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Article

The Impact of ESG on the Financial Performance of JSE-Listed Companies

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Abstract: The purpose of the study was to understand the impact of environmental, social, and corporate governance on the financial performance of JSE-listed firms in South Africa. The study utilised the JSE Top 40 firms for the period from 2002 to 2022. Furthermore, the study employed a two-step system Generalised Method of Moments, to estimate the impact of total ESG and individual dimensions of ESG on firm financial performance. Additionally, the study examined the moderating effects of firm size on the relationship between financial performance and ESG. The results revealed a positive and significant relationship between total ESG and firm financial performance. However, the findings regarding individual ESG dimensions and firm performance are mixed. Firm size has a moderating effect on the relationship between ESG and firm financial performance. The implication of these findings for South Africa is increased foreign direct investment from green investors and listed firms seriously considering ESG in their operations.

Keywords: ESG; Firm performance; South Africa; sustainability; JSE; System GMM

1. Introduction

Environment, Social and Governance (ESG) was first introduced in South Africa through the King's Report in 1994, which served as a guide for ethical and effective leadership among South African listed companies. In 2004, the Johannesburg Stock Exchange (JSE) launched a Socially Responsible Investing (SRI) index to reinforce governance and socially conscious themes such as the environment, society, and ethics. Over the years, investor interest in ESG has grown both globally and locally. In 2022, the JSE introduced sustainability disclosure guidelines to assist JSE-listed companies in navigating the ESG landscape, highlighting the country-specific sustainability challenges that need to be considered in their ESG reports. Despite these initiatives, South Africa faces post-colonial developmental challenges and the resource curse, failing to benefit from its abundant natural resources (Atsu & Adams, 2021). This study seeks to investigate the effects of ESG on firm performance and to establish whether the relationship encourages firms to adopt and implement ESG practices

The study analyses the impacts of ESG on the performance of listed companies on the JSE for the period spanning 2002 to 2022 using a dynamic panel model proposed by Arellano and Bond (1991) and Blundell and Bond (1998). The relationship between ESG and firm performance has remained largely inconclusive, with research still unsure of the reasons behind this phenomenon. Institutional investors are shifting towards sustainable and ethical investments due to pressure from the United Nations' SDGs, and firms that disclose ESG tend to have reduced risks and outperform firms that do not disclose ESG reports, though in varying proportions. On the other hand, Chen & Xie (2022 and observed that the ESG and financial performance relationship was more pronounced in mature companies, companies with high media attention, and ESG investors. The improved returns on green investments reflected increased unanticipated environmental concerns by investors.

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Therefore, green investments are a better hedge against climate risk (Pastor et al., 2022). ESG preferences, conversely, had a moderating effect on financial performance and ESG disclosure. This finding is similar to Lee & Suh (2022), who observed that incorporating greenwashing in a process or model had an influence on the ESG and financial achievement relationship. Weak internal control systems have an adverse controlling consequence on ESG ratings and firm performance. On the other hand, the relationship between ESG scores and firm performance is inconclusive due to different approaches and methodologies that are used by different rating agencies in coming up with ESG scores (Dobrick et al., 2023; Lee et al., 2023).

2. Empirical Literature Review

2.1 . Firm Performance and ESG

A bidirectional relationship exists between ESG performance, financial performance, and risk. This implies that sensitive and profitable firms tend to invest in ESG activities to yield superior returns in the future (M. A. Khan, 2022; N. Naeem et al., 2022). Sensitive industries such as mining and oil tend to disclose more ESG information to legitimise and send signals to the market, and to defend their reputation (Khan, 2022). ESG disclosure positively affects firm performance even after moderating effects on competitive advantage in Malaysia. A unit increase in ESG disclosure translated into a 4% increase in firm performance. Furthermore, firms with high ESG disclosure ratings have a greater competitive advantage than their counterparts (Mohammad & Wasiuzzaman, 2021). In China, ESG ratings have significantly increased the quantity and quality of green innovations (Tan & Zhu, 2022). IT companies were the lowest in terms of ESG rating; however, they had the potential to develop their own ESG practices since ESG affects performance. Interestingly, Egorova et al (2022) advocated for market value as the best measure to test ESG factors when analysing the relationship between ESG and firm performance.

A study of Italian top 100 firms revealed that ESG disclosure had a positive impact on Earnings Before Interest and Tax (EBIT), and this was attributed to the EU Directive 2014/95 which was later adopted in Italy under Legislative Decree 254/2016 becoming effective in 2017 (Pulino et al., 2022). Despite the positive link between ESG and EBIT, return on revenue remained lower than the rise in capital investment in the short term. Environmental and social initiatives had a positive effect on EBIT, and this was credited to customers rewarding the firm's environmental and social activities through increased sales. However, there was no relationship between corporate governance and EBIT in Italy. On the contrary, in South Korea, corporate governance for chaebol firms had a positive effect on firm value. The positive influence of corporate governance in chaebol firms was attributed to size and government-led company structure reforms in these family-run firms (Yoon et al., 2018). In the same study, Pulino et al (2022) observed a negative relationship between environment and Return on Assets (ROA). This negative relationship was attributed to an increase in low-carbon emission investments, which yielded a low return on investment in the short run. Environmentally sensitive firms had a negative relationship with environmental score (Yoon et al., 2018). These findings revealed that large firms with huge debt tend to invest more in ESG activities to meet ESG disclosure conditions of their debt obligations (Ahmad et al., 2021; Khan, 2022).

A study of 57 non-financial companies that are part of the S&P 500 revealed a positive relationship between ESG and firm financial performance using a two-stage least squares estimation method. There was a significant relationship between ESG and Tobin's Q, which implied that investors viewed ESG activities by firms positively and hence improved market value. There was also a positive relationship between ESG and accounting performance indicators: Return on Assets (ROA) and Return on Equity (ROE), though to a lesser magnitude than Tobin's Q in the long run (Nguyen et al., 2022). Similarly, Alareeni & Hamdan (2020); and Rahman et al (2023) observed a positive connection between ESG disclosure and monetary performance. Nevertheless, environmental and corporate social responsibility activities had a negative association with return on assets and return on equity. Environmental and corporate social responsibility had a positive

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relationship with Tobin's Q. Tobin's Q and ROA were positively correlated with governance, whereas ROE was negatively correlated with governance. These findings are in contrast to Shaikh (2022), who observed an adverse relationship between ESG and firm performance. This negative relationship stemmed from increased capital expenditure during the preliminary years of ESG implementation, which in turn affected ROA and ROE. ESG investment in the formative adoption stages gradually diminished the firm's financial performance until it became negative.

Similarly, Alareeni & Hamdan (2020) and Aydoğmuş et al. (2022) found an overall positive relationship between ESG and firm financial performance. However, Alareeni & Hamdan (2020) and Chen et al. (2022) observed that environment and CSR disclosures had a negative relationship with ROA and ROE. Furthermore, environmental and CSR disclosure had a positive effect on Tobin's Q. Corporate governance hurt ROE and was positively related to Tobin's Q and operational performance (ROA). Large firms with massive assets and leverage tend to have high total ESG, individual environmental, social, and governance scores. These high scores translated to high operational (ROA) and financial performance (ROE) (Alareeni & Hamdan, 2020). Aydoğmuş et al. (2022), in contrast, found social and corporate governance activities to have positive and significant effects on firm performance, while the environmental score had an insignificant relationship with firm performance. The lack of relationship between the environmental pillar and firm performance was attributed to the long turnover period before environmental investments could yield returns. The overall positive relationship between ESG and firm performance supports stakeholder theory, which shows that companies' investments in ESG activities are rewarded by the government, investors, shareholders, and other stakeholders. These inconclusive results on individual ESG components and financial performance align with Ahmad et al. (2021), who found a positive correlation between ESG and firm performance and mixed results between financial performance and individual ESG elements.

European countries have significantly adopted the GRI ESG disclosure guideline and established sustainability committees aimed at addressing ESG issues. Asian countries are more sustainability-disciplined in the energy sectors, and Asian Pacific countries are more inclined towards technology firms (Shaikh, 2022). Pressure and demands from investors and other stakeholders have led to ESG investment in the US, and interestingly, management with an unvested interest in companies tends to over-invest in ESG and negatively affect firm value (Nguyen et al., 2022). In light of this, Nguyen et al. (2022) concluded that firms that desire to improve firm value should invest in ESG activities and publicly disclose ESG activities to strengthen investors' and other stakeholders' commitment to the firm. In the same vein, Yoon et al. (2018) resolved that ESG significantly improved the market value of Korean firms. Climate change reporting and disclosure significantly improve firm performance among private manufacturing firms (Chen et al., 2022).

On a different note, a study consisting of Malaysia, Indonesia, Thailand, and Singapore found no relationship between ESG scores and both market and firm performance indicators. An increase or decrease in a firm's sustainability investments had no profound effect on firm performance. This result reflected the non-inclusion of sustainability indicators and ESG research in firm performance measurement within these ASEAN countries (Junius et al., 2020). However, in light of this, Singapore, due to its mandatory ESG disclosure regulations, had a significant positive relationship between ESG and firm performance (Junius et al., 2020). Narula et al (2024) revealed that there was no significant relationship between ESG and firm performance despite India being the 5th largest growing economy in the world. These indifferent findings can be attributed to the cost burden of ESG disclosure, which reduces profitability. In China, the relationship between ESG and firm performance is U-shaped, implying that there is a positive relationship between ESG and firm performance up to a certain point, and any additional ESG activities beyond the threshold will yield negative firm performance (Pu, 2023).

Improved board diversity, transparency, and governance structure improved companies' operational and market performances. Environmental and social activities had an adverse effect on both market and operational performances. However, firms implementing sustainability measures

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were getting more attention from stakeholders, which implied improved market and operational performances in the long run. In the same vein, ESG research and development significantly improved Tobin's Q (Shaikh, 2022).

Firm size had a moderating effect on the relationship between ESG and market performance (Ahmad et al., 2021; Pastor et al., 2022). Small-capital stocks are slow to react to climate change shocks in the news (Pastor et al., 2022). The ESG pillar positively influenced firm performance for FTSE350-listed firms, and high ESG firms outperformed low ESG firms. Transparent ESG information reduces information asymmetry between the firm and investors, and firms can predict the intrinsic value of shares. Large firms tend to invest in ESG due to economies of scale and to meet the ESG demands of various stakeholders. Similarly, firms with significant debt and assets tend to perform better in terms of ESG score, E score, S score, and G score (Ahmad et al., 2021). Firms with huge media attention can eliminate stakeholder ESG investment information asymmetry by taking advantage of the media (Bissoondoyal-Bheenick et al., 2023). Negative ESG news hurts firm performance. Firm reputation has a signaling effect on investors; however, on the contrary, firms in the sin industries were not affected by negative publicity (Wong & Zhang, 2022). Firm characteristics, industry and reputation influenced how investors reacted to negative media coverage.

In the same light, Bissoondoyal-Bheenick et al. (2023) and Rahman et al. (2023) found a positive relationship between ESG and Tobin's Q, which was highly driven by the social pillar, and this positive social pillar outweighed the positive Environmental and Governance pillars among the G-20 nations. These findings reveal that the Environmental and Governance pillars affect a firm's internal operations, while the social pillar, on the contrary, affects the external aspects of the firm. The social scope includes business risk, which affects business reputation. A firm is a subset of society, and firm value is derived from meeting society's expectations (Bissoondoyal-Bheenick et al., 2023). A firm's reputation is dependent on the social pillar, and the social pillar has grown progressively over the years to include human rights, health and safety, product safety, labour issues, and quality. Consequently, the social pillar measures the company culture and the firm's shared values with society. In a similar vein, corporate scandals are a function of the disintegration of the social pillar. These findings are in congruence with the stakeholder and legitimacy theory.

The same study by Bissoondoyal-Bheenick et al (2023) using excess returns as a measure of performance, found conflicting results from those found using Tobin's Q. There was an adverse relationship between ESG and excess returns. The negative relationship was driven by the governance pillar, which outweighed the environmental and social pillars. To illustrate, a unit decrease in governance score led to a 15.1% decline in annual returns. This result displayed investors' sensitivity to corporate governance information, and this susceptibility emanates from corporate governance scandals that have rocked the G20 nations since 2000. In contrast, Shakil et al (2019) observed that corporate governance did not affect financial performance in emerging markets; yet, the environmental and social aspects of ESG had a positive effect on firm performance in emerging markets. In sectoral analysis, the environmental score had a significant effect in the mining sector, and the three ESG pillars were significant in the retail sector using Tobin's Q. However, only the transport sector had a significant financial performance for all three ESG pillars using excess returns. These findings were in line with Yoon et al., (2018) who positioned that firm and industry characteristics significantly influenced the effect of ESG on share prices. Environmentally sensitive firms had a lower relationship between ESG and firm value.

In a study that utilised ESG data relevant to financial materiality and the United Nations Global Compact (GC) score to measure reputation from adherence to the UNGC. Yoo et al (2021) observed that an increase in ESG score, especially the environmental pillar, led to increased stock price returns and lower stock price volatility. Conversely, corporate governance led to lower returns and increased volatility (Bissoondoyal-Bheenick et al., 2023). Non-energy sectors benefited extensively from the improved environmental pillar compared to companies in the energy sector. However, companies in the energy sector benefited from reduced stock price volatility due to improved environmental performance during crisis periods (Yoo et al., 2021). Firms in the lower ESG band benefited more

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from ESG implementation than firms in the high ESG band (Ahmad et al., 2021; Yoo et al., 2021). These findings revealed that ESG investments during financial crisis periods reduced stock volatility and the probability of a stock price crash (Feng et al., 2022; Yoo et al., 2021).

Furthermore, ESG upgrades led to optimistic yet inconsistent significant abnormal returns of 0.5% per month, while ESG downgrades negatively affected stock returns by a magnitude of 1.2% per month. These findings are more pronounced in ESG-leading firms than in laggard firms (Shanaev & Ghimire, 2022). ESG efficiencies were observed to be greater than traditional efficiencies in the automotive industry. Firm size, geographical location, and level of innovation significantly affected ESG efficiencies in the automotive industry. The European automakers outperformed their American and Asian counterparts (Ahmad et al., 2021; Shanaev & Ghimire, 2022; Stefanoni & Voltes-Dorta, 2021). Corporate governance yielded the highest efficiencies, followed by the environmental and lastly the social pillars.

2.2. ESG and firm performance in South Africa

Using a two-stage least squares instrumental analysis, Chininga et al. (2023) observed that improved ESG actions positively affected both return on equity and market-grounded performance gauges (Tobin's Q). Environmental initiatives significantly influenced the market and accounting performance indicators more than the social and governance initiatives for the JSE top 40 companies, and this is attributed to the majority of the top 40 companies being in the materials and mining industries. Magubane & Wesi (2023), using PNARDL, found a positive relationship between ESG investing and financial performance in the financial sector. A one percent increase in ESG investing led to a five percent increase in bank financial performance. ESG investing was crucial in influencing stock performance in the South African financial sector during the COVID-19 pandemic. During crisis periods such as COVID-19, it is paramount for the financial sector to embark on ESG investing to improve financial resilience. On the contrary, Chininga (2022) observed that the overall ESG rating negatively affected market performance, and this implies that investors in South Africa do not value a firm's ESG investing activities.

Hypothesis 1

Individual and total ESG score has a positive effect on firm financial performance.

Firm size and firm performance have a complex relationship. As firms mature, they benefit from economies of scale, and their public scrutiny and exposure to media coverage increase as well (Bissoondoyal-Bheenick et al., 2023; Khan, 2022; Wong & Zhang, 2022). Firm size is not merely a control variable but plays a significant role as a moderator in the relationship between ESG and firm financial performance (Ahmad et al., 2021). A moderating variable is unique as it amplifies the strength or direction of an effect in the relationship between a dependent variable and the independent variable. To date, only a handful of studies show the effect of firm size on ESG and financial performance separately, notably. Ahmad et al., 2021; Graves & Waddock, 1994; Ullmann, 1985. Large firms have a positive effect on social performance due to pressure from various stakeholders and have the resources to meet the demands of the stakeholders (Bissoondoyal-Bheenick et al., 2023; Ullmann, 1985). Further, Ahmad et al. (2023) observed that firm size and ESG had a moderating effect on the 2007-2010 global financial crisis and company performance. ESG and corporate governance are strategic tools that can be utilised by firms in times of financial crisis. In addition, Zaiane & Ellouze (2023) observed a moderating effect of firm size on environmentally sensitive firms and environmentally non-sensitive large firms engaged in symbolic CSR, unlike their counterparts. Smaller firms, by size, found CSR to be expensive to implement and hence discarded CSR despite the pressure from the industry. On the contrary, Gregory (2024) failed to find a significant relationship between firm size and ESG rating, and only outlier states positively influenced the relationship between firm size and ESG ratings. This study utilised firm size as both a moderating and control variable in analysing the relationship between ESG and market performance.

Hypothesis 2

Firm size has a moderating effect on the firm performance of listed firms in South Africa.

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3. Methodology

3.1. Data Description and Data Sources

The research utilised the JSE's listed companies from 2002 to 2022, and a sample of JSE top 40 listed firms was used in this study. The study used secondary data, and this data was collected from the Bloomberg research domain. The Bloomberg database has data starting from 2002. Hence, the study period is from 2002. This database uses publicly available information in its ESG ratings. The Bloomberg database is widely used in ESG and firm performance research. Financial and accounting information was collected from the Bloomberg Library database (Fain, 2020). The study uses JSE-listed firms because the listed companies include both local and multinational companies and cover all sectors of the South African economy. The investigation captured all variables on an annual basis using panel data.

Definition and Justification of Variables

Following Ahmad et. al. (2021) and Z. Chen & Xie (2022) The dependent variables for the study were market value (MV) and earnings per share (EPS). EPS reflects changes in profitability and shares since it is calculated from net profit and shares. Qiu et al. (2016) observed that earnings per share were an important determinant of stock prices. The study used stock market-based performance measures to ensure that the research captures stock market investors' perceptions, which influence share prices and market values (Ahmad et al., 2021). Market-based measures are forward-looking and can show a firm's ability to make future profits.

The independent variables were the ESG score, ENV score, SOC score, CG score, ESGH score, and firm size (Ahmad et al., 2021; Saini et al., 2022). The key variable in these models was the ESG score. The study considered environmental, social, and governance scores as equally weighted (Ahmad et al., 2021). The ESG scores measured a firm's ESG performance. The ESG score ranges from 0 to 100, where higher scores mean good performance (Ahmad et al., 2021; Chen & Xie, 2022; Saini et al., 2022). Firm size is important because larger firms have more resources and benefit from economies of scale. This study used total assets as an approximation of firm size. To alleviate misleading results from omitted variables, financial performance independent variables were incorporated into the Model (Ahmad et al., 2021; Chen & Xie, 2022). The financial performance variables included were total revenue, financial leverage, capex as a fraction of sales, and actual tax charges. These variables were included as control variables. Total revenue was used as a control variable due to its positive relationship with firm profitability. Financial leverage was included in the model due to its negative effect on cash flow and returns. The debt-to-asset ratio was used as a proxy for financial leverage (Ahmad et al., 2021; Saini et al., 2022). Capital expenditure is a source of long-term investment and indicates long-term growth potential (Ahmad et al., 2021; Saini et al., 2022). The effective tax rate has a direct effect on the financial performance of a company. Hence, it was included in the model. The portrayal and meaning of the variables employed are shown in Table 1 below.

Table 1. Description and definition of variables.

Variable	Expected Sign	Description
LMV		A log of a company's market value. Share price times the quantity of common shares equals market value (Ahmad et al., 2021; Saini et al., 2022).
LEPS		A log of income per share for a company. Earnings per share (EPS) is net profit divided by the total number of ordinary shares. EPS is viewed as an annualised rate, and it may reflect the previous financial year (Ahmad et al., 2021; Lee & Suh, 2022).

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LESG	**+/-**	The log of the environmental, social, and governance (ESG) scores for companies based on equal-weighted rating illustrates how a company's financial and additional monetary well-being can be similarly weighted based on the information in the IRESS's economic, environmental, social, and corporate governance pillars. According to Ahmad et al. (2017), Alareeni & Hamdan (2020), Chen & Xie (2022), and Fain (2020), it replicates a balanced view of a company's performance in these four areas.
LENV	+/-	Log of the environment (ENV) score. This variable shows the environmental performance of a firm, it shows how well the company utilised environmental opportunities and avoided environmental risks that negatively impact living and non-living natural systems to generate long-term shareholder value (Ahmad et al., 2021; Saini et al., 2022).
LSOC	+/-	Log of social (SOC) score. This shows the ability of a company to generate loyalty and trust from customers, employees, and society at large. This variable reveals a company's reputation and its social contract to operate, which are key determinants in long-term shareholder value creation (Ahmad et al., 2021; Saini et al., 2022).
LCG	+/-	Log of corporate governance (CG) score. This variable quantifies a firm's systems, processes, and checks and balances aimed at ensuring the board and executives work in the best interest of long-term shareholders' value (Ahmad et al., 2021).
LTA	+	Log of total assets (total assets) score. This is a proxy for firm size and is a summation of fixed assets, current assets, and long-term receivables (Ahmad et al., 2021; Chen & Xie, 2022; Saini et al., 2022)
LDA	+/-	A proxy for a company's financial leverage is the log of the debt-to-assets ratio (Ahmad et al., 2021; Fain, 2020; Saini et al., 2022).
LREV	+	Log of revenue (REV), this variable includes gross sales and other operating revenues of a company (Ahmad et al., 2021; Fain, 2020).
CAPS	+/-	Capital expenditure as a fraction of sales (CAPS). This variable is obtained by dividing capital spending by net sales or revenue multiplied by 100 (Ahmad et al., 2021; Saini et al., 2022).
ETR	-	Effective tax rate (ETR). This is formulated as income tax divided by profit before tax multiplied by 100 (Ahmad et al., 2021)
ESGH	+	This dummy parameter of high ESG accomplishing companies is derived from counters with ESG scores above 50% (Ahmad et al., 2021).

To reveal the impacts of ESG on the financial performance of JSE-listed companies, the study employed a dynamic panel model in the form of a system generalised method of moments (System GMM) that is more powerful and able to deal with endogeneity problems than OLS (Kwenda, 2014,

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Nyeadi, et al, 2018). A different GMM and system GMM were used to eliminate the correlation between the regressor and the error arising from the demeaning process of subtracting everyone's mean value of y and each X from the respective variable. The ordinary least squares (OLS) method's endogeneity and simultaneity bias were fixed by a differenced GMM. The approach used instrumental variables and each variable's initial difference lag levels (Arellano and Bond, 1991). The bias caused by leaving variables out of the cross-sectional data was eliminated as a result. To capture moment conditions in addition to differential form moment conditions, a system GMM was implemented because lagged level regressors may be poor instruments for the differenced variables. The system GMM model will be employed to scrutinise the impact of ESG on the financial capabilities of JSE-listed companies (Shakil et al., 2019). Following Ahmad et al. (2021).

3.2. Model specification

To comprehend the influence of ESG on the financial performance of JSE-listed companies, the study adopted a dynamic effects model. Linear regression models were estimated based on the following regression equations.

equation 1

$$\begin{aligned} lMV_{it} = {} & \beta_0 + \beta_1 MV_{it-1} + \beta_2 lESG_{it} + \beta_3 lenv_{it} + \beta_4 lsoc_{it} + \beta_5 lcg_{it} \\ & + \beta_6 ESGH_{it} + \beta_7 ta_{it} + \beta_8 lda_{it} + \beta_9 lrev_{it} \\ & + \beta_{10} capex_{it} + \beta_{11} etr_{it} + e_{it} \end{aligned}$$

equation 2

$$\begin{aligned} lEPS_{it} = {} & \beta_0 + \beta_1 EPS_{it-1} + \beta_2 lESG_{it} + \beta_3 lenv_{it} + \beta_4 lsoc_{it} + \beta_5 lcg_{it} \\ & + \beta_6 ESGH_{it} + \beta_7 ta_{it} + \beta_8 lda_{it} + \beta_9 lrev_{it} \\ & + \beta_{10} capex_{it} + \beta_{11} etr_{it} + e_{it} \end{aligned}$$

Where:

it represents the company I at time t.

MV and EPS are the dependent variables.

ESG, env, soc, cg, eco, and ESGH are the independent variables.

ta, da, rev, caps, and etr are the control variables.

e is the error term.

The model examines the relationship between total ESG, specific ESG factors, and high- and low-ESG-achieving corporations in terms of their financial performance as measured by market value (MV) and earnings per share (EPS) (Ahmad et al., 2021).

Moderating effects model

A moderating effects model was used to test the relationship between the dependent variables and the independent variables, depending on a third variable. This test was important as it tested the boundary conditions under which the findings from equations 1 and 2 held. Thus, to determine the moderating effects of company size on the link between ESG and financial performance on JSE-listed firms, a moderating effects model was developed (Ahmad et al., 2021; Chen & Xie, 2022).

equation 3

$$\begin{aligned} lMV_{it} = {} & \beta_0 + \beta_1 lESG_{it} + \beta_2 lenv_{it} + \beta_3 lsoc_{it} + \beta_4 lcg_{it} + \beta_5 ESGH_{it} \\ & + \beta_6 ESGL_{it} + \beta_7 lESG_{it} * lta_{it} + \beta_8 lenv_{it} * lta_{it} \\ & + \beta_9 lsoc_{it} * lta_{it} + \beta_{10} lcg_{it} * lta_{it} + \beta_{11} lESGH_{it} * lta_{it} \\ & + \beta_{12} lda_{it} + \beta_{13} lrev_{it} + \beta_{14} capex_{it} + \beta_{15} etr_{it} + e_{it} \end{aligned}$$

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equation 4

$$\begin{aligned} \mathrm{lEPS_{it}} = {} & \beta_0 + \beta_1 \mathrm{lESG_{it}} + \beta_2 \mathrm{lenv_{it}} + \beta_3 \mathrm{lsoc_{it}} + \beta_4 \mathrm{lcg_{it}} + \beta_5 \mathrm{ESGH_{it}} \\ & + \beta_6 \mathrm{ESGL_{it}} + \beta_7 \mathrm{lESG_{it}} * \mathrm{lta_{it}} + \beta_8 \mathrm{lenv_{it}} * \mathrm{lta_{it}} \\ & + \beta_9 \mathrm{lsoc_{it}} * \mathrm{lta_{it}} + \beta_{10} \mathrm{lcg_{it}} * \mathrm{lta_{it}} + \beta_{11} \mathrm{lESGH_{it}} * \mathrm{lta_{it}} \\ & + \beta_{12} \mathrm{lda_{it}} + \beta_{13} \mathrm{lrev_{it}} + \beta_{14} \mathrm{capex_{it}} + \beta_{15} \mathrm{etr_{it}} + \mathrm{e_{it}} \end{aligned}$$

The moderating effects model equations 3 and 4 are similar to equations 1 and 2. If the coefficients in questions 3 and 4 are significant and same sign as equations 1 and 2, it means that firm size has a magnifying effect on the relationship between ESG disclosure and financial performance (Ahmad et al., 2021).

4. Results and Discussions

4.1. Descriptive statistics

Table 2. Summary Descriptive Statistics of variables.

	N	Mean	SD
Lnmcap	501	25.577	.987
Lnrevenue	496	23.985	1.367
ln total assets	499	24.946	1.533
LnESG	501	3.86	.31
LnENV	489	3.157	1.02
LnSOC	500	3.408	.478
LnCG	501	4.401	.238
Capex	496	-8.564	11.088
eff tax rate	501	41.284	248.332
debt asset ratio	501	18.295	12.638

The mean was used to measure the central tendency of the data, and the standard deviation was used to measure the dispersion of the data around the mean. Market capitalisation, which measures the financial performance of a firm, is 25.577%, and a low standard deviation of 0.987 indicates homogeneity in financial performance between firms (Alfalih, 2023). The average values of the ESG dimension show corporate governance with the highest of 4.401, followed by social performance with 3.408, and environment having the lowest score of 3.86 among the JSE-listed firms. This implies that JSE-listed firms consciously disclose corporate governance practices in their reports, and this could be attributed to the adherence to the King Code as a mandatory listing requirement. ESG score, market capitalisation, social score, corporate governance score, environment score, total assets, and revenue have low standard deviations ranging from as little as 0.238 to 1.533. This implies that the variables' data is clustered around the mean. The effective tax rate has the highest standard deviation of 248.332 and the highest mean of 41.284. This implies that effective tax rate data is scattered over a wide range. The data is normally distributed because 70% of the data falls within the 1.533 standard deviation. The total number of observations was 4985.

4.2. Variance Inflation Factor of independent variables

Table 3. Variance Inflation Factor (VIF).

Variable	VIF	1/VIF
InESG	16.78	0.059604
IneEnv	4.66	0.214635

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InSoc	4.63	0.215971
InCG	4.34	0.230584
lnRevenue	2.77	0.361481
lnTot Assets	2.01	0.497253
lnEPS	1.75	0.570196
Debt-Asset ratio	1.25	0.801581
Effective tax rate	1.12	0.892188
Capex	1.08	0.928588
Mean VIF	4.04	

The variance inflation factor (VIF) measures how much of the variance of a regression coefficient is inflated due to multicollinearity in the model. VIF results above 10 show severe multicollinearity, and variables with scores above 10 should be excluded from the model. VIF results between 5 and 10 show high multicollinearity in the variables. VIF results below 5 reveal moderate multicollinearity and should be accepted in the model.

Table 3 above shows the VIF results of the variables in the model. The composite ESG variable has the highest VIF of 16.78, which shows serious multicollinearity. This serious multicollinearity emanates from the fact that the ESG score value is a combination of the environmental score, social score and corporate governance performance of a firm. Thus, to ensure that the models are not inflated due to multicollinearity, where the ESG score variable is included in the model, the environment score variable, social score variable and corporate governance score variable are excluded from that model as shown in Table 5. The environment score variable, social score variable and corporate governance score variable had moderate VIF results of 4.66, 4.63 and 4.34. These results were a bit high but were within the acceptable levels of VIF. Revenue (2.77) and total assets (2.01) have low VIFs, which are acceptable. Debt to asset ratio (1.25), effective tax rate (1.12) and capex (1.08) have negligible multicollinearity in the model. The overall model has a mean VIF of 4.04, which shows an average multicollinearity and is acceptable. However, this average 4.04 VIF is skewed by the high ESG score VIF of 16.78.

4.3. Correlation Matrix of Independent Variables

Table 4. Pairwise Correlation.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) lnmcap	1.000										
(2) lnEPSY	0.058	1.000									
(3) lnrevenue	0.184*	0.565*	1.000								
(4) ln_total_assets	0.231*	0.359*	0.660*	1.000							
(5) lnESG	0.282*	0.054	0.110*	0.054	1.000						
(6) lnENV	0.210*	-0.004	0.089	-0.053	0.748*	1.000					
(7) lnSOC	0.210*	0.073	0.173*	0.126*	0.759*	0.507*	1.000				
(8) lnCG	0.137*	0.083	0.102*	0.117*	0.785*	0.218*	0.239*	1.000			
(9) capex	-0.054	0.016	0.071	0.067	-0.066	-0.120*	-0.109*	0.004	1.000		
(10) eff_tax_rate	-0.067	-0.187*	-0.061	-0.070	0.062	0.055	0.059	0.024	-0.071	1.000	
(11) debt_asset_ra~o	0.114*	-0.202*	-0.037	-0.186*	0.221*	0.189*	0.159*	0.144*	-0.235*	0.046	1.000

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** shows significance at p<0.05*

A pairwise correlation matrix was conducted after the variance inflation as a diagnostic and robustness test. Table 4 above shows that environment score (0.748), social score (0.759) and corporate governance (0.785) have a highly significant and correlated relationship with ESG score. This finding helps explain the high ESG score VIF of 16.78, which is heavily influenced by the environment score. Social score and corporate governance score variables.

4.4. Impact of ESG performance on firm financial performance using a two-step system GMM

Table 5. Impact of ESG performance on firm financial performance using a two-step system GMM results.

Models	(1)	(2)	(3)	(4)
	Lnmcap	lnmcap	lnEPSY	lnEPSY
L.lnmcap	.847***	.978***		
	(.086)	(.13)		
Lnrevenue	.194	.397*	.232	.314
	(.154)	(.233)	(.292)	(.27)
ln_total_assets	-.198**	-.386**	.174	.277
	(.09)	(.18)	(.219)	(.175)
LnENV	-.06			-.042
	(.051)			(.049)
LnSOC	.227**			-.39**
	(.1)			(.198)
LnCG	.827***			-.09
	(.263)			(.285)
Capex	.001	.001	-.012	-.018**
	(.007)	(.007)	(.013)	(.009)
eff_tax_rate	0.00	.002	-.008***	-.007***
	(.001)	(.003)	(.001)	(.001)
debt_asset_ratio	-.011**	-.015*	-.012	-.018**
	(.005)	(.008)	(.008)	(.008)
ESGH	-.08	-.439***	.245	.169
	(.081)	(.169)	(.228)	(.154)
LnESG		1.1**	-.066	
		(.498)	(.838)	
L.lnESPY			.32**	.387**
			(.149)	(.163)
_cons	.261	-3.078	-8.313	-11.31**
	(2.257)	(3.629)	(5.225)	(4.466)
Observations	407	410	396	393
Instruments	32	18	33	41
Counter Effects	No	No	No	No
Time Effects	No	No	No	No
Hansen's j test	[0.633]	[0.225]	[0.314]	[0.518]
AR[1]	[0.001]	[0.012]	[0.019]	[0.024]
AR[2]	[0.633]	[0.782]	[0.890]	[0.615]

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Counters	48	48	48	48

Standard errors are in parentheses

**** p<.01, ** p<.05, * p<.1*

Interpretation of results

Model 1 shows a significant positive relationship between social performance, corporate governance performance, and market value. However, environmental performance has a negative, insignificant relationship with market value, *ceteris paribus* (Pulino et al., 2022). Model one further shows a significant and positive relationship between social performance and market value of 0.227 at the 5% significance level (Aydoğmuş et al., 2022; Alfalih, 2023). This implies that a 1% increase in social investment in the short run will translate to a 22.7% increase in market value. This finding aligns with Ahmad et al. (2021) who observed a positive and significant relationship between social performance and market capitalisation. Interestingly, corporate governance has a significantly high positive effect on market value at the 1% significance level for JSE-listed firms in the short run. A 1% increase in the corporate governance performance of a firm will lead to an 82.7% increase in the market value of a JSE-listed firm (Ahmad et al., 2021; Pu, 2023; Aydoğmuş et al., 2022). This significant relationship between corporate governance and market value can be attributed to the mandatory adherence to the King Code as a listing requirement for all JSE-listed firms (Maubane et al., 2014; Yoon et al., 2018). In addition, from the data analysis, JSE-listed firms have consistently scored the highest in corporate governance compared to other ESG scores. There is also a significant negative relationship between total assets, the debt-to-assets ratio, and market value at the 5% significance level. The environment has a weak, negative, insignificant relationship with market performance. This finding aligns with Rahman et al., (2023) and Aydoğmuş et al., (2022), who observed a negative relationship between environmental scores and return on assets.

Model 2 shows a significant and positive relationship between the composite ESG performance and market value of 1.1 at the 5% significance level (Ahmad et al., 2021; Junius et al., 2020; Chininga et al., 2023). Similarly, Nguyen et al. (2022) observed a positive relationship between the ESG score and accounting performance indicators. A percentage increase in ESG performance will lead to a 1.1 increase in market value. The high positive relationship between ESG and market value can be attributed to the strong positive corporate governance pillar, as shown in Model 1. On the other hand, high-performing ESG companies had a significant negative relationship with the market performance of -0.439 at the 1% significance level. This negative relationship is supported by the literature, which states that the impact of ESG on firm performance depends on the level of ESG maturity. In the short run, when ESG is still a new phenomenon in the firm, it negatively affects firm performance due to high implementation costs (Yoon & Chun, 2022). The debt-to-assets ratio has a weak, negative, significant relationship with a market capitalisation of -0.15 at the 10% significance level. Total assets have a weak negative relationship with a market capitalisation of -0.386 at the 5% significance level, and revenue has a positive significant relationship with a market value of 0.397 at the 1% significance level.

Model 3 reveals that composite ESG performance has a weak, insignificant negative relationship with earnings per share of -0.066. This finding is in contrast to the findings of Chininga et al. (2023), who observed a positive effect of ESG on return on equity. In the same light, the effective tax rate has a very weak, negative, significant relationship with earnings per share of 0.008 at a 1% significance level. This could be attributed to the negative effect taxation has on the earnings of a company.

Model 4 presents interesting results between individual ESG scores and earnings per share. The environmental score has a negative, insignificant relationship with earnings per share of -0.042. This finding is similar to Pulino et al. (2022) and Yoon et al. (2018), who observed a negative relationship between the environment scores and return on assets. However, the social score has a significant

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negative relationship with earnings per share of -0.39 at a 5% significance level. This implies that a percentage increase in social investments will translate into a 39% decline in earnings per share. JSE's top 40 firms are socially sensitive to the social score. This finding is contrary to the positive effect of social performance on the market value of a firm found in Model 1. Corporate governance has a negative, insignificant relationship with earnings per share of -0.09. This insignificant relationship is contrary to the positive significant relationship between corporate governance and the market value of a firm. Interestingly, capital expenditure has a significant negative relationship with EPS of -0.018 at a 5% significance level. This is the only significant relationship in all four models. The effective tax rate has a significant negative relationship with EPS of -0.007 at a 1% significance level. This significant negative relationship is consistent for the two models related to EPS. This could be attributed to the adverse relationship between taxes and earnings. Debt-to-assets ratio also has a significant negative relationship with EPS of -0.018 at a 5% significance level. This negative significant relationship is consistent in all the models except for Model 3.

4.5. Firm Size Moderating Effects Model Using 2-step system GMM

Table 6. Firm size moderating Effects Model Using a 2-step system GMM results.

	(1)	(2)	(3)	(4)
	Lnmcap	Lnmcap	lnEPSY	LnEPSY
L.lnmcap	.91***	.951***		
	(.023)	(.055)		
Lnrevenue	.017	.012	.366***	.186
	(.013)	(.019)	(.075)	(.114)
ln_total_assets	-.369**	-1.972**	-.247	4.595***
	(.181)	(.98)	(.571)	(1.576)
lnESG	-2.453**		-5.626*	
	(1.198)		(3.287)	
lnESG_TA	.101**		.17	
	(.047)		(.133)	
Capex	0	-.003	-.023***	-.014***
	(.002)	(.003)	(.003)	(.003)
eff_tax_rate	-.001***	-.001**	-.008***	-.008***
	(0)	(0)	(0)	(0)
debt_asset_ratio	-.01***	-.008***	-.015***	-.006
	(.002)	(.002)	(.005)	(.007)
ESGH_TA	-.009***	-.016***	.027***	.041***
	(.003)	(.004)	(.004)	(.009)
lnENV		1.233***		-.924
		(.341)		(.904)
lnSOC		.362		-4.671*
		(.842)		(2.452)
lnCG		-11.477**		28.214***
		(5.435)		(9.834)
lnENV_TA		-.051***		.036
		(.014)		(.038)
lnSOC_TA		-.014		.162

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		(.036)		(.101)
lnCG_TA		.492**		-1.139***
		(.217)		(.397)
L.lnESPY			.228***	.174***
			(.013)	(.037)
_cons	11.213**	47.081**	3.706	-114.916***
	(4.446)	(23.935)	(12.829)	(38.878)
Observations	410	407	396	393
Instruments	41	37	41	37
Counters	48	48	48	48
AR(1)	0.000	0.000	0.005	0.008
AR(2)	0.496	0.340	0.764	0.34
Hansen's J test	0.249	0.116	0.124	0.233

Corrected standard errors are in parentheses.

**** p<.01, ** p<.05, * p<.1*

Interpretation of results

In Model 1, firm size has a weak, positive, significant moderating effect on ESG of 0.101 at a 5% significance level. However, under the firm size moderating effects, ESG has a strongly significant negative relationship with market capitalisation of -2.453 at a 5% significance level. (Zaiane & Ellouze, 2023). This implies that firm size has a negative magnifying effect on the relationship between ESG and financial performance. This negative relationship between ESG and financial performance could be attributed to increased public scrutiny from various stakeholders that accompany large firms (Bissoondoyal-Bheenick et al., 2023; Khan, 2022; Wong & Zhang, 2022). Model 1 equally reveals that firm size has a weak negative magnifying effect in high-performing ESG firms of -0.009 at a 1% significance level. This negative relationship is also shown in Table 5, where high-performing ESG firms had a significant negative relationship with market performance of -0.439 at a 1% significance level. Firm size has a weak, significant magnifying effect on ESG in high-performing ESG firms. The effective tax rate has a very weak, negative, significant relationship with the market performance of -0.001. This finding is almost similar to the dynamic panel data analysis in Table 5, where the effective tax rate was neutral and had no effect on market performance.

Model 2 presents interesting results that are unique and different from the findings from Table 5. Under the firm size moderating effects, the environment has a significant positive effect on market capitalisation of 1.233 at a 1% significance level (Zaiane & Ellouze, 2023). This strong positive significant environment score on market performance could be attributed to large firms being sensitive to environmental issues such as global warming and being forced to engage in both symbolic and actual CSR activities, unlike their SME counterparts. The JSE-listed financial institutions created and adopted climate change policies from 2020 onwards after NGO investor activists requested such disclosure at the Standard Bank AGM (Cassim, 2022; Zaiane & Ellouze, 2023). Conversely, the firm size moderating effect on the environment has a negative effect on the market performance of -0.051 at a 1% significance level. This could be attributed to the increased costs associated with implementing environmental programmes (Alfalih, 2023). On the other hand, under firm size moderation effects on social performance, both the interacting variable and the social score have insignificant effects on market performance. The moderator is different in sign and magnitude from the social performance in this equation, and this implies that firm size does not influence the relationship between social performance and market performance. This insignificant social performance finding is attributed to legislation such as the FSC and B-BBEE Act (2003), which mostly

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governs the social investment practices of firms in South Africa, regardless of size (Viviers & Els, 2017). Corporate governance has a strongly negative significant relationship with market capitalisation of -11.477 at a 5% significance level under firm size moderating effects. Bissoondoyal-Bheenick et al. (2023) observed that a decline in corporate governance led to a decline in excess returns. This strong negative effect of corporate governance on market capitalisation under firm size moderating effects implies that for JSE-listed firms, slacking on corporate governance issues translates to a serious decline in share prices. Adherence to good corporate governance practices and the King Code IV is a mandatory listing requirement for JSE-listed firms. Failure to adhere to the King Code can lead to the delisting of a firm (Ho & Park, 2019; Taplin, 2021). This finding contrasts with the positive significant firm size interacting variable of corporate governance of 0.492 at a 5% significance level on market performance. This implies that large firms boost the positive effects of corporate governance disclosure.

Model 3 shows that revenue has a significant positive effect on earnings per share of 0.366 at a 1% significance level. In addition, firm size moderates the relationship between ESG and earnings per share. ESG has a strong negative significant relationship with EPS of -5.626 at a 10% significance level (Shaikh, 2022). On the other hand, the firm size moderator on ESG has an insignificant effect on earnings per share. This implies that the firm size effect on ESG does not influence the earnings per share of JSE-listed companies. Capital expenditure (-0.023), effective tax rate (0.008), and debt-to-asset ratio (-0.015) have a very weak, negative, significant relationship at a 1% significance level with EPS when firm size is a moderating factor. This finding is relevant to capital expenditure, effective tax rate, and leverage, which reduce the earnings of a firm and ultimately the EPS of a firm. In addition, large firms tend to be highly leveraged and have larger tax obligations than smaller firms. The firm size moderating effect of high-performing ESG firms has a weak, significant effect on EPS of 0.27 at a 1% significance level.

Under Model 4, social performance has a strong negative relationship with earnings per share of -4.671 at a 10% significance level. However, these findings differ in sign and level of significance from the firm size moderator of social performance, which has an insignificant effect on earnings per share. In addition, corporate governance has a strong and significant effect on earnings per share of 28.214 at a 1% significance level under firm size moderating effects (Ahmad et al., 2021; Pu, 2023; Aydoğmuş et al., 2022). This implies that good corporate governance practices can seriously improve the earning power of a firm (Alfalih, 2023). This is in contrast in both sign and magnitude to the firm size corporate governance moderator, which has a strong negative significant effect on earnings per share of -1.139 at a 1% significance level (Bissoondoyal-Bheenick et al., 2023). The strong effect of corporate governance on earnings per share shows the importance of good corporate governance practices on the earnings ability of a company (Alfalih, 2023). Poor corporate governance practices can lead to both closure and delisting from the JSE stock exchange. Under firm size, the moderating effects of capital expenditure (-0.014) and effective tax rate (-0.008) continued to have a weak negative relationship with EPS. These findings signify the negative effect that capital expenditure and effective tax rate have on the earnings of a company. Total assets, interestingly, have a strong positive significant effect on EPS of 4.595 at a 1% significance level under firm size moderating effects. This implies that total assets, when efficiently utilised, can lead to increased earnings in a listed firm. High ESG-performing firms have a weak and significant moderator of 0.041 at a 1% significance level to earnings per share.

4.6. Discussion of findings

The study found a positive relationship between the ESG pillar, social pillar, corporate governance pillar, and market capitalisation, which represented market performance among the JSE top 40 listed firms (Ahmad et al., 2023; Aydoğmuş et al., 2022). Firm market performance was represented by market capitalisation and earnings per share. The study found interesting results using a two-step system GMM. Market value was positively and statistically influenced by corporate governance at a 1% significance level (Aydoğmuş et al., 2022). A percentage increase in corporate

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governance will lead to an 82.7% increase in the market capitalisation of a firm. Good corporate governance practices had a significant positive effect on firm value. In South Africa, adherence to the King Code is a mandatory listing requirement on the JSE. In addition, good corporate governance practices are essential for business continuity. Social performance, in the same line, had a significant positive relationship at 5% with the market value of JSE's top 40 firms (Aydoğmuş et al., 2022). A percentage increase in social performance would translate into a 22.7% increase in the market value of a JSE-listed firm. This positive relationship between social performance and firm value could be attributed to acts such as the B-BBEE Act (2003) and the FSC, which force firms to address social and economic inequalities in the marginalised black communities. Each year, the firms are given a BEE rating where 1 is the highest rating, indicating that the firm is seriously considering social and economic redressing of the marginalised black population in its decisions. Furthermore, the social pillar reflects the firm's core values, which are linked to the well-being of the community (Alfalih, 2023). The environment score had a negative, insignificant relationship with market value. This negative effect could be attributed to increased costs associated with environmental investments, as well as perceived potential costs or penalties associated with environmental initiatives by South African investors. The total ESG score had a strong positive significant relationship of 1.1 with the market performance at a 5% significance level. This strong positive relationship between ESG and market performance is mostly driven by corporate governance. This result aligns with Alfalih (2023) and Chininga et al. (2023), who concluded that firms that engage in ESG activities that positively affect communities experience a decline in earnings when they start to engage in environmental and social investments. However, the decline in earnings is compensated by increased share price and ultimately firm value.

In addition, the interaction between firm size, the ESG pillars, and total ESG presented fascinating and conflicting results. The environment score (1.233) had a positive significant relationship with market capitalisation, whilst corporate governance (-11.477) and total ESG (-2.453) had a negative significant relationship with market capitalisation. A percentage decrease in corporate governance practices will lead to an 11.477 times decrease in market capitalisation. For example, the recent Steinhoff and Tongaat-Hulett scandals led to a serious plunge in their respective stock prices and eventually negatively affected the market performance of these companies (Andrew, 2020; Rossouw & Styan, 2021). This implies that firm size encourages ESG and corporate governance implementation, and failure to implement ESG has serious negative consequences on share price and ultimately market value. The strong negative corporate governance effect influenced the overall ESG score impact on market capitalisation. Conversely, firm size encourages environmental initiatives as it positively affects market capitalisation. This could still be attributed to increased public scrutiny that follows large firms. Hence, forcing the firms to consider environmental issues in their investment and operational activities. In addition, this relationship can be explained by an increase in green investors who are considering environmental issues in their investing activities, with environmentally friendly firms being considered attractive investment opportunities. Firm size has a positive moderating role in the relationships between ESG, corporate governance, and market capitalisation. On the other hand, firm size has a negative moderating role in the relationship between the environment and market capitalisation. In the same disposition, firm size has a negative moderating role in the relationship between corporate governance and earnings per share. In contrast, corporate governance has a strong positive and significant relationship with earnings per share under firm size moderating effects. This could be attributed to the effects of strong corporate governance practices on business continuity and earning ability. Poor corporate governance practices can lead to the closure of listed firms. Firm size had an insignificant moderating effect on individual ESG pillars and total ESG performance as far as earnings per share are concerned.

5. Conclusions

Corporate governance has the strongest positive impact on market performance. A percentage increase in corporate governance leads to a significant increase in market capitalisation (82.7%). This

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underscores the importance of good corporate governance practices, which are critical for business continuity and shareholder value. The mandatory adherence to the King Code in South Africa, which enforces strong corporate governance standards, further highlights its role in enhancing market value.

Social performance also has a positive effect on market value (22.7%), likely due to the B-BBEE Act (2003) and FSC, which promote social and economic redress in marginalized communities. This highlights the importance of a firm's social impact and its ability to demonstrate commitment to societal values, positively influencing investor perception.

Environmental performance showed a negative and insignificant relationship with market capitalisation. This may be due to higher environmental costs associated with environmental investments or concerns over potential penalties, leading South African investors to perceive these activities as burdensome or unprofitable in the short term.

The total ESG score has a strong positive relationship with market performance, particularly driven by the corporate governance pillar. This suggests that firms engaged in ESG practices often face initial declines in earnings due to social and environmental investments, but these are compensated by increased share price and ultimately improved firm value. Thus, the total ESG score appears to significantly contribute to firm value, particularly when corporate governance is strong.

Firm size plays a crucial role in moderating the relationship between ESG and market capitalisation. Larger firms benefit more from ESG initiatives, particularly in terms of environmental issues, likely due to increased public scrutiny and green investment interest. As a result, larger firms are encouraged to implement environmental initiatives that boost market value.

However, corporate governance and total ESG have a significantly negative relationship with market capitalisation when firm size is factored in. This could suggest that, despite larger firms' ability to implement better ESG practices, poor corporate governance can have a detrimental effect on firm value, as evidenced by the Steinhoff and Tongaat-Hulett scandals. The negative impact of corporate governance failures on stock prices is substantial (11.477 times decrease in market value). Firm size's role as a moderator suggests that larger firms can absorb the negative effects of poor governance or ESG practices, but are still vulnerable to the reputational damage that results from corporate governance failures.

Corporate governance positively influences earnings per share (EPS) under the moderating effect of firm size, suggesting that good governance leads to better financial performance and business continuity. Firms with poor governance practices are at risk of closure or significant financial distress, impacting their earnings capacity.

While firm size plays a moderating role in the relationship between ESG and market capitalisation, it has an insignificant moderating effect on the relationship between individual ESG pillars (environment, social, and governance) and earnings per share. This indicates that the influence of ESG on earnings may not be strongly driven by firm size, or that other factors like operational efficiency or industry dynamics might have more influence on earnings than ESG initiatives alone.

The study's findings contribute to Legitimacy Theory and Signaling Theory by demonstrating that firms with strong corporate governance and social performance not only gain legitimacy in the eyes of stakeholders but also signal their reliability, sustainability, and long-term viability, which positively impacts their market value. At the same time, the study suggests that environmental performance, while important for long-term sustainability, may not yet be as strongly valued in the South African market, thus limiting its ability to serve as an effective signal to investors. This dual contribution enhances the understanding of how ESG practices serve both as legitimacy mechanisms and signals of firm quality in the emerging market context.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, Wilfreda Chawarura and Mabutho Sibanda.; methodology, X.X.; software, Wilfreda Chawarura; validation, Wilfreda Chawarura, Mabutho Sibanda and Kuziva Mamvura; formal analysis, Wilfreda Chawarura; writing—original

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draft preparation, Wilfreda Chawarura; writing—review and editing Wilfreda Chawarura; supervision, Mabutho Sibanda. Kuziva Mamvura. All authors have read and agreed to the published version of the manuscript." Please turn to the CRediT taxonomy for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

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