ESG ratings and corporate financial performance in South Africa

Emmerson Chininga and Abdul Latif Alhassan
*Development Finance Centre (DEFIC),
University of Cape Town Graduate School of Business–Breakwater Campus,
Cape Town, South Africa, and*
Bomikazi Zeka
*Faculty of Business, Government and Law, University of Canberra,
Canberra, Australia*

Abstract

Purpose – This paper examines the effect of ESG ratings and its dimensions (environmental, social and governance) on the financial performance of JSE-listed firms included in FTSE/JSE Responsible Investment Index.
Design/methodology/approach – The paper employs panel data covering 40 JSE-listed firms included in FTSE/JSE Responsible Investment Index between 2015 and 2019. The paper employs the two-stage least squares (2SLS) instrumental variable regression technique to estimate the effect of ESG ratings and its dimensions (environmental, social and governance) on both accounting- and market-based performance indicators.
Findings – The results of the two-stage least squares instrumental estimation analysis reveal that investment in ESG initiatives improves both accounting- and market-based indicators of financial performance. Of the ESG pillars, the paper finds environmental initiatives improves firms' financial bottom line and market performance, while a firm's social and governance practices are observed to have no effect on a firm's accounting and market performance measures.
Practical implications – The insights from this study proffers policy implications for firms' management, investors and regulatory authorities.
Originality/value – As far as the authors are concerned, this paper presents the first empirical analysis on the contribution of ESG ratings on financial performance in South Africa.

Keywords ESG, Financial performance, JSE, South Africa

Paper type Research paper

1. Introduction

The interest in responsible investment is assumed to have developed where investors' demands are rising for heightened transparency and disclosures with regards to how and where their funds are being invested. According to United Nations Principles of Responsible Investment UNPRI (2021), "responsible investment is a strategy which seeks to incorporate environmental(E), social(S) and governance(G) ESG factors into investment policies, decisions and ownership in a bid to generate sustainable risk-adjusted returns". Integrating ESG factors into processes of making investment decisions helps to identify and price any risks that would not be ordinarily included under traditional investment analysis approaches. The Socially Responsible Investing (SRI) movement which made headlines in the 1980s was a fundamental principle in the establishment of ESG practices. It de-campaigned the apartheid regime in South Africa through divesting South

African investments (Richardson and Cragg, 2010). Other investment approaches with similar practices include "ethical investing, economically targeted investing, sustainable or responsible investing, and impact investing" where the advocates of SRI recoined the idea as ESG in the early 2000s by including governance factors (Schanzenbach and Sitkoff, 2020).

The rising trends in ESG reporting to address sustainability issues is evidenced in principles enacted by various organisations including United Nations and its Sustainable Development Goals (SDGs) launched in January 2016 which are a blueprint for humanity to achieve a sustainable future for all; the UN-backed Principles for Responsible Investment (PRI) launched in 2006, the Global Reporting Initiative (GRI) and the recently launched EU Taxonomy [1]. In February 2012, the South African Code for Responsible Investing (CRISA) was established, whose five principles correlates to the UN-PRI [2] principles (IODSA, 2021) with the main objective of acquainting the investor community with ESG and emphasising the importance of ESG issues. The sustainability principles have necessitated an upsurge in responsible investing. The UNPRI reports that by January 2021 there was 18.9% growth in PRI signatories to 3,038, and assets under management for the total global portfolio grew by 12.3% to US$103.4tn. Furthermore, in Europe, sustainable investments account for 60% of assets under management, and in South Africa over $600bn worth of assets are allocated under responsible investing (GSIA, 2019; Reynolds, 2021; Lyudvig, 2022). This reflects investors' consideration of long-term returns through their adoption of ESG strategies on investment decisions and ownership. The growth in ESG funds and PRI signatories happened during the COVID-19 pandemic, which was disrupting supply chains and negatively affecting global economies making ESG proponents claim that ESG is living its promise of offering enhanced risk-adjusted returns (Authers, 2020).

An important issue arising from the increasing focus of responsible investing strategies relates to its effect on firms' bottom-lines. This has stimulated several studies on the effect of ESG investing on corporate financial performance (CFP), mainly within the context of developed economies, where most of the responsible investing funds are held. However, evidence remains inconclusive (Velte, 2017; Deng and Cheng, 2019; Rahi et al., 2022; Hasan et al., 2022; Friede et al., 2015; Zhao et al., 2018; Mohammad and Wasiuzzaman, 2021; Franzén, 2019; Petitjean, 2019; Folger-Laronde et al., 2020; Amin and Tauseef, 2022). As such, the objective of this research is to address this gap in contradictory evidence by empirically verifying the effect of ESG investing on firms' CFP within the context of an emerging economy, where little research has been carried out (Sherwood and Pollard, 2018; Johnson, 2020). In addition, emerging economies' lagging in infrastructure development and social amenities presents substantial investment and capital deployment opportunities. To be precise, in South Africa there is high income and social inequality, further aggravated by a significant reliance on fossil fuels for electricity generation among dire externalities on the environment. Therefore its necessary to have the study focus on this jurisdiction. Furthermore, our study is also motivated by and builds on the exploratory work of Worthington-Smith and Giamporcaro (2021) who found growing awareness of ESG factors in South African asset management and the need for further research to demonstrate how the integration of ESG factors can materially impact financial performance from a South African context.

Given that managerial behaviour tends to be driven by a firm's compensation system (Hang et al., 2019), evidence of the positive effects of ESG on profits can also incentivise managers to invest in socially responsible practices, as its partial consideration may not lead to desirable financial results (Adomako et al., 2019). Against this background, this paper contributes to the debate on the role of ESG on the financial performance of firms listed on Africa's largest stock exchange, the Johannesburg Stock Exchange (JSE). Specifically, the paper estimates a panel regression model of 40 listed firms which are included on FTSE/JSE Responsible Investment (RI) index from 2015 to 2019 using the instrumental variable estimation technique to address endogeneity. From the empirical analysis, overall ESG rating is observed to significantly

improve accounting and market-based indicators of financial performance when controlling for endogeneity. Social factors are found to enhance firm's accounting performance. In addition, weak evidence is found in support of the role of environmental and governance indicators on financial performance which could signify that the markets are yet to reward such initiatives.

The analysis undertaken in this paper contributes to the literature in the following ways [3]. First, it extends the literature on JSE-related studies which have mainly been limited to the effect of corporate social responsibility (CSR) (Du Toit and Lekoloane, 2018; Mohmed *et al.*, 2020), social performance disclosure (Sampong *et al.*, 2021), governance disclosure (Abdo and Fisher, 2007) on financial performance and ESG disclosures on cost of capital (Johnson (2020). These studies endeavour to touch on the subsets of corporate sustainability, including CSR and corporate governance, creating gaps on the entire sustainability constructs covering environmental, social and governance which this study aims to address (Abukari *et al.*, 2023). In addition, the CSR practices whose indicators are qualitative in nature dominates studies from South Africa and these are based on the overarching concerns around social and environmental issues. The qualitative characteristics of CSR indicators pose a challenge to firms due to the difficulties in measuring sustainable efforts. Pagano *et al.* (2018) define ESG ratings as a framework for assigning scores to a company, sector or a country's performance and practices in the areas of ESG factors, and these ratings are measured in a systematic way to yield a combined ESG score for that entity, industry or country. ESG ratings are made up of the overall rating that stems from underlying Pillar and Thematic Exposures and Scores built on over 300 individual indicator assessments tailored to each entity's unique circumstances (FTSE Russell, 2020). The ESG ratings are used to assess how well an entity incorporates sustainable and responsible practices into its operations, and how it manages risks and impacts related to the environment, social issues and corporate governance. Investors take interest in ESG ratings of companies for crafting investment strategies and decision-making. They use ESG ratings to evaluate sustainability performance and the risk profile of firms as this helps identify firms that align with their values, manage risks effectively and have potential for long-term sustainable growth. Higher ESG ratings may also be viewed by stakeholders that a firm is being a responsible citizen thus builds trust in the company and brand loyalty to its products and services it offers, increase reputation and strengthens relations with stakeholders (Billio *et al.*, 2021; Pagano *et al.*, 2018).

In addition, companies with very high ESG ratings are often perceived as less risky and more sustainable thus attracting capital at lower costs. More so, higher ratings enhance credit worthiness which may lead to lower borrowing costs and improved credit terms (Johnson, 2020). This study goes beyond the qualitative nature of CSR indicators and adopts ESG ratings criteria, which focuses on the quantitative results of firms' sustainable efforts leading to the measurability of those business efforts. South Africa's energy and water intensive industries, such as mining and agriculture, face a plethora of ESG risks including those that are climate-related such as extreme weather events, chronic heat waves, erosion and rising sea levels. Most of these climate-related risks emanate from South Africa's reliance on fossil fuels for energy output, therefore the results of the study may help businesses prioritise ESG risks and practices as these pose huge threats for firms viability (Vezér and Mayaki, 2019). Second, this paper also accounts for some classic econometric issues associated with the modelling of the relationship between ESG and financial performance such as endogeneity and simultaneity biases, which have been ignored by the prior literature to date (Velte, 2017; Deng and Cheng, 2019; Rahi *et al.*, 2022; Hasan *et al.,* 2022; Friede *et al.*, 2015; Zhao *et al.*, 2018; Mohammad and Wasiuzzaman, 2021; Franzén, 2019; Petitjean, 2019; Folger-Laronde *et al.,* 2020; Amin and Tauseef, 2022). This paper addresses these issues and makes a methodological contribution with the use of two-stage least squares estimation approach to provide robust evidence on the relationship between ESG and CFP.

The rest of the paper is organised as follows: Section 2 presents an overview of the JSE and ESG practices in South Africa, while Section 3 outlines the theoretical framework

and presents the research hypotheses. Section 4 reviews the empirical literature on ESG and financial performance. Sections 5 and 6 discuss the empirical strategy and the findings respectively, while Section 7 concludes the research and presents policy recommendations.

2. Background of the study: the JSE and ESG practices in South Africa

The JSE currently offers two responsible investing indexes. These are the FTSE/JSE Responsible Investment Top 30 Index and the FTSE/JSE Responsible Investment benchmark (Verney, 2018). The listing on the Johannesburg Stock Exchange (JSE) requires compliance with the King IV report on corporate governance to enhance better disclosure of environmental and social performance. This is viewed as essential in enhancing firms' capital allocation and risk pricing which are crucial ingredients to deliver an efficient market. According to the Department of National Treasury (2020) the Sustainable Finance Initiative for South Africa was developed to stimulate the attainment of sustainable economic and industrial activities which identifies, accommodates, and takes into account environmental and societal risks that can impact the stability of the financial sector. Thus, the JSE provides a platform for attracting investments earmarked for sustainable activities.

South Africa, like other emerging economies, is not lagging in the pursuit of sustainable environmental practices as evidenced by its national pledge of achieving Net Zero emissions by the year 2050. Given that the country emits heavy greenhouse gases, as the bulk of its electricity is generated from coal, this presents a huge opportunity for renewable energy investments and other low-carbon technologies (OECD, 2021; Sulla, 2020). In addition, the social condition in South Africa warrants consideration as the country has high income inequality which stood at 63 in 2014/15 as measured by Gini coefficient, which represents one of the highest rates in the world. Mdluli and Dunga (2022) assert that the social inequality in South Africa is further widened by high HIV rates of 13.7%, unemployment rates of 35.3% and over 55.5% of population living in poverty which is at the national upper poverty line of approximately ZAR 1,335 in 2021. These environmental and social considerations highlight the need for social responsibility efforts in South African firms, particularly those listed on the JSE.

To tackle these and other challenges, the government enacted a number of policies to interconnect the physical environment, natural resources and ethics to guide government structures in ensuring better stewardship and sustainability. A number of policies have been put in place to drive sustainable behaviour in the economy including The Carbon Tax, The National Environmental Management Act and the Integrated Resource Plan with regards to environmentally sustainable practices. Furthermore, the Reconstruction and Development Plan, The Growth, Employment and Redistribution Policy, and The Broad Based Black Economic Empowerment Act aim to address the social element of sustainability. Finally, the King IV report on Corporate Governance emanated to improve civil society and business practice by setting out principles aimed at achieving better corporate governance (Pfaff, 2021). Given the ESG issues South Africa has, it is clear that there is an expectation for firms to do more for their stakeholders to address its investment in ESG activities. By adopting ESG practices, firms will gain the trust of their stakeholders, which may ultimately lead to long-term relationships that may benefit firms financially.

3. Theoretical framework

The relationship between ESG ratings and CFP is underpinned by neo-classical economic theories on behavioural economics, rational choice and stakeholder-agency theories. Under the neo-classical school of thought, Friedman (1970) posit that if a firm pursues social activities, it incurs costs which reduce profits available for distribution to shareholders (Landi and Sciarelli, 2019). This idea asserts that the social responsibility of a business is to maximise financial returns and predicts that a firm's pursuit of non-financial goals obscures

it from maximising shareholders wealth. By applying a cost-to-benefit lens, this theory attempts to widen traditional neo-classical approaches by incorporating the negative impact (i.e. costs in investing in non-financial goals such as ESG practices) within traditional pricing systems (Flores and Sarandon, 2004). However, we argue that while the desired outcome is indeed positive financial returns, managers need to be aware of the specific input required to achieve the desired output, particularly when operating within an emerging economy. With limited knowledge on the non-financial goals that lead to positive financial performance, this study aims to address this theoretical gap by analysing the effect of investing in ESG practices (as the input) on CFP (as the output).

In the same vein, according to Beerbaum and Puaschunder (2019), behavioural economic theory assumes that human beings use heuristics in making choices for themselves and their communities. Though these mental shortcuts enable humans to cope with a complex world and its surroundings, these heuristics expose humans to biases and ultimately result in failures in making rational decisions. Thus, the theory questions the assumption that individuals make rational decisions as behavioural economists argue that people are often influenced by impulsivity, their surroundings, their emotions rather than science when making decisions, and likely chase short-term gains than long-term rewards (Witynski, 2022). Given that ESG practices seek long-term financial gains, both neo-classical and behavioural economic theories anticipate a negative relationship between ESG activities and financial performance. Based on the neo-classical school of thought, behavioural economic theories and empirical evidence of Rahi et al. (2022), it can be hypothesised that:

H_{A0}. ESG ratings have no impact on financial performance.

H_{A1}. ESG ratings have a significant negative impact on financial performance.

The rational choice and stakeholder-agency theories explain the positive effect of ESG factors on financial performance. First, the rational choice theory (RCT) is another classical economic theory which assumes that human beings make decisions after evaluating a number of factors and then select the decision that will provide them with the greatest benefit. The RCT assumes that individuals logically make an investment decision after weighing costs and benefits and seek the option that maximises return. Since individuals interests are an increase in return, therefore if the assessed ESG costs are lower than ESG returns then it is aligned to their best interest (Marinescu, 2016; Bowen, 2018; Robinhood, 2022). The consideration of logical process in selecting investment choices after weighing costs and benefits plus inclusion of future uncertainties to generate return is akin to ESG investing. However, this theory is largely based on individual action and does not account for nuances such as cultural or social contexts where socially responsible activities are undertaken for reasons that are not derived from self-interest. Therefore, we account for this limitation by applying the stakeholder theory which assumes that businesses consider the interests of its stakeholders when it makes its business decisions as firm's value is created through the interdependence between the firm and its stakeholder groups which include; financiers, customers, suppliers, communities, employees, government, etc. (Wijnberg, 2000). Stakeholders are now more interested in firm's sustainability activities as these enhance better prospects of its long-term survival and profitability. Thus ESG ratings are a useful instrument firms can utilise to fulfil stakeholder interests, resulting in improved sustainable practice ratings and reputation which leads to increased financial performance (Velte, 2017). Jensen and Meckling (1976) explain the agency theory as a relationship between a principal and an agent to make some investment decisions that maximise revenue and minimise costs. The agency theory explains shareholder wealth maximisation through metrics such as return on equity (ROE) and return on assets (ROA). By carefully selecting investments which are environmentally friendly, it shows that management is fulfilling their fiduciary duty of increasing the wealth of the shareholders as they view higher ESG ratings as an indication of

risk management which points to better performance of a company's shares in future (Rahi *et al.*, 2022). The rational choice and stakeholder-agency theories, along with the empirical evidence of prior studies (Velte, 2017; Aboud and Diab, 2018; Deng and Cheng, 2019; Mohammad and Wasiuzzaman, 2021) suggests that:

H_{B0}. ESG ratings have no impact on financial performance.

H_{B1}. ESG ratings have a significant positive impact on financial performance.

The environmental dimension of ESG refers to a firm's impact on the natural environment where factors such as carbon emissions, resource efficiency, reticulation of waste and laws around environment influence financial performance. Firms that adopt sustainable practices and mitigate their environmental risks are inclined to enjoy cost savings from energy efficiency measures, avoid penalties for law breaches, improved media headlines, access to new markets and customers which are environmentally sensitive, and these point to better financial performance of an entity (Amin and Tauseef, 2022; Shakil *et al.*, 2019; Khlif *et al.*, 2015). This paper therefore hypothesises that:

H_{C0}. Environmental ratings have no impact on financial performance.

H_{C1}. Environmental ratings have a significant positive impact on financial performance.

The social dimension of ESG encompasses a firm's relationship with its employees, customers, suppliers and local communities. The social activities like good labour practices, employee satisfaction, diversity and inclusion, customer satisfaction and community engagement can impact financial performance. Thus, positive social practices enhance employee productivity, lowers employee turnover, improves customer loyalty and trust, facilitates good relationships with suppliers and ultimately leads to a positive brand image. These factors are ingredients to increased sales, reduced operating costs, better risk management thus improving overall financial performance of an entity (Khlif *et al.*, 2015; Mohammad and Wasiuzzaman, 2021). As such, it is hypothesised that:

H_{D0}. Social ratings have no impact on financial performance.

H_{D1}. Social ratings have a significant positive impact on financial performance.

The governance dimension of ESG refers to a company's internal management structure, board composition, transparency and ethical practices. Robust governance structures ensure sound decision-making, proper risk management and accountability in organisations. Thus, sound governance practices can attract investors, reduce the cost of borrowing loans from banks and improves transparency about firms ESG's risks which helps alleviate information asymmetry and can lower a company's exposure to risk. Therefore strong corporate governance is aligned with better financial performance of a company (Rahi *et al.*, 2022; Hunjra *et al.*, 2020). From the literature, it is therefore hypothesised that:

H_{E0}. Governance ratings have no impact on financial performance.

H_{E1}. Governance ratings have a significant positive impact on financial performance.

To summarise the discussion on the theoretical framework and prior studies leading to the development of the research hypotheses, Figure 1 presents the hypothesised relationships of the ESG components and CFP.

4. Empirical literature
Similar to the conflicting effect of ESG on financial performance as evidenced by the preceding theoretical discussions, the empirical literature remains inconclusive, with evidence of either negative, positive or non-existing effects (Velte, 2017; Deng and Cheng, 2019; Rahi *et al.*, 2022;
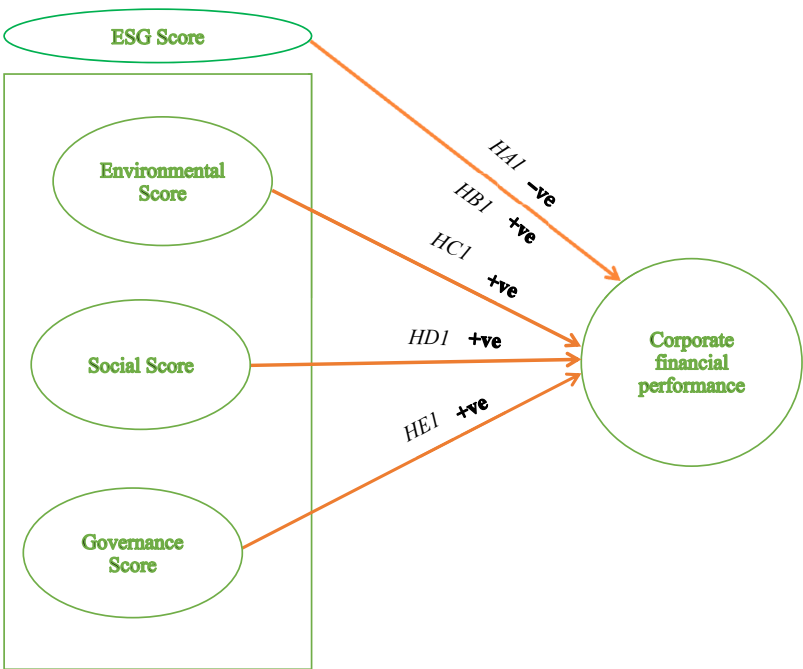
Figure 1.
Hypothesised
relationships

Source(s): Authors' design from theoretical framework

Hasan *et al.,* 2022; Friede *et al.*, 2015; Zhao *et al.*, 2018; Mohammad and Wasiuzzaman, 2021; Franzén, 2019; Petitjean, 2019; Folger-Laronde *et al.,* 2020; Amin and Tauseef, 2022). In instances where positive relationships were established, Velte (2017) found evidence in support of a positive effect of ESG scores on ROA but no relationship was found between ESG scores and market-based financial measures in the German market. Deng and Cheng (2019) studied China's A share listed firms and the results showed a positive relationship between a firm's ESG indices and the performance of its shares. The results also showed the impact to be stronger for private firms than state entities, and for secondary industry sectors than the tertiary industry. This difference is largely due to manufacturing and processing industries' ratings on environmental aspects including high pollution, waste management and weak efficient water usage. Mohammad and Wasiuzzaman (2021) also found a positive relationship between ESG disclosures with financial performance even after controlling for competitive advantage, as the focus on sustainability was found to help firms manage their resources efficiently thereby saving on costs and eventually increasing firm's value. Albitar *et al.* (2020) weighed in and established that ESG disclosures help improve financial performance both before and after the introduction of integrated reports in the UK in 2013. On the contrary, Hasan *et al.* (2022), Amin and Tauseef (2022) and Franzén (2019) reported the negative effect of ESG on financial performance. First, Hasan *et al.* (2022) found a negative relationship between accounting measures (ROA and cash flow margin) and environmental performance of banks but an insignificant relationship with market measures (i.e. Tobin's Q). Amin and Tauseef (2022) established that overall ESG ratings reduce both accounting performance and market-based performance for firms in the financial sector.

Conversely, the ESG score for firms not operating in the financial sector shows a positive relationship between environment and market-based performance and this is owing to

government incentives to green industries and compulsory reporting on pollution and environmental audits when applying for financing. Franzén (2019), in the study conducted between 2002 and 2017, found that firms with low ESG scores outperform firms with higher ESG scores, as ESG firm portfolios are subjected to higher negative abnormal returns due to costs of high ESG practices which exceeds the benefits. Moreso, investors overestimate high ESG benefits or underestimate its costs thus resulting in stock mispricing which manifest in negative abnormal returns. In addition, the presence of similarities in portfolio systematic risk contributes to making diversification difficult. Lastly, Rahi et al. (2022), Petitjean (2019), Folger-Laronde et al. (2020) have not found strong evidence in support of a relationship between ESG and financial performance. Rahi et al. (2022) found no relationship between ESG performance and the accounting measure (ROI), while Petitjean (2019) reported a weak relationship between ESG scores and financial performance following the 2008–2009 financial crisis because stockholders perceived that the sustainability activities were done sacrificing future alternative investment activities thereby cutting down the potential generation of firm's income thus jeopardising its market value. Furthermore, Folger-Laronde et al. (2020) studied ESG ratings during the COVID-19 pandemic and postulated that higher ESG ratings do not provide resilience to financial loses during a crisis-induced market crash, pointing to the weakness of the sustainability indicator used to measure ESG ratings as unable to adequately assess the ability to resist losses during crisis, making ESG inefficient in risk management.

Similar to aggregate ESG score, the effect of individual ESG dimensions/ratings on financial performance is also inconclusive. Under the positive theme, Bătae et al. (2021) and Amin and Tauseef (2022) reported that reductions in environmental emissions increase both accounting and market returns, mainly attributed to the incentives received from the government towards green industry development thereby boosting financial performance. Similar results were also reported by Shakil et al. (2019) for banks in emerging markets. In contrast, other studies by Hasan et al. (2022) and Samet and Jarboui (2017) have found banks that invest a lot in environmental initiatives struggle to efficiently manage cash flows thus harming a bank's market value. From the social component of ESG, higher social performance proxied by product responsibility, encompassing data privacy policy, quality management systems, products and services for low-income customers, and CSR practices hamper financial performance. Hasan et al. (2022) also find that CSR initiatives do not ameliorate a firm's free cash flow problems. Instead, Amin and Tauseef (2022) identify that higher social practice ratings harm a firm's market performance.

Finally, the study on governance factor ratings and ESG has inconclusive results as well. Amin and Tauseef (2022) showed a positive relationship between governance and market-based performances particularly when driven by foreign investors entering the Chinese stock market as foreign investors prioritise good governance structures and whether they are in place. Within the South African context, Ntim and Soobaroyen (2013) established that corporate governance combined with CSR initiatives has a stronger positive effect on financial performance than CSR alone. Further, it was also noted by Harun et al. (2020) that the size of a board of directors positively affects sustainability disclosures. Generally, the ownership of a firm that is concentrated among a few individuals results in poor financial performance, whereas the concentration of ownership by internal members of the organisation decreases agency costs and consequently improves financial performance (Xu and Wang, 1999). Conversely, Bătae et al. (2021) found that a change in the management and oversight score as a proxy for governance, negatively affects accounting measures and also identified that market measures are negatively related with the following governance measures: board characteristics, directors' compensation, independence of nomination committee and CEO-Chairperson duality. Harun et al. (2020) also found that CSR disclosures are negatively influenced by CEO duality.

5. Research design

5.1 Population and sample

In this paper, the target population comprised of companies listed on the FTSE/JSE Responsible Investment Index. FTSE Russell entered an arrangement with the JSE and created a FTSE/JSE Responsible Investment Index with listing commencing from 2015. FTSE Russell does the periodic evaluation of firms that are included on the index and when the firm no longer meets the listing criteria it is then dropped from the index and new firms which qualify are added. The reason for adoption of this as the population is because all firms listed on the index are known to be practising ESG investing as that is the qualifying criteria to be included on the index (JSE FTSE Russell, 2015). The total firms listed on the FTSE/JSE RI Index in 2015 was 64 and 14 of these firms were dropped from the index by December 2019. The FTSE classified 10 of the 64 firms as foreign entities, and these were also excluded from the list to ensure the data is specifically from South Africa. As a result, the final sample studied was 40 listed firms.

5.2 Data source, sample and period

The paper employs ESG data from the FTSE Russell's database. The data from the FTSE Russell's database comprises of ESG ratings for all FTSE/JSE listed firms and its three pillars. The data is also categorised into industry sectors, super sector and each company is identified by the unique International Securities Identification Number (ISIN). Given that FTSE uses its ESG data to screen for firms that qualify to be listed on the FSTE/JSE RI index, the data is thus believed to be a true representation of the firms under study. Financial data was gathered from the Bloomberg database, company websites and the JSE website. There are various international agencies that provide ESG ratings and these include: Bloomberg, ASSET4, Sustainalytics, FTSE Russell, MSCI, S&P Global and Moody's. Due to different methodologies adopted in compiling data, ESG performance results differ across rating agencies. Therefore to achieve consistency in results, this study restricted itself to the FTSE Russell database for ESG ratings (Gregory, 2022; Hasan *et al.*, 2022).

Although the target population comprised of companies listed on the FTSE/JSE Responsible Investment Index, the sample selected for the study covered 40 JSE listed firms included in FTSE/JSE Responsible Investment Index between 2015 and 2019. The reasons for the selection of this period are that the FTSE/JSE Responsible Investment Index was launched in 2015, hence data could reliably be found from 2015. The selection of cut-off of 2019 as the end period of the dataset was to eliminate the confounding effects of the COVID-19 pandemic on financial data and its potential biases in distorting the central hypothesis of the paper. Furthermore, the period of 5 years under investigation is considered long enough to warrant any ESG benefits to accrue to investors, aligning with Rahi *et al.* (2022) who studied the same period of 2015–2019. Even though a longer timeframe beyond five years would have been ideal, the research utilised the period when data was available. The FTSE Russell does the periodic evaluation of firms that are included on the index and when the firm no longer meets the listing criteria it is then dropped from the index and new firms which qualify are added. The reason for adoption of this as the population is because all firms listed on the index are known to be practising ESG investing as that is the qualifying criteria to be included on the index (JSE FTSE Russell, 2015). Out of the total firms (64) listed on the FTSE/JSE RI Index in 2015, 14 firms were dropped from the index by December 2019, with an additional 10 firms classified as foreign entities and excluded from the list to ensure the data is specifically from the South African context. As a result, the final sample studied was 40 listed firms. The sample selection is summarised in Table 1.

5.3 Model specification

This paper adapts the regression model of Zhao *et al.* (2018) and Landi and Sciarelli (2019) to examine the impact of overall ESG ratings on CFP as defined in Equation (1) as:

$$CFP_{i,t} = \beta_0 + \beta_1 ESG_{i,t} + \beta_2 DER_{i,t} + \beta_3 DIV_{i,t} + \beta_4 MCAP_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 OPM_{i,t} + \varepsilon_{i,t} \quad (1)$$

Equation (1) is expanded into Equations(2)–(4) by replacing ESG ratings with its respective pillars (E, S and G) on CFP as shown below:

$$CFP_{i,t} = \alpha_0 + \alpha_1 E_{i,t-1} + \alpha_2 DER_{i,t} + \alpha_3 DIV_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 OPM_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$CFP_{i,t} = \delta_0 + \delta_1 S_{i,t-1} + \delta_2 DER_{i,t} + \delta_3 DIV_{i,t} + \delta_4 SIZE_{i,t} + \delta_5 OPM_{i,t} + \epsilon_{i,t} \quad (3)$$

$$CFP_{i,t} = \theta_0 + \theta_1 G_{i,t-1} + \theta_2 DER_{i,t} + \theta_3 DIV_{i,t} + \theta_4 SIZE_{i,t} + \theta_5 OPM_{i,t} + \eta_{i,t} \quad (4)$$

where *CFP* denotes CFP proxied by ROA, ROE and Tobin's Q; $ESG_{i,t}$ represents the overall Environment, Social and Governance (ESG) rating from the FTSE/JSE Responsible Investment Index; *DER*, *DIV*, *MCAP*, *SIZE* and *OPM* represent debt-to-equity ratio, dividend pay-out ratio, market capitalisation, firm size and operating margin respectively.

The accounting- and market-based indicators (ROA, ROE and Tobin's Q) employed in this paper are in line with (Hasan *et al.*, 2022; Velte, 2017). The ESG ratings measured on a scale of 1–5 extracted from the FTSE Russell database have also been extensively used in the literature (Bătae *et al.*, 2021; Hasan *et al.*, 2022; Rahi *et al.*, 2022; Abdi *et al.*, 2020; Akisik and Gal, 2017). The paper also controls for firm size, as measured by the logarithm of total assets of a firm, as larger firms can make the most out of economies of scale thereby influencing profitability. In line with Velte (2017), Abdi *et al.* (2020), Bătae *et al.* (2021) and Rahi *et al.* (2022), the paper also controls for the debt-to-equity ratio, operating profit margin, dividend pay-out ratio and market capitalisation. The summary of the variables is presented in Table 2.

6. Empirical findings and discussion
6.1 Descriptive statistics
The descriptive statistics of the variables presented in Table 3 show that on average the firms listed on FTSE/JSE RI Index have an ESG overall rating of 3.548 and a standard deviation of 0.64 showing a low dispersion from the mean. The governance pillar has the highest average rating of 4.224 indicating that firms are investing more in governance initiatives and performing better in it, followed by the environmental pillar with a rating of 3.259. The social pillar has the lowest average rating of 3.227, revealing the underwhelming commitment of South African firms to social initiatives which is a concern in a country grappling with high social and income inequalities. The overall ESG score largely suggests that most firms have good ESG ratings and are consistent with the requirement of good governance for listed entities (Institute of Directors in Southern Africa (IoDSA), 2016). A maximum return of 41.46% for ROA and 108.75% for ROE was calculated with mean scores of 6.42 and 18.32 respectively. This result highlights that firms listed on FTSE/JSE RI index are efficient at generating operating profit from the invested capital. The same can be said for the operating profit margin, which yielded a maximum profit margin of 76.18% and returned a mean of 18.6. Tobin's Q shows a mean of 1.79 and maximum return of 8.84 indicating that on average,

	Sample (*N*)	Percentage
Initial sample in the FTSE/JSE RI Index in 2015	64 (320)	100
Firms dropped from FTSE/JSE RI Index by 2019	14 (70)	22
Firms classified as foreign entities	10 (50)	16
Final sample (of South firms) for analysis	40 (200)	63

Note(s): *N* = Observations
Source(s): Authors' design

Variable	Proxy summary	Expected symbol
Dependent variables		
ROA	EBIT/Total Assets	
ROE	EBIT/Total Equity	
Tobin's Q	(Equity + Debt market values)/Book values	
Independent variables		
E Score	Environment performance rating	+ve
S Score	Social performance rating	+ve
G Score	Governance performance rating	+ve
ESG	ESG Overall performance rating	−ve/+ve
Control variables		
SIZE	Logarithm of Total Assets of firm	+ve
DER	Debt-to-Equity ratio	−ve
OPM	Operating Margin	−ve
DIV	Dividend Pay-out Ratio	+ve
MCAP	Market Capitalisation	+ve

Source(s): Authors' design

Table 2.
Definition of variables

	Mean	Median	SD	Min	Max	*N*
Dependent variables						
ROA	6.423	4.560	8.268	−15.290	41.460	200
ROE	18.320	15.760	19.331	−27.340	108.750	200
TOBINQ	1.793	1.330	1.196	0.630	8.840	200
Independent variables						
ESG Score	3.548	3.600	0.641	2.000	5.000	200
E Score	3.259	3.350	1.097	0.800	5.000	200
S Score	3.227	3.300	0.812	1.000	5.000	200
G Score	4.224	4.300	0.630	2.000	5.000	200
Control variables						
DER	59.597	44.885	66.473	0.000	607.480	200
DIV	68.287	63.820	62.868	0.000	731.730	181
MCAP	1.02E+11	4.50E+10	1.85E+11	9.36E+09	1.51E+12	200
SIZE	11.254	11.042	1.472	8.930	14.802	200
OPM	18.622	15.420	17.948	−33.640	76.180	200

Note(s): ROA = Return on assets; ROE = Return on equity; TOBINQ = Tobin's Q; E = Environment rating; S = Social Rating; G = Governance rating, ESG = Aggregate ESG rating; DER = Debt-to-Equity ratio; DIV = Dividend pay-out; MCAP = Market capitalisation; Size = Natural logarithm of total assets; OPM = Operating margin
Source(s): Authors' estimates from research data

Table 3.
Descriptive statistics

the market value of assets from firms listed on the FTSE/JSE RI Index are above their replacement costs and thus perceived as expensive by JSE investors. On the other hand, the average debt-to-equity ratio for FTSE/JSE RI Index listed firms is 59.6, indicating that the firms have mostly leveraged their equity. The dividend pay-out ratio returned a mean of 68.28, suggesting that on average the firms are generous in issuing dividends, thus signalling a healthy financial status.

6.2 Regression results[4]
The results of the panel regression analysis from Equation (1) relating to the effect of ESG ratings on indicators of financial performance are presented in Table 4. The fixed effects model (FEM), random effects model (REM) and two-stage least squares (2SLS) estimations techniques are employed on two variants of Equation (1) (i.e. the first variant, Equation (1A) uses the level ESG rating while the second equation (1B) employs the lagged value of ESG as the independent variable). Following Hasan *et al.* (2022), we employ the debt-to-equity ratio, dividend pay-out ratio, market capitalisation, firm size and operating profit margin as instruments for ESG scores in the first stage analysis. The insignificance of the Sargan (1958) and Basman (1960) tests confirms the validity of the instrument while the significance of the Durbin (1954) and Wu-Hausman tests (Wu, 1974; Hausman, 1978), justifies the use of the instrumental variable regression technique.

From Table 4, the coefficient of ESG score is negative but insignificant for all the three financial performance indicators (ROA, ROE, TOBIN'S Q) from either REM or FEM models. On the contrary, the results of the 2SLS estimation show a positive and significant effect of ESG ratings on ROE (6.847) and Tobin's Q (0.267) at 5% significance levels. Similarly, the lagged ESG is found be positive and significant at 10% for ROA and Tobin's Q and 1% for ROE in Model 1B, suggesting that improvements in ESG ratings over time have a positive effect of financial performance. From the estimated coefficient, 1 unit of ESG initiative leads to 6.847 units of return on equity and 0.267 units of Tobin's Q. This is consistent with the rational choice and stakeholder-agency theories, and the findings of prior research (Velte, 2017; Aboud and Diab, 2018; Deng and Cheng, 2019; Mohammad and Wasiuzzaman, 2021) found that ESG ratings enhance the accounting performance of firms. This indicates that a firm's investment in sustainable practices such as re-useable resources, reducing emissions and water saving practices, having a better management structure, a fair remuneration framework and implementing sustainable policies will be positively reflected in its bottom-line performance.

From our examination of the control variables, we noted some remarkable results. The coefficient sign for control variables is the same for both Model 1 for overall ESG and Model 2 for individual ESG pillars. By applying Hausman tests and 2SLS tests, we find that debt-to-equity has a negative significant coefficient with ROA and but a positive significant coefficient with Tobin's Q on both Models 1 and 2. This means that the debt firms are acquiring are not being utilised in increasing the revenue generating capabilities of a firm to help increase its ROA. These results align with Johnson (2020), who finds a negative relationship between composite ESG disclosures and the weighted average cost of capital. However, the results of Tobin's Q suggest that the more the debt the firms acquires, the greater the value of the firm. The firm's size is also noted to have a negative and significant coefficient with all dependant variables, implying that firms with more assets have a lower ability to generate positive returns, particularly when income does not increase with the accumulation of assets. This can be explained from the perspective of firms with greater assets, as they have more visibility and can therefore attract more stakeholders. As such more resources are channelled towards public relations management thus harming profit. This is consistent with neo-classical theories (Rahi *et al.*, 2022).

Dividend pay-out was seen to have a positive association with Tobin's Q, however the result is not statistically significant implying that it does not influence the financial performance of a firm as per the recent study of Abdi *et al.* (2020). Both market capitalisation and operating profit margin are found to have a positive effect on the dependent variables in both Model 1 and Model 2, except for operating profit margin whose coefficient is not significant on Tobin's Q. Therefore, these control variables positively influence the accounting performance of JSE listed firms.

The results of the panel regression analysis of regression Equations (2)–(4) on the effect of ESG pillars ratings on financial performance are presented in Table 5. Unlike Equation (1),

Table 4.
ESG and financial performance (model 1)

Dependent variable	ROA			ROE			TOBINQ		
	Model 1A		Model 1B	Model 1A		Model 1B	Model 1A		Model 1B
Estimation technique	FEM *Coefficient*	2SLS *Coefficient*	2SLS *Coefficient*	REM *Coefficient*	2SLS *Coefficient*	2SLS *Coefficient*	FEM *Coefficient*	2SLS *Coefficient*	2SLS *Coefficient*
Constant	−5.138 (20.207)	−35.243** (14.206	−25.622 (16.557)	−37.633 (28.482)	−44.549 (29.636)	−4.288 (31.225)	−4.155** (1.702)	−7.889*** (1.284)	−8.482*** (1.537)
ESG Score	−0.230 (0.699)	*1.501 (1.453)*		−0.148 *(1.457)*	6.847** *(2.642)*		−0.064 *(0.059)*	0.267** *(0.111)*	*0.215* (0.122)*
L1.ESG Score			*2.302* (1.334)*			6.525*** *(2.371)*			*0.215*†*
DER	−0.044*** (0.015)	−0.026** (0.013)	−0.033** (0.015)	−0.029 (0.029)	−0.034 (0.028)	−0.065** (0.029)	0.005*** (0.001)	0.0016 (0.001)	0.001 (0.001)
DIV	−0.019 (0.013)	0.000 (0.012)	0.009 (0.014)	−0.006 (0.027)	0.007 (0.030)	0.013 (0.034)	0.002* (0.001)	0.003* (0.001)	0.002 (0.001)
MCAP	3.409*** (0.785)	2.443*** (0.678)	1.610* (0.832)	4.177*** (1.462)	3.274** (1.492)	0.761 (1.619)	0.705*** (0.066)	0.530*** (0.065)	0.567*** (0.078)
SIZE	−6.201*** (1.250)	−2.382*** (0.707)	−1.568* (0.814)	−5.242*** (1.526)	−4.633*** (1.494)	−2.351 (1.551)	−1.030*** (0.105)	−0.437*** (0.065)	−0.452*** (0.076)
OPM	0.136*** (0.037)	0.164*** (0.034)	0.137*** (0.038)	0.356*** (0.077)	0.362*** (0.081)	0.338*** (0.087)	0.002 (0.003)	0.004 (0.004)	0.003 (0.004)
Year Dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
F/Wald χ^2	8.6***	122.73***	100.58***	88.88***	109.65***	109.38***	20.76***	403.53***	297.2***
R-squared	0.4212	0.5333	0.541	0.4409	0.425	0.4232	0.6372	0.741	0.7472
Hausman χ^2	21.91			7.07			17.547		
Prob > χ^2	0.0251			0.7932			0.0249		
Durbin χ^2 (p-value)		53.43 (0.000)	39.65(0.000)		15.91 (0.000)	9.22 (0.002)		99.07 (0.000)	78.06 (0.000)
Wu–Hausman F (p-value)		77.25 (0.000)	52.320 (0.000)		16.87 (0.000)	9.44 (0.002)		207.97 (0.000)	158.60 (0.000)
Sargan χ^2 (p-value)		1.31 (0.252)	0.96 (0.328)		0.23 (0.633)	0.01 (0.903)		0.108 (0.742)	0.02 (0.885)
Basman χ^2 (p-value)		1.27 (0.258)	0.93 (0.336)		0.22 (0.639)	0.01 (0.905)		0.103 (0.749)	0.02 (0.888)
Firms	40	40	40	40	40	40	40	40	40
Observations	181	181	145	181	181	145	181	181	145

Note(s): E = Environment rating; S = Social rating; G = Governance rating, ESG = Aggregate ESG rating; DER = Debt-to-Equity ratio; DIV = Dividend pay-out; MCAP = Market capitalisation; Size = Natural logarithm of total assets; OPM = Operating margin. ***, ** and * denote significance at 1%, 5% and 10% respectively
Source(s): Authors' estimates from research data

	ROA (2)			ROE (3)			TOBINQ (4)		
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Constant	3.804 (4.849)	−25.091* (14.101)	−0.875 (17.568)	14.693 (13.937)	46.214* (18.047)	8.116 (29.101)	1.124* (0.600)	4.117*** (1.265)	8.882** (3.988)
L1.E Score	2.670* (1.472)			10.243** (4.232)			0.323* (0.182)		
L1.S Score		3.938 (3.172)			−5.964 (4.212)			−1.219*** (0.340)	
L1.G Score			0.112 (2.461)			3.856 (6.000)			−1.243** (0.600)
DER	−0.028** (0.014)	−0.082*** (0.024)	−0.053*** (0.013)	−0.024 (0.041)	−0.066* (0.036)	−0.077** (0.030)	−0.003 (0.002)	−0.003 (0.003)	−0.006* (0.003)
DIV	0.043* (0.024)	−0.017 (0.030)	0.023 (0.017)	0.124* (0.068)	0.021 (0.037)	0.007 (0.033)	0.004 (0.003)	0.008** (0.003)	0.005 (0.003)
OPM	0.181*** (0.046)	0.328*** (0.084)	0.232*** (0.058)	0.431*** (0.134)	0.272*** (0.092)	0.334*** (0.101)	0.009* (0.006)	0.006 (0.008)	−0.007 (0.013)
SIZE	−0.835 (0.566)	1.257 (0.782)	0.309 (0.603)	−3.898* (1.626)	−1.680 (1.402)	−1.185 (0.981)	−0.077 (0.070)	0.064 (0.097)	−0.197 (0.151)
Wald χ^2/F	123.12***	72.44***	31.14***	54.1***	41.26***	76.51***	185.9***	58.65***	54.48***
R-squared	0.4235	0.5174	0.3067	0.1736	0.3474	0.4573	0.542	0.3601	0.372
Durbin χ^2 (p-value)	6.9259 (0.0085)	40.503 (0.0000)	18.455 (0.0000)	17.7321 (0.0000)	6.280 (0.0122)	4.432 (0.035)	8.244 (0.0041)	28.993 (0.0000)	50.646 (0.0000)
Wu–Hausman F (p-value)	6.420 (0.0125)	59.131 (0.0000)	20.382 (0.0000)	17.8341 (0.0000)	5.747 (0.0185)	4.036 (0.0466)	7.716 (0.0063)	31.990 (0.0000)	86.791 (0.0000)
Sargan χ^2 (p-value)	0.971 (0.3244)	0.039 (0.8433)	0.999 (0.3175)	0.155 (0.6937)	0.698 (0.4034)	1.078 (0.299)	0.059 (0.808)	3.749 (0.053)	2.945 (0.229)
Basmann χ^2 (p-value)	0.863 (0.3529)	0.036 (0.8498)	0.925 (0.3361)	0.137 (0.7112)	0.606 (0.4363)	0.999 (0.318)	0.054 (0.816)	3.397 (0.065)	2.749 (0.253)
Firms	40	40	31	40	40	40	40	40	31
Observations	145	145	109	145	145	145	145	145	109

Note(s): E = Environment rating; S = Social rating; G = Governance rating, ESG = Aggregate ESG rating; DER = Debt-to-Equity ratio; DIV = Dividend pay-out; Size = Natural logarithm of total assets; OPM =Operating margin. ***, ** and * denote significance at 1%, 5% and 10% respectively
Source(s): Authors' estimates from research data

Table 5.
ESG dimensions and
financial performance
(Equations (2)–(4))

the results in Table 5 are limited to the effect of the lagged values of dimensions of ESG on the three proxies of CFP. The results from Table 5 show that the coefficient of the lagged environmental score on accounting profits (ROA, ROE) and market performance (Tobin's Q) from 2SLS estimations are observed to be positive and significant. The observed effect on Tobin's Q also suggests that the market already knows of the high environmental shortcomings of the firms in the country. The coefficients of the lagged social and governance scores are observed to be negative and significantly related to Tobin's Q, suggesting that efforts by firms to improve social standing of communities are valued by stakeholders and in all likelihood, acknowledge the efforts South African firms are making to reduce high levels of inequalities, and are yet to translate into their bottom line. This finding is consistent with Landi and Sciarelli (2019), who postulates that stock markets do not reward firms that engage in socially responsible activities. In addition, Johnson (2020) also reported a negative relationship between governance disclosure and cost of capital, suggesting that South African firms with high scores on governance disclosures enjoyed lower costs when borrowing funds. This is inconsistent with Ahmad et al. (2021), who postulates that social and governance performances have positive and significant impact on the earnings per share of a firm. There is an expectation that social initiatives should directly reward the generous efforts of equity holders in assisting address poverty in South Africa given the high-income inequality of the population.

7. Summary and conclusions

Considering the growth in ESG investments in South Africa over the recent years, this paper employed panel regression techniques to examine the effect of ESG ratings on financial performance of 40 JSE-listed firms included on FTSE/JSE RI between 2015 and 2019. The results of the 2SLS instrumental variable estimation of the panel regression models find evidence in support of the positive effect of ESG activities on firms' ROE and Tobin's Q performance. As such, this paper made a methodological contribution by accounting for the classic econometric issues, such as endogeneity and simultaneity biases that were not considered by prior studies (Franzén, 2019; Petitjean, 2019; Folger-Laronde et al., 2020; Amin and Tauseef, 2022). The second contribution of this research was made by analysing the effect of the entire sustainability construct as a collective initiative on firms' finance performance, where prior studies (Du Toit and Lekoloane, 2018; Sampong et al., 2021; Abdo and Fisher, 2007) merely applied the subsets of corporate sustainability. Furthermore, the lack of conclusive findings from research conducted on this topic required empirical verification of the relationship between ESG and CFP of firms operating in an emerging economy and listed on the JSE. The empirical results of this research have contributed towards the sustainability discourse by analysing the instantaneous and lagged effect on ESG investments on CFP.

In respect of the ESG pillars (see Table 6), a positive relationship is observed between the environmental pillar and financial performance, indicating that firms' activities to reduce

	ROA		ROE		TOBINQ	
	Level	Lag	Level	Lag	Level	Lag
Aggregate ESG score	+ve	+ve*	+ve*	+ve*	+ve*	+ve*
Environment score	n/a	+ve*	n/a	+ve*	−	+ve*
Social score	n/a	+ve	n/a	−ve	n/a	−ve*
Governance score	n/a	+ve	n/a	−ve	n/a	−ve*

Table 6.
Summary of findings

Note(s): * denotes significance based on 2sls estimations in Tables 4 and 5
Source(s): Authors' design

greenhouse gas emissions, use environmentally friendly products and/or implement water saving initiatives have translated into significance gains in the bottom line of the sampled firms. In contrast, the social and governance pillars were found to have negative effect on CFP. Overall, ESG ratings positively affect specific accounting-based and market-based measures, namely ROE and Tobin's Q ratio, providing support for the rational choice and stakeholder-agency theories that ESG initiatives enhance the financial performance of firms. Furthermore, the lagged ESG rating was found be positive and significant for the accounting- and market-based measures employed in the paper, indicating that an investment in ESG initiatives over time positively contributes to the financial performance of firms.

Several implications of the findings from this paper can be inferred to the leadership of firms, investors, market players and regulators. It is evident from the results that if a firm focuses on enhancing its ESG ratings, this will ultimately increase its attractiveness to other stakeholders. First, the observed positive effect on market performance highlights the value investors place on ESG ratings. The implications to company management and those in charge of governance practices are based on the trade-off between the choice of long-term returns through focusing on ESG practices across all three pillars and the of pursuit of short-term profits. Investing in sustainable practices (ESG initiatives) helps create a good social image for firms and results in positive returns. For instance, the investment in water saving methods, including water recycling and the use of raw materials that use less water, creates a good climate image for the firm and in addition, results in cost savings which increase profits in the long run. The transparency of information regarding financial performance, investment opportunities, risk management strategies and diversity of board members in terms of gender, racial background and disability reflects positively on the governance of firms and is an attribute required for a firm to be sustainable. A composite of these activities by company management can create long-term sustainable financial returns for the firm. It is evident that the engagement in ESG activities by firms indeed provides firms with positive financial returns and could also help stabilise capital markets, in particular the JSE, by attracting capital that is linked to sustainable practices. Firms engaging in ESG practices are perceived as less risky and therefore could experience less volatility. It is important for financial markets to develop ESG-related financial instruments that can suite and incorporate small-to-medium-sized enterprises as these firms play a huge role in implementing sustainable practices and contribute towards meeting of the UN's Sustainable Development Goals.

There are pertinent limitations that the study is exposed to which brings in perspectives for further research. A classic example is that study focused on all firms listed on the FTSE/ JSE Responsible Investment Index and the index covers all sectors of the economy thereby the results are generalised to the entire economy. However, each sector of an economy has risks and opportunities which are distinct therefore the generalisation of results may not be true to all sectors. As such, future studies should focus on sectorial performance of ESG initiatives on financial performance as opposed to the overall industry. Despite this limitation, this paper provided evidence that engaging in ESG practices results in positive financial returns for firms operating in an emerging economy, like that of South Africa. As such, firms can contribute towards the betterment of the communities and pursue substantiality activities while still ensuring positive financial performance. In addition, recognising the potential non-linear relationship between ESG and financial performance requires future studies to explore potential thresholds effects, tipping points or nonlinear relationship between ESG performance and financial outcomes. ESG factors can affect a company's risk profile and resilience to external shocks, therefore future research should investigate how ESG performance influences a company's ability to manage risks, adapt to changing market conditions and enhance organisational resilience.

Notes

1. This is a "European Union classification system" which was developed to clarify environmentally sustainable investments.

2. "United Nations Principles for Responsible Investment (UNIPRI)" is a United Nations-supported international network of investors working together to promote the incorporation of environmental, social and governance factors into investment decision making.

3. This paper is also extends the study of Khlif *et al.* (2015) which was limited to the effect of environmental and social disclosures on corporate finance performance.

4. Before the estimation of the regression models (1 and 2), the independence of explanatory variables were examined using the threshold of less than 0.7 (70%) to avoid spurious and biased estimates of the coefficients (Gujarati, 2004). The results presented in Appendix show a very weak association between ESG and control variables as the coefficients range between -0.22 and 0.63, of which these values are less than 0.7. Hence, we conclude that estimated effects in the regression results are free from multicollinearity biases. This observation is also supported by the VIF presented in Appendix.

References

Abdi, Y., Li, X. and Càmara-Turull, X. (2020), "Impact of sustainability on firm value and financial performance in the air transport industry", *Sustainability (Switzerland)*, Vol. 12 No. 23, pp. 1-22, doi: 10.3390/su12239957.

Abdo, A. and Fisher, G. (2007), "The impact of reported corporate governance disclosure on the financial performance of companies listed on the JSE", *Investment Analysts Journal*, Vol. 36 No. 66, pp. 43-56.

Aboud, A. and Diab, A. (2018), "The impact of social, environmental and corporate governance disclosures on firm value: evidence from Egypt", *Journal of Accounting in Emerging Economies*, Vol. 8 No. 4, pp. 442-458.

Abukari, K., Musah, A. and Assaidi, A. (2023), "The role of corporate sustainability and its consistency on firm financial performance: Canadian evidence*", *Accounting Perspectives*, Vol. 22 No. 1, pp. 55-86, doi: 10.1111/1911-3838.12309.

Adomako, S., Amankwah-Amoah, J., Danso, A., Konadu, R. and Owusu-Agyei, S. (2019), "Environmental sustainability orientation and performance of family and nonfamily firms", *Business Strategy and the Environment*, Vol. 28 No. 6, pp. 1250-1259.

Ahmad, N., Mobarek, A. and Roni, N.N. (2021), "Revisiting the impact of ESG on financial performance of FTSE350 UK firms: static and dynamic panel data analysis", *Cogent Business and Management*, Vol. 8 No. 1, pp. 1-18, doi: 10.1080/23311975.2021.1900500.

Akisik, O. and Gal, G. (2017), "The impact of corporate social responsibility and internal controls on stakeholders' view of the firm and financial performance", *Sustainability Accounting, Management and Policy Journal*, Vol. 8 No. 3, pp. 246-280, doi: 10.1108/SAMPJ-06-2015-0044.

Albitar, K., Hussainey, K., Kolade, N. and Gerged, A.M. (2020), "ESG disclosure and firm performance before and after IR: the moderating role of governance mechanisms", *International Journal of Accounting and Information Management*, Vol. 28 No. 3, pp. 429-444, doi: 10.1108/IJAIM-09-2019-0108.

Amin, N. and Tauseef, S. (2022), "Does an optimal ESG score exist? Evidence from China", *Macroeconomics and Finance in Emerging Market Economies*, Vol. 00 No. 00, pp. 1-19, doi: 10.1080/17520843.2022.2034280.

Authers, J. (2020), *ESG Investing is Having a Good Crisis. It's Also Killing Jobs*, Bloomberg Opinion, New York, available at: https://www.bloomberg.com/opinion/articles/2020-05-21/esg-investing-s-good-coronavirus-crisis-is-killing-jobs?in_source=embedded-checkout-banner

Basmann, R.L. (1960), "On finite sample distributions of generalized classical linear identifiability test statistics", *Journal of the American Statistical Association*, Vol. 55 No. 292, pp. 650-659.

Bătae, O.M., Dragomir, V.D. and Feleagă, L. (2021), "The relationship between environmental, social, and financial performance in the banking sector: a European study", *Journal of Cleaner Production*, Vol. 290, doi: 10.1016/j.jclepro.2021.125791.

Beerbaum, D. and Puaschunder, J.M. (2019), "A behavioral economics approach to sustainability reporting", *SSRN Electronic Journal*, pp. 1-18. doi: 10.2139/ssrn.3381607.

Billio, M., Costola, M., Hristova, I., Latino, C. and Pelizzon, L. (2021), "Inside the ESG ratings: (Dis) agreement and performance", *Corporate Social Responsibility and Environmental Management*, Vol. 28 No. 5, pp. 1426-1445, doi: 10.1002/csr.2177.

Bowen, W.M. (2018), "Environmental justice and rational choice theory", *The Routledge Handbook of Environmental Justice, McGurty*, pp. 50-60. doi: 10.4324/9781315678986-5.

Deng, X. and Cheng, X. (2019), "Can ESG indices improve the enterprises' stock market performance?- An empirical study from China", *Sustainability (Switzerland)*, Vol. 11 No. 17, pp. 1-13, doi: 10.3390/su11174765.

Department of National Treasury (2020), *Financing a Sustainable Economy: Technical Paper*. National Treasury, Pretoria, available at: https://protect-au.mimecast.com/s/_jkmCvl0WqTqNZm6UXwWdu?domain=treasury.gov.za, https://www.treasury.gov.za/publications/other/sustainability%20technical%20paper%202020.pdf

Durbin, J. (1954), "Errors in variables", *Review of the International Statistical Institute*, Vol. 22 Nos 1/3, pp. 23-32.

Du Toit, E. and 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*, Vol. 21 No. 1, pp. 1-11.

Flores, C.C. and Sarandón, S.J. (2004), "Limitations of neoclassical economics for evaluating sustainability of agricultural systems: comparing organic and conventional systems", *Journal of Sustainable Agriculture*, Vol. 24 No. 2, pp. 77-91.

Folger-Laronde, Z., Pashang, S., Feor, L. and ElAlfy, A. (2020), "ESG ratings and financial performance of exchange-traded funds during the COVID-19 pandemic", *Journal of Sustainable Finance and Investment*, Vol. 0 No. 0, pp. 1-7, doi: 10.1080/20430795.2020.1782814.

Franzén, F. (2019), "ESG Portfolios and Stock Returns: an analysis of ESGs effect on financial performance", June.

Friede, G., Busch, T. and Bassen, A. (2015), "ESG and financial performance: aggregated evidence from more than 2000 empirical studies", *Journal of Sustainable Finance and Investment*, Vol. 5 No. 4, pp. 210-233, doi: 10.1080/20430795.2015.1118917.

Friedman, M. (1970), "The social responsibility of business is to increase its profits", in *Corporate Ethics and Corporate Governance*, Springer Berlin, Heidelberg, pp. 173-178, doi: 10.1007/978-3-540-70818-6_14.

FTSE Russell (2020), "Product overview ESG Ratings and data model", pp. 1-5, available at: https://research.ftserussell.com/products/downloads/ESG-ratings-overview.pdf?987

Gregory, R.P. (2022), "The influence of firm size on ESG score controlling for ratings agency and industrial sector", *Journal of Sustainable Finance and Investment*, Vol. ahead-of-print, No. ahead-of-print, pp. 1-14, May, doi: 10.1080/20430795.2022.2069079.

GSIA (2019), *2018 Global Sustainable Investment Review*, Global Sustainable Investment Alliance, Sydney, pp. 7-12, available at: http://www.gsi-alliance.org/wp-content/uploads/2019/03/GSIR_Review2018.3.28.pdf

Gujarati, D.N. (2004), *Basic Econometrics*, 4th ed., McGraw-Hill Companies, New York.

Hang, M., Geyer-Klingeberg, J. and Rathgeber, A.W. (2019), "It is merely a matter oftime: a meta-analysis of the causality between environmental performance and financial performance", *Business Strategy and the Environment*, Vol. 28 No. 2, pp. 257-273.

Harun, M.S., Hussainey, K., Mohd Kharuddin, K.A. and Farooque, O.Al. (2020), "CSR disclosure, corporate governance and firm value: a study on GCC Islamic banks", *International Journal of Accounting and Information Management*, Vol. 28 No. 4, pp. 607-638, doi: 10.1108/IJAIM-08-2019-0103.

Hasan, R., Miah, M.D. and Hassan, M.K. (2022), "The nexus between environmental and financial performance: evidence from gulf cooperative council banks", *Business Strategy and the Environment*, Vol. 31 No. 7, pp. 2882-2907, doi: 10.1002/bse.3053.

Hausman, J.A. (1978), "Specification tests in econometrics", *Econometrica: Journal of the Econometric Society*, Vol. 46 No. 6, pp. 1251-1271.

Hunjra, A.I., Mehmood, R. and Tayachi, T. (2020), "How do corporate social responsibility and corporate governance affect stock price crash risk?", *Journal of Risk and Financial Management*, Vol. 13 No. 2, p. 30, doi: 10.3390/jrfm13020030.

Institute of Directors in Southern Africa (IoDSA) (2016), *King IV Report on Corporate Governance for South Africa – 2016*, IoDSA, available at: https://www.adams.africa/wp-content/uploads/2016/11/King-IV-Report.pdf

IODSA (2021), *Code for Responsible Investing in SA (CRISA)*, CRISA, available at: https://www.crisa2.co.za/.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Johnson, R. (2020), "The link between environmental, social and corporate governance disclosure and the cost of capital in South Africa", *Journal of Economic and Financial Sciences*, Vol. 13 No. 1, pp. 1-12, doi: 10.4102/jef.v13i1.543.

JSE FTSE Russell (2015), "FTSE/JSE responsible investment index series", *Ground Rules*, pp. 1-13, April, available at: https://www.jse.co.za/content/JSEIndexClassificationandCodesItems/FTSE JSE Responsible Investment Index Ground Rules v1 2.pdf

Khlif, H., Guidara, A. and Souissi, M. (2015), "Corporate social and environmental disclosure and corporate performance: evidence from South Africa and Morocco", *Journal of Accounting in Emerging Economies*, Vol. 5 No. 1, pp. 51-69.

Landi, G. and Sciarelli, M. (2019), "Towards a more ethical market: the impact of ESG rating on corporate financial performance", *Social Responsibility Journal*, Vol. 15 No. 1, pp. 11-27, doi: 10.1108/SRJ-11-2017-0254.

Lyudvig, A. (2022), *ESG Integration Is High on Agenda for SA Fund Managers, Finds Report*, Africa Global Funds, available at: https://www.africaglobalfunds.com/news/funds/markets-and-industry-news/esg-integration-is-high-on-agenda-for-sa-fund-managers-finds-report/#:~:text=ESG integration is the leading,for Impact Barometer (AIFIB)

Marinescu, A. (2016), "Axiomatical examination of the neoclassical economic model: logical assessment of the assumptions of neoclassical economic model", *Theoretical and Applied Economics*, Vol. 23 No. 2, pp. 47-64.

Mdluli, P. and Dunga, S. (2022), "Determinants of poverty in South Africa using the 2018 general household survey data", *Journal of Poverty*, Vol. 26 No. 3, pp. 197-213.

Mohammad, W.M.W. and Wasiuzzaman, S. (2021), "Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia", *Cleaner Environmental Systems*, Vol. 2 No. February, 100015, doi: 10.1016/j.cesys.2021.100015.

Mohmed, A., Flynn, A. and Grey, C. (2020), "The link between CSR and earnings quality: evidence from Egypt", *Journal of Accounting in Emerging Economies*, Vol. 10 No. 1, pp. 1-20.

Ntim, C.G. and Soobaroyen, T. (2013), "Corporate governance and performance in socially responsible corporations: new empirical insights from a Neo-Institutional framework", *Corporate Governance: An International Review*, Vol. 21 No. 5, pp. 468-494.

OECD (2021), *Economic Policy Reforms 2021: Going for Growth - Shaping a Vibrant Recovery- South Africa Note*, Vol. 14, Oecd, Paris, 17131, 2005, available at: https://www.oecd-ilibrary.org/economics/economic-policy-reforms-2021_3c796721-en

Pagano, M.S., Sinclair, G. and Yang, T. (2018), "Understanding ESG ratings and ESG indexes", in *Research Handbook of Finance and Sustainability*, Edward Elgar Publishing Cheltenham, pp. 339-371, doi: 10.4337/9781786432636.00027.

Petitjean, M. (2019), "Eco-friendly policies and financial performance: was the financial crisis a game changer for large US companies?", *Energy Economics*, Vol. 80, pp. 502-511, doi: 10.1016/j.eneco. 2019.01.028.

Pfaff, R. (2021), "ESG and its implications for the nexus of business, society and regulatory legislation in South Africa", available at: https://assets.kpmg/content/dam/kpmg/za/pdf/2021/esg-the-context-of-south-africa.pdf

Rahi, A.F., Akter, R. and Johansson, J. (2022), "Do sustainability practices influence financial performance? Evidence from the Nordic financial industry", *Accounting Research Journal*, Vol. 35 No. 2, pp. 292-314, doi: 10.1108/ARJ-12-2020-0373.

Reynolds, F. (2021), "PRI update Q1 2021", available at: https://www.unpri.org/download?ac=10067

Richardson, B.J. and Cragg, W. (2010), "Being virtuous and prosperous: SRI's conflicting goals", *Journal of Business Ethics*, Vol. 92, pp. 21-39.

Robinhood (2022), "What is rational choice theory?", available at: https://learn.robinhood.com/articles/7sO3NcvHHi41uSPp5EsVK8/what-is-rational-choice-theory/

Samet, M. and Jarboui, A. (2017), "How does corporate social responsibility contribute to investment efficiency?", *Journal of Multinational Financial Management*, Vol. 40, pp. 33-46, doi: 10.1016/j. mulfin.2017.05.007.

Sampong, F., Song, N., Amoako, G.K. and Boahene, K.O. (2021), "Voluntary social performance disclosure and firm profitability of South African listed firms: examining the complementary role of board independence and managerial ownership", *South African Journal of Economic and Management Sciences*, Vol. 24 No. 1, p. 3346.

Sargan, J.D. (1958), "The estimation of economic relationships using instrumental variables", *Econometrica*, Vol. 26 No. 3, pp. 393-415.

Schanzenbach, M.M. and Sitkoff, R.H. (2020), Harvard, p. 5349.

Shakil, M.H., Mahmood, N., Tasnia, M. and Munim, Z.H. (2019), "Do environmental, social and governance performance affect the financial performance of banks? A cross-country study of emerging market banks", *Management of Environmental Quality: An International Journal*, Vol. 30 No. 6, pp. 1331-1344, doi: 10.1108/MEQ-08-2018-0155.

Sherwood, M.W. and Pollard, J.L. (2018), "The risk-adjusted return potential of integrating ESG strategies into emerging market equities", *Journal of Sustainable Finance and Investment*, Vol. 8 No. 1, pp. 26-44, doi: 10.1080/20430795.2017.1331118.

Sulla, V. (2020), "Poverty and equity brief: south Africa", pp. 1-2, April available at: www.worldbank. org/poverty

UNPRI (2021), "What is responsible investment?".

Verney, P. (2018), ESG country snapshot, South Africa, available at: https://protect-au.mimecast.com/s/JfGZCr8DPZu7VOKvi716F9?domain=responsible-investor.com/, https://www.responsible-investor.com/esg-country-snapshot-south-africa/

Velte, P. (2017), "Does ESG performance have an impact on financial performance? Evidence from Germany", *Journal of Global Responsibility*, Vol. 8 No. 2, pp. 169-178, doi: 10.1108/jgr-11-2016-0029.

Vezér, M. and Mayaki, O. (2019), "South Africa and ESG risk", available at: https://www. sustainalytics.com/esg-research/resource/investors-esg-blog/south-africa-and-esg-risk

Wijnberg, N.M. (2000), "Normative stakeholder theory and Aristotle: the link between ethics and politics", *Journal of Business Ethics*, Vol. 25 No. 4, pp. 329-342.

Witynski, M. (2022), "What Is Behavioral Economics?", *Behavioral Economics*, Chicago. Explained available at: https://news.uchicago.edu/explainer/what-is-behavioral-economics#:~:text=Behavioral economics combines elements of,decisions based on those preferences.

Worthington-Smith, M. and Giamporcaro, S. (2021), *ESG materiality: insights from the South African investment industry*, pp. 217-240.

Wu, D.M. (1974), "Alternative tests of independence between stochastic regressors and disturbances: finite sample results", *Econometrica: Journal of the Econometric Society*, Vol. 42 No. 3, pp. 529-546.

Xu, X. and Wang, Y. (1999), "Ownership structure and corporate governance in Chinese stock companies", *China Economic Review*, Vol. 10 No. 1, pp. 75-98, doi: 10.1016/S1043-951X(99)00006-1.

Zhao, C., Guo, Y., Yuan, J., Wu, M., Li, D., Zhou, Y. and Kang, J. (2018), "ESG and corporate financial performance: empirical evidence from China's listed power generation companies", *Sustainability (Switzerland)*, Vol. 10 No. 8, pp. 1-18, doi: 10.3390/su10082607.

Corresponding author
Abdul Latif Alhassan can be contacted at: latif.alhassan@gsb.uct.ac.za

Appendix

	ESG	E	S	G	DER	DIV	MCAP	SIZE	OPM	VIF(T4)	VIF(T5)
ESG	1.000									1.12	
E Score	0.769	1.000								–	1.64
	0.000										
S Score	0.828	0.426	1.000							–	1.55
	0.000	*0.000*									
G Score	0.682	0.301	0.459	1.000						–	1.57
	0.000	*0.000*	*0.000*								
DER	0.091	0.092	0.018	0.083	1.000					1.32	1.26
	0.200	*0.198*	*0.803*	*0.241*							
DIV	−0.137	−0.321	0.011	0.049	−0.162	1.000				1.12	1.27
	0.067	*0.000*	*0.881*	*0.509*	*0.029*						
MCAP	0.056	0.203	−0.011	−0.116	0.133	−0.196	1.000			1.46	–
	0.429	*0.004*	*0.875*	*0.103*	*0.061*	*0.008*					
SIZE	0.215	0.329	0.160	−0.108	0.374	−0.134	0.643	1.000		2.21	1.74
	0.002	*0.000*	*0.024*	*0.127*	*0.000*	*0.072*	*0.000*				
OPM	0.012	0.012	0.102	−0.222	0.041	0.187	0.191	0.400	1.000	1.44	1.42
	0.864	*0.863*	*0.150*	*0.002*	*0.563*	*0.012*	*0.007*	*0.000*			

Note(s): E = Environment rating; S = Social rating; G = Governance rating; ESG = Aggregate ESG rating; DER = Debt-to-Equity ratio; DIV = Dividend pay-out; MCAP = Market capitalisation; Size = Natural logarithm of total assets; OPM = Operating margin. Italicised values represent *p*-values. VIF(T4) = Variance inflation factors for Table 4; VIF(T5) = Variance inflation factors for Table 5

Source(s): Authors' estimates from research data

Table A1.
Correlations matrix
and variance inflation
factors (VIF)