' balanced performance for ESG performance before and during the COVID-19 pandemic.

Furthermore, the COVID-19 pandemic is related to corporate behavior toward environmental and social activities. Over the crisis, businesses increase their readiness to meet their environmental and social obligations; ESG is also regarded as a safe haven to avoid future stakeholder pressure. Nonetheless, the COVID-19 crisis had no positive impact on corporate governance performance due to poor communication during closures and movement restrictions. Taken together, the pandemic improves the ESG collective performance score because companies do not want to have a significant conflict with stakeholders whose needs grow during the crisis. The findings may be compatible with the administration's long-term plans, implying that it improves managing stakeholders' perceptions during crises to highlight their good intentions and moral attitudes toward societies during difficult health conditions and to build a strong relationship with stakeholders for the post-crisis period. In addition, ESG performance is regarded as insurance against risks in times of uncertainty during health crises. Also, it enhances the company's image and reputation through its ability to respond to the various demands of stakeholders, accelerating the pace of recovery from the pandemic's effects.

The study provides several important theoretical and empirical implications. First, the current study employs the perspective of stakeholders in health crises. It explains corporate practices and their handling of the ESG agenda during the COVID-19 pandemic and the extent to which they consider the demands of stakeholders and respond to their expectations by maintaining ESG performance during the crisis. Second, the study assesses the impact of the coronavirus pandemic by providing a unique glimpse into ESG performance before and during the crisis period, and this provides an important perspective for many parties such as regulators, investors, shareholders, government agencies, and other stakeholders such as communities, employees, and consumers. Third, the study provides insights that help policymakers, regulators, and investors understand the extent to ensure that companies adhere to their non-financial performance during crises; it also includes cross-country insights into understanding ESG's performance practices during the volatilities. Moreover, businesses must implement long-term policies adaptable to changing circumstances to address the sustainability and social responsibility agenda. Countries that implement policies encouraging corporate compliance with ESG initiatives will be more socially balanced and better able to deal with crises and shocks in uncertain times. As a result, when crises occur, such as the COVID-19 crisis, stakeholders will be more monitoring companies' environmental and social behavior, which increases the possibility of increased pressure during crises. Thus, companies' commitment enhances stakeholders' confidence in corporate policies in conditions of uncertainty.

Finally, empirical studies are subject to several limitations, which provide opportunities for future research. Firstly, the current study was limited to a sample of developing and developed countries. Future research can expand the sample or investigate the impact of the pandemic on groups of countries that represent international bodies or unions, such as the Group of Twenty, NATO, or the Gulf Cooperation Council countries. Secondly, the current study adopted the stakeholder theory as a theoretical reference to interpret the results. In the future, researchers can follow other theories that can explain phenomena during crises, such as the crisis theory. Thirdly, the study data were collected through Thomson Reuter's database. Thus, we invite researchers to look into similar studies using different databases, such as Bloomberg, to see how similar the results are and the potential deviations. Moreover, future research can address the impact of the COVID-19 pandemic on compliance on investor behavior toward companies that comply with ESG performance during crisis periods. Besides, future researchers can assess the financial and economic effects of the pandemic and its comparison between developing and developed countries. In addition, it is interesting to study the extent to which companies that have adhered to preparing the integrated reporting are affected, which provides future-oriented information for organizations.

Appendix

Table 10 The distribution of the sample based on sectors

NAICS sector name	Year						
	2016	2017	2018	2019	2020	2021	Total
Accommodation and Food Services	29	29	31	42	49	25	205
Administrative and Support and Waste Management and Remediation Services	22	25	29	38	47	22	183
Agriculture, Forestry, Fishing and Hunting	10	13	19	27	33	10	112
Arts, Entertainment, and Recreation	8	10	13	15	19	11	76
Construction	52	70	78	103	118	29	450
Educational Services	3	3	3	4	5	2	20
Finance and Insurance	282	330	382	461	513	149	2117
Health Care and Social Assistance	23	26	31	37	44	19	180
Information	98	122	145	174	215	73	827
Management of Companies and Enterprises	0	0	0	1	1	0	2
Manufacturing	382	484	584	829	1012	169	3460
Mining, Quarrying, and Oil and Gas Extraction	221	237	252	284	316	85	1395
Other Services (except Public Administration)	4	4	4	6	7	1	26
Professional, Scientific, and Technical Services	53	63	78	113	158	71	536
Real Estate and Rental and Leasing	106	123	137	169	207	84	826
Retail Trade	81	90	102	124	140	80	617
Transportation and Warehousing	75	85	90	109	119	31	509
Utilities	56	67	80	96	104	18	421
Wholesale Trade	47	52	61	76	85	31	352
Total	1552	1833	2119	2708	3192	910	12,314

Table 11 Descriptive comparison between times before and after the health crisis

Variable	Obs		Mean		Std. Dev		Min		Max	
	Before Covid time	For Covid time	Before Covid time	For Covid time	Before Covid time	For Covid time	Before Covid time	For Covid time	Before Covid time	For Covid time
GOV_Score	8218	4105	49.089	48.386	22.807	23.129	0.294	0.38	99.376	97.992
ENV_Score	7157	3702	34.114	33.68	27.9	27.107	0	0	98.74	98.914
SOC_Score	7157	3702	44.074	44.033	24.15	24.087	0.309	0.386	98.242	97.319
ESG_Score	7157	3704	42.966	42.963	20.931	20.668	0.665	0.741	94.267	93.83
COVID_19	–	4104	–	1,499,603	–	2,316,701	–	802	–	8,828,790
GDP	8220	4105	12.539	12.583	12.639	12.682	10.601	10.640	13.155	13.168

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Data availability The datasets used and/or analyzed during the current study are available from the corresponding author and first author on reasonable request.

Declarations

Ethics approval Not applicable.

Consent to participate Not applicable.

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References

Al Amosh HA (2021) The role of governance attributes in corporate social responsibility (CSR) practices evidence from Jordan. In A. Alqatan, K. Hussainey, & H. Khlif (Eds.), Corporate Governance and Its Implications on Accounting and Finance (pp. 255–279). IGI Global. https://doi.org/10.4018/978-1-7998-4852-3.ch012

Al Amosh H, Mansor N (2021) Disclosure of integrated reporting elements by industrial companies: evidence from Jordan. J Manage Governance 25(1):121–145

Al Amosh H, Khatib SF (2021) Corporate governance and voluntary disclosure of sustainability performance: the case of Jordan. SN Business Econ 1(12):1–22

Al Amosh H, Khatib SFA, Ananzeh H (2022) Environmental, social and governance impact on financial performance: evidence from the Levant countries, Corporate Governance, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/CG-03-2022-0105

Aneja R, Ahuja V (2021) An assessment of socioeconomic impact of COVID-19 pandemic in India. J Public Aff 21(2):e2266

Aneja R, Mathpal M (2022) Economic growth and electricity consumption in India: an econometric analysis. Indian Econ J 70(1):22–33

Aneja R, Banday UJ, Hasnat T, Koçoglu M (2017) Renewable and non-renewable energy consumption and economic growth: empirical evidence from panel error correction model. Jindal J Business Res 6(1):76–85

Alpaslan CM, Green SE, Mitroff II (2009) Corporate governance in the context of crises: towards a stakeholder theory of crisis management. J Contingencies Crisis Manag 17(1):38–49

Asante Antwi H, Zhou L, Xu X, Mustafa T (2021) Beyond COVID-19 pandemic: an integrative review of global health crisis influencing the evolution and practice of corporate social responsibility. In Healthcare (Vol. 9, No. 4, p. 453). Multidisciplinary Digital Publishing Institute.

Bapuji H, de Bakker FG, Brown JA, Higgins C, Rehbein K, Spicer A (2020) Business and society research in times of the corona crisis. Bus Soc 59(6):1067–1078

Berkman H, Li M, Lu H (2021) Trust and the value of CSR during the global financial crisis. Account Fin 61(3):4955–4965

Broadstock DC, Chan K, Cheng LT, Wang X (2021) The role of ESG performance during times of financial crisis: evidence from COVID-19 in China. Financ Res Lett 38:101716

Balqiah TE, Yuliati E, Martdianty F (2021) Customer attribution toward corporate social responsibility: the importance of social justice in COVID-19 donation, Social Responsibility Journal, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/SRJ-12-2020-0494

Bae KH, El Ghoul S, Gong ZJ, Guedhami O (2021) Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic. J Corp Finan 67:101876

Banday UJ, Aneja R (2020) Renewable and non-renewable energy consumption, economic growth and carbon emission in BRICS: evidence from bootstrap panel causality. Int J Energy Sect Manage 14(1):248–260. https://doi.org/10.1108/IJESM-02-2019-0007

Banday UJ, Aneja R (2019) Energy consumption, economic growth and CO_2 emissions: evidence from G7 countries. World J Sci Technol Sustain Dev 16(1):22–39. https://doi.org/10.1108/WJSTSD-01-2018-0007

Bazhair AH, Khatib SF, Al Amosh H (2022) Taking stock of carbon disclosure research while looking to the future: a systematic literature review. Sustainability 14(20):13475

Buallay A (2019) Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector. Manag Environ Qual 30(1):98–115. https://doi.org/10.1108/MEQ-12-2017-0149

Buallay AM (2020) Sustainability reporting and bank's performance: comparison between developed and developing countries. World J Sci Technol Sustain Dev 16(2):187–203

Caldecott B (2020) Defining transition finance and embedding it in the post-Covid-19 recovery. J Sustain Fin Invest, 1–5

Carroll AB (2021) Corporate social responsibility (CSR) and the COVID-19 pandemic: organizational and managerial implications. J Strateg Manag 14(3):315–330. https://doi.org/10.1108/JSMA-07-2021-0145

Chouaibi Y, Rossi M, Zouari G (2021) The effect of corporate social responsibility and the executive compensation on implicit cost of equity: evidence from French ESG data. Sustainability 13(20):11510

Coombs T, Holladay S (2015) CSR as crisis risk: expanding how we conceptualize the relationship. Corp Commun Intl J 20(2):144–162. https://doi.org/10.1108/CCIJ-10-2013-0078

Chintrakarn P, Jiraporn P, Treepongkaruna S (2021) How do independent directors view corporate social responsibility (CSR) during a stressful time? Evidence from the financial crisis. Int Rev Econ Financ 71:143–160

Demers E, Hendrikse J, Joos P, Lev B (2021) ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. J Bus Financ Acc 48(3–4):433–462

Dias A, Rodrigues LL, Craig R (2016) Global financial crisis and corporate social responsibility disclosure. Soc Respons J 12(4):654–671. https://doi.org/10.1108/SRJ-01-2016-0004

Diaye MA, Ho SH, Oueghlissi R (2021) ESG performance and economic growth: a panel co-integration analysis. Empirica, 1–24

El Khoury R, Nasrallah N and Alareeni B (2021) ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. J Sustain Financ Invest Taylor & Francis, Vol. 0 No. 0, pp. 1–25

Engelhardt N, Ekkenga J, Posch P (2021) ESG ratings and stock performance during the COVID-19 crisis. Sustainability 13(13):7133

Ferriani F, Natoli F (2021) ESG risks in times of Covid-19. Appl Econ Lett 28(18):1537–1541

Folger-Laronde Z, Pashang S, Feor L, ElAlfy A (2020) ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic. J Sustain Financ Invest, 1–7

Grant J, Wunder T (2021) Strategic transformation to sustilience: learning from COVID-19. J Strateg Manag 14(3):331–351. https://doi.org/10.1108/JSMA-07-2021-0151

Gros M, Koch S, Wallek C (2017) Internal audit function quality and financial reporting: results of a survey on German listed companies, J Manag Govern, Springer US, Vol. 21 No. 2, pp. 291–329

Gregory RP (2022) ESG scores and the response of the S&P 1500 to monetary and fiscal policy during the Covid-19 pandemic. Int Rev Econ Financ 78:446–456

Gromis di Trana M, Fiandrino S, Yahiaoui D (2022) Stakeholder engagement, flexible proactiveness and democratic durability as CSR strategic postures to overcome periods of crisis, Management Decision, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/MD-08-2021-1012

Hassan A, Elamer AA, Lodh S, Roberts L, Nandy M (2021) The future of non-financial businesses reporting: learning from the Covid-19 pandemic. Corp Soc Responsib Environ Manag 28(4):1231–1240

Hannah ST, Sayari N, Harris FHD, Cain CL (2021) The direct and moderating effects of endogenous corporate social responsibility on firm valuation: Theoretical and empirical evidence from the global financial crisis. J Manage Stud 58(2):421–456

Hoang T-H-V, Segbotangni EA, Lahiani A (2020) Does ESG disclosure transparency help mitigate the COVID-19 pandemic shock? An empirical analysis of listed firms in the UK, SSRN Electronic Journal, No. November, available at: https://doi.org/10.2139/ssrn.3738256

Hoang HV, Nguyen C, Nguyen DK (2022) Corporate immunity, national culture and stock returns: startups amid the COVID-19 pandemic. Int Rev Financ Anal 79:101975

Humphreys KA, Trotman KT (2021) Judgment and decision making research on CSR reporting in the COVID-19 pandemic environment. Accounting & Finance, 1–27

Kramer (2007) Strategy and society: The link between competitive advantage and corporate social responsibility-response. Harv Bus Rev 85(5):139–139

Khatib S, Abdullah DF, Elamer A, Hazaea SA (2022) The development of corporate governance literature in Malaysia: a systematic literature review and research agenda, Corporate Governance International Journal of Business in Society, Vol. ahead of p No. ahead of print, available at: https://doi.org/10.1108/CG-12-2020-0565

Klymenko O, Lillebrygfjeld Halse L (2021) Sustainability practices during COVID-19: an institutional perspective, The International Journal of Logistics Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJLM-05-2021-0306

Laidroo L, Sokolova M (2015) International banks' CSR disclosures after the 2008 crisis. Balt J Manag 10(3):270–294. https://doi.org/10.1108/BJM-08-2014-0128

Lööf H, Sahamkhadam M, Stephan A (2021) Is corporate social responsibility investing a free lunch? The relationship between ESG, tail risk, and upside potential of stocks before and during the COVID-19 crisis. Finance Research Letters, 102499

Lu X, White H (2014) Robustness checks and robustness tests in applied economics. J Econometr 178:194–206

Nyberg AJ, Shaw JD, Zhu J (2021) The people still make the (remote work-) place: lessons from a pandemic. J Manag 47(8):1967–1976. https://doi.org/10.1177/01492063211023563

Mao Y, He J, Morrison AM, Andres Coca-Stefaniak J (2021) Effects of tourism CSR on employee psychological capital in the COVID-19 crisis: from the perspective of conservation of resources theory. Curr Issue Tour 24(19):2716–2734

Miralles-Quirós MM, Miralles-Quirós JL, Hernández JR (2019) ESG performance and shareholder value creation in the banking industry: International differences, Sustainability (Switzerland), Vol. 11 No. 5, available at: https://doi.org/10.3390/su11051404.

Miller D, Tang Z, Xu X, Breton-Miller L (2021) Are socially responsible firms associated with socially responsible citizens? A study of social distancing during the Covid-19 pandemic. J Business Ethics, 1–24

Mousa M, Saleem A, Sági J (2022) Are ESG shares a safe haven during COVID-19? Evidence from the Arab Region. Sustainability 14(1):208

Obrenovic B, Du J, Godinic D, Tsoy D, Khan MAS, Jakhongirov I (2020) Sustaining enterprise operations and productivity during the COVID-19 pandemic: "Enterprise Effectiveness and Sustainability Model." Sustainability 12(15):5981

Palma-Ruiz JM, Castillo-Apraiz J, Gómez-Martínez R (2020) Socially responsible investing as a competitive strategy for trading companies in times of upheaval amid COVID-19: Evidence from Spain. Intl J Financ Stud 8(3):41

Pavlova I, de Boyrie ME (2022) ESG ETFs and the COVID-19 stock market crash of 2020: Did clean funds fare better? Financ Res Lett 44:102051

Panagiotopoulos I (2021) Novel CSR & novel coronavirus: corporate social responsibility inside the frame of coronavirus pandemic in Greece. Int J Corp Soc Responsib 6(1):1–12

Phillips R, Freeman RE, Wicks AC (2003) What stakeholder theory is not. Bus Ethics Q 13(4):479–502

Popkova E, DeLo P, Sergi BS (2021) Corporate social responsibility amid social distancing during the COVID-19 crisis: BRICS vs. OECD countries. Res Intl Business Fin, 55, 101315

Qiu SC, Jiang J, Liu X, Chen MH, Yuan X (2021) Can corporate social responsibility protect firm value during the COVID-19 pandemic? Int J Hosp Manag 93:102759

Rababah A, Al-Haddad L, Sial MS, Chunmei Z, Cherian J (2020) Analyzing the effects of COVID-19 pandemic on the financial performance of Chinese listed companies. J Public Aff 20(4):e2440

Ramya SM, Baral R (2021) CSR during COVID-19: exploring select organizations' intents and activities. Corp Gov 21(6):1028–1042. https://doi.org/10.1108/CG-09-2020-0426

Ranjbari M, Esfandabadi ZS, Zanetti MC, Scagnelli SD, Siebers PO, Aghbashlo M, ... Tabatabaei M (2021) Three pillars of sustainability in the wake of COVID-19: a systematic review and future research agenda for sustainable development. J Clean Prod, 297, 126660

Rossi M, Chouaibi J, Chouaibi S, Jilani W, Chouaibi Y (2021) Does a board characteristic moderate the relationship between CSR practices and financial performance? Evidence from European ESG firms. J Risk Fin Manag 14(8):354

Shabana KM, Buchholtz AK, Carroll AB (2017) The institutionalization of corporate social responsibility reporting. Bus Soc 56(8):1107–1135

Sharma P, Panday P, Dangwal RC (2020) Determinants of environmental, social and corporate governance (ESG) disclosure: a study of Indian companies. Int J Discl Gov 17(4):208–217

Shakil MH, Mahmood N, Tasnia M, Munim ZH (2019) Do environmental, social and governance performance affect the financial performance of banks? A Cross-Country Styudy of Emerging Market Banks. Manag Environ Qual Intl J 30(6):1331–1344

Singhania M, Saini N (2021) Institutional framework of ESG disclosures: comparative analysis of developed and developing countries, J Sustain Fin Invest, available at: https://doi.org/10.1080/20430795.2021.1964810

Singh NP, Makhija P, Chacko E (2021) Sustainable investment and the COVID-19 effect-volatility analysis of ESG index. Intl J Sustain Econ 13(4):357–368

Tullberg J (2013) Stakeholder theory: some revisionist suggestions. J Socio-Econ 42:127–135

Tashman P, Marano V, Kostova T (2019) Walking the walk or talking the talk? Corporate social responsibility decoupling in emerging market multinationals. J Int Bus Stud 50(2):153–171

Tampakoudis I, Noulas A, Kiosses N, Drogalas G (2021) The effect of ESG on value creation from mergers and acquisitions. What changed during the COVID-19 pandemic?, Corporate Governance, Vol. 21 No. 6, pp. 1117–1141. https://doi.org/10.1108/CG-10-2020-0448

World Bank (2020) Global economic prospects, June 2020.

Yoo S, Keeley AR, Managi S (2021) Does sustainability activities performance matter during financial crises? Investigating the case of COVID-19. Energy Policy 155:112330

Zamil IA, Ramakrishnan S, Jamal NM, Hatif MA, Khatib SFA (2021) Drivers of corporate voluntary disclosure: a systematic review, J Financ Report Account, Vol. ahead of p No. ahead of print, available at: https://doi.org/10.1108/JFRA-04-2021-0110