Cleaner and Responsible Consumption 8 (2023) 100101

Contents lists available at ScienceDirect

Cleaner and Responsible Consumption

journal homepage: www.journals.elsevier.com/cleaner-and-responsible-consumption

# The impact of environmental, social and governance score on shareholder wealth: A new dimension in investment philosophy

Abhishek Parikh [a,*,1], Divya Kumari [a], Maria Johann [b], Dušan Mladenović [c]

[a] Ganpat University, Faculty of Management Studies, VMPCMS, Ganpat Vidyanagar, 384012, India
[b] Warsaw School of Economics, al. Niepodległości 162, 02-554, Warszawa, Poland
[c] Masaryk University, Department of Corporate Economy, Faculty of Economics and Administration, Brno, Czech Republic

ARTICLE INFO

*Keywords:*
ESG
Sustainable investment
Shareholder wealth
Return
India

ABSTRACT

Recently, there has been significant research on the environmental, social, and governance (ESG) aspects of wealth generation. Managers have tried to attract investors for sustainable growth by pushing for ESG investments. This study attempts to determine the relationship between ESG scores on shareholders' wealth and define possible selection criteria for future investments. Notably, there are funds and investment avenues that are specifically designed for ESG themes, urging toward sustainable wealth creation. However, investors' focus remains on their returns and wealth creation. In recent years, reporting ESG scores has become standard practice for most rating agencies to report the financial health of companies. Thus, this study employs a linear regression model to analyze the impact of ESG scores on the equity returns of 225 Indian companies. The results show empirical evidence of the positive impact of the governance (G) factor on equity returns, while it reports the negative impact of the environmental (E) factor on equity returns. Moreover, the impact of the social (S) factor is found to be insignificant. Therefore, we conclude that financial motivations may be needed to trigger E– and S-factor practices by companies. It is important for companies to be very conscious of their governance practices to improve their shareholders' wealth.

## 1. Introduction

The COVID-19 pandemic has completely disrupted the world economy, causing global stock markets to become extremely volatile (Chowdhury et al., 2022). The economic slowdown owing to the pandemic has brought about significant difficulties for investors in terms of sustaining their wealth.

According to the Global Sustainable Investment Alliance (GSIA, 2014), ESG scores can remedy the information asymmetry in financial markets. The ESG score includes scores for environmental, social, and governmental factors of firms and can be defined as a "firm's obligation to improve social welfare; and equitable and sustainable long-term wealth for stakeholders" (Mohammad and Wasiuzzaman, 2021). Lourenço and Branco (2013) argued that ESG is a critical impulse in socially responsible investments, especially in terms of long-lasting economic benefit. According to Johann (2022), it is a particularly significant indicator during volatile times. Consequently, ESG has emerged as a common denominator in attempts to attract new long-term-orientated investors.

Reporting ESG scores has become a prerequisite for credit rating agencies to assess the financial health of individual companies (CRISIL, 2022). Ashwin Kumar et al. (2016) stated that the integration of ESG practices makes a company less vulnerable to its reputation and lowers the volatility in profits. In essence, the ESG score serves as an insurance mechanism against harmful stocks and mitigates investor risks.

Despite the growing popularity of ESG indicators and ESG-bounded investments (Bengtsson, 2008), the literature is silent regarding the relationship between ESG and investor returns. This is surprising given that reporting ESG-relevant activities has been deemed mandatory by the New Companies Act (2013), is perceived positively by risk-averse investors, and is an additional indicator of a company's financial status. ESG assists decision-makers and shortens the time needed to make investment decisions (Gillan et al., 2021).

The context of developing countries remains largely unexplored in

* Corresponding author.
*E-mail addresses:* f13abhishekp@iima.ac.in (A. Parikh), divyaagrawal.da97@gmail.com (D. Kumari), mjohan@sgh.waw.pl (M. Johann), dusan.mladenovic@econ.muni.cz (D. Mladenović).
[1] Current Address: A2/104, Mandar Apartment, Nr. Loyola Hall, Naranpura, Ahmedabad, Gujarat – 380,013, India.

https://doi.org/10.1016/j.clrc.2023.100101
Received 22 September 2022; Received in revised form 24 December 2022; Accepted 18 January 2023
Available online 28 January 2023

scientific terms when it comes to corporate social responsibility (CSR) framework and practices related to ESG factors (Hamidu et al., 2015). Therefore, to address these gaps in knowledge, this study aims to portray the importance of ESG factors to investors' returns in the context of a developing country. India provides an excellent opportunity to do this, given that companies in the country are obligated to report activities that are related to ESG factors.

India's New Companies Act (2013) provides a legal framework and motivation for faithful reporting of relevant activities. Drawing on publicly available data in form of ESG reports from Yahoo Finance, ACCORD, and CRISIL (2021), we compute adjusted equity returns to assess the three-factor model (ESG). Moreover, we examine whether ESG engagements lead to higher investors' wealth in India.

We make three significant contributions to the CSR and ESG literature. First, we capture the context of a developing country (India) that has been a global pioneer in legal requirements to report ESG scores. By observing this unique case, we contribute to the growing body of knowledge on the domain of ESG. Second, by discovering that only the governance score (G factor) leads to increased shareholder wealth we provide pioneering empirical-based insights into the background dynamics of ESG score. As somewhat expected, the social (S factor) and environmental (E factor) scores proved to have a negative influence on shareholder returns. Last, by observing ESG, we contribute to a better understanding of the short-term dynamics of creating equity returns. Given that investors are often interested in long-term prospects, our findings present a solid base for further and more complex explorations. However, our findings must be taken with caution given the observed time and national context.

The remainder of the paper is structured as follows: Section 2 provides a literature review of related studies. Section 3 presents the data, data collection method, and models used in this study. Section 4 reports the analysis procedure and major results. Section 5 discusses the results and explains the implications. Last, Section 6 states the conclusion of this study and suggests avenues for future research.

## 2. Literature review

The concepts of CSR and ESG have been broadly discussed by researchers in recent years. A growing interest in CSR and ESG strategies is due to their roles in company performance (Franco et al., 2020). There is also evidence that CSR's effect on financial results is rising in the long run (Theodoulidis et al., 2017). The CSR concept has developed greatly since Bowen (1953) emphasized the obligation of companies to implement policies addressing social needs and expectations. Different approaches to CSR have been taken over the years, including philanthropy, regulated CSR, and instrumental/strategic CSR (Hamidu et al., 2015). Instrumental/strategic CSR is embedded into the business strategy and requires CSR orientation, sustainable management, reporting, philanthropic activities, certificates, and communication (Johann, 2022). Moreover, collaboration with stakeholders is essential for sustainable production and consumption (Mishra et al., 2022).

ESG refers to how corporations integrate environmental, social, and governance issues into their business models (Gillan et al., 2021). In practice, ESG strategy and reports are an inherent part of the corporate strategy of companies taking a socially responsible approach. The implementation of sustainable business models has become crucial for sustainable development (Bocken and Short, 2021) and a company's financial results. Table 1 provides recent works regarding CSR and ESG's effects on corporate financial performance (CFP).

In the given context, it is not surprising that investors' and corporate managers' interest in CSR and ESG is increasing and ESG investments are gaining importance (Gillan et al., 2021). The number of companies that issue sustainability/ESG reports has considerably increased over the last few years (G&A, 2021, 2020a; 2020b). In addition, the Principles for Responsible Investment (PRI) have been developed to support investors by addressing ESG issues in investment practices, including environmental issues such as sustainable commodities, biodiversity, and circular economies; social issues such as human rights, working conditions and modern slavery; governance issues such as tax fairness, responsible political engagement, and executive pay (PRI, n.d.). The principles are designed to align investment practices with the UN Sustainable Development Goals (SDGs) adopted by all UN Member States in 2015 (UN, 2015). Thus, with detailed guidance regarding responsible investment practices, it is easier to integrate ESG concerns into investment analysis and decision-making processes. Moreover, the growth of responsible investment has had a significant impact on financing cleaner production methods and sustainable practices within organizations (Ortas et al., 2013). Consequently, sustainable production may stimulate sustainable consumption (Ülkü and Hsuan, 2017).

Investors today attach great importance to ESG investing for two reasons. First, through ESG investing, ethical investment practices are actively promoted. Second, ESG investing enhances the performance of a managed portfolio, thereby increasing returns while reducing portfolio risk. Galbreath et al. (2014) reported that integrating sustainable investment with ESG factors is the fastest-growing and the most popular investment approach. Nair and Ladha, 2014 stated that while

**Table 1**
Overview of recent studies regarding the CSR/ESG's effects on CFP (Source: Authors).

| Authors | Companies/industry/country | Source | Time period | Method | Topic |
|---|---|---|---|---|---|
| Theodoulidis et al. (2017) | 683 companies, tourism industry | MSCI ESG, COMPUSTAT | 2005–2014 | panel regressions | CSR, firm strategy and CFP |
| Velte (2017) | 412 companies listed on the German Prime Standard | Asset4 database of Thomson Reuters | 2010–2014 | correlation and regression analysis | ESG and CFP |
| Landi and Sciarelli (2018) | Italian firms listed on FTSE MIB | Standard Ethics Agency on FTSE MIB's companies | 2007–2015 | panel data analysis | ESG and CFP |
| Dalal and Thaker (2019) | 65 Indian public limited companies | NSE 100 ESG Index database | 2015–2017 | panel data regression analysis | ESG and CFP |
| Franco et al. (2020) | 178 companies, the hospitality industry | Thomson Reuters Eikon database | 2012–2017 | panel data analysis | CSR, quality management and CFP |
| Ahmad et al. (2021) | 351 UK companies | FTSE350 UK firms | 2002–2018 | static and dynamic panel data techniques | ESG and CFP, firm size as a moderator |
| El Khoury et al. (2021) | 46 listed banks, MENAT countries | Refinitiv and World Bank statistics | 2007–2019 | panel regression | ESG and CFP |
| Rossi et al. (2021) | 225 European listed companies | Thomson Reuters ASSET4 database | 2015–2019 | linear regressions with panel data | CSR and CFP, board as a moderator |
| Yilmaz (2021) | non-financial companies, BRICS countries | Sustainalytics database | 2014–2018 | panel regression | corporate sustainability and CFP |
| Zhou et al. (2022) | 167 Chinese listed companies | SynTao Green Finance | 2014–2019 | linear regression | ESG, CFP and company market value, CFP as a mediator |

sustainable investment has grown considerably in America, Australia, and Europe, the growth has been slowing in some emerging economies. However, as per a report published by India's top credit rating agency, ESG-focused funds have become attractive for several big investors, such as Aditya Birla Sun Life ESG Fund, Axis ESG Fund, ICICI Prudential ESG Fund, Kotak ESG Opportunity Fund, Mirae Asset ESG Sector Leaders ETF, Quantum India ESG Equity Fund, and SBI Magnum Equity ESG Fund (CRISIL, 2022).

Investors apply ESG factors, which are non-financial factors, as a part of their analysis process to assess risks and growth opportunities of a firm. However, such factors are interconnected; thus, their classification can be challenging (CFA, 2022). Institutions such as the Global Reporting Initiative (GRI, n.d.) have developed standards for sustainability reporting to measure the organization's impact on the economy, environment, and society. Thus, the main groups of ESG factors refer to the environment (e.g., climate change and carbon emissions, air and water pollution, biodiversity, deforestation, energy efficiency, waste management, and water scarcity), society (e.g., customer satisfaction, data protection and privacy, gender and diversity, employee engagement, community relations, human rights, and labor standards) and governance (e.g., board composition, audit committee structure, bribery and corruption, executive compensation, lobbying, political contribution, and whistleblower schemes) of a firm (CFA, 2022). The ESG scores, based on various ESG criteria, are used to objectively measure a company's performance concerning socially responsible practices. They are also used to assess risks and opportunities and enable comparisons between companies across sectors (Balatbat et al., 2012).

ESG investments have attracted the interest of mainstream investors. Ashwin Kumar et al. (2016) highlighted the importance of ESG factors for investors, using a new quantitative model. The authors established empirical evidence of the link between ESG factors and investment risk-adjusted performance. More recently, Ilhan et al. (2021) showed that firms with poor ESG profiles/scores, as reflected through higher carbon emissions, have higher tail risks. These results concur with arguments stating that employing ESG considerations in investment decisions can mitigate uncompensated portfolio risks and that reducing exposure risks is a major driver of shareholder engagement (Fortado, 2017). Thus, an increasing number of institutions actively engage with their portfolio firms to reduce exposure risks.

Krueger (2015) argued that it is not ESG factors that allow investors to manage risks; instead, companies' higher valuation effectively leads to better financial shape. This enables investors to invest more in measures that improve their ESG profile, which leads to firms accumulating higher ESG scores. A higher ESG score thereby helps in identifying equity stocks that result in higher shareholder wealth. This helps both companies and investors in deciding whether to focus on individual factors of ESG or identify the score that is possibly more important from an investor's point of view. Recent findings seem to prove that companies that have implemented ESG principles outperform other ones (Harper, 2020; Kurtz, 2020; Chen and Mussalli, 2020).

However, Eccles, Ioannou, and Serafeim (2012) and Allianz Global Investors (2015) overlooked the issue of risk. By focusing on the idea that ESG factors can help deliver what everyone wants— superior, risk-adjusted performance over the long run—Eccles et al. (2012) obtained the nexus high ESG–less risk as granted and leapfrog to show improved financial, stock, and portfolio performance where ESG factors are analytically applied. Thus, the significance of ESG in relation to wealth generation seems to be questionable without empirical evidence. Consequently, Bannier et al. (2019) found that increasing ESG scores reduces firm risk (particularly downside risk), indicating an insurance-like characteristic of CSR.

Research on the effects of ESG reporting on returns, especially in emerging markets has been on the rise. For instance, Park (2017) presented a positive linkage between ESG and firm performance for Korean firms, and Xiong (2021) found that in China, stocks containing low ESG risk seem to provide higher returns with better-tailed risk. In the context of developed economies, a plethora of research has been carried out to understand the impact of ESG reporting on returns. Verheyden, Eccles, and Feiner (2016) demonstrated the effect of ESG on risk-adjusted returns for shareholders using data from 23 developed countries. Battisti et al. (2019) used data from the Italian stock market to test EVA and competitive advantage for ESG companies. Lööf et al. (2022) examined data from European countries and found that ESG ratings have helped investors reduce their risk exposure to market turmoil caused by the COVID-19 pandemic while maintaining the fundamental trade-off between risk and reward.

The impact of size and performance on shareholder wealth has been proved empirically in both developed and developing countries (Kousenidis et al., 2000). In addition, Drempetic et al. (2020) and Ramić (2019) have shown the influences of firm market capitalization and return on investment (ROI) on ESG scores, respectively. Hence, the size factor and performance factor are key to understanding the true impact of ESG scores on returns empirically. In this study, we take both variables as control variables to establish the impact of ESG score on short-run returns of individual stocks in India.

Anchored in the currently available body of knowledge, there is a shred of fragmented evidence on the individual E, S, and G factors' influence on shareholder returns. Recently, Lueg and Pesheva (2021) investigated the positive influence of each ESG factor on total returns. Earlier, Broadstock et al. (2021) found that cumulative stock returns are positively related to E and G, but not the S factor in the Chinese context. However, the impact of E, S, and G factors on the return on shareholders' equity has not been examined in the context of the ever-growing developing economy of India. Therefore, this study aims to propose the prediction model shown in Fig. 1.

Fig. 1 shows the environmental, social, and governance scores as independent variables and the monthly returns for four months after the declaration of the scores are taken as dependent variables. Market capitalization and ROI are introduced as control variables in the proposed model since they impact both the independent and dependent variables.

Therefore, anchored in the above-discussed arguments and based on the recognized gaps in the domain literature, we posit the following set of hypotheses:

**H1**. ESG factors influence the return on shareholders' equity

**H1a**. E factor influences the return on shareholders' equity

**H1b**. S factor influences the return on shareholders' equity

**H1c**. G factor influences the return on shareholders' equity

## 3. Methodology

### 3.1. Data and sample

To analyze the impact of individual ESG factor scores on returns, the 4-month period following the announcement of ESG scores by Indian credit rating agencies was considered. Notably, the Indian equity market belongs to the weak form of market efficiency (Parikh, 2013); hence, the publicly available information may be adjusted in the very short run. CRISIL India published a report on ESG scores for the top-listed Indian companies in June 2021. CRISIL is a leading credit rating agency in India and its ratings and reports are used by investors to benchmark quality ratings and make investment decisions (CRISIL, 2022).

As a sample period, we used 6 months before monthly adjusted returns, and 6 months after monthly adjusted returns after the ESG score, as reported by CRISIL in June 2021. We took 6 months on both sides to cover one calendar year, as short-term can be defined as less than one year for taxation purposes. We selected the ACE equity data considering its inclusiveness for our analysis; these data included all 225 companies, whose ESG scores were published by CRISIL (CRISIL, 2021).

Table 2 shows all 225 Indian sample firms from 20 different

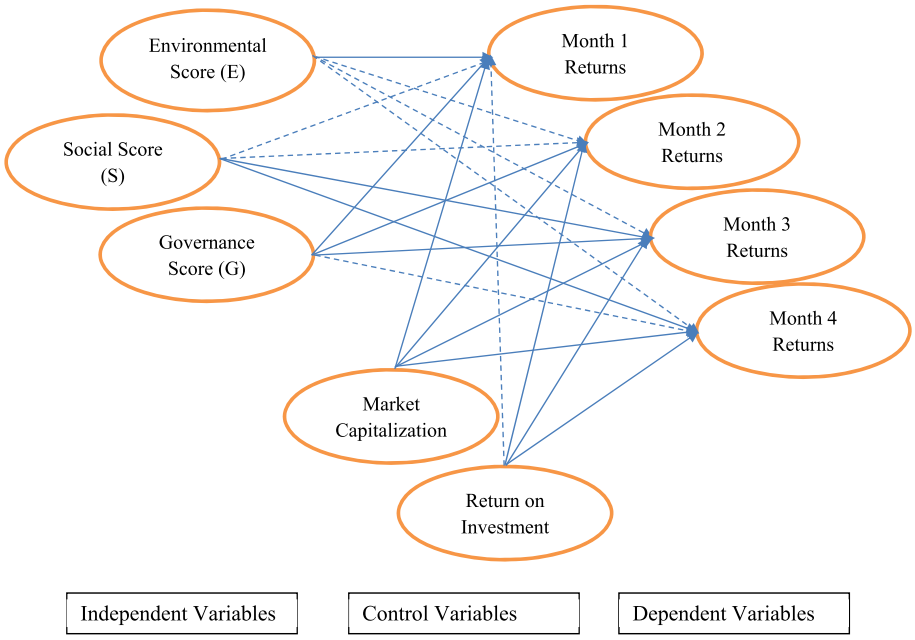


**Fig. 1.** Proposed Model.

**Table 2**
Sample distribution industry-wise (Source: Authors).

| No. | Industry/Sector | No of Firms | Total Observations | Percent |
|---|---|---|---|---|
| 1 | Auto ancillary | 10 | 120 | 4.44 |
| 2 | Auto OEM | 9 | 108 | 4.00 |
| 3 | Cement | 12 | 144 | 5.33 |
| 4 | Chemicals | 15 | 180 | 6.67 |
| 5 | Diversified | 2 | 24 | 0.89 |
| 6 | Engineering and Capital Goods | 15 | 180 | 6.67 |
| 7 | Financial | 45 | 540 | 20.00 |
| 8 | FMCG | 25 | 300 | 11.11 |
| 9 | Healthcare | 4 | 48 | 1.78 |
| 10 | Internet | 4 | 48 | 1.78 |
| 11 | IT | 11 | 132 | 4.89 |
| 12 | Lubricants | 1 | 12 | 0.44 |
| 13 | Metals | 10 | 120 | 4.44 |
| 14 | Mining | 2 | 24 | 0.89 |
| 15 | Oil and gas | 12 | 144 | 5.33 |
| 16 | Paints | 4 | 48 | 1.78 |
| 17 | Pharmaceuticals | 26 | 312 | 11.56 |
| 18 | Power | 11 | 132 | 4.89 |
| 19 | Real estate | 5 | 60 | 2.22 |
| 20 | Telecom | 2 | 24 | 0.89 |
| | Total | 225 | 2700 | 100 |

industries; the monthly returns recorded yielded a total of 2700 observations (=225*12) collected from ACE equity and cross-checked through the Yahoo Finance database. The financial sector is dominant in our sample at 20%, followed by the pharmaceuticals industry at 11.56%; the industry with the smallest representation is the telecommunication industry at 0.89%.

### 3.2. The modeled relationships

The average returns for 6 months were calculated from January 2021 to June 2021 to find the pre–half-yearly average adjusted returns (HAAR) and from July 2021 to December 2021 for the post-HAAR. Similarly, the average returns were calculated from April 2021 to June 2021 for the pre-quarterly average adjusted returns (QAAR) and from July 2021 to September 2021 for post-QAAR. We utilized the following equations in our calculations:

$$HAAR = \frac{1}{6}\sum_{i=1}^{6} AR_i \quad (1)$$

$$QAAR = \frac{1}{3}\sum_{i=1}^{3} AR_i \quad (2)$$

where AR represents the adjusted returns of equity shares for the event *i*, HAAR is the half-yearly average adjusted returns of equity shares, and QAAR is the quarterly average adjusted returns of equity shares.

## 4. Data analysis

### 4.1. Descriptive statistics

Table 3 presents the descriptive statistics and shows that the governance score has the highest mean of 67.06, while the environmental score has the lowest mean of 47.88. After the ESG score announcement, the third month (September 2021) shows the highest mean returns of 4.22% and the highest return of 94.76%. The lowest mean is reported in

**Table 3**
Descriptive statistics (Source: Authors).

| Variable Name | Minimum | Maximum | Mean | Std. Deviation (SD) |
|---|---|---|---|---|
| Environmental Score | 22 | 86 | 47.88 | 12.86 |
| Social Score | 29 | 74 | 53.90 | 8.81 |
| Governance Score | 40 | 83 | 67.06 | 8.05 |
| Market Capitalization (Rs. in Crores) | 4002 | 1,290,000 | 69,600 | 148,000 |
| Return on Investment (ROI) | −22.79 | 49.11 | 2.20 | 9.73 |
| Jul2021 Returns | −20.48 | 49.11 | 2.20 | 9.73 |
| Aug2021 Returns | −31.25 | 74.84 | 1.59 | 11.54 |
| Sep2021 Returns | −16.49 | 94.76 | 4.22 | 11.81 |
| Oct2021 Returns | −19.75 | 45.18 | −0.24 | 8.81 |
| *Pre*QAAR | −7.19 | 24.92 | 4.73 | 5.06 |
| *Post*QAAR | −10.58 | 34.03 | 2.67 | 6.03 |
| *Pre*HAAR | −4.39 | 22.71 | 4.53 | 4.42 |
| *Post*HAAR | −6.99 | 14.46 | 1.25 | 3.88 |

Note: N = 225.

the fourth month after the publication of the ESG score (October 2021), with a minimum return of −19.75%. In addition, the average market cap is Rs. 69,600 crores with an average ROI of 2.2% per annum.

Before the publication of ESG scores, the average quarterly returns are 4.73% with a standard deviation of 5.06%; the average half-yearly returns are 4.53% with a standard deviation of 4.42%. After the publication of ESG scores, the returns are 2.67% (quarterly) and 1.25% (half-yearly) with standard deviations of 6.03% and 3.88%, respectively.

### 4.2. Pre-post impact of ESG score announcement

To verify the before-and-after effect of the ESG score report on adjusted returns, we created pairs of HAAR and QAAR to examine whether the impact lasts for six-month data or three-month data. For these paired samples, we used the *t*-test because the same group of share returns before and after the ESG scores report were considered.

We checked whether the ESG score announcement has an impact on returns. Table 4 shows that the average adjusted returns for the first and second half of 2021 are significantly different ($t = 9.201$; $p < 0.05$). However, as the returns have a significant positive relationship, it cannot be concluded that the difference in returns is specifically due to the ESG score announcement. The QAAR for both the first and second quarters of 2022–23 were also found to be statistically different and significant (($t = 3.840$; $p < 0.05$) and have no significant relationship. Therefore, the before-and-after QAAR results of the ESG scores announcement in the CRISIL reports are comparable. This signals a clear 3-month effect of the ESG scores announcement on the adjusted monthly returns of companies whose ESG scores were reported.

### 4.3. Impact of ESG individual score on shareholder wealth

In the next step, checked which of the three factors (i.e., E, S, or G) influences shareholder wealth. We adopted a multiple linear regression analysis that measures the influence of independent variables on dependent ones (Hair et al., 2010). To show the impact of the control and main variables, we performed a stepwise hierarchy regression analysis.

As shown in Table 5, first, we examined the impact of both control variables, market cap (size factor) and ROI (performance factor), on the dependent variable, stock returns (shareholder wealth). Secondly, we used ESG scores as independent variables to understand their impact on stock returns. In addition, the enter method was used by indicating that all of the E, S, and G scores were processed simultaneously.

Regression models were formulated for the 1-month post-ESG announcement (Model 1), the 2-month post-ESG announcement (Model 2), the 3-month post-ESG announcement (Model 3), and the 4-month post-ESG announcement (Model 4). Table 5 reports the results of the regression analyses of the four models along with their R-squared values and changes in R-squared values (the change in R-squared helps in understanding whether an independent variable improves any dependent variable explanation or not).

We checked for multi-collinearity issues through the variance inflation factor (VIF). VIF values for all independent variables E, S, and G are 1.534, 1.491, and 1.069 respectively, which is below 10 (Li et al., 2018); this confirms that the data are free from multi-collinearity. In all four models, the independent variable and its score remain the same. Hence, the value of VIF also remains the same for the same independent variables in all four models.

The model fits for all four models are significant ($p < 0.05$). Specifically, the E factor ($\beta = -0.135$; $p < 0.05$) and G ($\beta = 0.255$; $p < 0.05$) are significant predictors in Model 1, and the G factor is significant in Model 2 ($\beta = 0.233$; $p < 0.05$) and Model 3 ($\beta = -0.249$; $p < 0.05$). The E factor is an insignificant predictor in Models 2, 3, and 4, and the G factor is insignificant in Model 4 at a 5% significance level. The S factor is insignificant for all of the models at a 5% significance level. Hence, Hypotheses *H1a* and *H1c* prove to be true for Model 1, and *H1c* proves to be true for Models 2 and 3 at a 5% significance level. However, the S factor is significant at a 10% level in Models 3 and 4 with a negative impact ($\beta = -0.190$; $p < 0.10$) and positive impact ($\beta = 0.143$; $p < 0.10$) respectively.

The control variables are significant and very crucial to predict the monthly stock returns in all four models. Market cap shows significance at 10% in all models and has very little impact on stock returns ($\beta = -0.000007$, 0.00001, −0.0000003, and −0.000000005, respectively, for months 1–4). However, performance ROI is a very important control variable in predicting stock returns and shows a significant positive impact for the first two months and a significant negative impact for the next two months ($p < 0.05$; $\beta = 0.226$, 0.275, −0.506, and −0.247 for months 1–4, respectively).

During the stepwise hierarchy regression analysis, the impact of the control variables (market cap and ROI) is reduced, and the variances in shareholder wealth are explained in the context of ESG factors. Models 1 to 4 are all significant (at 5%) with increases in R-squared of 4.7%, 3.3%, 4.1%, and 4.3%, respectively. These results reflect the importance of individual E, S, and G scores as a factor that impacts stock returns in the short run of 1–4 months.

The findings reveal that the G score for any company may remain dominant, and thus, does have a positive impact on returns for the first two months, and a negative impact for the third month. The E score, however, may impact only the first month negatively after the announcement of ESG scores. The S score shows an impact at a 10% significance level the third month after the ESG score announcement.

## 5. Discussion and implications

Interestingly, for India, the G factor shows a positive impact on returns while the E factor shows a negative one. This study demonstrates that a company's engagement in ESG practices does affect its returns. Therefore, this study offers insights related to the promotion of responsible investing and the enhancement of company engagement in ESG activities. However, the results show that only managing the governance factor eventually helps in increasing a company's equity returns. Notably, environmental activities negatively affect shareholder wealth, and the social engagement of the company is insignificant as far as equity returns are concerned.

This implies a possible downward shift in spending toward an environment-friendly society, and is a major point of concern to stakeholders, especially in emerging economies (Mohammad and Wasiuzzaman, 2021) where companies have not yet focused on the E factor, while not realizing its larger effect on society. From a policy perspective, the E factor remains a concern for any emerging economy like India. Thus, this study indicates the need for governments and regulatory bodies to intervene to develop a relevant framework. This will possibly motivate companies to engage in environment-related activities without hurting the financial wealth of shareholders. In terms of protecting the wealth of investors on a larger scale that addresses all stakeholders such as

**Table 4**
Effect of announcement of ESG scores of companies (Source: Authors).

| Pair | Observations (N) | Coefficient of Correlation | Sig (p-value) | Mean Difference | t -value | Sig (p-value) |
|---|---|---|---|---|---|---|
| PreHAAR – PostHAAR | 225 | 0.177 | 0.008* | 3.2757 | 9.201 | 0.000* |
| PreQAAR – PostQAAR | 225 | −0.041 | 0.542 | 2.0565 | 3.840 | 0.000* |

Note: * denotes $p < 0.05$ level of significance.

**Table 5**
Hierarchy regression analysis for the impact of individual ESG scores on returns (Source: Authors).

| Models for 1, 2, 3, and 4-month returns | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Factors | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| | Coefficient | p-value | Coefficient | p-value | Coefficient | p-value | Coefficient | p-value |
| Step 1 | | | | | | | | |
| Const. | 0.954 | 0.326 | −1.834 | 0.102 | 8.144 | 0.000 | 1.684 | 0.056 |
| MarketCap | −7.39E−06 | 0.090** | 1.83E−05 | 0.000* | 3.26E−07 | 0.094** | 5.55E−09 | 0.099** |
| ROI | 0.226 | 0.012* | 0.275 | 0.008* | −0.506 | 0.000* | −0.247 | 0.002* |
| Rsquared | 0.038 | | 0.092 | | 0.096 | | 0.041 | |
| Δ Rsquared | 0.038 | | 0.092 | | 0.096 | | 0.041 | |
| Step 2 | | | | | | | | |
| Const. | −12.5 | 0.057 | −15.97 | 0.036 | 32.53 | 0.000 | −12.19 | 0.041 |
| MarketCap | −9.40E−06 | 0.049* | 1.34E−05 | 0.016* | 7.35E−06 | 0.091** | 5.55E−06 | 0.020* |
| ROI | 0.131 | 0.161 | 0.246 | 0.024* | −0.480 | 0.000* | −0.194 | 0.023* |
| E | −0.134 | 0.034* | 0.095 | 0.194 | 0.038 | 0.604 | 0.069 | 0.223 |
| S | 0.068 | 0.443 | −0.101 | 0.327 | −0.190 | 0.071** | 0.143 | 0.077** |
| G | 0.255 | 0.004* | 0.233 | 0.022* | −0.249 | 0.016* | 0.042 | 0.591 |
| Rsquared | 0.085 | | 0.126 | | 0.137 | | 0.084 | |
| Δ Rsquared | 0.047 | | 0.033 | | 0.041 | | 0.043 | |

Note: * denotes $p < 0.05$ level of significance; ** denotes $p < 0.10$ level of significance.

customers, suppliers, and shareholders, we recommend that the government assist companies that have lower competitive advantage via tax incentives, financial support, and training (Jallai, 2020), specifically for E factor activities.

Our findings indicate that the G factor plays a significant role in increasing equity returns. Therefore, we urge for additional efforts from the authorities in the form of legal and structural reforms that help investors have stronger confidence in companies that practice ESG. If portfolio managers focus on G practices of companies by including them in ESG-based portfolios before the ESG score announcement by the credit rating agencies, they will likely gain additional returns that will improve investors' wealth. Companies should also focus on their transparency and clearly define their governance practices; doing this will improve their G scores and increase shareholders' wealth.

In sum, this study extends the extant body of literature on ESG practices by showing that a company's use and disclosure of quality ESG practices have a significant positive impact on investor relations. It further augments the financial market literature by showing evidence that as companies engage less in financial misconduct, they strengthen their relationships with all of their important stakeholders, thereby creating shareholder wealth.

## 6. Conclusion and future scope

The major results of this study suggest that the G factor is the sole factor that contributes to positive returns for shareholders. This finding is consistent with the original assumption of the impact of the G factor in improving equity returns (Broadstock et al., 2021). Any investor or trader can benefit from better returns for equity investment for the first two months after the ESG score announcement.

Notably, our results also indicate the insignificance of the S factor for the creation of equity returns, especially in the short run. However, in the long run, time series or panel data are more appropriate to determine the dynamic relationship between the S factor and equity returns. The E factor leads to negative returns due to additional investments by a company that may not help in the creation of any revenue. Hence, company performance or equity returns may be a concern for any investor keeping the E factor in mind. However, the E factor it is very important for sustainable lives. Therefore, this study concludes with a call for the Indian government to mandate E-factor practices for all companies in the country.

This study has its limitations. First, it only examined the effect of ESG factors on stock returns; however, it is necessary to determine the impact of ESG factors in other contexts. Next, this study's sample data are limited to Indian companies; hence, the results found in this study may not be applicable in the global context. Last, while the study helps to give investors a short-run advantage for creating equity returns, the long-run impact on equity returns may differ. Thus, panel or time series data should be used to identify the dynamic relationship between ESG factors and shareholder returns in the long run, globally.

## Author contribution statement

The authors contributed equally to this work.

## Declaration of competing interest

We have no conflict of interest to declare.

## Data availability

Data will be made available on request.

## References

Ahmad, N., Mobarek, A., Roni, N.N., 2021. Revisiting the impact of ESG on financial performance of FTSE350 UK firms: static and dynamic panel data analysis. Cogent Business & Management 8 (1), 1900500.

Allianz Global Investors, 2015. ESG in Equities. Research Analysis into the Materiality of Environmental, Social and Corporate Governance Factors for Equity Portfolios. Retrieved from. http://www.!risklab.com/files/20150518_agi_gs_risklab_esg_in_equities.pdf.

Ashwin Kumar, N.C., Smith, C., Badis, L., Wang, N., Ambrosy, P., Tavares, R., 2016. ESG factors and risk-adjusted performance: a new quantitative model. Journal of Sustainable Finance & Investment 6 (4), 292–300.

Balatbat, M., Siew, R., Carmichael, D., 2012. ESG scores and its influence on firm performance: Australian evidence. In: Australian School of Business School of Accounting, School of Accounting Seminar Series Semester, 2. University of New South Wales, Australia, pp. 1–30 (India).

Bannier, C., Bofinger, Y., Rock, B., 2019. Doing Safe by Doing Good: ESG Investing and Corporate Social Responsibility in the U.S. And Europe. CFS working paper, p. 621.

Battisti, E., Miglietta, N., Nirino, N., Diaz, M.V., 2019. Value creation, innovation practice, and competitive advantage: evidence from the FTSE MIB index. Eur. J. Innovat. Manag. 23 (2), 273–290.

Bengtsson, E., 2008. A history of Scandinavian socially responsible investing. J. Bus. Ethics 82 (4), 969–983.

Bocken, N.M., Short, S.W., 2021. Unsustainable business models–Recognising and resolving institutionalised social and environmental harm. J. Clean. Prod. 312, 127828.

Bowen, H., 1953. Social Responsibilities of the Businessman. Harper and Row, New York, NY, USA.

Broadstock, D.C., Chan, K., Cheng, L.T., Wang, X., 2021. The role of ESG performance during times of financial crisis: evidence from COVID-19 in China. Finance Res. Lett. 38, 101716.

CFA Institute, 2022. Retrieved from: https://www.cfainstitute.org/en/research/esg-investing. (Accessed 6 August 2022).

Chen, M., Mussalli, G., 2020. An integrated approach to quantitative ESG investing, ethical investing 2020. J. Portfolio Manag. 46 (3), 65–72.
Chowdhury, E.K., Khan, I.I., Dhar, B.K., 2022. Catastrophic impact of Covid-19 on the global stock markets and economic activities. Business Soc. Rev. 127 (2), 437–460.
CRISIL, 2021. Retrieved from: https://www.crisil.com. (Accessed 6 August 2022).
CRISIL, 2022. The Next Frontier in ESG Fund Management. Retrieved from. https://www.crisil.com/en/home/our-analysis/views-and-commentaries/2022/08/the-next-frontier-in-esg-fund-management.html. (Accessed 6 August 2022).
Dalal, K.K., Thaker, N., 2019. ESG and corporate financial performance: a panel study of Indian companies. IUP J. Corp. Gov. 18 (1), 44–59.
Drempetic, S., Klein, C., Zwergel, B., 2020. The influence of firm size on the ESG score: corporate sustainability ratings under review. J. Bus. Ethics 167, 333–360.
Eccles, R.G., Ioannou, I., Serafeim, G., 2012. The Impact of Corporate Sustainability on Organizational Processes and Performance. NBER Working Paper No. 17950.
El Khoury, R., Nasrallah, N., Alareeni, B., 2021. ESG and financial performance of banks in the MENAT region: concavity–convexity patterns. Journal of Sustainable Finance & Investment 1–25.
Fortado, L., 2017. Why Activists Are Cheerleaders for Corporate Social Responsibility, 26. Financial Times, December.
Franco, S., Caroli, M.G., Cappa, F., Del Chiappa, G., 2020. Are you good enough? CSR, quality management and corporate financial performance in the hospitality industry. Int. J. Hospit. Manag. 88, 102395.
G&A, Governance & Accountability Institute, Inc, 2020a. Retrieved from: https://www.ga-institute.com/research/ga-research-directory/sustainability-reporting-trends/2020-russell-1000-flash-report.html.
G&A, Governance & Accountability Institute, Inc, 2020b. Retrieved from: https://www.ga-institute.com/research/ga-research-directory/sustainability-reporting-trends/2020-sp-500-flash-report.html.
G&A, Governance & Accountability Institute, Inc, 2021. Retrieved from: https://www.ga-institute.com/research/ga-research-directory/sustainability-reporting-trends/2021-sustainability-reporting-in-focus.html.
Galbreath, J., 2014. ESG in focus: the Australian evidence. J. Bus. Ethics 118, 529–541.
Gillan, S.L., Koch, A., Starks, L.T., 2021. Firms and social responsibility: a review of ESG and CSR research in corporate finance. J. Corp. Finance 66, 101889.
Global Sustainable Investment Alliance, 2014. Global Sustainable Investment Review. Global Sustainable Investment Alliance, Washington, DC, USA.
GRI. n.d., Retrieved from: https://www.globalreporting.org/standards/.
Hamidu, A., Haron, M., Amran, A., 2015. Corporate social responsibility: a review on definitions, core characteristics and theoretical perspectives. Mediterr. J. Soc. Sci. 6 (4), 83–95.
Harper, H., 2020. One institutional investor's approach to integrating ESG in the investment process. J. Portfolio Manag. 46 (4), 110–123.
Ilhan, E., Sautner, Z., Vilkov, G., 2021. Carbon tail risk. Rev. Financ. Stud. *34*/3, 1540–1571.
Jallai, A.G., 2020. Ethical Standards for Tax Planning by Corporations. *Ethics And Taxation*. Springer, Singapore, pp. 207–231.
Johann, M., 2022. CSR strategy in tourism during the COVID-19 pandemic. Sustainability 14 (7), 3773.
Kousenidis, D.V., Negakis, C.I., Floropoulos, I.N., 2000. Size and book-to-market factors in the relationship between average stock returns and average book returns: some evidence from an emerging market. Eur. Account. Rev. 9 (2), 225–243.
Krueger, P., 2015. Corporate goodness and shareholder wealth. J. Financ. Econ. 115 (2), 304–329.
Kurtz, L., 2020. Three pillars of modern responsible investment. ESG special issue 2020. J. Invest. 29 (2), 21–31.
Landi, G., Sciarelli, M., 2018. Towards a more ethical market: the impact of ESG rating on corporate financial performance. Soc. Responsib. J. *15*/1, 11–27.
Lööf, H., Sahamkhadam, M., Stephan, A., 2022. 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 Res. Lett. 46, 102499.
Lourenço, I.C., Branco, M.C., 2013. Determinants of corporate sustainability performance in emerging markets: the Brazilian case. J. Clean. Prod. 57, 134–141.
Lueg, R., Pesheva, R., 2021. Corporate sustainability in the Nordic countries–The curvilinear effects on shareholder returns. J. Clean. Prod. 315, 127962.
Mishra, R., Singh, R.K., Rana, N.P., 2022. Developing environmental collaboration among supply chain partners for sustainable consumption & production: insights from an auto sector supply chain. J. Clean. Prod. 338, 130619.
Mohammad, W.M.W., Wasiuzzaman, S., 2021. Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. Clean. Environ. Sys. 2.
Nair, A.S., Ladha, R., 2014. Determinants of non-economic investment goals among Indian investors. Corporate Governance. Int. J. Business Soc. 14, 714–727.
Ortas, E., Burritt, R.L., Moneva, J.M., 2013. Socially Responsible Investment and cleaner production in the Asia Pacific: does it pay to be good? J. Clean. Prod. 52, 272–280.
Parikh, A., 2013. Exploring efficient market hypothesis and excess returns: an empirical study across different segments of Indian equity market. Indian J. Finance 7 (5), 32–40.
Park, S., 2017. Corporate social responsibility, visibility, reputation and financial performance: empirical analysis on the moderating and mediating variables from Korea. Soc. Responsib. J. 13 (4), 856–871.
PRI. Principles for responsible investment (n.d.), Retrieved from: https://www.unpri.org/sustainability-issues/environmental-social-and-governance-issues.
Ramić, H., 2019. Relationship between ESG Performance and Financial Performance of Companies: an Overview of the Issue. University of Lausanne. https://doi.org/10.13140/RG.2.2.34837.68322.
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 Financ. Manag. 14 (8), 354.
Theodoulidis, B., Diaz, D., Crotto, F., Rancati, E., 2017. Exploring corporate social responsibility and financial performance through stakeholder theory in the tourism industries. Tourism Manag. 62, 173–188.
Ülkü, M.A., Hsuan, J., 2017. Towards sustainable consumption and production: competitive pricing of modular products for green consumers. J. Clean. Prod. 142, 4230–4242.
UN, 2015. United Nations. Department of Economic and Social Affairs, Sustainable Development. Retrieved from. https://sdgs.un.org/2030agenda.
Velte, P., 2017. Does ESG performance have an impact on financial performance? Evidence from Germany. J. Global Responsibil. 8/2, 169–178.
Xiong, J.X., 2021. The impact of ESG risk on stocks. J. Impact ESG Invest. 2 (1), 7–18.
Yilmaz, I., 2021. Sustainability and financial performance relationship: international evidence. World J. Entrepreneur. Manag. Sustain. Develop. 17 (3), 537–549.
Zhou, G., Liu, L., Luo, S., 2022. Sustainable development, ESG performance and company market value: mediating effect of financial performance. Bus. Strat. Environ. 1–17.