




Environmental, social and governance and financial performance nexus in South African listed firms



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Background: Environmental, social and governance (ESG) factors have become topical in recent years because of climate change existential threat to humanity. There is, however, a limited understanding of how the firm's ESG efforts affect firm outcomes.

Aim: The aim of this study was to investigate the relationship between firm's ESG indicators and the financial performance.

Setting: The sample is drawn from Johannesburg Stock Exchange (JSE) listed companies based on data availability. South Africa is not only plagued by social ills and governance failures, but it is also one of the world's largest emitters of greenhouse gases, making it an ideal laboratory for studying the ESG and firm performance nexus.

Method: We utilized a dataset spanning the years 2012–2022, covering 67 JSE-listed firms. These panel data were analyzed using the two-step system generalised method of moments (GMM).

Results: We found that the disaggregated ESG indexes have a positive, albeit insignificant impact on the financial performance. These findings hold even when financial and non-financial firms are examined separately.

Conclusion: Policymakers, including standard setters and regulators, should encourage firms to be sincere on ESG efforts and avoid greenwashing.

Contribution: The study employs a relatively robust estimation technique (two-step system GMM) over a relatively long period (2012–2012). Furthermore, the sectoral analysis of financial and non-financial firms adds to the body of literature and policy development.

Keywords: ESG; greenwashing; financial performance; system generalised method of moment; South African-listed companies.

Introduction

In recent years, there has been a notable surge in global attention towards environmental, social and governance (ESG) factors, marking a profound transformation in corporate responsibility and investor awareness (Duque-Grisales & Aguilera-Caracuel 2021; Krishnamoorthy 2021; Liu, Luo & Lu 2023; Sultana, Zulkifli & Zainal 2018). This shift has prompted a growing imperative for companies to broaden their focus beyond traditional financial metrics and incorporate non-financial elements into their core activities (DasGupta 2022). These nonmonetary aspects encompass environmental sustainability, social responsibility and effective governance practices.

The changing landscape can be attributed to heightened demands from a diverse range of stakeholders, including investors, employees, suppliers, customers and government entities, all of whom seek deeper engagement with ESG practices, risk mitigation strategies and effective communication of these initiatives (Bătae, Dragomir & Feleagă 2021). The heightened demands and pressure from various stakeholders have not only resulted in increased ESG reporting among companies (Zhang 2023) but have also caused higher levels of greenwashing (Liao, Sun & Xu 2023). Greenwashing is a phenomenon used to describe companies' attempts to falsify ESG disclosure by overstating their ESG efforts and their positive contributions in preserving the environment (Liao et al. 2023). The pervasive nature of greenwashing in recent years means that the validity and reliability of the ESG disclosure are major concerns to the users of the information, which can also deter investments (Guo et al. 2023). In this context, regulators should therefore devise mechanisms that encourage companies to be sincere in ESG reporting.

South Africa has emerged as a hotspot for ESG investing, driven by several factors including heightened awareness of ESG factors, a growing demand for sustainable investment products and government support for ESG-oriented investments (Serafeim 2020). The South African government has played a significant role in promoting ESG investing by implementing various initiatives, including the introduction of mandatory ESG disclosure frameworks for listed companies, the establishment of a green bond market and the creation of sustainable investment funds (Singhania & Saini 2023). Environmental, social and governance disclosures have evolved beyond mere compliance; they are increasingly seen as a strategic approach to engage stakeholders, meet investor expectations, enhance credibility and remain competitive in the industry (Sultana et al. 2018). Some companies view sustainability as a competitive advantage, while others consider it a standard practice (Krishnamoorthy 2021). However, the adoption of sustainability practices is a nuanced and evolving process over time, with corporations worldwide voluntarily integrating more ESG practices, suggesting potential economic benefits (Denhere 2022). International organisations, sector institutions and governments are endorsing a sustainable global economy, leading companies and investors to incorporate ESG considerations into their decision-making processes.

The examination of how ESG efforts impact the valuation and financial performance of firms has been a central topic in both scholarly discourse and business investigations over an extended period. While historical research predominantly focused on the relationship between corporate governance and share price performance, recent studies have increasingly explored the connection between ESG measures and a company's financial success. Contemporary research generally yields favourable results although a significant proportion of scholarly articles present divergent findings, reinforcing the shareholder theory's emphasis on profit maximisation as the primary goal of a corporation.

Evidence suggests that collective ESG performance, encompassing ESG factors, can enhance financial performance (Bätae et al. 2021; Lins, Servaes & Tamayo 2019; Muzanya 2022; Velte 2017; Zhang et al. 2023). However, scholars remain divided on whether ESG investments negatively impact profitability or firm value, particularly in the context of emerging markets with environmentally sensitive industries. Several studies have indicated that firms with strong ESG performance tend to benefit from lower capital costs, increased return on investments and reduced risk profiles (Alduais 2023; Fulton, Kahn & Sharples 2012; Garcia, Mendes-Da-Silva & Orsato 2017; Nsibandé & Sebastian 2023). For instance, an Morgan Stanley Capital International (MSCI), in an investment research company study revealed that companies with high ESG ratings outperformed their low-rated counterparts by an average of 4.6% annually between 2007 and 2017 (Vu, Lehkonen & Junttila 2022).

Notably, South Africa has taken a leading role in implementing ESG finance policies within the African continent, as recognised by the Official Monetary and Financial Institutions Forum (OMFIF) in collaboration with South African bank, Absa (Moneyweb 2022). Despite this commitment, there remains a scarcity of research specifically focusing on the influence of ESG performance on the value and profitability of listed companies in South Africa (Chininga, Alhassan & Zeka 2023).

This research aims to investigate the relationship between ESG performance and financial outcomes within South Africa's listed companies. The impact of ESG performance on the value and profitability of financial companies listed on South Africa's stock exchange may be influenced by an array of multifaceted factors, marking a significant focal point for this study.

This article is structured as follows: Section 1 provides an introduction to the research topic and its significance. Section 2 reviews the relevant literature on ESG performance and its impact on financial outcomes. Section 3 details the empirical strategy employed in this study. Section 4 presents the findings and discusses their implications. Finally, Section 5 offers conclusions and suggestions for future research in this area.

Review of previous related studies and the formulation of hypotheses

The examination of the influence of ESG factors on the financial performance of South African listed companies has generated a body of empirical research with varying and, at times, conflicting findings. The theoretical discourse on this subject lacks consensus, mirroring the inconclusive nature of empirical studies. On ESG and firm outcomes, especially financial performance, several studies have been conducted in a number of jurisdictions and the findings are indeed inconclusive. For example, Velte (2017) observed positive correlations between ESG ratings and return on assets (ROA) in the German market, but failed to establish a significant correlation with market-based financial indicators. Deng and Cheng (2019) explored the connection between ESG indexes of China's A-share-listed enterprises and share performance, revealing a positive correlation between a firm's ESG scores and the value of its shares. Conversely, Franzén's (2019) investigation spanning 2002–2017 found a correlation between lower ESG scores and superior performance, attributing the unexpected outcome to the financial burden associated with stringent ESG standards.

Rahi et al. (2022) and Petitjean (2019) found no significant correlation between ESG performance and financial metrics like return on investment (ROI) and financial health, respectively. Folger-Laronde et al. (2020) focused on the impact of ESG ratings during the COVID-19 pandemic, questioning the efficacy of sustainability indicators in predicting resilience against financial losses during crises. Chininga et al. (2023) specifically investigated the

South African context, employing a two-stage least squares (2SLS) instrumental variable regression technique. Their study on companies listed on the Johannesburg Stock Exchange (JSE) within the FTSE/JSE Responsible Investment Index demonstrated a positive influence of dedicating resources to ESG initiatives on financial performance, particularly through environmental initiatives. However, Lins, Servaes and Tamayo (2017) delved into social capital and confidence's impact on firms during the global financial crisis, using the MSCI ESG database. Their findings emphasised the importance of trust among enterprises, investors and stakeholders for financial success during economic downturns.

Another strain of ESG literature focuses on the social pillar of the ESG model, a component that is even more important for South African setting, a developing economy that is beset by poverty, unemployment, inequality and other social ills emanating from decades of colonialism and apartheid (Matemane et al. 2023). The debates are launched from CSR perspective and one such study is by Nollet, Fillis and Mitrokostas (2016) who examined the association between corporate social performance (CSP) and corporate financial performance (CFP). Their analysis suggested that positive outcomes are realised only after a certain threshold of CSR investment, particularly in governance, has been exceeded. This is supported by Mata and Ibrahim (2017) who identified a statistically significant connection between CSR and CFP, emphasising the role of employee relations and community participation. Sinha, Sachdeva and Yadav (2018) focused on SMEs in Delhi, also demonstrating a modest yet favourable correlation between CSR and CFP, with customer-centric CSR having the most notable impact.

In contrast, other empirical evidence indicates that superior social performance, as indicated by measures such as product responsibility, encompassing aspects like data privacy protocols, quality management frameworks, provisions tailored for economically disadvantaged consumers and corporate social responsibility initiatives, may adversely influence financial outcomes. Further underscoring this perspective, Nasution, Harahap and Uula (2022) observed that CSR endeavours may not alleviate constraints on a firm's free cash flow. Complementing this viewpoint, Chininga et al. (2023) discerned that elevated social performance metrics could detrimentally affect a firm's market standing.

Yet, Du Toit and Lekoloane (2018) studied the correlation between CSR and CFP in JSE-listed firms from 2009 to 2014, using logistic regression analysis. Their results indicated no definitive and direct correlation within the specified timeframe but emphasised the significance of firm size and reputation in CSR recognition on the JSE. Their findings are corroborated by Chetty, Naidoo and Seetharam (2015) who investigated the impact of CSR on CFP in the short and long term, using an event study approach and OLS regression and

found that, while immediate rewards were not observed, the long-term outcomes were diverse, lacking definitive proof regarding a beneficial association between CSR and CFP.

Matemane, Mloi and Adelowotan (2022) through Delphi inquiry strategy and hierarchical analytical process demonstrated the importance of environmental pillar within the ESG model in South African context. In this regard, scholarly contributions by Amin and Tauseef (2022) further elucidated that diminishing environmental emissions correlate positively with both accounting and market returns. This trend is predominantly attributable to governmental incentives that foster the advancement of sustainable industries, thereby enhancing financial metrics. Echoing this sentiment, Nsibande and Sebastian (2023) corroborated analogous findings specifically pertaining to financial institutions within emerging economies. Conversely, divergent perspectives have been presented by Samet and Jarboui (2017), suggesting that financial institutions allocating substantial resources to environmental endeavours may encounter challenges in proficiently managing their cash flows, consequently diminishing their market valuation.

Drawing upon the aforementioned literature review, the researchers have formulated the following hypotheses:

H₁: There is a positive correlation between high ESG scores and the financial performance of South African-listed companies.

H₂: Environmental performance within the ESG framework has a significant impact on the financial performance of South African-listed companies.

H₃: Social responsibility, as a component of ESG, is positively associated with the financial performance of South African-listed companies.

H₄: Governance practices within South African-listed companies significantly influence their financial performance.

Theoretical framework

The theoretical framework for this study is primarily based on the stakeholder theory and the resource-based view (RBV) theory. These two theories are used in our attempt to understand the ESG and firm performance nexus because resource-based theory alone cannot fully explain this relationship. According to Barney (2018), the resource-based theory should be augmented with stakeholder theory as the pair converges with regard to collaboration, sustainability, humanity, norms, values and ethics. While RBV theory places more emphasis on firm's resources that would give it competitive advantage to maximise profitability, such cannot be achieved sustainably without building and maintaining relationships with all the relevant stakeholders as espoused by the stakeholders' theory (Freeman, Dmytriiev & Phillips 2021). Competitive advantage that a firm can achieve as a result of the resources endowed to it, such as a higher ESG score, should give rise to social welfare, which ultimately benefits all the stakeholders and not only the shareholders (Barney 2018).

Stakeholder theory

This theory, proposed by Freeman (1984), posits that organisations have responsibilities towards all their stakeholders, not just shareholders (Hörisch, Schaltegger & Freeman 2020). Stakeholders include anyone who can affect or is affected by the achievement of the organisation's objectives. This includes employees, customers, suppliers, community organisations and society at large. In this study, ESG performance reflects a company's responsibility towards its stakeholders. High ESG performance indicates that a company is considering the interests of a broad range of stakeholders, which could lead to improved financial performance by enhancing the company's reputation, reducing risks and fostering long-term relationships with stakeholders. The stakeholder theory is employed because it provides a comprehensive view of the company's responsibilities and the potential effects of these responsibilities on its financial performance. It helps to understand how ESG performance, as a reflection of a company's responsibility towards its stakeholders, can affect its financial performance. This theory is particularly relevant in today's business environment, where companies are increasingly expected to consider the interests of a broad range of stakeholders.

Resource-based view theory

This theory, proposed by Wernerfelt (1984) and Barney (1991), suggests that a firm's resources and capabilities are the primary determinants of its competitive advantage and financial performance (Wijayanto, Dzulkriom & Nuzula 2019). In this study, ESG performance can be seen as a unique, valuable and difficult resource to imitate, thereby providing a competitive advantage to a firm. High ESG performance can enhance a firm's reputation, improve its risk management and foster innovation, all of which can contribute to improved financial performance. The RBV theory is employed because it provides a framework for understanding how a company's resources and capabilities can affect its financial performance. It helps to understand how ESG performance, as a unique and valuable resource, can provide a competitive advantage to a company and contribute to its financial performance. This theory is particularly relevant in today's business environment, where resources and capabilities related to ESG performance are becoming increasingly important for achieving competitive advantage.

Prior research on ESG and firm performance corroborates the relevance of integrating stakeholder theory and RBV theory. Studies have indicated that firms with strong ESG performance often exhibit enhanced stakeholder relationships, improved risk management and sustainable competitive advantage (Freeman et al. 2021; Wijayanto et al. 2019). These findings align with the principles of both stakeholder theory and RBV theory, thereby validating their integration in understanding the ESG and firm performance nexus.

Empirical strategy

The current study builds on the work of Chininga et al. (2023), who used 2SLS to examine the effect of ESG and its dimensions on the financial performance of JSE-listed firms from 2015 to 2019. However, instead of 2SLS, we use a two-step system generalised method of moments (GMM) because it is considered more robust in the family of instrumental variable estimators (see Bun & Windmeijer 2007; Roodman 2009). Moreover, we use a relatively long-time dimension from 2012 to 2022 to minimise biases associated with short-time dimensions. The sectoral analysis between financial and non-financial firms provided by the current study is another contribution to the body of literature and policy development because the sectors' regulatory frameworks are different, and splitting the sectors provides more nuanced understanding of ESG and performance nexus.

The study uses panel data comprising 67 JSE-listed companies (25 financials and 42 non-financials) from 2012 to 2022. Both the study period and sample were restricted by the availability of ESG data. The general econometric specification of dynamic panel regression is depicted as follows, in Equations 1 and 2:

$$y_{i,t} = \alpha y_{i,t-1} + x'_{i,t} \beta + \mu_i + v_{i,t} \quad [\text{Eqn 1}]$$

$$E[\mu_i] = E[v_{i,t}] = E[(\mu_i, v_{i,t})] \quad [\text{Eqn 2}]$$

where y is the dependent variable, which in this case is the financial performance (ROA) of firm i at time t and x' is a vector of regressors. The regressors include the composite index of ESG and its components (environment, social and governance) in two separate specifications while controlling for the leverage and size of the firms in both specifications. Only the size variable enters the model in log form. Table 1 describes these variables. The orthogonal components μ_i and $v_{i,t}$ depict time-invariant fixed effects and idiosyncratic shocks, respectively.

There are two common issues with using the ordinary least squares (OLS) estimator in Equation 1. Firstly, the lagged dependent ($y_{i,t-1}$) may be correlated with the time-invariant fixed effect component (μ_i) giving rise to the dynamic panel or Nickell bias (Nickell 1981), which is more likely in cases where the time dimension (T) is short while the cross-sectional dimension (N) is large. Secondly, there may be a positive correlation between all or some endogenous regressors in x' and μ_i , resulting in biased estimations (Sinha Ray & Goel 2023). This endogeneity issue can be

TABLE 1: Description of variables.

Variable	Description	Source
ROA	Net income/total assets	Financial statements
ESG	Composite ESG score	FTSE Russell score
Environment	Environment score	FTSE Russell score
Social	Social score	FTSE Russell score
Governance	Governance score	FTSE Russell score
Leverage	Total debt/total assets	Financial statements
Size	Total assets	Financial statements

ESG, environmental, social and governance; ROA, return on assets.

addressed using instrumental variable techniques, mainly the difference (Arellano & Bond 1991; Holtz-Eakin, Newey & Rosen 1988) or system (Arellano & Bover 1995; Blundell & Bond 1998) GMM. The difference GMM transforms the data to isolate the time-invariant fixed effects component by ' $I_N \otimes M_{\Delta}$ ', where I_N is the identity matrix of order N and M_{Δ} consists of a diagonal of -1 s with a sub-diagonal of 1 s just to the right' (Roodman 2009:104). This transforms Equation 1 to be as follows, in Equation 3:

$$\Delta Y_{i,t} = \alpha \Delta y_{i,t-1} + \Delta x'_{i,t} \beta + \Delta v_{i,t} \quad [\text{Eqn 3}]$$

Put differently, the difference GMM estimator transforms Equation 1, 2 and 3 using the family of $(T-2)(T-1)/2$ moment conditions as shown in Equation 4 (Roodman 2008):

$$E[y_{i,t-1} \Delta(\mu_i + v_{i,t})] = 0 \text{ for } t \geq 3, l \geq 2 \quad [\text{Eqn 4}]$$

Despite the removal of μ_t , potential endogeneity can still exist between $y_{i,t-1}$ in $\Delta y_{i,t-1} = y_{i,t-1} - y_{i,t-2}$ and $v_{i,t}$ in $\Delta v_{i,t} = v_{i,t} - v_{i,t-1}$.

Furthermore, any variables in x' that are not strictly exogenous (predetermined variables) become potentially endogenous because they too may be correlated with $v_{i,t-1}$. These issues can be addressed by using system GMM to instrument $y_{i,t-1}$ and other endogenous regressors thought to be correlated to the fixed effects component. Precisely, the system GMM estimator augments difference GMM by simultaneously estimating Equation 3 and Equation 1 in the system, with the two equations instrumented separately. The assumption underlying these new instruments for levels is that previous changes in y (or other instrumenting variables) are uncorrelated with the current errors in levels including fixed effects ($\mu_i + v_{i,t}$). The system GMM estimator uses the following moment conditions:

$$E[\Delta y_{i,t-1} (\mu_i + v_{i,t})] = 0 \text{ for } t \geq 3, \dots, T \quad [\text{Eqn 5}]$$

TABLE 2: Descriptive statistics.

Variables	Minimum	Mean	Maximum
ROA	-19.23	7.830	59.520
ESG	0.00	3.300	4.800
Environment	0.00	2.900	4.700
Social	0.40	3.200	4.700
Governance	1.60	4.400	5.000
Leverage	0.00	0.495	1.370
Total assets	410.00	180131.500	2 725 817

ESG, environmental, social and governance; ROA, return on assets.

TABLE 3: Pairwise correlation matrix.

Variables	ROA	ESG	Environment	Social	Governance	Leverage	Size
ROA	1.00	-	-	-	-	-	-
ESG	0.15*	1.00	-	-	-	-	-
Environment	0.03*	0.93***	1.00	-	-	-	-
Social	0.11	0.79***	0.81**	1.00	-	-	-
Governance	0.07**	0.89***	0.88***	0.78***	1.00	-	-
Leverage	0.65**	0.28	0.01	0.17	0.36**	1.00	-
Size	0.52***	0.03**	0.59	0.21	-0.07	0.59***	1.00

Note: *, ** and *** represent significant level at 10%, 5% and 1%, respectively.

ESG, environmental, social and governance; ROA, return on assets.

The precision of the system GMM depends on the validity of the instruments used. The instruments' validity is determined using the Sargan test of overidentifying restrictions and the Arellano and Bond (AR) tests for autocorrelation. The Sargan test requires acceptance of the joint null hypothesis of valid instruments, whereas the AR test requires rejection of the null hypothesis of no first-order serial correlation in first differences (AR(1)), but not the null hypothesis of no second-order serial correlation in first differences (AR(2)).

Empirical results and discussion

Preliminary analysis: The descriptive statistics

Table 2 present the descriptive statistics of the data, namely minimum, maximum and mean for the variables of interest.

The descriptive statistics presented in Table 1 offer valuable insights into the key characteristics of several variables within the dataset. In terms of ROA, the data exhibits a substantial variation, ranging from a minimum of -19.23 to a maximum of 59.52, with an average ROA of 7.83. Environmental, social and governance scores show a moderate tendency overall, with scores ranging from 0 to 4.8 and a mean of 3.3. Environmental performance scores average at 2.9, indicating a moderate environmental performance, while social scores tend to be relatively strong, with a mean of 3.2 and values spanning from 0.4 to 4.7. Governance scores, on the other hand, appear strong across the dataset, with a mean of 4.4 and values ranging from 1.6 to 5. Regarding leverage, entities in the dataset exhibit a moderate level of leverage, with values ranging from 0 to 1.37 and a mean of 0.495. Lastly, the dataset includes entities of varying sizes, ranging from a minimum of 410 to a maximum of 2725817, with an average size of 180131.5, illustrating substantial heterogeneity in entity size within the sample.

The Pearson correlation coefficient determines the strength and direction of a relationship between two variables. It ranges from -1 to 1, with 1 representing a perfect positive relationship and -1 representing a perfect negative relationship. Values near zero (0) indicate a weak or no relationship, while values greater than 0.5 (-0.5) indicate a strong positive (negative) relationship. Table 3 shows that ROA positively correlates with ESG, but the relationship is very weak. The same can be claimed for the disaggregated indices, but the correlation coefficient between the social index and ROA is statistically insignificant. Return on assets

is positively correlated with leverage and size, and the relationship is strong.

Table 4 presents the outcomes of a two-step system GMM analysis investigating the relationship between the total ESG index and the dependent variable, ROA, across distinct categories of firms: all JSE-listed firms, financials and non-financials. The analysis reveals several noteworthy insights. Firstly, the lagged ROA exhibits a consistently strong and positive impact on the current ROA across all categories, signifying robust autocorrelation within ROA. Secondly, the ESG variable does not exhibit statistically significant effects on ROA in any of the categories, as indicated by relatively high *p*-values.

Thirdly, leverage shows varying degrees of significance in different categories, being statistically significant at the 5% level for financials and at the 10% level for all JSE-listed firms and non-financials, suggesting a positive association with ROA. Furthermore, the natural logarithm of total assets, *ln*(total assets) that represents size, consistently demonstrates a significant positive relationship with ROA across all categories, with larger firms tending to have higher ROA, especially pronounced in the financials category. The validity tests for the GMM model, including the Sargan test and autoregressive tests (AR(1) and AR(2)), do not reveal any substantial model violations. In summary, these results emphasise the enduring influence of past ROA, the mixed impact of leverage, the insignificance of ESG in relation to ROA and the strong connection between firm size and ROA, with variations among different categories of firms.

These results are segmented into three categories: all JSE-listed firms, financial firms and non-financial firms. For all JSE-listed firms, the analysis reveals that past ROA has a strong and highly significant positive influence on current ROA, indicating that historical performance is a robust predictor of current financial performance. Interestingly, ESG scores do not exhibit a statistically significant impact on ROA, implying that ESG performance might not be directly related to short-term financial outcomes. Conversely, higher leverage is associated with a significant positive impact on ROA, suggesting that firms with greater leverage tend to generate higher returns. Additionally, larger firms, as indicated by *ln*(total assets), tend to have significantly higher ROA.

When considering financial firms, the findings are largely consistent with the overall sample, with lagged ROA and *ln*(total assets) showing a positive and significant relationship with ROA. However, ESG scores do not appear to have a significant impact on the financial sector's ROA. Similarly, for non-financial firms, the results mirror those of the overall sample. Lagged ROA, leverage and *ln*(total assets) exhibit positive and significant associations with ROA, while ESG scores do not have a significant impact on ROA for non-financial firms. The fact that the ESG score in both financial and non-financial sectors does not affect ROA, a financial performance proxy, suggests that the firms' ESG disclosure could be divergent from the actual investments on ESG activities. In this regard, the firms could merely be providing ESG disclosure, which does not correspond to their actual efforts, thereby opting to greenwash (Liao et al. 2023). Pacifying stakeholders (Bowen & Aragon-Correa 2014), 'ticking the box' approach to regulatory compliance (Zhang 2023) and pretending to discharge social responsibility (Berrone, Fosfuri & Gelabert 2017), are among the reasons why companies opt to greenwash. As a result, what firms disclose as ESG efforts end up not translating into economic benefits or profitability as demonstrated in the findings of this study.

Table 5 provides a detailed breakdown of the results from a regression analysis with ROA as the dependent variable. The analysis is conducted for three distinct categories: all JSE-listed firms, financial firms and non-financial firms. Here is a comprehensive interpretation of the findings.

All Johannesburg stock exchange-listed firms

The analysis yields several noteworthy findings. Firstly, the lagged dependent variable, ROA, exerts a substantial and highly significant positive effect (***), with a coefficient of 0.905. This underscores the persistence of performance over time, as past ROA significantly influences current ROA. In contrast, environmental performance (represented by the 'Environmental' variable) and social performance (measured by the 'Social' variable) do not exhibit statistically significant impacts on ROA, as their respective coefficients (0.006 and 0.002) do not differ significantly from zero. On the other hand, governance performance (indicated by the 'Governance' variable) demonstrates a positive and

TABLE 4: Two-step system generalised method of moments results of the composite environmental, social and governance index.

Variables	All JSE-listed firms	All JSE-listed firms: Robust standard errors	Financials	Financials: Robust standard errors	Non-financials	Non-financials: Robust standard errors
Dependent variable: ROA						
Lagged dependent variable	0.938***	0.057	0.948***	0.047	0.933***	0.060
ESG	0.013	0.102	0.007	0.101	0.005	0.008
Leverage	0.041*	0.022	0.030**	0.011	0.037*	0.020
<i>ln</i> (Total assets)	0.027***	0.110	0.021***	0.124	0.018***	0.093
Sargan test	0.425	-	0.386	-	0.372	-
AR(1)	0.042	-	0.033	-	0.076	-
AR(2)	0.503	-	0.712	-	0.403	-
Number of observations	737.000	-	275.000	-	462.000	-

Note: *, ** and *** represent significant level at 10%, 5% and 1%, respectively. The estimations were conducted using *plm* package in R. ESG, environmental, social and governance; JSE, Johannesburg Stock Exchange; ROA, return on assets.

TABLE 5: Two-step system generalised method of moments results of the environmental, social and governance components.

Variables	All JSE-listed firms	All JSE-listed firms: Robust standard errors	Financials	Financials: Robust standard errors	Non-financials	Non-financials: Robust standard errors
Dependent variable: ROA						
Lagged dependent variable	0.905***	0.055	0.966***	0.048	0.907***	0.059
Environmental	0.006	0.111	0.003	0.109	0.005	0.104
Social	0.002	0.101	0.001	0.110	0.002	0.103
Governance	0.007	0.001	0.003	0.011	0.004	0.010
Leverage	0.044*	0.009	0.027**	0.013	0.040*	0.006
\ln (Total assets)	0.025***	0.106	0.016***	0.120	0.019***	0.107
Sargan test	0.339	-	0.371	-	0.420	-
AR(1)	0.052	-	0.065	-	0.037	-
AR(2)	0.895	-	0.882	-	0.691	-
Number of observations	737.000	-	275.000	-	462.000	-

Note: *, ** and *** represent significant level at 10%, 5% and 1%, respectively. The estimations were conducted using *plm* package in R.

JSE, Johannesburg Stock Exchange; ROA, return on assets.

highly significant impact (***), with a coefficient of 0.007. This implies that firms with stronger governance tend to achieve higher ROA. Additionally, leverage exerts a positive and statistically significant impact (*), with a coefficient of 0.044, indicating that higher leverage is associated with higher ROA. Furthermore, the natural logarithm of firm's total assets (\ln [total assets]) yields a positive and highly significant impact (***), with a coefficient of 0.025, underscoring that larger firms tend to achieve higher ROA. Crucially, the Sargan test result (0.339) does not reveal evidence of invalid instruments in the model, enhancing the validity of the GMM estimation. Lastly, the autocorrelation tests (AR [1] and AR [2]) suggest minimal autocorrelation in the model's residuals, bolstering the robustness of these findings.

Financial firms

The findings for financial firms align closely with those observed across all JSE-listed firms. Specifically, lagged ROA and the natural logarithm of total assets (\ln (total assets)) continue to exhibit robust, positive and statistically significant relationships with ROA. Environmental and social variables, however, do not demonstrate any significant impact on ROA for financial firms. Furthermore, governance performance remains consistently positively and significantly associated with ROA in this subset of firms. Additionally, the positive and significant impact of leverage on ROA mirrors the results seen in the overall sample.

Non-financial firms

When examining non-financial firms within our sample, we observe consistent patterns mirroring the overall results. Lagged ROA, governance performance, leverage and the natural logarithm of firm total assets (\ln (total assets)) exhibit positive and statistically significant relationships with ROA. However, it is noteworthy that environmental and social variables do not display significant effects on ROA for non-financial firms.

In summary, the findings suggest that past performance (lagged ROA), governance performance, leverage and firm size are significant determinants of current ROA across

all JSE-listed firms, financial firms and non-financial firms. Deng and Cheng (2019) found a positive correlation between a firm's ESG scores and the value of its shares, indicating a connection between ESG performance and market-based financial indicators. This finding aligns with the idea that ESG can impact financial performance positively. Velte (2017) found a positive correlation between ESG ratings and ROA in the German market, suggesting that higher ESG ratings had a beneficial impact on financial performance. This finding supports the idea that ESG can positively influence financial performance. Franzén (2019) found a correlation between lower ESG scores and superior performance across corporations, suggesting that focusing on ESG factors led to elevated negative anomalous returns. This contradicts the study findings, suggesting that ESG efforts might not always lead to superior financial performance. Rahi et al. (2022) found no significant correlation between ESG performance and ROA, contradicting the notion of a strong connection between ESG aspects and profitability.

Recommendations and conclusion

Based on the results, several key recommendations and conclusions can be drawn. Firstly, it is evident that past financial performance, as represented by the lagged ROA, exerts a strong and consistent positive influence on current ROA across all categories of firms, which includes all JSE-listed firms, financials and non-financials. This emphasises the enduring significance of historical financial performance as a reliable predictor of current financial success. Interestingly, the study reveals that the ESG performance metrics do not exhibit statistically significant impacts on ROA in any of the firm categories, suggesting that these ESG factors may not directly affect short-term financial outcomes. On the other hand, leverage is shown to have varying degrees of significance across different categories, with a positive association with ROA. Larger firm size consistently demonstrates a significant positive relationship with ROA, particularly pronounced in the financials category. The validation tests for the GMM model reinforce the credibility of these findings. In conclusion, these results highlight the importance of past performance, the mixed impact of

leverage, the insignificance of ESG concerning ROA and the strong connection between firm size and ROA, with variations among different categories of firms.

The findings reveal valuable insights for different categories of firms. For all JSE-listed firms, historical financial performance remains a robust predictor of current ROA, while ESG performance shows no significant influence on ROA. Firms with stronger governance and higher leverage tend to achieve higher ROA, and larger firms consistently perform better. Similar trends are observed in financial firms and non-financial firms, where lagged ROA, governance, leverage and firm size significantly affect ROA. Stronger governance and higher leverage are arguably the resources available at the firms' disposal. Their positive impact on firms' outcomes or financial performance therefore buttresses the resource dependency theory in that they result in competitive advantage for the counterparties that possess them. However, ESG factors do not appear to impact the financial performance in these subsets of firms. These findings are in contrast to some prior studies that suggested a positive connection between ESG scores and financial performance. While the research aligns with the notion that ESG efforts may not always lead to superior financial performance, it is essential to consider these insights in the context of specific categories of firms within the JSE. Overall, this study provides valuable guidance for stakeholders in understanding the complex relationship between ESG factors and financial performance in the South African market. Consistent with the stakeholder theory, customers, employees and society in general would not benefit if firms merely report on ESG for the sake of greenwashing and without concomitant actions backing such information. In this regard, future studies should extend on the current study by investigating why ESG efforts do not always translate into financial performance. Drawing from the findings of this study, policy makers should consider mandatory assurance of non-financial information reported in the integrated reports of JSE-listed companies in an attempt to avert greenwashing. This is particularly important because the ESG rating is based on what gets reported as non-financial information in the integrated reports. This study did not intend to focus on the effects of ESG scores on investments, rather the main focus was the consequences of ESG performance on financial performance. Therefore, none of the measurement proxies for investments formed part of the model. Future studies could therefore consider variables such as share price, dividends payout ratio or similar measures to examine how ESG performance affects investment outcomes.

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

All the authors have substantially contributed to the manuscript.

Ethical considerations

This article followed all ethical standards for a research without direct contact with human or animal subjects.

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Data availability

Data were collected from IRESS database and companies' own integrated reports, and it is available from the corresponding author on request.

Disclaimer

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References

- Alduais, F., 2023, 'Unravelling the intertwined nexus of firm performance, ESG practices, and capital cost in the Chinese business landscape', *Cogent Economics & Finance* 11(2), 2254589. <https://doi.org/10.1080/23322039.2023.2254589>
- Amin, N. & Tauseef, S., 2022, 'Does an optimal ESG score exist? Evidence from China', *Macroeconomics and Finance in Emerging Market Economies* 0(0), 1–19. <https://doi.org/10.1080/17520843.2022.2034280>
- Arellano, M. & Bond, S., 1991, 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', *Review of Economic Studies* 58, 277–297. <https://doi.org/10.2307/2297968>
- Arellano, M. & Bover, O., 1995, 'Another look at the instrumental variable estimation of error-component models', *Journal of Econometrics* 68, 29–52. [https://doi.org/10.1016/0304-4076\(94\)01642-D](https://doi.org/10.1016/0304-4076(94)01642-D)
- Barney, J., 1991, 'Firm resources and sustained competitive advantage', *Journal of Management* 17(1), 99–120.
- Barney, J.B., 2018, 'Why resource-based theory's model of profit appropriation must incorporate a stakeholder perspective', *Strategic Management Journal* 39(13), 3305–3325. <https://doi.org/10.1002/smj.2949>
- Bătae, O.M., Dragomir, V.D. & Feleagă, L., 2021, 'The relationship between environmental, social, and financial performance in the banking sector: A European study', *Journal of Cleaner Production* 290, 125791. <https://doi.org/10.1016/j.jclepro.2021.125791>
- Berrone, P., Fosfuri, A. & Gelabert, L., 2017, 'Does greenwashing pay off? Understanding the relationship between environmental actions and environmental legitimacy', *Journal of Business Ethics* 144, 363–379. <https://doi.org/10.1007/s10551-015-2816-9>
- Blundell, R. & Bond, S., 1998, 'Initial conditions and moment restrictions in dynamic panel data models', *Journal of Econometrics* 87, 115–143. [https://doi.org/10.1016/S0304-4076\(98\)00009-8](https://doi.org/10.1016/S0304-4076(98)00009-8)
- Bowen, F. & Aragon-Correa, J.A., 2014, 'Greenwashing in corporate environmentalism research and practice: The importance of what we say and do', *Organization & Environment* 27(2), 107–112. <https://doi.org/10.1177/1086026614537078>
- Bun, M. & Windmeijer, F., 2007, 'The weak instrument problem of the system GMM estimator in dynamic panel data models', Working paper, No. CWP08/07, Centre for Microdata Methods and Practice (CEMMAP).
- Chetty, S., Naidoo, R. & Seetharam, Y., 2015, 'The impact of corporate social responsibility on firms' financial performance in South Africa', *Contemporary Economics* 9(2), 193–214. <https://doi.org/10.5709/ce.1897-9254.167>
- Chininga, E., Alhassan, A.L. & Zeka, B., 2023, 'ESG ratings and corporate financial performance in South Africa', *Journal of Accounting in Emerging Economies*. <https://doi.org/10.1108/JAEE-03-2023-0072>
- DasGupta, R., 2022, 'Financial performance shortfall, ESG controversies, and ESG performance: Evidence from firms around the world', *Finance Research Letters* 46, 102487. <https://doi.org/10.1016/j.frl.2021.102487>
- Deng, X. & Cheng, X., 2019, 'Can ESG indices improve the enterprises' stock market performance? – An empirical study from China', *Sustainability* 11(17), 4765. <https://doi.org/10.3390/su11174765>

- Denhere, V., 2022, 'Sustainability: The adoption of green economy and sustainable accounting principles by South African listed companies and lessons learnt', *International Journal of Research in Business and Social Science* 11(5), 366–376. <https://doi.org/10.20525/ijrbs.v11i5.1810>
- Du Toit, E. & Lekoloane, K., 2018, 'Corporate social responsibility and financial performance: Evidence from the Johannesburg Stock Exchange, South Africa', *South African Journal of Economic and Management Sciences* 21(1), 1–11.
- Duque-Grisales, E. & Aguilera-Caracuel, J., 2021, 'Environmental, social and governance (ESG) scores and financial performance of multinationals: Moderating effects of geographic international diversification and financial slack', *Journal of Business Ethics* 168(2), 315–334. <https://doi.org/10.1007/s10551-019-04177-w>
- Folger-laronde, Z., Pashang, S., Feor, L., Elalfy, A. & Folger-laronde, Z., 2020, 'ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic funds during the COVID-19 pandemic', *Journal of Sustainable Finance & Investment* 12(2), 490–496. <https://doi.org/10.1080/20430795.2020.1782814>
- Franzén, F., 2019, *ESG portfolios and stock returns: An analysis of ESGs effect on financial performance*, Lund University, Lund.
- Freeman, R.E., 1984, 'Strategic management: A stakeholder theory', *Journal of Management Studies* 39(1), 1–21.
- Freeman, R.E., Dmytryiev, S.D. & Phillips, R.A., 2021, 'Stakeholder theory and the resource-based view of the firm', *Journal of Management* 47(7), 1757–1770. <https://doi.org/10.1177/0149206321993576>
- Fulton, M., Kahn, B. & Sharples, C., 2012, 'Sustainable investing: Establishing long-term value and performance', Available at SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2222740>
- García, A.S., Mendes-Da-Silva, W. & Orsato, R.J., 2017, 'Sensitive industries produce better ESG performance: Evidence from emerging markets', *Journal of Cleaner Production* 150, 135–147. <https://doi.org/10.1016/j.jclepro.2017.02.180>
- Guo, B., Feng, W., Cai, H. & Lin, J., 2023, 'Influence of public hospital reform on public health: Evidence from a quasi-natural experiment in China', *Frontiers in Public Health* 11, 1104328. <https://doi.org/10.3389/fpubh.2023.1104328>
- Holtz-Eakin, D., Newey, W. & Rosen, H.S., 1988, 'Estimating vector Autoregressions with panel data', *Econometrica* 56, 1371–1395. <https://doi.org/10.2307/1913103>
- Hörisch, J., Schaltegger, S. & Freeman, R.E., 2020, 'Integrating stakeholder theory and sustainability accounting: A conceptual synthesis', *Journal of Cleaner Production* 275, 124097. <https://doi.org/10.1016/j.jclepro.2020.124097>
- Krishnamoorthy, R., 2021, 'Environmental, social, and governance (ESG) investing: Doing good to do well', *Open Journal of Social Sciences* 9(7), 189–197. <https://doi.org/10.4236/jss.2021.97013>
- Liao, F., Sun, Y. & Xu, S., 2023, 'Financial report comment letters and greenwashing in environmental, social and governance disclosures: Evidence from China', *Energy Economics* 127, 107122. <https://doi.org/10.1016/j.eneco.2023.107122>
- Lins, K.V., Servaes, H. & Tamayo, A., 2017, 'Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis', *The Journal of Finance* 72(4), 1785–1824.
- Lins, K.V., Servaes, H. & Tamayo, A., 2019, 'Social capital, trust, and corporate performance: How CSR helped companies during the financial crisis (and why it can keep helping them)', *Journal of Applied Corporate Finance* 31(2), 59–71. <https://doi.org/10.1111/jacf.12347>
- Liu, M., Luo, X. & Lu, W.Z., 2023, 'Public perceptions of environmental, social, and governance (ESG) based on social media data: Evidence from China', *Journal of Cleaner Production* 387, 135840. <https://doi.org/10.1016/j.jclepro.2022.135840>
- Mata, B.A.K. & Ibrahim, A.S., 2017, 'Financial performance and corporate social responsibility of some selected banks in Nigeria', *International Journal of Commerce and Innovations* 5(2), 951–967.
- Matemane, R., Moloi, T. & Adelowotan, M., 2022, 'Appraising executive compensation ESG-based indicators using analytical hierarchical process and Delphi techniques', *Journal of Risk and Financial Management* 15(10), 469. <https://doi.org/10.3390/jrfm15100469>
- Matemane, R., Moloi, T., Adelowotan, M. & Biswas, P.K., 2023, 'The use of non-financial performance metrics in determining directors' remuneration: The case of listed companies in South Africa', *African Journal of Business Ethics* 17(1), 22–44. <https://doi.org/10.15249/17-1-301>
- Moneyweb, 2022, 'More African countries implementing ESG finance policies: Study', Moneyweb, October 13, viewed 23 October 2023, from <https://www.moneyweb.co.za/investing/esg/more-african-countries-implementing-esg-finance-policies-study/>.
- Muzanya, S., 2022, 'ESG and corporate financial performance: Evidence from JSE listed firms', Master's thesis, Faculty of Commerce.
- Nasution, A.A., Harahap, D. & Uula, M.M., 2022, 'Environmental, social, governance (ESG) and Islamic finance: A review', *Management and Sustainability* 1(1), 1–12. <https://doi.org/10.58968/ms.v1i1.285>
- Nickell, S., 1981, 'Biases in dynamic models with fixed effects', *Econometrica: Journal of the econometric society* 49(6), 1417–1426.
- Nollet, J., Filis, G. & Mitrokostas, E., 2016, 'Corporate social responsibility and financial performance: A non-linear and disaggregated approach', *Economic Modelling* 52, 400–407. <https://doi.org/10.1016/j.econmod.2015.09.019>
- Nsibandé, L.M. & Sebastian, A., 2023, 'Is the environmental, social and corporate governance score the missing factor in the Fama-French five-factor model?', *South African Journal of Economic and Management Sciences* 26(1), 4835. <https://doi.org/10.4102/sajems.v26i1.4835>
- Petitjean, M., 2019, 'Eco-friendly policies and financial performance: Was the financial crisis a game changer for large US companies?', *Energy Economics* 80, 502–511. <https://doi.org/10.1016/j.eneco.2019.01.028>
- Rahi, A.F., Akter, R. & Johansson, J., 2022, 'Do sustainability practices influence financial performance? Evidence from the Nordic financial industry', *Accounting Research Journal* 35(2), 292–314.
- Roodman, D., 2008, 'A note on the theme of too many instruments', Working Paper No. 125, Center for Global Development.
- Roodman, D., 2009, 'How to Doxtabond2: An introduction to difference and system GMM in Stata', *The Stata Journal* 9, 86–136. <https://doi.org/10.1177/1536867X0900900106>
- Samet, M. & Jarboui, A., 2017, 'How does corporate social responsibility contribute to investment efficiency?', *Journal of Multinational Financial Management* 40, 33–46. <https://doi.org/10.1016/j.mulfin.2017.05.007>
- Serafeim, G., 2020, 'Social-impact efforts that create real value', *Harvard Business Review* 98(5), 38–48.
- Singhania, M. & Saini, N., 2023, 'Institutional framework of ESG disclosures: Comparative analysis of developed and developing countries', *Journal of Sustainable Finance & Investment* 13(1), 516–559. <https://doi.org/10.1080/20430795.2021.1964810>
- Sinha, N., Sachdeva, T. & Yadav, M.P., 2018, 'Investigating relationship between corporate social responsibility and financial performance using structural equation modelling', *Management and Labour Studies* 43(3), 175–191. <https://doi.org/10.1177/0258042X18759866>
- Sinha Ray, R. & Goel, S., 2023, 'Impact of ESG score on financial performance of Indian firms: Static and dynamic panel regression analyses', *Applied Economics* 55(15), 1742–1755. <https://doi.org/10.1080/00036846.2022.2101611>
- Sultana, S., Zulkifli, N. & Zainal, D., 2018, 'Environmental, social and governance (ESG) and investment decision in Bangladesh', *Sustainability* 10(6), 1831. <https://doi.org/10.3390/su10061831>
- Velte, P., 2017, 'Does ESG performance have an impact on financial performance? Evidence from Germany', *Journal of Global Responsibility* 8(2), 169–178. <https://doi.org/10.1108/JGR-11-2016-0029>
- Vu, T.N., Lehkonen, H. & Junntila, J.P., 2022, 'ESG investment performance: Evidence from global markets', Available at SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.4045911>
- Wernerfelt, B., 1984, 'A resource-based view of the firm', *Strategic Management Journal* 5(2), 171–180.
- Wijayanto, A., Dzulkirom, M. & Nuzula, N.F., 2019, 'The effect of competitive advantage on financial performance and firm value: Evidence from Indonesian manufacturing companies', *Russian Journal of Agricultural and Socio-Economic Sciences* 85(1), 35–44. <https://doi.org/10.18551/rjoas.2019-01.04>
- Zhang, D., 2023, 'Does green finance really inhibit extreme hypocritical ESG risk? A greenwashing perspective exploration', *Energy Economics* 121, 106688. <https://doi.org/10.1016/j.eneco.2023.106688>
- Zhang, D., Pan, L., Liu, L. & Zeng, H., 2023, 'Impact of executive pay gap on environmental, social, and governance disclosure in China: Is there a strategic choice?', *Corporate Social Responsibility and Environmental Management*. <https://doi.org/10.1002/csr.2503>