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How ESG activities improve corporate stock performance during the COVID-19 crisis

By HUYEN THANH NGUYEN (S1053581)

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Master's Program in Economics
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Supervisor: Daniel Reimsbach

Radboud Universiteit



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Abstract

Purpose: This thesis investigates how ESG activities impact corporate stock performance during the COVID-19 crisis.

Design/methodology/approach: The event study method is used to examine the stock price movements after the European stock market reacted to the influence of the COVID-19 crisis. Cross-sectional analysis is applied to explore how each ESG pillar impacts corporate stock performance differently.

Findings: The findings suggest that, under normal circumstances, ESG companies' stock performance does not outperform the market. The COVID-19 crisis negatively influenced the stock performance of both ESG companies and the market, but the magnitude of the impact on ESG companies is lower than that on the market. In addition, high ESG companies outperform low ESG companies only in a short period (2 and 5 days after the event date). The results also reveal that only environmental and social dimensions have a positive effect on abnormal returns but only in the short term. In contrast, the governance dimension does not influence abnormal returns during the entire crisis. The additional test results show that only environmental and social dimensions in 2017 positively influenced corporate stock performance during COVID-19.

Keywords: ESG; COVID-19 crisis; corporate stock performance

1 Introduction

In January 2020, COVID-19 was initially discovered in Wuhan, China. Within a month, the infection had spread throughout the city and triggered a "lockdown" in this and other Chinese cities. The National Health and Fitness Commission of China verified the human-to-human transmission of coronavirus on January 20, 2020 (Mishra & Mishra, 2021). Only one day later, on January 21, 2020, the US found its first case of the coronavirus (Domm, 2020). On January 30, 2020, the World Health Organization (WHO) proclaimed COVID-19 a global health emergency of international concern (World Health Organization, 2020). The news about new infections, new number of deaths, and strict lockdowns in many cities in China had an enormous impact on the global economy because China is the world's largest manufacturing power (Global Times, 2021). Consequently, the stock market grew volatile as the virus's dynamics were unpredictable (Baker et al., 2020). The Asian Dow Index immediately sank by 4 percent; the Japanese Nikkei-225 declined by 3.6 percent, and the Hong Kong Stock Exchange fell by 3.6 percent within the day. Then, on January 31, 2020, the WHO declared a "global pandemic." The Asian stock market crash spread rapidly to other markets. The U.S. stock market saw its worst decline as the Dow Jones lost 37% of its value (Frazier, 2021). In the European stock market between February 2020 and 2021, the FTSE lost more than a third of its value, equivalent to 2,500 points (Jolly et al., 2021). According to Chowdhury et al. (2021), compared to Asia, North America, and Africa, the European stock market was hardest hit during this period. Furthermore, many empirical studies proved that COVID-19 had a greater influence on stock markets in developed and developing economies than the financial crises of 1929, 1987 and 2008 or any previous infectious disease pandemic since 1900, including the Spanish flu (Au Yong & Laing, 2021; Baker et al., 2020; Mishra & Mishra, 2021; Sun et al., 2022).

The negative impact of the COVID-19 pandemic on the stock market and the solutions to reduce this impact are highly contradictory in the current literature. Some studies have shown that companies engaging in environment, social and governance (ESG) initiatives can enhance their value by achieving both higher profits and better social condition (Bénabou & Tirole, 2010; Engelhardt et al., 2021; Ferrell et al., 2016). Broadstock et al. (2021) studied the effect of ESG performance during the COVID-19 crisis in China; they concluded that ESG performance has a

positive association with short-term cumulative returns over 3-, 5- and 11-day event windows because it minimizes risks during the crisis. They discovered that portfolios with a high ESG score had a better return during times of crisis compared to portfolios with a low ESG score; however, this result did not uphold under normal economic conditions. Hence, it demonstrates ESG activities incremental value during a crisis. Other literature on the insurance function of high ESG equities confirms the findings of this study, revealing that investors in high ESG stocks pay an insurance price in the form of reduced returns during normal times in exchange for downside protection during times of crisis (Ding et al., 2020; Engle et al., 2020).

From the same point of view, Beloskar & Rao (2022) found that ESG performance helped companies reduce stock return volatility during the COVID-19 pandemic. They explained that ESG performance promotes ethical practices at companies, especially during health pandemics such as COVID-19, and enhances the risk-adjusted performance of actively managed portfolios. Zhou & Zhou (2021) revealed that companies with higher ESG performance have lower price volatility than those with lower performance, and ESG activities serve a crucial role in bolstering “resilience” and stabilizing stock prices. However, using a sample of Indian companies, Meher et al. (2020) established a negative correlation between ESG performance and stock returns. Bae et al. (2021) conducted empirical research with 1,750 U.S. firms and found no evidence that ESG activities affected stock returns during the crash period. They proved that companies with better ESG performance before the crisis did not have better performance during the pandemic crisis.

To sum up, it is still disputed whether ESG activities can have a positive impact on companies’ stock performance during a crisis. To contribute to the current understanding, this research focuses on the impact of ESG activities on company stock returns during the COVID-19 crisis, namely whether higher ESG performance protects firm stock performance. Most current literature about the impact of ESG activities on stock performance is conducted using Asian or U.S. companies (Bae et al., 2021; Beloskar & Rao, 2022; Meher et al., 2020; Qiu et al., 2021; Zhou & Zhou, 2021), even though the European stock market experienced the heaviest losses during the crisis (Chowdhury et al., 2021). Therefore, this research focuses on European companies to fill the current gap. The research question of this study is:

“To what extent do ESG activities influence company stock return during the COVID-19 crisis?”

To answer this research question, this study used the event study method (ESM) to examine the stock price movement after the European stock market reacted to the influence of COVID-19. Following prior literature employing event study methodology in the COVID-19 crisis (Beloskar & Rao, 2022; Broadstock et al., 2021; Meher et al., 2020; Qiu et al., 2021), the dependent variables were defined as the firm's cumulative 2-, 5-, 10- and 20-day abnormal returns. Additionally, to see whether ESG activities positively impacted the company stock market for a longer period, this study also used the firm's cumulative 1-year abnormal return. This research did not include 2021 as the crisis year because the European stock market recovered without shock fluctuations in 2021. February 20, 2020, was chosen as the event date for this research rather than March 11, 2020, when WHO announced the COVID-19 outbreak as a global pandemic because investors had already reacted to the spread of the COVID-19 pandemic and there was the first signal of a plunge in the stock market (Reuters, 2022). The data on ESG performance and stock returns of all European companies were retrieved from Refinitiv through Eikon.

A number of empirical results are revealed. First, the results found no evidence that overall, companies with higher ESG performance have higher stock returns than companies with lower ESG performance during the COVID-19 crisis. Second, environmental performance has a positive correlation with the firm's cumulative 5-, 10- and 20-day abnormal return, and the social pillar has a positive correlation with the firm's cumulative 5- and 10-day abnormal return. Meanwhile, governance pillars do not have significant influence. The additional test was conducted to examine whether ESG performance before the crisis influenced firms' stock performance during the crisis. The results indicate that the social pillar in 2017 positively impacted cumulative abnormal returns during the crisis with statistical significance, while the impact of the environment and governance pillars were not significant.

The paper is organized as follows. Section 2 reviews the existing literature on ESG performance during the crisis and normal times. The hypotheses are defined in Section 3, while the research design is presented in Section 4. The result of the study is discussed in Section 5. Conclusion, policy implications, limitations of the study and areas for future research are outlined in Section 6.

2 Literature review

2.1 Definition of ESG

According to Gray et al. (1996), ESG activities were initiated in the early 1970s. Around this time, Friedman (1970) pointed out that ESG activities help companies increase their profits besides their main operating business. Despite the fact that ESG activities have been around for a while and that increasingly more firms, governments, shareholders and others are paying attention to ESG performance, the definition of ESG activities is not comprehensive and clear (Islam et al., 2013; Welford, 2004). The European Commission defined corporate social responsibility, a term related to ESG initiatives, as “a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis” (COM, 2001).

In empirical studies, ESG activities is defined as a voluntary commitment that goes beyond adherence to government rules and regulations (Batty et al., 2016). Barnett (2007) argued that ESG initiatives are a tool for companies to enhance relationships with their key stakeholders. In general, most ESG definitions emphasize that, in addition to the benefits to their shareholders, companies should be responsible to their other stakeholders, such as consumers, employees and the environment.

ESG activities are divided into internal and external activities based on the different categories of stakeholders (Deng et al., 2020; Jia et al., 2019). External ESG matters refer to social responsibility activities aimed at the local community, the natural environment and customers, for example. Internal ESG matters refer to companies’ actions taken to encourage employee satisfaction, actively fulfill and enhance organizational fairness for employees and ensure a safe environment for employee development. Companies that secure the advantages of both external and internal stakeholders can generate more reputation, trust and loyalty in addition to financial gains (Gazzola & Colombo, 2014).

Due to all the long-term benefits, ESG activities may be a valuable and effective strategy to cope with global challenges – not only in increasing company resilience and lowering the potential

consequences of crisis circumstances but also in transforming business threats into opportunities (Šain, 2021).

2.2 How ESG activities relates to firm stock performance

According to Hao et al. (2018), firms are motivated to hide damaging news in some specific circumstances. Due to the information asymmetry between corporate managers and stakeholders, investors are over-optimistic about the company's performance, which causes a stock price bubble. Then when the company's damaging news is revealed, or the economy fluctuates, the hidden actions result in significantly lower stock performance and significant losses for investors (Jin & Myers, 2006). Therefore, ESG activities are considered a solution to first enhance the transparency of the financial reporting of a company and then improve the company's stock performance (Francis et al., 2016; Hao et al., 2018; Kim & Zhang, 2016). From the same point of view, the social impact theory also supports the crucial role of ESG activities in reducing stock price volatility. This theory suggests that ESG activities optimize the interests of all stakeholders, including shareholders (Hao et al., 2018; Hategan et al., 2018; Orlitzky et al., 2003; Zasuwa, 2017). When ESG activities are implemented, firm managers pay adequate attention to their connections with investors, consumers, suppliers, etc. and issue transparent and reliable financial reports. Accordingly, these activities will significantly lower the degree of information asymmetry by overseeing and restraining managers, decreasing the likelihood of negative information hoarding behavior by managers and reduce the risk of stock price decline.

In addition to the social impact theory, the resource-based view explains the relation between ESG performance and firm stock performance. The theory stresses that a company's competitive advantages are formed by its "valuable, uncommon, imperfectly imitable, and irreplaceable" sources and skills (Barney, 1991). Therefore, if a company conducts ESG activities, its competitiveness and reputation would be enhanced, making a favorable impact on all stakeholders and boosting investor confidence. By investing in ESG initiatives, the company may attract consumers and investors with a strong sense of social responsibility, expedite financing, and expect assistance in financial difficulties to recover (J. Choi & Wang, 2009; Hillman & Keim, 2001; Ioannou & Serafeim, 2015).

On the other hand, the management balance theory states that ESG activities are used to serve the interests of management rather than shareholders (Hao et al., 2018). From this point of view, a company cannot entirely meet the interest of every stakeholder. Thus, the interest of each group of stakeholders must be considered carefully. If companies adopt an excessive amount of social responsibility, then the interests of their shareholders are compromised, resulting in a higher cost rate and inferior performance (Friedman, 1970). This balance implies that managers of the company enjoy the benefits of ESG activities at the cost of shareholders. Because ESG activities incur only extra expenditures and increases risks, it may diminish a company's competitiveness (Chtourou & Triki, 2017; McWilliams et al., 2006). Preston & O'Bannon (1997) proved that there is a negative relation between ESG performance and financial performance when managers use it to pursue their own benefits instead of stakeholders' benefits. Therefore, they criticize ESG initiatives and believe that businesses have just one social obligation: to use their resources without violating the laws of the game and to grow their profits.

2.3 The importance of ESG activities to firm stock performance during COVID-19 crisis

The COVID-19 pandemic is an unprecedented public health disaster that has spread globally. Approximately one-third of the world's population has been forced to stay in quarantine since the beginning of 2020. Amid the COVID-19 spread, global economic activities reached their lowest level, and the World Economic Forum (WEF), World Bank and International Monetary Fund anticipated an economic recession and global financial catastrophe (Lucchese & Pianta, 2020). During this period, the combined consequences of demand shock, supply shock and financial shock have been unprecedented (OECD, 2020; World Bank, 2020). Due to the unstable global economy and unpredictable coronavirus spread, stock markets in all nations have seen significant levels of volatility and decline (Lee & Lu, 2021; Mishra & Mishra, 2021; Sun et al., 2022). In this case, ESG's role in mitigating the impact of the pandemic on corporate stock performance has received much attention.

Some scholars indicate a positive relation between ESG performance and firm stock performance during the COVID-19 crisis. Beloskar & Rao (2022) conducted empirical research with ESG companies listed on the Bombay Stock Exchange (BSE) during the COVID-19 pandemic

and concluded that ESG performance protects companies from the decline of the stock market when it helps companies reduce the volatility in stock prices. Broadstock et al. (2021) investigated the effect of ESG performance in the market-wide financial crisis caused by the COVID-19 epidemic. Using a database of China's CSI300 index and event study methodology, they drew three important conclusions regarding the stock returns and ESG performance during the COVID-19 pandemic. First, ESG performance generally had a positive impact on short-term cumulative returns over 3-, 5-, and 11-day event windows around the date of the first lockdown in Wuhan, China. Moreover, they specifically proved that companies with higher ESG performance outperformed those with lower ESG performance. The authors finally concluded that ESG initiatives significantly minimize more risk during a crisis than they do in a regular economic environment (Broadstock et al., 2021; Zhang et al., 2022). Other scholars support the insurance function of high ESG stocks (Ding et al., 2020; Engle et al., 2020; Mousa et al., 2022). They argued that from an investor's perspective, high ESG stocks are relatively more resilient during the pandemic because investors hold their stocks patiently without selling to avoid losses during crises. From the same point of view, Lee & Lu (2021) demonstrated that compared to all companies and non-ESG companies, ESG companies were less impacted by the outbreak; their stock values were more resistant to the decline, and they recovered more quickly. Moreover, the short- and long-term cumulative impact of COVID-19 on the stock prices of ESG companies was less than that of non-ESG companies. This function of ESG activities is shown not only during the COVID-19 crisis but also during previous crises. Nofsinger & Varma (2014) pointed out that socially responsible funds outperformed conventional mutual funds during market crises from 2000 to 2011. Cornett et al. (2016) found that during the global financial crisis of 2008 to 2009, U.S. banks conducting ESG activities had better stock performance than other banks. Overall, ESG performance had a positive influence on firm stock performance; but the effect of each pillar on stock returns is different (Broadstock et al., 2021; Garel & Petit-Romec, 2020). Broadstock et al. (2021) found a positive relation between accumulative stock returns and environmental and especially governance performance, but social performance does not have an impact during the crisis period. Nevertheless, Albuquerque et al. (2020) did not include the governance performance because they wanted to avoid capturing a governance effect. Instead, they only

focused on the environmental and social aspects when researching how these activities influence the resiliency of firm stocks. Garel & Petit-Romec (2020) stated that the COVID-19 shock, and its extraordinary financial repercussions, are a warning about the immense uncertainty surrounding the future of climate action and that this issue should receive more attention from businesses, governments and society. Therefore, in their study, they placed a greater emphasis on the environmental pillar and sought investors' perspectives and expectations regarding environmental difficulties amid the most severe health crises, such as COVID-19. They discovered that the COVID-19 situation encourages investors to value environmental responsibility to a larger extent.

On the other hand, some articles found no relation or negative relation between ESG performance and firm stock performance. Bae et al. (2021) examined the influence of ESG performance and stock market returns using a sample of 1,750 U.S. companies during the COVID-19 pandemic. They found no evidence proving that ESG activities influence firm stock returns prior to the pandemic and do not perform better during the crash time. This result means that ESG performance prior to the crisis does not protect shareholder wealth from the negative impact of the crisis. To explain their findings, they argue that firms' ESG scores (the current rating system) may not adequately reflect the actual socially responsible actions of companies. In addition, investors can assess by themselves whether a company conducted ESG activities genuinely or engaged in "cheap talk." Based on the sample of 3,000 Russell companies during the 2008 financial crisis, Buchanan et al. (2018) discovered that before the financial crisis, ESG firms had a greater firm value than non-ESG companies, but after the crisis, ESG companies were affected harder. They contend that it is the signal of the ESG overinvestment effect and that the overall ESG effects are contingent on which effect predominates under a given economic circumstance.

Even though there are still empirical studies demonstrating a negative or nonexistent relationship between ESG and firm stock performance during the COVID-19 or previous crises (Bae et al., 2021; Buchanan et al., 2018), the majority of prior literature argues that ESG performance plays a crucial role in protecting companies from the negative market impact during crises (Broadstock et al., 2021; Garel & Petit-Romec, 2020; Lee & Lu, 2021; Nofsinger & Varma, 2014; Zhang et al., 2022).

Thus, two hypotheses are formulated:

Hypothesis 1 (H1): There is a negative stock price reaction to the COVID-19 crisis.

Hypothesis 2 (H2): Stock price reactions to the COVID-19 crisis are positively associated with ESG performance.

In addition, three dimensions of ESG do not have the same impact on corporate stock performance during the COVID-19 crisis (Albuquerque et al., 2020; Broadstock et al., 2021; Garel & Petit-Romec, 2020). Therefore, this research will explore how far three different dimensions affect corporate stock returns.

3 Methodology

3.1 Event Study

To answer the research questions, the ESM is used to examine the stock price movement after the European stock market reacted to the influence of the COVID-19 crisis. ESM has been extensively used to estimate the effect of a particular event or multiple events on stock returns (Al-Qudah & Houcine, 2021; Becchetti & Ciciretti, 2011; Grewal et al., 2019; Lämsilähti, 2012; Qiu et al., 2021).

For example, Mishra & Mishra (2021) used the event study method to demonstrate the negative impact of the worldwide spread of COVID-19 infection on aberrant stock market returns, with the assumption that Asian stock markets are information efficient. In addition, Albuquerque et al. (2020) proved that companies with better ESG performance have better stock returns during the crash period. Using stock market data from the Arab region, Mousa et al. (2022) established that the level of volatility in the ESG stock index was much lower in the post-COVID period compared to the traditional stock index and that companies conducting ESG activities have a shorter period to recover after the shocks from the market than other companies.

According to Al-Qudah & Houcine (2021), theoretically, an event analysis approach is a valuable instrument for assessing the financial effect of changes in markets or enterprises. Anomalies in corporate value are commonly measured using abnormal returns and cumulative abnormal returns (CAR). Even while the negative impact of crises on firm value has been successfully

established using ESM, little attention has been dedicated to stock market reactions to these events to ameliorate the decline. As stated earlier, ESG substantially influences corporations' stock performance during the COVID-19 crisis (Albuquerque et al., 2020; Broadstock et al., 2021; Mousa et al., 2022). Consequently, this study employed ESM to investigate if ESG initiatives enhance firms' stock returns during COVID-19.

3.2 Research design

The first analysis is an event study considering benefits of ESG following European investors' reactions to the global pandemic. This analysis documented stock market reactions to the companies after COVID-19 became a global pandemic. $CAR_{i(t_1, t_2)}$ was the cumulative abnormal return of security i around the day that European market reacted to the pandemic most measured over a window (days t_1 to t_2 relative to the announcement date). Market-adjusted method and value-weighted market returns were employed to estimate expected returns (Arthur & Cook, 2004; Qiu et al., 2021).

The market-adjusted method was estimated for each firm over a 60-day period or 1-year period prior to the event on the premise that examined firms' profitability or line of business did not suffer a significant change (Krivin et al., 2003). First, the firm's stock return was regressed against the return of market index to control for the overall market effects

$$(1) \quad R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where R_{it} represented the return of security i on day t and R_{mt} represented the return of market index on day t . ε_{it} was the error term.

After this, an ordinary least squares (OLS) regression analysis was performed to obtain estimates of market model parameters $\hat{\alpha}_1$ and $\hat{\beta}_1$.

$$(2) \quad ER_{it} = \hat{\alpha}_1 + \hat{\beta}_1 R_{mt}$$

Finally, abnormal return (AR) was calculated by subtracting the expected return from the stock return (Model 3). AR was summed over the event window of days t_1 through t_2 to yield the cumulative abnormal return (CAR) for security i (Model 4):

$$(3) \quad AR_{it} = R_{it} - ER_{it}$$

$$(4) \quad CAR_{i(t_1, t_2)} = \sum_{t=t_1}^{t_2} AR_{it}$$

The study used the cross-sectional analysis to test the hypothesis 2.

$$(5) \quad CAR_{it} = \alpha + \beta_1 Env_i + \beta_2 Soc_i + \beta_3 Gov_i + \beta_4 LEV_i + \beta_5 CF_i + \beta_6 \ln(MV)_i + \beta_7 \ln(MTB)_i + \text{Industry FE} + \text{Country FE} + \varepsilon_i$$

The dependent variable is CAR_{it} the cumulative abnormal return for firm i aggregated across the event window period.

The independent variables include:

- Env_i represented the environmental score of firm i in the three categories, including resource use, emissions and innovation from Thomson Reuters Asset4 ESG database.
- Soc_i represented the social score of firm i in the four dimensions, including workplace, human rights, community and product responsibility from Thomson Reuters Asset4 ESG database.
- Gov_i represented the governance score of firm i in three areas, including management, shareholders and ESG strategy.

Each pillar's performance was weighted to percentages ranging between 0 and 100 (Refinitiv, 2021). The analysis used Env_i, Soc_i and Gov_i in 2020 to measure the influence of ESG performance on corporate stock performance during the COVID-19 crisis. In addition, Env_i, Soc_i and Gov_i from 2017 until 2019 are used for the additional test to evaluate the long-term impact of ESG performance on firm stock returns.

Some control variables were included to reduce the effect of confounding and other extraneous variables. Most previous literature about financial and ESG performance includes firm size (Akben-Selcuk, 2019; B. B. Choi et al., 2013; Crisóstomo et al., 2011; Devie et al., 2018). Following the existing empirical research, firm size was calculated as the log of the total assets of a company. In addition, other control variables that represented corporate financial flexibilities were returned on assets (ROA), Book to Market value ratio (MB), Leverage and Cash holdings (Bae et al., 2021; Fahlenbrach et al., 2020; Garel & Petit-Romec, 2020; Ramelli & Wagner, 2020). According to the existing literature, companies with higher financial flexibilities (i.e., more cash and less debt) did significantly better during the COVID-19 crisis. All control variables were retrieved from the Refinitiv database.

The sample of this research includes various companies from different industries in Europe. Prior studies have shown that the COVID-19 crisis impacted companies differently across industries, and each European government had different support for their companies during the crisis. As a result, the researchers used a fixed effect for the country and industry variables (Garel & Petit-Romec, 2020; Ramelli & Wagner, 2020).

3.3 Event and sample selection

This study used the data of 1,180 European companies from Thomson Reuters' Refinitiv ESG database. The first case of COVID-19 was detected on December 31, 2019, in Wuhan, China. However, until February 20, 2020, this health crisis had the first impact on global stock markets when people recognized the coronavirus had spread worldwide and was considered a global health emergency of international concern (World Health Organization, 2020). The reactions of investors in Asian, European and American stock markets to the spread of COVID-19 were shown through the significant decline through February 20, 2020. This reaction occurred before March 11, 2020, when WHO declared the novel coronavirus outbreak a global pandemic (World Health Organization, 2020). Therefore, February 20, 2020, was selected as the event date for this research. The lockdown periods varied per nation during the COVID-19 crisis, so to determine the proper length of the event window, the fixed-length window method was used. According to Krivin et al. (2003), the proper length range for fixed-length windows was from two days to one year. Therefore, to test hypothesis 1, the researchers examined the abnormal returns during window periods [+1, +2], [+1, +5], [+1, +10], [+1, +20] and [+1, +255]. Moreover, the event window period did not include 2021 because the European Centre for Disease Prevention and Control (ECDC) was authorized for use in the European Union in December 2020 (ECDC, 2020), and investors had become more optimistic about the recovery of the market. The European stock market did not experience any extreme fluctuation during 2021. Because the duration of the event period is only almost one year (2020), both financial and ESG information has been gathered for a sample of 1180 companies located worldwide with a total of 1180 firm-year observations.

The estimation period ran for sixty days or one year before the event if the company had no major change in its profitability or line of business (Krivin et al., 2003). To determine the expected return accurately, our estimation period cannot include the effect of COVID-19 on firm stock performance with our large sample. The estimation period has a length of one year before December 31, 2019.

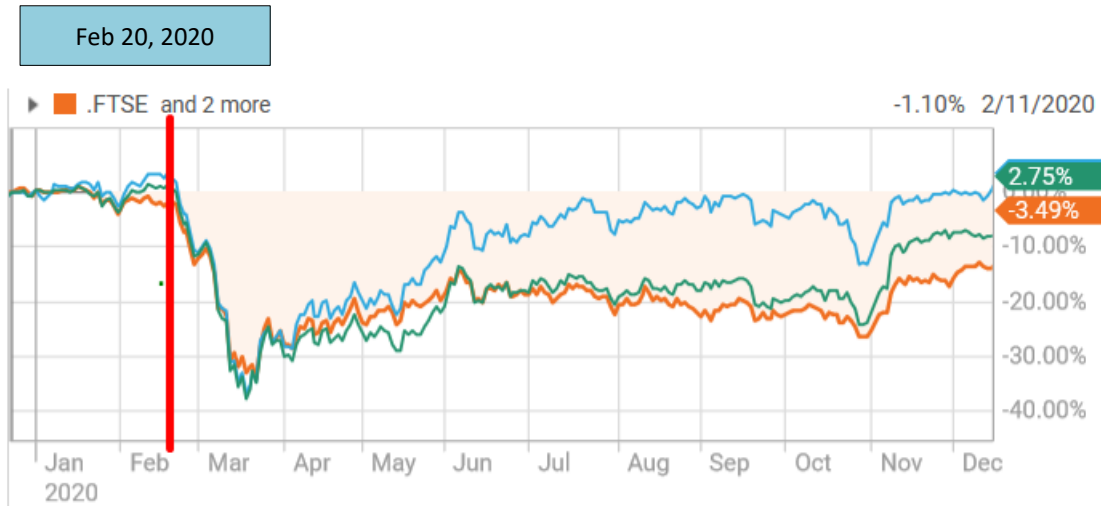


Figure 1: Price chart of FTSE index, N225 index, DJI index from January 01, 2020 to december 31, 2021

- .FTSE index
- .DJI index
- .N225 index

Source: www.reuters.com



FIGURE 2: EUROPEAN STOCK MARKET FROM 2020-CURRENT DATE

Source: www.reuters.com

This sample also excluded companies from the health and medical section, chemists trade section, online shopping section and technology section. According to the Office for National Statistics of the United Kingdom, these sections have been thriving during the COVID-19 crisis (Office for National Statistics, 2020).

Table 1 shows firm sample distribution per industry. It illustrates that most companies conducting ESG activities are in the industrial sector (30.68%) and consumer cyclicals (22.84%). Most industrial and consumer cyclicals companies engage in ESG operations because of rising demands from lawmakers, investors, customers and the media on various fronts. This includes customers having a greater awareness of sustainable products, business-to-business (B2B) purchases exerting increasing pressure on supplier chains and their ESG practices and an increase in C-suite and board members paying greater attention to these issues.

Table 2 displays firm sample distribution per country. Most companies conducting ESG activities are from UK (24.92%), Germany (14.1%), and Sweden (13.65%).

Industry	N	Percentage
Academic & Educational Services	2	0.17
Basic Materials	146	12.37
Consumer Cyclicals	270	22.84
Consumer Non-Cyclicals	125	10.59
Energy	90	7.63
Industrials	362	30.68
Real Estate	115	9.75
Utilities	70	5.93
Total	1180	100

TABLE 1: FIRM SAMPLE DISTRIBUTION PER INDUSTRY

Country	N	Percentage
Austria	16	1,36%
Belgium	25	2,12%
Bermuda	2	0,17%
Cayman Island	1	0,08%
Czechia	2	0,17%
Denmark	25	2,12%
Finland	32	2,71%
France	102	8,64%
Germany	139	11,78%
Greece	14	1,19%
Iceland	4	0,34%
Ireland	12	1,02%
Italy	55	4,66%
Jersey	2	0,17%
Luxembourg	2	0,17%
Netherland	39	3,31%
Norway	47	3,98%
Poland	27	2,29%
Portugal	10	0,85%
Russia	20	1,69%
Spain	47	3,98%
Sweden	140	11,86%
Switzerland	83	7,03%
Turkey	40	3,39%
United Kingdom	294	24,92%
Total	1180	100

TABLE 2: FIRM SAMPLE DISTRIBUTION PER COUNTRY

4 Empirical Results

4.1 Descriptive Statistics

Table 1 presents Pearson correlations (Panel A) and descriptive statistics (Panel B) for the treatment observation (N= 1,368). All variables are measured as of the 2020 calendar year-end and winsorized at the 1% and 99% levels.

Within Table 1, Panel A reveals the Pearson correlation coefficients between dependent and independent variables. First, the correlations between *Env*, *Soc* and $CAR[+1,+10]$; $CAR[+1,+20]$ are significantly positive, indicating that companies can improve their returns within 10 and 20 days after the crash market date caused by the pandemic if they have better environment and social performance. However, both *Env* and *Soc* have no significant correlation with the $CAR-1$ year after the event date. This result is the first indication that *Env* and *Soc*'s performance does not benefit companies' long-term stock value. On the other hand, governance performance has an impact on the stock value of companies for a longer time during the pandemic when the correlations between *Gov* and $CAR[+1,+10]$; $CAR[+1,+20]$ and $CAR[+1,+225]$ are positive and significant. Additionally, the correlations between *ROA* and $CAR[+1,+2]$; $CAR[+1,+5]$; $CAR[+1,+10]$ and $CAR[+1,+20]$ are all positive and significant, but the correlation between *ROA* and $CAR[+1,+225]$ is negative and significant, which corroborates that the better financial performance can only help companies improve their stock return in the short term during COVID-19 crisis but not in the long term.

Panel A: Pearson correlations (N=1180)												
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)CAR[+1;+2]	1.000											
(2)CAR[+1;+5]	0.769***	1.000										
(3)CAR[+1;+10]	0.648***	0.804***	1.000									
(4)CAR[+1;+20]	0.496***	0.669***	0.754***	1.000								
(5)CAR[+1;+225]	0.497***	0.598***	0.597***	0.593***	1.000							
(6)Env	0.015	-0.030	0.046*	0.056**	-0.031	1.000						
(7)Soc	0.010	0.022**	0.029**	0.009*	-0.002	0.029	1.000					
(8)Gov	0.013	0.032	0.061**	0.050*	0.048*	0.522***	0.040	1.000				
(9)ROA	0.101***	0.105***	0.112***	0.149***	-0.020	-0.002	0.046	0.035	1.000			
(10)LEV	0.024	-0.007	-0.057**	0.003	0.016	0.020	0.008	0.036	-0.009	1.000		
(11)CF	-0.006	0.040	0.005	-0.001	-0.002	0.046*	0.049*	0.047*	-0.003	0.005	1.000	
(12)lnMV	0.042	0.013	0.009	-0.001	-0.020	0.600***	0.037	0.529***	0.007	-0.012	0.067**	1.000
(13) lnMTB	0.017	0.012	0.016	0.031	-0.019	-0.003	-0.001	0.035	0.037	-0.017	0.015	0.150***

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

Panel B: Descriptive data (N=1180)									
Stats	N	Mean	Std	Min	P25	P50	P75	Max	
CAR[+1;+2]	1180	-1.543	4.106	-52.937	-3.180	-1.152	0.436	23.114	
CAR[+1;+5]	1180	-3.268	8.062	-121.03	-6.318	-2.877	0.370	37.204	
CAR[+1;+10]	1180	-4.894	12.283	-200.48	-9.089	-3.681	0.529	35.364	
CAR[+1;+20]	1180	-19.926	33.462	-203.80	-35.744	-17.769	-0.611	83.209	
CAR[+1;+225]	1180	6.113	98.203	-2095.9	-21.761	2.459	31.670	513.931	
Env	1180	41.641	27.769	0	17.51	40.075	64.4	97.59	
Soc	1180	51.903	21.291	2.92	32.69	53.69	71.94	97.96	
Gov	1180	51.715	22.85	0.64	33.335	52.32	70.005	96.63	
ROA	1180	3.715	11.223	-154.11	1.24	4.245	7.57	95.99	
LEV	1180	123.606	661.824	-4729.2	19.855	58.385	127.415	21803.16	
CF	1180	-0.0014	0.05	-1.836	1.03e-06	7.64e-06	0.00004	1439.97	
lnMV	1180	6.968	1.836	1.2060	5.653	6.84	8.204	12.338	
lnMTB	1180	0.747	0.926	-2.207	0.113	0.683	1.292	6.0238	

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

TABLE 3: DESCRIPTIVE STATISTICS

The second part of Table 2, Panel B, presents that the average environment performance is 41.641 (*Env*), social performance is 51.903 (*Soc*) and governance performance is 51.715 (*Gov*). These scores range from 0 to 100; according to the Refinitiv database, scores over 4.7 imply above average ESG performance (Refinitiv, 2021). It can be seen that companies focus more on social and governance activities than environmental activities. Specifically, the social pillar receives the most attention from European companies because its mean (51.903), min (2.92) and max (97.96) values are higher than environment and governance pillars.

Variable	VIF	1/VIF
ROA	1.03	0.971939
LEV	1.03	0.975200
CF	1.01	0.994339
lnMV	1.00	0.998133
lnMTB	1.00	0.999596
Mean VIF	1.01	

TABLE 4: VARIANCE INFLATION FACTORS (VIF)

Table 4 shows the variance inflation factor (VIF) test to examine the multicollinearity between variables. Multicollinearity is a phenomenon in which a dependent variable significantly influences another dependent variable in a multiple regression model. The VIF of each independent variable is lower than two, so there is no sign of multicollinearity (Table 4).

4.2 Stock market reaction to COVID-19 crisis

	Normal period					Pandemic period				
	Obs	Mean	Std. dev	Min	Max	Obs	Mean	Std. dev	Min	Max
ESG firm	1180	.0387848	1.822412	-7.95	9.00	1180	.0297725	1.667977	-3.861	4.1775
Market	1180	.0494466	.7875825	-3.83	3.37	1180	.0113049	1.817778	--4.24	3.41

TABLE 5: STOCK RETURNS BEFORE AND DURING COVID-19 CRISIS

A general picture of stock returns of ESG companies and European market returns before and during the COVID-19 crisis is shown in Table 5. The mean value of corporate stock returns, represented as the arithmetic mean, is the most commonly used measure of central tendency. Before the crisis, the mean of ESG firms' stock return (0.039) is lower than that of market stock return (0.049), which means that the stock returns of ESG firms are generally lower than the European stock market returns. During the pandemic period, there is a decline in stock returns with both ESG firms and the European stock market. Moreover, the decrease in European market stock returns is much higher than that of ESG firms: the stock returns' mean for ESG firms is 0.030, while the total market stock returns' mean is 0.011. This finding suggests that in normal periods, average ESG companies have lower performance than the market, but during times of crisis, they perform better. This result is in line with the previous literature (Boubaker et al., 2022; Broadstock et al., 2021; Leite & Cortez, 2015).

	Cumulative Abnormal Return				
	(1) [+1;+2]	(2) [+1;+5]	(3) [+1;+10]	(4) [+1;+20]	(5) [+1;+225]
Treatment	0.466*	0.654*	0.565	2.491	2.835
	(2.01)	(2.19)	(0.85)	(1.35)	(0.53)
ROA	0.0217*	0.0551**	0.0894**	0.301***	-0.223
	(2.21)	(2.92)	(3.17)	(3.84)	(-0.99)
LEV	0.0002	-0.0001	-0.001*	-0.001	0.0017
	(1.12)	(-0.18)	(-2.20)	(-0.41)	(0.47)
CF	-0.269	5.655	-0.544	-5.865	-0.785
	(-0.14)	(1.50)	(-0.10)	(-0.38)	(-0.02)
lnMV	0.0745	0.0338	0.118	0.153	0.0057
	(1.21)	(0.29)	(0.66)	(0.31)	(0.00)
lnMTB	0.108	0.118	0.204	1.014	2.036
	(0.89)	(0.50)	(0.58)	(1.04)	(0.73)
Industry FE	Control	Control	Control	Control	Control
Country FE	Control	Control	Control	Control	Control
_cons	-5.235	-5.324	-1.837	0.618	22.80
	(-1.86)	(-0.98)	(-0.23)	(0.03)	(0.35)
<i>N</i>	1180	1180	1180	1180	1180
<i>R</i> ²	0.141	0.103	0.108	0.140	0.040

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 6: MARKET REACTION TO THE COVID-19 CRISIS BETWEEN HIGHER ESG PERFORMANCE AND LOWER ESG PERFORMANCE

Table 6 represents the difference in the market reaction to high ESG firms and low ESG firms 2, 5, 10, 20 and 225 days after the event date. High ESG firms are defined when their ESG score is higher than the ESG median, and low ESG firms are defined when their ESG score is lower than the median (Beloskar & Rao, 2022). The ESG median is a statistical measure that determines the middle value of ESG scores in the research dataset. The coefficients between the treatment group and $CAR[+1,+2]$ and $CAR[+1,+5]$ are significantly positive, proving that higher ESG firms outperform lower ESG firms during the 2 and 5 trading days after the event date. The other coefficients between the treatment group and $CAR[+1,+10]$; $CAR[+1,+20]$ and $CAR[+1,+225]$ are positive but not significant. The result shows that higher ESG companies only outperform lower ESG companies from 2 to 5 trading days after the event.

4.3 Cross-Sectional Analyses

In Table 7, the relation between ESG scores and corporate stock returns during the COVID-19 crisis can be seen. The environmental and social scores have a significantly positive relation with CAR but only within a short period after the event date. This relation cannot be seen between *Env*

and Soc and CAR after one year ($CAR[+1,+225]$). The result shows that the Gov does not have significant relation with cumulative abnormal returns during the whole crisis period.

	Cumulative Abnormal Return				
	(1) [+1;+2]	(2) [+1;+5]	(3) [+1;+10]	(4) [+1;+20]	(5) [+1;+225]
Env	0.00450 (0.81)	0.0235* (2.18)	0.0485** (3.02)	0.108* (2.42)	-0.128 (-0.97)
Soc	0.0329 (0.69)	0.0827* (2.11)	0.0227* (2.08)	0.0238 (0.62)	0.0429 (0.38)
Gov	0.0100 (1.62)	0.00976 (0.81)	0.0197 (1.09)	0.0406 (0.81)	0.022* (2.09)
ROA	0.00934 (0.89)	0.0373 (1.83)	0.0638* (2.09)	0.293*** (3.46)	-0.284 (-1.14)
LEV	0.000225 (1.42)	0.0000273 (0.09)	-0.000880 (-1.91)	-0.000275 (-0.22)	0.00220 (0.59)
CF	-0.446 (-0.23)	5.197 (1.37)	-0.738 (-0.13)	-5.327 (-0.34)	-3.154 (-0.07)
lnMV	0.182* (2.13)	0.353* (2.12)	0.701** (2.81)	1.433* (2.07)	2.458 (1.21)
lnMTB	0.0478 (0.38)	-0.0322 (-0.13)	-0.0913 (-0.25)	0.466 (0.45)	0.348 (0.12)
Industry FE	Control	Control	Control	Control	Control
Country FE	Control	Control	Control	Control	Control
_cons	-5.720* (-2.01)	-6.851 (-1.24)	-3.746 (-0.45)	0.897 (0.04)	17.21 (0.25)
<i>N</i>	1180	1180	1180	1180	1180
<i>R</i> ²	0.141	0.096	0.111	0.134	0.038

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 7: THE IMPACT OF ESG SCORES ON STOCK MARKET REACTION TO COVID-19

5 Additional tests

Aybars et al. (2019) report that ESG activities are anticipated to have a long-term impact on financial performance. Conversely, investors are less likely to consider ESG factors in their investment decisions in the short term. In addition, Orlitzky et al. (2003) contend that long-term ESG efforts (3 years before the crisis) enhance the reputation of organizations and ensure the stability of their financial performance. This conclusion is consistent with the empirical research conducted by Bansal et al. (2015) regarding the relationship between ESG performance and business financial success during the global financial crisis (2018–2019). In addition, stakeholders may view a firm's excellent ESG performance under normal circumstances as a genuine activity of the company for their benefit rather than for the advantage of managers, in accordance with the management balance theory. Specifically, the longer-term favorable impact of ESG performance on aberrant returns during the COVID-19 outbreak.

To examine the long-term influence of ESG performance, the researchers use the ESG performance of sample companies from 2017 to 2019 – the period before COVID-19 occurred. Panel A of Table 8 shows that in 2017, only the correlations between social score and $CAR[+1,+5]$; $CAR[+1,+20]$ and $CAR[+1,+225]$ are significantly positive. Panel B of Table 8 reveals that ESG scores in 2018 do not have any significant influence on cumulative abnormal returns during the period of crisis. In Panel C, it can be seen that only the correlation between *Env* in 2019 and $CAR[+1,+5]$ is significantly positive.

The results emphasized the significant long-term impact of social performance on firm cumulative abnormal returns during the height of COVID-19.

Panel A: 2017					
	(1)	(2)	(3)	(4)	(5)
	[+1;+2]	[+1;+5]	[+1;+10]	[+1;+20]	[+1;+225]
Soc	0.00171 (0.14)	0.0684** (2.77)	0.0701 (1.77)	0.354*** (3.42)	1.034** (3.04)
Env	-0.00382 (-0.40)	-0.0384 (-1.92)	-0.0392 (-1.22)	-0.194* (-2.32)	-0.346 (-1.26)
Gov	-0.000830 (-0.09)	-0.0303 (-1.60)	-0.0334 (-1.10)	-0.117 (-1.47)	-0.168 (-0.64)
ROA	0.0648*** (3.67)	0.145*** (3.96)	0.176** (3.00)	0.569*** (3.70)	-0.230 (-0.46)
LEV	0.000124 (0.61)	0.000121 (0.29)	-0.000698 (-1.04)	0.000867 (0.49)	0.00559 (0.97)
CF	-51.79 (-0.50)	57.40 (0.27)	203.4 (0.59)	401.4 (0.44)	-66.37 (-0.02)
lnMV	0.157 (1.57)	0.192 (0.93)	0.187 (0.56)	0.368 (0.42)	1.398 (0.49)
lnMTB	0.0597 (0.31)	-0.0574 (-0.14)	0.730 (1.13)	1.991 (1.18)	3.366 (0.61)
Industry FE	Control	Control	Control	Control	Control
Country FE	Control	Control	Control	Control	Control
_cons	-3.568 (-1.04)	-1.485 (-0.21)	3.768 (0.33)	14.80 (0.50)	-21.67 (-0.22)
<i>N</i>	1180	1180	1180	1180	1180
<i>R</i> ²	0.201	0.152	0.154	0.183	0.056
Panel B: 2018					
	(1)	(2)	(3)	(4)	(5)
	[+1;+2]	[+1;+5]	[+1;+10]	[+1;+20]	[+1;+225]
Soc	-0.0114 (-1.29)	-0.0122 (-0.67)	-0.0184 (-0.65)	0.0744 (0.98)	-0.0754 (-0.32)
Env	0.00632 (0.87)	0.0138 (0.92)	0.0209 (0.90)	-0.0501 (-0.81)	-0.0308 (-0.16)
Gov	0.00545 (0.78)	-0.0106 (-0.73)	-0.0132 (-0.59)	-0.00540 (-0.09)	0.209 (1.12)
ROA	0.0144 (1.24)	0.0506* (2.12)	0.0782* (2.12)	0.307** (3.11)	-0.470 (-1.53)
LEV	0.000162 (0.97)	-0.0000346 (-0.10)	-0.000958 (-1.81)	0.0000260 (0.02)	0.00304 (0.69)
CF	-37.01 (-1.05)	-73.48 (-1.01)	-53.02 (-0.47)	-311.1 (-1.03)	-357.0 (-0.38)
lnMV	0.174* (2.31)	0.218 (1.41)	0.216 (0.91)	0.368 (0.57)	0.399 (0.20)
lnMTB	0.0410 (0.27)	0.101 (0.33)	0.561 (1.17)	1.904 (1.48)	4.317 (1.08)
Industry FE	Control	Control	Control	Control	Control
Country FE	Control	Control	Control	Control	Control
_cons	-5.274 (-1.80)	-5.454 (-0.91)	-1.178 (-0.13)	2.010 (0.08)	6.505 (0.08)
<i>N</i>	1180	1180	1180	1180	1180
<i>R</i> ²	0.141	0.103	0.104	0.143	0.046
Panel C: 2019					
	(1)	(2)	(3)	(4)	(5)
	[+1;+2]	[+1;+5]	[+1;+10]	[+1;+20]	[+1;+225]
Soc	-0.00764 (-0.93)	-0.0192 (-1.15)	-0.0277 (-1.07)	0.0425 (0.60)	-0.165 (-0.78)
Env	0.00876 (1.27)	0.0284* (2.02)	0.0365 (1.66)	0.0329 (0.55)	0.0812 (0.46)
Gov	0.00188 (0.28)	-0.0140 (-1.03)	-0.0183 (-0.87)	-0.0619 (-1.08)	0.153 (0.89)
ROA	0.0156 (1.45)	0.0459* (2.09)	0.0753* (2.21)	0.299** (3.22)	-0.466 (-1.69)
LEV	0.000184	-0.000071	-0.00103*	-0.000041	0.00263

	(1.14)	(-0.22)	(-2.01)	(-0.03)	(0.64)
CF	-34.80	-70.60	-55.79	-341.6	-369.7
	(-1.00)	(-1.00)	(-0.51)	(-1.14)	(-0.42)
lnMV	0.154*	0.171	0.225	0.379	0.713
	(2.18)	(1.19)	(1.00)	(0.62)	(0.39)
lnMTB	0.0993	0.141	0.342	1.619	3.251
	(0.70)	(0.49)	(0.76)	(1.33)	(0.90)
Industry FE	Control	Control	Control	Control	Control
Country FE	Control	Control	Control	Control	Control
_cons	-5.773*	-6.492	-2.145	-3.529	9.360
	(-2.04)	(-1.12)	(-0.24)	(-0.14)	(0.13)
<i>N</i>	1180	1180	1180	1180	1180
<i>R</i> ²	0.146	0.099	0.107	0.139	0.043

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE 8: THE LONG-TERM IMPACT OF ESG SCORES ON STOCK MARKET REACTION TO COVID-19

6 Discussion

6.1 Interpretations

The first performed analysis shows that the COVID-19 crisis has a negative influence on the corporate stock performance of all companies. This result is in line with the current understanding of corporate stock performance during the COVID-19 crisis (Broadstock et al., 2021; Hwang et al., 2021; Sun et al., 2022; Zhang et al., 2022). When the number of infections increased, governments took countermeasures, resulting in a severe economic slowdown, growing unemployment, a significant decline in international trade, rising budget deficits and a disastrous drop in stock markets (Bai et al., 2021; Sun et al., 2022). In addition, the finding demonstrates that, relative to the market, enterprises conducting ESG activities have better stock market performance during the crisis. However, this is not the case during normal times. During the standard period, ESG companies do not perform better than the market, potentially because investors do not pay proper attention to ESG activities – they look at ESG activities as a cost and instead prioritize maximizing their profit (Chtourou & Triki, 2017; Friedman, 2007). However, when the global health crisis occurred, causing disastrous consequences for the global economy and stock market, investors looked at ESG performance as risk mitigation (Broadstock et al., 2021) or prevention of an overall loss of trust in companies (Lins et al., 2017). Lee & Lu (2021) proved that investors seemed more confident with ESG stocks because they held the stocks patiently and did not sell

them to avoid losses during the pandemic. It shows the insurance function of ESG activities during the crisis period.

Furthermore, this research shows that high ESG companies outperform low ESG companies 2 and 5 days after the event day but not for a longer period (a few months). This result is consistent with current literature investigating the relationship between ESG performance and corporate stock performance (Broadstock et al., 2021; Ding et al., 2020; Engle et al., 2020; Mousa et al., 2022). This result emphasizes the insurance function of ESG performance in reducing risks and preventing the loss of trust in companies during the COVID-19 crisis. However, high ESG performance companies only outperform the low ESG performance companies after the short term (2 and 5 days after the event day). Previous researchers contended that ESG performance has a positive impact on firm financial performance in the medium and long term (Camilleri, 2012; Orlitzky et al., 2003; Sayekti, 2015). Therefore, it raised questions about whether the ESG performance of companies is measured correctly or is overvalued and if high ESG performance is still a benefit to companies after a short time. In addition, to explain the short-term influence of ESG performance during the time of crisis, Shiu & Yang (2017) argue that the benefits of ESG performance are accurately assessed or overestimated. After the initial phase of the crisis, investors may realize that ESG operations do not provide firms with a major competitive advantage and that ESG companies do not generate greater profits than non-ESG companies. Their elevated expectations for ESG enterprises do not last over time (one year after the event day). This is demonstrated by the insignificant correlation between CSR performance and stock returns found in this study. This result is backed by earlier research, and no studies have found a substantial relationship between CSR performance and longer-term stock returns (a few months after the event date).

This research also explores how much three dimensions of ESG performance affect corporate stock performance differently during the COVID-19 crisis. The result shows that environmental and social dimensions positively influence abnormal returns but only for a short period. Meanwhile, the governance dimension does not influence abnormal returns during the whole crisis period. This result is in line with research from Albuquerque et al. (2020) and Garel & Petit-Romec (2020). The characteristics of the COVID-19 crisis can explain this result. Because the

COVID-19 crisis is a global health crisis, it is considered a warning for people about environmental problems. As a result, the environmental dimension has a positive impact on firms' abnormal returns during the period. Additionally, the social dimension plays an important role in improving corporate stock performance. Because the better social performance is, the more companies care about their employees and the wider society around them. During the current COVID-19 pandemic, employees expected more care from their companies when they had psychological problems during the lockdown or had to work in high-exposure positions (Parker et al., 2022). Moreover, companies have higher demand for skilled employees, and "the war for talent was already picking up" during the COVID-19 crisis (Popken, 2021). Therefore, in this period, companies had equitable policies to ensure enjoyable environments and the quality of life of their employees to keep their skilled employees or attract more talented employees to help them overcome the crisis. However, the result of this research is partly opposite to Broadstock et al. (2021), who argued that governance played the most important role of the three dimensions in improving stock performance during the COVID-19 crisis. They reasoned that all companies from different industries have to manage governance risks at the same material level, although environmental and social risks differ by industry.

The additional tests explore how the ESG performance of companies before COVID-19 influenced the corporate stock market during the COVID-19 crisis. The results show that social score in 2017 has a significantly positive relation with abnormal returns of ESG companies within 5, 10, 20 and 225 days after the event date. Environment in 2017 had a significantly positive relation with abnormal returns within 20 days after the event date. However, both environment and social performance in 2018 and 2019 did not influence the abnormal returns during the crisis period in 2020. The result also shows no relation between governance performances in previous years (2017–2019) and abnormal returns during the COVID-19 crisis. The result of this research is consistent with previous research. First, it shows the long-term benefit of ESG activities with corporate stock performance. Orlitzky et al. (2003) argue that in the long term, ESG activities (3 years before the crisis) improve companies' reputations and assure the stability of companies' financial performance. This result is in line with the empirical research conducted by Bansal et al. (2015) about ESG and corporate financial performance during the global financial recession in

2018 and 2019. In addition, if a company has good ESG performance during the normal period before a crisis occurs, stakeholders may look at it as an authentic action of the company, which benefits them instead of managers, per the management balance theory. In particular, the longer positive influence of ESG performance on abnormal returns protected companies during the COVID-19 crisis. Second, with the financial crisis caused by a global health crisis, environment and social performance have more influence on corporate stock performance, while governance performance does not influence even in the long term.

6.2 Theoretical implication

The social impact theory states that ESG activities optimize the interests of all stakeholders. Hence, ESG companies have less volatility in their stock price. During the COVID-19 crisis, it is crucial to ensure the interests of all stakeholders, particularly internal stakeholders: employees. Employees had to face serious psychological problems working from home during the challenging lockdown period (Parker et al., 2022). Moreover, if employees worked in high-exposure positions, they had to face a higher chance of being infected or easily losing their jobs when their company closed during the pandemic. As a result, employees, especially skilled employees, had higher expectations for compensation and benefits policies from their company during the COVID-19 crisis. Therefore, if companies guaranteed their employees' interests, they were able to retain talented workers, which played an essential role in assisting businesses in planning for the COVID-19 crisis. The results of this research fully reflect the perspective of the theory. The social dimension has a positive impact on corporate stock performance during the early stage of the crisis. The social performance in 2017, three years before the crisis, even had a positive influence for a longer time during the crisis.

The second theory that can be used to explain the results of this research is the resource-based view theory. This theory maintains that a company's competitive advantages come from its "valuable, rare, hard to copy, and irreplaceable" sources and skills (Barney, 1991). If a company considers environmental issues, it may enhance its competitive advantages, especially given that the current economic crisis is rooted in the global health crisis. From the social dimension's perspective, better ESG performance shows that companies care about employees and their

quality of life. It may be a competitive advantage for a company to attract or retain more talented employees.

On the other hand, the results of this research also show that the positive impact of ESG performance does not sustain for long durations during the COVID-19 crisis. This is also supported by previous literature (Broadstock et al., 2021; Hwang et al., 2021; Shiu & Yang, 2017). The management balance theory can explain this. The management balance theory claims that ESG is employed to suit management interests as opposed to shareholder interests (Hao et al., 2018). Therefore, in the initial stages of the crisis, investors realized that ESG activities did not provide them with the anticipated advantages, so ESG performance no longer had a positive impact on the company's stock performance.

6.3 Practical implication

The present outcomes can help investors spend more attention evaluating the ESG performance of a company, whether ESG activities are suitable and services benefit all stakeholders or just managers. By conducting ESG activities, companies maintain mutually beneficial relationships with employees, consumers and communities at different times, particularly during crises that may be social, economic, moral or so on (Mahmud et al., 2021).

From the results, from companies' perspectives, they can know within three ESG dimensions which dimension brings the most benefits for them when managing a pandemic like COVID-19 in the future. From that, they have more benefits while minimizing the costs they have to invest. Additionally, due to the short-term effect of ESG performance on corporate stock performance at the beginning of the crisis, companies should carefully reconsider whether ESG activities can bring as many benefits as they expected or reconsider their ESG strategy so that they can have better results in the future.

Corporate social responsibility is received much attention from the European Commission and each European government (European Commission, 2016). According to the European Commission, ESG is important for the sustainability, competitiveness, and innovation of EU enterprises and the EU economy. It brings benefits for risk management, cost savings, access to capital, customer relationships, and human resource management. The results of this research

prove all benefits of ESG activities to companies and society as expected. To retain these benefits over a longer length of time, particularly during times of crisis, governments must enact additional policies encouraging corporations to engage in ESG activities. In addition, if ESG performance is defined formally, ESG performance may be enhanced and bring more long-term benefits to companies and communities.

6.4 Limitations and future research

This study is subject to several limitations. First, the research does not control whether companies receiving any financial support from their governments during the COVID-19 crisis. In fact, the Commission and the European Investment Bank Group together triggered a comprehensive package to support companies over the COVID-19 crisis, which most focuses on small - medium companies (European Commission, 2020). In addition, each European government also has their own action to support companies and employees overcome the crisis and mitigate the long-term consequences from this (KPMG, 2020). Therefore, the outcomes may be influenced by this issue. Second, based on the available data on Refinitiv database, our sample does not contain many medium and small companies, which are more vulnerable during the COVID-19 crisis. According to Moneva-Abadía et al. (2019), ESG initiatives provide a strategic opportunity for small businesses amid economic crises. From this perspective, future research may study how ESG performance improves the stock performance of small and medium-sized corporations. Third, the research only uses ESG scores from Refinitiv – Eikon database to measure companies' performance. Without comparison with other ESG measures, it is difficult to conclude whether the current measurement can be considered accurate. As a result, the future research can use multiple ESG measures to evaluate the relationship between ESG performance and corporate stock performance during the COVID-19 crisis.

7 Conclusion

This study empirically examined the relationship between ESG performance and corporate stock performance for European companies during the COVID-19 crisis. This study aims to determine if ESG stocks outperform the market and to what extent the three characteristics of

ESG impact stock prices differently. The event study method and cross-sectional analysis were performed to examine the influence of ESG on corporate stock performance and how far three dimensions of ESG affect the stock price differently.

The results show that the COVID-19 crisis negatively influenced all stock markets. However, ESG stocks have better returns than the stock market during the crisis period, even though ESG stocks have lower returns than the market stock under normal conditions. In addition, high ESG firms outperform low ESG firms during the crisis period, but only in the short term (20 days after the event day) and not for the longer period (one year). These results align with previous literature (Broadstock et al., 2021; Lee & Lu, 2021; Lins et al., 2017; Meher et al., 2020). It means that ESG is looked at as downside protection in crises. Nevertheless, the results only showed the positive impact of ESG in the early stage of the crisis, and no current empirical research found the long-term influence of ESG during the crises (Broadstock et al., 2021; Hwang et al., 2021; Shiu & Yang, 2017). Besides, the results also show that environmental and social dimensions have a positive relation with abnormal returns within a few days after the event date, and environmental and social performances have a positive impact in the longer period during the COVID-19 crisis. Meanwhile, the governance dimension does not have any impact on stock abnormal returns during the COVID-19 crisis. It may be argued that the COVID-19 crisis is an exogenous shock to companies and directly impacts the health of individuals and their views of environmental issues. As a result, individuals pay more attention to environmental and social issues during this crisis.

The findings reported in this research have several implications, including for the decision-making process of investors. According to the management balance theory, they should carefully assess whether companies execute ESG activities to secure benefits for all stakeholders or to solely serve the interests of managers. Second, the findings provide companies with a signal regarding their ESG implementation strategy. Each dimension of ESG has a different impact on companies' performance, so companies must evaluate their circumstances carefully to maximize the benefits of ESG while minimizing the costs invested. Third, with all benefits and problems relating to ESG, governments must encourage firms to engage in ESG initiatives to keep these advantages over time and, at the same time, establish a clear baseline for ESG performance to ensure companies conduct ESG for the benefit of their stakeholder and society.

Ultimately, the subject of whether ESG performance has a beneficial influence on company performance, particularly during COVID-19, is attracting considerable attention not just from academic research but also from corporations, the government and society. To continue this topic, future research can use different ESG measures or focus on small and medium companies to see the relationship between ESG and corporate stock performance from different perspectives.

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