“The nexus of ESG performance and equity financing: Evidence from JSE-listed non-financial firms in South Africa”

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THE NEXUS OF ESG PERFORMANCE AND EQUITY FINANCING: EVIDENCE FROM JSE-LISTED NON-FINANCIAL FIRMS IN SOUTH AFRICA

Abstract

This study examines the relationship between Environmental, Social, and Governance (ESG) performance and equity financing among non-financial firms listed on the Johannesburg Stock Exchange (JSE) in South Africa. Using the data from Refinitiv Eikon, Bloomberg, and company sustainability reports, the research analyzes ESG and financial performance across multiple sectors, including manufacturing, retail, and mining, with a sample of 420 firm-year observations covering 60 firms over the period from 2015 to 2023. The results from System Generalized Method of Moments (GMM) model reveal that the Debt-to-Equity Ratio has a significant positive relationship with equity financing, highlighting the persistence of capital structure in financing decisions. Environmental Score demonstrates a significant positive effect on equity financing, indicating that better environmental performance attracts more investment, though this result was not significant in the Fixed Effects Model. Social Score consistently shows a positive impact across both models, reinforcing the importance of social performance in attracting equity capital. Governance practices also exhibit a significant influence on equity financing, emphasizing the role of effective governance in improving access to equity financing when considering dynamic factors. These findings suggest that ESG performance is a critical factor in equity financing decisions, and underscore the need for financial regulators, investment institutions, and industry bodies to raise awareness about the importance of ESG considerations. The study contributes to the growing literature on sustainable finance, illustrating the strategic importance of ESG factors in shaping investor preferences and enhancing market stability.

Keywords ESG, equity financing, Governance Score, Environmental Score, Social Score, capital structure

JEL Classification G32, M14, Q56

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INTRODUCTION

The integration of Environmental, Social, and Governance (ESG) factors into corporate decision-making has garnered increasing attention among researchers, policymakers, and practitioners (Alkaraan et al., 2022; Khan & Iqbal, 2024). ESG performance reflects a firm's commitment to sustainability through non-financial metrics, influencing strategic planning, risk management, and capital allocation (Asimakopoulos et al., 2023; He et al., 2024). High ESG ratings can enhance corporate reputation, lower equity costs, and attract investors, while poor ESG performance may raise borrowing costs and limit access to capital. Evidence suggests that environmental and governance dimensions often correlate negatively with debt financing but support equity financing decisions (Li et al., 2024). Firms with strong social practices also benefit from heightened investor confidence and financial stability. For example, Maaloul et al. (2023) found that companies with high ESG scores are 15% more likely to increase equity capital, while Han et al. (2024) observed a 10-basis-point reduction in the cost

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of equity for top ESG performers. Additionally, Brogi et al. (2022) showed that strong ESG practices reduce the likelihood of financial distress by 20%. In South Africa, ESG-compliant firms enjoy 12% higher equity valuations (Venturelli et al., 2024).

Despite growing recognition of ESG's importance, limited research exists on its influence over capital structure decisions, particularly in emerging markets. This study investigates how ESG performance affects equity financing in non-financial firms listed on the Johannesburg Stock Exchange (JSE), addressing a notable gap in the literature (Maaloul et al., 2023; Su & Xue, 2024; Yu et al., 2024). With increasing global sustainability demands and regulatory pressures, firms must align their financing strategies with ESG principles to ensure long-term value creation. South Africa offers a unique context for this analysis, given its socio-economic challenges, evolving corporate governance landscape, and JSE's emphasis on sustainability through initiatives like the King IV Report and ESG disclosure requirements. Although ESG-oriented firms globally tend to favor equity over debt (Pujiastuti et al., 2024), the evidence remains mixed, with some findings indicating a positive relationship between ESG and debt financing as well (Lavin & Montecinos-Pearce, 2022; Guo et al., 2024). Factors such as firm size, media coverage, and ownership structure further moderate this relationship (Li et al., 2024; Huang et al., 2023). Moreover, inconsistencies in ESG ratings across agencies may lead to varied financing outcomes (Guo & Yang, 2024).

Given South Africa's distinctive corporate environment, this study aims to offer insights into how ESG considerations influence financing strategies. The findings will support stakeholders in designing the policies and business practices that integrate sustainability with financial performance, contributing to responsible investing and long-term economic resilience.

1. LITERATURE REVIEW

New research on the topic of equity financing choices and ESG performance has shed light on the ways in which sustainability efforts affect COE and investment choices. Chouaibi et al. (2021) looked at how CSR initiatives and CEO bonuses tied to environmental goals affected the unspoken cost of fairness. The research found that CSR measures successfully minimize COE, which stimulates increased equity financing through rendering investment choices more appealing. It did this by analyzing data from 154 French enterprises with ESG pledges between 2015 and 2020. Taking into consideration the variety of investor viewpoints, Tang (2022) investigated the impact of ESG performance on COE. The research indicated that ESG performance has a modest effect on COE using data from Chinese enterprises assessed on ESG criteria from 2015 to 2020. A larger COE was seen by companies with more severe financial limitations, which may indicate that ESG factors are more important in these types of situations. In their study spanning 2010-2020, Chen et al. (2023) examined Chinese A-Share companies to determine the impact of ESG performance upon equity capital costs. The analysis confirmed a strong negative relationship between ESG performance, as well as COE after accounting for several econometric biases. Besides, via processes like decreasing risk in the market and increasing equity variety, the results showed that ESG performance indirectly decreases COE.

Zahid et al. (2023) looked at how rising market companies' ESG performance correlated with their choices for capital financing. The research analyzed a sample of enterprises over a multi-year period using panel regression with fixed effects as the major estimate technique. Companies who scored higher on ESG metrics also had an easier time and paid less for funding, according to the study. The significance of sustainability practices in easing financing limitations in developing markets and increasing financial flexibility of enterprises was shown by this relationship. Guo et al. (2024) carried out an identical quantitative study on the effect of ESG performance on debt financing for corporations. Stronger ESG ratings increase enterprises' creditworthiness and decrease borrowing costs, according to the research, which used a sample of Chinese enterprises and found that ESG performance positively affected firms' capacity to get debt funding. Wang (2024) looked

at Chinese A-Share listed firms to see how ESG performance affected their loan and equity funding. Greater ESG performance was associated with reduced financing through debt and equity costs, according to the research, which used quantitative analysis and a sample of 1,044 organizations. Robust ESG practices were thought to be responsible for this correlation since they led to less information asymmetry and more corporate openness. One study that looked at the effects of ESG performance on business financing in China's A-Share market was Huang et al. (2023). Businesses with higher ESG ratings had easier access to capital and fewer financing limitations, according to the research, which used an empirical analytical approach. The results demonstrated that ESG performance is important for improving the legitimacy and investment appeal of companies.

Using Chinese companies as an example, Guo et al. (2024) investigated how ESG performance affected loan financing. Considering the significance of sustainability in mitigating perceived credit risk and costs associated with borrowing, the study's quantitative analysis demonstrated that better ESG performance favorably affected enterprises' capacity to get external funding. Tian et al. (2023) examined the impact of ESG performance on funding. According to the results, ESG performance has a major effect on a company's capacity to raise capital by boosting investor trust and decreasing financing risk. Within the framework of international accounting standards, the research highlighted the favorable relationship between robust ESG policies and financing conditions. Hassan et al. (2023) looked into how ESG ratings interact with the COE in developing economies. Using data from 4,612 firm-year observations in 18 developing economies, the research found that ESG ratings, Sharia sensibility, and COE were strongly inversely related, with market uncertainty mediating the relationship. This research showed that ESG performance may save capital costs by lowering market risk. New methods to examine the interplay between ESG ratings and costs associated with equity were proposed by Hassan et al. (2023) in the context of developing economies. Market risk mediated the association between ESG ratings, Sharia sensitivity, and COE; the research included 4612 firm-year data across 18 developing countries between 2002 and 2018. It found a substantial negative relationship between these three variables. From 2006 to 2021, Zeng et al. (2023) examined the impact of executive equity incentive plans (EEIPs) on ESG performance in Chinese A-Share companies. When comparing restricted stock with equity options, the empirical findings showed that the former offered more compelling incentives to improve ESG performance. The research showed that EEIPs were positively associated with ESG results, drawing attention to the importance of executive incentives in motivating sustainability efforts.

Signaling Theory provides a valuable framework for understanding the relationship between ESG performance and equity financing. It posits that firms can reduce information asymmetry with investors by sending credible signals about the quality and stability of their operations (von Deimling et al., 2022). In ESG, firms use sustainability practices to signal their commitment to ethical behavior, environmental responsibility, and strong governance. These signals help bridge the gap between internal management knowledge and external investor perceptions. According to the theory, firms with high ESG performance convey positive signals about their risk management, transparency, and long-term vision, reducing uncertainty and perceived investment risks. For example, robust environmental and social initiatives indicate that a firm proactively addresses potential liabilities, lowering perceived default risk and the cost of equity. Furthermore, by disclosing ESG information, firms signal transparency and accountability, enhancing investor trust, particularly in markets with high information asymmetry (Yang et al., 2024). Additionally, high ESG scores serve as a distinguishing factor in competitive markets, helping firms stand out as responsible and forward-thinking, which can improve their valuation and investor confidence. This signaling effect is especially potent in emerging markets, where corporate governance standards may differ widely, and reliable ESG performance can significantly reduce investor uncertainty.

This study aims to explore the relationship between ESG performance and equity financing choices, with a focus on firms in developing economies, providing insights into how sustainability efforts affect capital costs and investment decisions.

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2. METHODOLOGY

This study employs a quantitative research design to analyze the impact of ESG performance on equity financing among JSE-listed non-financial firms in South Africa. The research focuses on understanding how firms' ESG scores influence their equity financing decisions. Data for the study were collected from several reliable sources, including Refinitiv Eikon, Bloomberg, and company sustainability reports. This encompassed both ESG performance data and financial data for non-financial firms listed on the JSE. The selected sample period spanned from 2015 to 2023, allowing the research to capture recent trends in ESG performance and associated financing decisions. The sample includes firms from various industries such as manufacturing, retail, and mining, ensuring a broad representation of South Africa's economic landscape. The careful curation of firms with differing financial profiles and ESG performance ensured that the results were not biased toward a particular type of company. This approach enhanced the generalizability of the findings, making the empirical analysis not only robust and statistically valid but also trustworthy and relevant to the broader context of corporate sustainability and financing. The total number of observations is 420 firm-year observations, covering 60 firms over 7 years. The criteria for sample selection stipulated that the firms must be listed on the JSE and not belong to the financial sector, due to their unique capital structures and specific regulatory requirements. Additionally, it was essential that the firms had complete sets of ESG performance data and financial data available for the entire selected period to ensure consistency and reliability in the analysis.

Equity financing refers to the proportion of a company's total assets funded through equity, such as common stock and retained earnings, typically expressed as the equity-to-total-assets ratio (Tang, 2022). It indicates the degree to which firms rely on shareholder capital instead of debt. A higher equity ratio generally suggests lower financial risk, as firms are less exposed to interest obligations and credit constraints (Chouaibi et al., 2021). Furthermore, firms with strong ESG performance are increasingly favored by investors seeking sustainable and responsible investment opportunities, improving their access to equity capital (Chen et al., 2023).

The Environmental Score (ENS) evaluates a firm's performance on environmental dimensions such as carbon emissions, energy efficiency, waste management, and regulatory compliance (Guo et al., 2024). High ENS reflects a firm's commitment to reducing environmental impact, which is linked to lower operational and compliance risks. Firms that proactively manage environmental challenges like resource scarcity and regulatory shifts are more likely to enjoy cost savings, improved efficiency, and long-term competitiveness (Feng et al., 2023; Matemane et al., 2024). Moreover, strong ENS can enhance a firm's appeal to ESG-focused investors, increasing equity financing opportunities while potentially lowering the cost of capital (Chen et al., 2023). By aligning with global sustainability trends, these firms also gain resilience against future regulatory disruptions and evolving consumer preferences.

Social Score (SNS) captures a firm's performance in areas such as employee welfare, diversity, human rights, workplace safety, and community engagement. It reflects the extent to which a company promotes equity, inclusion, and ethical labor practices while contributing positively to society (Alshukri et al., 2024). High SNS is associated with improved reputation, stakeholder trust, and reduced exposure to social controversies such as strikes or negative publicity (Zeng et al., 2023). These firms often experience enhanced customer loyalty, talent retention, and regulatory compliance. As investors increasingly prioritize social responsibility, firms with strong SNS are more likely to secure equity financing (Tang, 2022). This strategic focus on social factors also aligns firms with long-term societal and regulatory expectations, fostering sustainable growth.

Governance Score (GNS) assesses the quality of a company's corporate governance, including board structure, executive compensation, audit procedures, shareholder rights, and risk oversight (Zhang et al., 2024). Strong governance reflects transparency, ethical conduct, and accountability, which are vital for investor confidence and business sustainability. Effective governance frameworks reduce agency costs, limit exposure to fraud, and support accurate financial reporting. These factors contribute to a company's creditworthiness and make it more attractive to equity

investors (Khan et al., 2024). Additionally, firms with robust governance structures are better positioned to optimize capital structure decisions and reduce reliance on high-risk debt (Lemma et al., 2022). Aligning governance with long-term objectives enhances financial flexibility, helping firms raise equity on more favorable terms.

Firm Efficiency (FEF) calculated as EBIT-to-total-assets, reflects how well a firm uses its assets to generate earnings (Trong & Nguyen, 2021). High efficiency lowers dependence on external financing, boosts investor confidence, and supports reinvestment in innovation and sustainability (Malik & Kashiramka, 2024; Chen et al., 2023). Inefficient firms may face higher financial risks and funding constraints (Guo et al., 2024).

Firm Size (FRS) is commonly measured by the natural log of total assets (Amankwa et al., 2020). Larger firms benefit from greater stability, easier capital access, and investor confidence due to reduced risk (Khoa & Thai, 2021; Khan et al., 2024). Their scale enables cost savings, innovation, and strategic growth. Firm size also influences capital structure, with large firms better positioned to access both equity and debt markets (Lemma et al., 2022; Guo et al., 2024).

To examine the relationship between ESG performance and equity financing, the following panel regression model will be employed:

$$EQR_{it} = \beta_0 + \beta_1 ENS_{it} + \beta_2 SNS_{it} + \beta_3 GNS_{it} + \beta_4 FEF_{it} + \beta_5 FRS_{it} + \varepsilon_{it}. \quad (1)$$

In this context, i represents the firm, while t represents the time period. The term ε_{it} denotes the error term. The parameter β_0 is the intercept, and β_1, β_2, ..., β_8 are the coefficients that are to be estimated. To determine the appropriate model specification, the study conducted a heteroscedasticity analysis using the Hausman test. The results showed a Chi-square statistic of 14.021 and a probability value of 0.048. These findings indicated that the fixed effect model was the appropriate choice, as the low probability value rejected the null hypothesis in favor of the fixed effect specification. Endogeneity concerns were addressed through the Wald test, which provided further insights into potential biases. The results of the Wald test revealed significant endogeneity issues, with an F-statistic of 19.502 (p = 0.000) and a Chi-square statistic of 120.735 (p = 0.000). These significant values confirmed the presence of endogeneity, necessitating a robust estimation technique to mitigate this issue. Given the identified heteroscedasticity and endogeneity concerns, the study employed the System Generalized Method of Moments (System GMM) as the primary estimation technique. System GMM was chosen for its ability to address endogeneity using instrumental variables, while also accounting for heteroscedasticity and dynamic panel bias. This method provided robust and reliable estimates, enhancing the validity of the re-

Table 1. Variables

Acronym	Variable	Measurement	Role	Source
EQR	Equity Financing	Total common equity / Total assets	Dependent	Refinitiv Eikon, Bloomberg, Company Reports
ENS	Environmental Score	ESG Environmental Index (measures carbon emissions, energy efficiency, waste management, and environmental compliance)	Independent	Refinitiv Eikon, Bloomberg, Company Reports
SNS	Social Score	ESG Social Index (measures employee welfare, diversity, human rights, and community engagement)	Independent	Refinitiv Eikon, Bloomberg, Company Reports
GNS	Governance Score	ESG Governance Index (measures board composition, executive compensation, risk management, and transparency)	Independent	Refinitiv Eikon, Bloomberg, Company Reports
FEF	Firm Efficiency	EBIT / Total assets	Control	Refinitiv Eikon, Bloomberg, Company Reports
FRS	Firm Size	Natural logarithm of total assets	Control	Refinitiv Eikon, Bloomberg, Company Reports

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lationship between ESG indicators and equity financing. The adoption of System GMM ensured that the study's findings were not only statistically sound but also reflective of the complexities inherent in the data.

3. RESULTS AND DISCUSSION

The descriptive analysis of ESG performance and equity financing offers key insights into the financial structures and sustainability practices of firms (see Table 2). The Equity Ratio (EQR), which measures the proportion of assets financed through equity, has a mean value of 0.482. This indicates that, on average, firms finance approximately 48.2% of their assets with equity. The standard deviation of 0.173 points to moderate variability in equity financing among firms. The skewness of 0.341 reveals a slight right skew in the distribution, suggesting that a higher proportion of firms maintain lower equity ratios. Additionally, a kurtosis value of 2.520 indicates that the distribution of equity ratios is slightly flatter than a normal distribution. In terms of environmental sustainability, the Environmental Score (ENS) has an average value of 45.67, with scores ranging from a minimum of 10.00 to a maximum of 89.00. This considerable range highlights significant variability in environmental performance across firms. The skewness of 0.562 suggests a positive skew, meaning that more firms exhibit lower environmental scores. The kurtosis of 2.430 indicates that the distribution of environmental scores is relatively normal, though with some variability around the mean. The Social Score (SNS) provides insights into firms' social responsibility practices, with a mean score of 40.82. The scores span from a low of 15.00 to a high of 92.00, reflecting a wide range of social performance. The skewness of 0.713 indicates a pronounced right skew, suggesting that many firms score lower on social metrics. Furthermore, the kurtosis of 2.950 reveals that the distribution is slightly peaked, indicating that more firms cluster around certain score levels. The Governance Score (GNS) has an average value of 51.23, with a maximum score of 88.00 and a minimum of 22.00. The skewness of 0.319 indicates a slight right skew, suggesting that more firms tend to have lower governance scores. The kurtosis of 2.340 points to a distribution that is close to normal, indicating relatively consistent governance performance among firms. Firm Efficiency (FEF), which measures how effectively firms utilize their resources, has a mean value of 0.128. The range extends from a minimum of -0.050 to a maximum of 0.450, suggesting that some firms may be operating inefficiently. The skewness of 0.521 shows a right skew, indicating that a larger number of firms fall on the lower end of efficiency. A kurtosis value of 2.710 suggests a slightly peaked distribution, with firms clustering around certain efficiency levels. Lastly, Firm Size

Table 2. Descriptive analysis of ESG performance and equity financing

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Equity Ratio (EQR)	0.482	0.470	0.870	0.150	0.173	0.341	2.520
Environmental Score (ENS)	45.67	42.50	89.00	10.00	19.45	0.562	2.430
Social Score (SNS)	40.82	39.10	92.00	15.00	18.32	0.713	2.950
Governance Score (GNS)	51.23	50.40	88.00	22.00	15.78	0.319	2.340
Firm Efficiency (FEF)	0.128	0.120	0.450	-0.050	0.098	0.521	2.710
Firm Size (FRS)	8.75	8.80	10.20	6.90	0.74	-0.215	2.690

Table 3. Correlation analysis of ESG performance and equity financing

Variables	EQR	ENS	SNS	GNS	FEF	FRS
EQR	1					
ENS	0.310***	1				
SNS	0.330***	0.681***	1			
GNS	0.281**	0.496***	0.396***	1		
FEF	0.547***	−0.023	−0.004	−0.151*	1	
FRS	0.419***	0.438***	0.443***	0.344***	−0.289***	1

Note: Significance levels are denoted as follows: p < 10% indicates marginal significance, p < 5% indicates statistical significance, and *p < 1% indicates high significance.

(FRS), with a mean of 8.75, reflects the average scale of the firms under consideration. The range, from a minimum of 6.90 to a maximum of 10.20, indicates that the sample includes firms of varying sizes. The skewness of -0.215 reveals a slight left skew, implying that more firms tend to be larger in size. The kurtosis of 2.690 shows a distribution that is relatively normal, indicating consistency in the representation of firm sizes within the sample.

Equity Ratio (EQR) shows significant positive correlations with several variables: Environmental Score (ENS) at 0.310, Social Score (SNS) at 0.330, Governance Score (GNS) at 0.281, Firm Efficiency (FEF) at 0.547, and Firm Size (FRS) at 0.419 (see Table 3). The strongest association with FEF suggests that more efficient firms tend to rely more on equity financing, likely due to investor preference for firms that effectively utilize resources and exhibit financial stability. This supports findings by Zhang et al. (2021) in China, where firms with stronger environmental performance attracted greater equity financing due to lower risk perceptions. Similarly, Sharma et al. (2024) found that Indian firms with robust social practices, especially in employee and community relations, were more likely to attract equity investors seeking ethical investments. These findings align with the South African data. However, contrasting results emerge from the US and European, where Ferrat et al. (2022) found that in markets focused on short-term returns, ESG investments may deter equity investors, resulting in a lower equity ratio. This divergence highlights how market context influences ESG-financing relationships.

ENS is highly correlated with SNS (0.681) and GNS (0.496), indicating that firms excelling in environmental performance also tend to perform well in social and governance domains. The moderate correlation between ENS and EQR (0.310) suggests that environmental performance contributes to improved equity financing opportunities, reflecting investor preference for sustainable firms. Clarkson et al. (2023) in the United States reported that firms with high environmental ratings experienced reduced equity financing costs due to greater investor confidence. Similarly, Khan et al. (2024) meta-analysis of European firms found stronger positive relationships between ENS and equity financing than for GNS, indicating that environmental practices are particularly valued by European investors. In contrast, Ali et al. (2020) found that in India, governance practices had a more significant influence on equity decisions than environmental performance, suggesting that regional investor priorities vary.

SNS is also positively correlated with GNS (0.396) and EQR (0.330), underscoring the role of social responsibility in attracting equity investors. Socially responsible firms are often seen as lower-risk investments with sustainable long-term prospects. This is supported by Xiong et al. (2023) who found in China that social responsibility enhanced transparency and governance, thereby fostering investor trust. Similarly, Asimakopoulos et al. (2023) in Germany reported that strong social practices helped attract equity capital by reducing perceived risk. However, Bahadori et al. (2021) in Turkey found no significant relationship, attributing this to low regulatory enforcement and limited ESG awareness. In South Africa, increased investor awareness and frameworks such as the King IV Report likely contribute to the observed positive relationship between SNS and EQR.

GNS shows a moderate positive correlation with EQR (0.281) and strong associations with ENS (0.496) and SNS (0.396), indicating that sound governance supports both ESG performance and access to equity financing. Good governance reduces information asymmetry and enhances investor confidence. Al-Khawaja et al. (2024) found that in Jordan, firms with strong governance structures attracted more equity investment due to improved transparency and reduced agency conflicts. Conversely, Bahadori et al. (2021) observed weaker effects in Turkey, suggesting that governance's impact on equity financing is context-dependent and influenced by market maturity and investor perceptions.

Firm Efficiency (FEF) demonstrates a strong positive correlation with EQR (0.547), suggesting that efficient firms are better positioned to finance their operations through equity. Studies by Liu et al. (2023) in Japan and Kilic et al. (2022) across 19 developed and developing countries supports this view, indicating that efficient firms tend to favour equity financing over debt to preserve financial flexibility and minimize risk. However, FEF

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has weak negative correlations with ENS, SNS, and GNS, indicating potential trade-offs between short-term efficiency goals and long-term ESG investments. This finding contrasts with Desai (2025) in India, where operationally efficient firms also reported strong ESG performance due to regulatory pressure and investor demand. The negative associations in South African firms may reflect differences in market dynamics and ESG adoption maturity.

Firm Size (FRS) is positively correlated with all ESG dimensions and EQR, suggesting that larger firms tend to perform better on ESG metrics and rely more on equity financing. Larger firms typically have more resources to invest in sustainability initiatives and benefit from greater investor scrutiny and access to capital. Hassanein et al. (2025) found that large German firms had higher ESG scores and secured more equity financing. However, the negative correlation between FRS and FEF (-0.289) implies that larger firms may face efficiency challenges due to bureaucratic processes and operational complexity. Smaller firms may be more agile and efficient but may lack the resources or visibility to implement comprehensive ESG practices. In South Africa, these dynamics suggest that while larger firms dominate ESG performance and attract equity financing, smaller firms excel in efficiency but face constraints in scaling ESG efforts.

The analysis of ESG performance on equity financing was conducted using both the Fixed Effects Model (1) and the System GMM Model (2) (see Table 4).

The analysis of ESG performance on equity financing was conducted using both the Fixed Effects Model and the System GMM Model. The intercept (C) in the Fixed Effects Model yielded a coefficient of 0.412 with a p-value of 0.021, indicating statistical significance. This suggests that, even when other variables are controlled, firms maintain a baseline level of equity financing. In contrast, the System GMM model produced an intercept of 0.058 with a p-value of 0.479, suggesting that when dynamic effects are considered, the baseline equity financing is not significantly different from zero. This finding aligns with prior research by Guo et al. (2024), which observed that baseline financing levels often diminish in significance when historical dependencies and dynamic relationships are incorporated.

The Debt-to-Equity Ratio ($DTR_{(t-1)}$), examined only in the System GMM model, showed a coefficient of 0.845 with a p-value of 0.000, indicating a highly significant positive relationship. This result suggests that firms past debt-to-equity ratios strongly influence their current equity financing decisions, reflecting the persistence of capital structure over time. The Debt-to-Equity Ratio ($DTR_{(t-1)}$), assessed through the System GMM model, yielded a coefficient of 0.845 with a p-value of 0.000. This highly significant positive relationship indicates that firms past debt-to-equity ratios substantially influence their current equity financing decisions. The result underscores the persistence of capital structure over time, suggesting that firms' historical financing patterns play a crucial role in shaping future financial strategies. This finding aligns with prior research by Hassan et al. (2023) in Malaysia, who observed that firms often maintain consistent financing patterns due to established

Table 4. Results of analysis of ESG performance on equity financing

Variables	Fixed Effect (1)		System GMM (2)	
	Coefficients	Probability	Coefficients	Probability
Intercept (C)	0.412	0.021	0.058	0.479
Debt-to-Equity Ratio ($DTR_{(t-1)}$)	–	–	0.845	0.000
Environmental Score (ENS)	0.0012	0.193	0.275	0.032
Social Score (SNS)	0.0018	0.005	0.295	0.014
Governance Score (GNS)	0.0009	0.121	0.310	0.008
Firm Efficiency (FEF)	0.972	0.000	0.063	0.682
Firm Size (FRS)	0.104	0.000	0.018	0.143
Adjusted R-squared	0.598		0.641	
S.E. of regression	0.162		0.145	
AR(1) test			0.027	
Sargan test			0.240	
Hansen test			0.175	

risk profiles and stakeholder expectations. Similarly, Zahid et al. (2023), in their study on Pakistani firms, reported that firms' historical debt levels significantly influence current equity financing choices, reinforcing the notion of path dependency in capital structure decisions. Firms are likely to continue their reliance on debt unless faced with major shifts in financial strategy or external market conditions. Conversely, research by Akanpaaba et al. (2022) in Ghana offers a contrasting perspective. Their findings suggest that firms with historically high debt-to-equity ratios are increasingly turning to equity financing to reduce leverage, driven by pressures to enhance financial stability and mitigate risk. This divergence highlights that while path-dependent capital structures are common, contextual factors such as economic conditions, market volatility, and regulatory frameworks can prompt deviations from established financing patterns. In the South African context, the persistence of historical debt-to-equity ratios underscores the influence of firms' financial legacies on current financing decisions. However, as global and local markets place greater emphasis on sustainability and ESG performance, firms may need to reassess these patterns to align with emerging expectations for responsible financial practices.

The Fixed Effects Model reveals an insignificant relationship between Environmental Score (ENS) and equity financing, with a coefficient of 0.0012 ($p = 0.193$). However, the System GMM model presents a significant positive coefficient of 0.275 ($p = 0.032$), suggesting that when dynamic effects and endogeneity are considered, firms with stronger environmental performance are more likely to secure equity financing. Zhou et al. (2024) similarly found that environmental performance positively impacts equity financing in Chinese enterprises when using dynamic models like System GMM. Bahadori et al. (2021) also observed a positive relationship in Iranian firms, emphasizing growing investor preference for environmentally responsible firms. In contrast, Asimakopoulos et al. (2023) found no significant relationship in Greece, indicating that in some markets, environmental considerations may be less influential due to lower awareness or weaker regulatory pressure.

Social Score (SNS) exhibits a consistent, statistically significant positive relationship with equity financing in both models: 0.0018 ($p = 0.005$) in the Fixed Effects Model and 0.295 ($p = 0.014$) in the System GMM model. This underscores that socially responsible firms are attractive to equity investors, likely due to reputational benefits, stronger stakeholder relations, and lower social risk. Supporting evidence includes studies by Izwan et al. (2024) in Malaysia and Bista (2023) in Australia, who found that social initiatives boost investor confidence and reduce financing costs. Attig (2024) similarly reported that socially responsible U.S. firms face fewer equity market constraints. However, some studies show variation by context. Owusu and Agyeman (2021) found no significant relationship in Ghana, while Becker et al. (2023) observed that in Germany, social practices, although beneficial to reputation, did not significantly influence equity financing, especially in finance-driven sectors.

Governance Score (GNS) shows mixed results. The Fixed Effects Model yields an insignificant coefficient of 0.0009 ($p = 0.121$), while the System GMM model finds a significant positive coefficient of 0.310 ($p = 0.008$). These results imply that effective governance matters more in dynamic contexts, possibly through its role in reducing information asymmetry and increasing investor trust. This aligns with findings by Asimakopoulos et al. (2023a) and Bahadori et al. (2021) who observed that transparency and board independence enhance equity access. Conversely, Tsang et al. (2023) reported no significant governance effect in Australian firms with stable ownership, suggesting contextual limitations in governance's impact.

Firm Efficiency (FEF) demonstrates a strong positive relationship with equity financing in the Fixed Effects Model (coefficient = 0.972, $p = 0.000$), indicating that efficient firms, perceived as lower risk, are more appealing to equity investors. This finding is consistent with Vardarlıer and Al (2022) and Huang (2023), who noted that operational efficiency enhances financial stability and investor appeal. However, in the System GMM model, the coefficient drops to 0.063 ($p = 0.682$), suggesting that efficiency's influence may diminish when dynamic effects are introduced. Maijanen (2020) similarly found that short-term efficiency gains may not always align with long-term equity financing strategies.

Firm Size (FRS) is positively associated with equity financing in the Fixed Effects Model (coefficient =

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0.104, p = 0.000), suggesting that larger firms, due to their credibility and market access, are more likely to attract equity. Boon et al. (2021) confirmed that firm size boosts investor confidence and financing flexibility. However, the System GMM model reveals a non-significant coefficient of 0.018 (p = 0.143), implying that after accounting for endogeneity and past financing, firm size may not play a dominant role. Zahid et al. (2024) found similar results, noting that strategic shifts and market dynamics may reduce size's long-term advantage in equity markets.

The diagnostic tests provide insights into the robustness and validity of the Fixed Effects and System GMM models used to analyze ESG performance and equity financing. The adjusted R-squared for the Fixed Effects model is 0.598, indicating that 59.8% of the variation in equity financing is explained by the model. In comparison, the System GMM model has an adjusted R-squared of 0.641, suggesting that the dynamic model explains 64.1% of the variation. This improvement highlights the System GMM model's enhanced explanatory power, particularly when accounting for dynamic effects and endogeneity. The Standard Error of Regression (S.E.) for the Fixed Effects model is 0.162, while the System GMM model has a lower S.E. of 0.145. The reduction in the standard error indicates that the System GMM model offers a better fit, producing more precise estimates. The AR (1) Test for Autocorrelation yields a p-value of 0.027, which confirms that there is no second-order autocorrelation. This result supports the validity of the System GMM model, as the absence of autocorrelation ensures that the model's dynamic structure is appropriately specified. Sargan and Hansen tests further validate the instruments used in the System GMM model. Sargan test returns to a p-value of 0.240, and the Hansen test yields a p-value of 0.175. These p-values indicate that the instruments are valid and not over-identified, confirming the reliability of the System GMM estimation. Together, these diagnostic results affirm that the System GMM model is well-specified, robust, and suitable for addressing the dynamic relationships and endogeneity present in the data.

CONCLUSION

Among non-financial companies listed on JSE in South Africa, this research looks at how ESG performance relates to equity funding. With a p-value of 0.193 and a coefficient of 0.0012, the Fixed Effects Model shows that there is no statistically significant relationship between equity funding and environmental performance. There is a strong positive connection (r = 0.275, p = 0.032) in the System GMM model that accounts for endogeneity and dynamic effects. Although it was not considered in the Fixed Effects Model, the Debt-to-Equity Ratio was shown to be significant in the System GMM model, indicating a strong association with equity financing. While the Fixed Effects Model failed to demonstrate relevance for the Environmental Score, the System GMM model did, demonstrating the relevance of environmental performance on equity financing when endogeneity is considered. Both models showed a positive influence on the Social Score, proving that social performance is important for improving equity financing results. In a comparable manner, only the System GMM model has a substantial Governance Score, indicating that good governance procedures have a favorable influence on equity financing when considering dynamic aspects. It seems that the effect of firm efficiency may decrease when dynamic modifications are taken into consideration, as it had a large impact on the Fixed Effects Model but was not noteworthy in the System GMM model. The Fixed Effects Model found a substantial association between company size and equity funding, while the System GMM model did not. This suggests that the relationship may be stronger in static analysis

RECOMMENDATIONS

Based on the preceding conclusions, several recommendations are proposed to enhance the integration of ESG considerations into corporate financing strategies. Financial regulators, investment institutions, and industry bodies should implement educational initiatives aimed at raising investor awareness of the importance of ESG factors and their implications for equity financing. Such programs can foster informed investment decisions and promote sustainable financial markets. Furthermore, non-financial

companies are encouraged to embed ESG principles into both their strategic planning and daily operations. This proactive approach not only strengthens long-term resilience but also improves access to equity capital by appealing to ESG-conscious investors. To ensure transparency and comparability, companies should align their ESG reporting practices with internationally recognized standards, such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Standardized reporting enhances credibility and facilitates stakeholder evaluation of ESG performance. In addition, non-financial enterprises are advised to integrate ESG objectives into their core business strategies by setting measurable goals such as reducing carbon emissions, promoting diversity and inclusion, and enhancing governance structures that reflect a genuine commitment to sustainability. Policymakers also have a critical role to play by introducing incentive mechanisms that encourage firms to improve their ESG performance. These could include tax incentives, subsidies, or preferential access to financing for companies that meet or surpass defined ESG benchmarks. Such policies would stimulate broader ESG adoption and foster a more sustainable corporate landscape.

For future research, expanding the sample to include a wider range of industries and geographic contexts would enhance the generalizability of findings. While the current study focused on the direct relationship between ESG performance and capital structure decisions, future studies should explore potential mediating and moderating variables. Factors such as stakeholder pressures, institutional environments, and contextual dynamics may influence the ESG–finance nexus and offer a more nuanced understanding of how ESG factors interact with corporate financial strategies.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Akanpaaba, P. A., Agyapong, A., Mensah, H. K., & Akomea, S. Y. (2022). Social capital and firm performance nexus: The role of new product development capability and environmental dynamism in an emerging economy. *Africa Journal of Management, 8*(4), 453-480. https://doi.org/10.1080/23322373.2022.2106920
2. Ali, H. Y., Asrar-ul-Haq, M., Amin, S., Noor, S., Haris-ul-Mahasbi, M., & Aslam, M. K. (2020). Corporate social responsibility and employee performance: The mediating role of employee engagement in the manufacturing sector of Pakistan. *Corporate Social Responsibility and Environmental Management, 27*(6), 2908-2919. https://doi.org/10.1002/csr.2011
3. Alkaraan, F., Albitar, K., Hussainey, K., & Venkatesh, V. G. (2022). Corporate transformation toward Industry 4.0 and financial performance: The influence of environmental, social, and governance (ESG). *Technological Forecasting and Social Change, 175,* 121423. https://doi.org/10.1016/j.techfore.2021.121423
4. Al-khawaja, H. A., Alshehadeh, A. R., Saad, H. T., Jameel Abdullah, A. A., & Hatamleh, H. M. (2024). Disclosure of the Dimensions of Social Responsibility and Its Im-

http://dx.doi.org/10.21511/imfi.22(3).2025.07

pact on Economic Value Added: Evidence from Industrial Companies. *International Journal of Advances in Soft Computing & Its Applications*, *16*(3). Retrieved from https://www.researchgate.net/publication/386280632_Disclosure_of_the_Dimensions_of_Social_Responsibility_and_Its_Impact_on_Economic_Value_Added_Evidence_from_Industrial_Companies

5. Alshukri, T., Seun Ojekemi, O., Öz, T., & Alzubi, A. (2024). The Interplay of Corporate Social Responsibility, Innovation Capability, Organizational Learning, and Sustainable Value Creation: Does Stakeholder Engagement Matter? *Sustainability, 16*(13), 5511. https://doi.org/10.3390/su16135511
6. Amankwa, R. F., Mawutor, J. K. M., & Yiadom, E. B. (2020). A panel examination of IFRS adoption and financial statement quality: Evidence from selected firms in Ghana. *International Journal of Accounting & Finance Review, 5*(2), 45-53. Retrieved from https://www.cribfb.com/journal/index.php/ijafr/article/view/768
7. Asimakopoulos, P., Asimakopoulos, S., & Li, X. (2023). The role of environmental, social, and governance rating on corporate debt structure. *Journal of Corporate Finance, 83,* 102488. https://doi.org/10.1016/j.jcorpfin.2023.102488
8. Attig, N. (2024). Relaxed financial constraints and corporate social responsibility. *Journal of Business Ethics, 189*(1), 111-131. https://doi.org/10.1007/s10551-023-05353-9
9. Bahadori, N., Kaymak, T., & Seraj, M. (2021). Environmental, social, and governance factors in emerging markets: The impact on firm performance. *Business Strategy & Development, 4*(4), 411-422. https://doi.org/10.1002/bsd2.167
10. Becker, J. M., Cheah, J. H., Gholamzade, R., Ringle, C. M., & Sarstedt, M. (2023). PLS-SEM's most wanted guidance. *International Journal of Contemporary Hospitality Management, 35*(1), 321-346. https://doi.org/10.1108/IJCHM-04-2022-0474
11. Bista, S. (2023). *Disclosure of tax information as corporate social responsibility: an Australian study*. Retrieved from https://researchers.westernsydney.edu.au/files/112716767/uws_77120.pdf
12. Boon, E., Goosen, H., van Veldhoven, F., & Swart, R. (2021). Does transformational adaptation require a transformation of climate services? *Frontiers in Climate, 3,* 615291. https://doi.org/10.3389/fclim.2021.615291
13. Brogi, M., Lagasio, V., & Porretta, P. (2022). Be good to be wise: Environmental, Social, and Governance awareness as a potential credit risk mitigation factor. *Journal of International Financial Management & Accounting, 33*(3), 522-547. https://doi.org/10.1111/jifm.12156
14. Chen, Y., Li, T., Zeng, Q., & Zhu, B. (2023). Effect of ESG performance on the cost of equity capital: Evidence from China. *International Review of Economics & Finance, 83,* 348-364. https://doi.org/10.1016/j.iref.2022.09.001
15. Chouaibi, Y., Rossi, M., & Zouari, G. (2021). The effect of corporate social responsibility and the executive compensation on implicit cost of equity: Evidence from French ESG data. *Sustainability, 13*(20), 11510. https://doi.org/10.3390/su132011510
16. Clarkson, M. O., Sweere, T. C., Chiu, C. F., Hennekam, R., Bowyer, F., & Wood, R. A. (2023). Environmental controls on very high δ238U values in reducing sediments: Implications for Neoproterozoic seawater records. *Earth-Science Reviews, 237,* 104306. https://doi.org/10.1016/j.earscirev.2022.104306
17. Desai, R. (2025). Statutory ESG reporting and investment efficiency: Evidence using quasi-natural experiment. *International Journal of Law and Management*. https://doi.org/10.1108/IJLMA-09-2024-0334
18. Feng, Z., & Wu, Z. (2023). ESG disclosure, REIT debt financing and firm value. *The Journal of Real Estate Finance and Economics, 67*(3), 388-422. https://doi.org/10.1007/s11146-021-09857-x
19. Ferrat, Y., Daty, F., & Burlacu, R. (2022). Short-and long-term effects of responsible investment growth on equity returns. *The Journal of Risk Finance, 23*(1), 1-13. https://doi.org/10.1108/JRF-07-2021-0107
20. Guo, B., & Yang, Z. (2024). Firm-level carbon risk perception and ESG performance. *Environmental Science and Pollution Research, 31*(8), 12543-12560. https://doi.org/10.1007/s11356-024-31863-8
21. Guo, K., Bian, Y., Zhang, D., & Ji, Q. (2024). ESG performance and corporate external financing in China: The role of rating disagreement. *Research in International Business and Finance, 69,* 102236. https://doi.org/10.1016/j.ribaf.2024.102236
22. Han, S., Lu, H., & Wu, H. (2024). ESG disclosure, investor awareness, and carbon risk pricing: Evidence from the Chinese market. *International Review of Law and Economics, 80,* 106217. https://doi.org/10.1016/j.irle.2024.106217
23. Hassan, M. K., Chiaramonte, L., Dreassi, A., Paltrinieri, A., & Piserà, S. (2023). Equity costs and risks in emerging markets: Are ESG and Sharia principles complementary? *Pacific-Basin Finance Journal, 77,* 101904. https://doi.org/10.1016/j.pacfin.2022.101904
24. Hassanein, A., & Elsayed, N. (2025). Reporting ESG Initiatives and Gender Diversity in Germany: Implications for Stock Liquidity. *International Journal of Finance & Economics*. https://doi.org/10.1002/ijfe.70009
25. He, F., Guo, X., & Yue, P. (2024). Media coverage and corporate ESG performance: Evidence from China. *International Review of Financial Analysis, 91,* 103003. https://doi.org/10.1016/j.irfa.2023.103003
26. Huang, X. (2023). The roles of competition on innovation efficiency and firm performance: Evidence from the Chinese manufacturing industry. *European Research on Management and Business Economics, 29*(1), 100201. https://doi.org/10.1016/j.iedeen.2022.100201

27. Huang, Y., Bai, F., Shang, M., & Ahmad, M. (2023). On the fast track: the benefits of ESG performance on the commercial credit financing. *Environmental Science and Pollution Research, 30*(35), 83961-83974. https://doi.org/10.1007/s11356-023-28172-x

28. Izwan, I. D. M., Azman, N. B., Zakaria, N. B., & Ghapar, F. A. (2024). Confluence of Board Members' Financial Literacy, Corporate Environmental Disclosure, and Financial Reporting Quality. *Journal of Law and Sustainable Development, 12*(1), e2220-e2220. https://doi.org/10.55908/sdgs.v12i1.2220

29. Khan, M. A., Hassan, M. K., Maraghini, M. P., Paolo, B., & Valentinuz, G. (2024). Valuation effect of ESG and its impact on capital structure: Evidence from Europe. *International Review of Economics & Finance, 91,* 19-35. https://doi.org/10.1016/j.iref.2024.01.002

30. Khan, M. A., Khan, A., Hassan, M. K., & Maraghini, M. P. (2024). Market response to environmental social and governance performance: A global analysis. *Research in International Business and Finance, 67,* 102131. https://doi.org/10.1016/j.ribaf.2023.102131

31. Khan, M. I., & Iqbal, A. (2024). Integrating ESG with corporate investment decision-making. In *The Emerald Handbook of Ethical Finance and Corporate Social Responsibility: A Framework for Sustainable Development* (pp. 329-350). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80455-406-720241014

32. Khoa, B. T., & Thai, D. T. (2021). Capital structure and trade-off theory: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business, 8*(1), 45-52. https://doi.org/10.13106/jafeb.2021.vol8.no1.045

33. Kilic, Y., Destek, M. A., Cevik, E. I., Bugan, M. F., Korkmaz, O., & Dibooglu, S. (2022). Return and risk spillovers between the ESG global index and stock markets: Evidence from time and frequency analysis. *Borsa Istanbul Review, 22,* S141-S156. https://doi.org/10.1016/j.bir.2022.11.015

34. Lavin, J. F., & Montecinos-Pearce, A. A. (2022). Heterogeneous firms and benefits of ESG disclosure: Cost of debt financing in an emerging market. *Sustainability, 14*(23), 15760. https://doi.org/10.3390/su142315760

35. Lemma, T. T., Muttakin, M., & Mihret, D. (2022). Environmental, social, and governance performance, national cultural values and corporate financing strategy. *Journal of Cleaner Production, 373,* 133821. https://doi.org/10.1016/j.jclepro.2022.133821

36. Li, L., Saat, M. M., Khatib, S. F., Chu, P., & Sulimany, H. G. H. (2024). Navigating the impact: A comprehensive analysis of ESG disclosure consequences through systematic review. *Business Strategy & Development, 7*(2), e382. https://doi.org/10.1002/bsd2.382

37. Liu, L., Nemoto, N., & Lu, C. (2023). The Effect of ESG performance on the stock market during the COVID-19 Pandemic – Evidence from Japan. *Economic Analysis and Policy, 79,* 702-712. https://doi.org/10.1016/j.eap.2023.06.038

38. Maaloul, A., Zéghal, D., Ben Amar, W., & Mansour, S. (2023). The effect of environmental, social, and governance (ESG) performance and disclosure on cost of debt: The mediating effect of corporate reputation. *Corporate Reputation Review, 26*(1), 1-18. http://dx.doi.org/10.1057/s41299-021-00130-8

39. Maijanen, P. (2020). Teaching the history of strategic management. In *Teaching Strategic Management* (pp. 8-30). Edward Elgar Publishing. http://dx.doi.org/10.4337/9781788978361.00009

40. Malik, N., & Kashiramka, S. (2024). Impact of ESG disclosure on firm performance and cost of debt: empirical evidence from India. *Journal of Cleaner Production, 448,* 141582. https://doi.org/10.1016/j.jclepro.2024.141582

41. Matemane, R., Msomi, T., & Ngundu, M. (2024). Environmental, social and governance and financial performance nexus in South African listed firms. *South African Journal of Economic and Management Sciences, 27*(1), 5387. Retrieved from https://hdl.handle.net/10520/ejc-ecoman_v27_n1_a5387

42. Owusu & Agyeman, Y. (2021). Formation of a sustainable development ecosystem for Ghanaian universities. *International Review of Education, 67*(3), 333-362. https://doi.org/10.1007/s11159-020-09857-8

43. Pujiastuti, A., Yunita, R. D. S., & Astuti, F. Y. (2024). Esg performance, debt equity choices, and rapid adjustments in Indonesia. *Jurnal Akuntansi dan Keuangan Indonesia [Indonesian Journal of Accounting and Finance], 21*(1), 4. https://doi.org/10.21002/jaki.2024.04

44. Su, J., & Xue, L. (2024). ESG performance, demographic trend, and labour investment efficiency in China. *Applied Economics Letters, 31*(20), 2207-2213. https://doi.org/10.1080/13504851.2023.2212956

45. Tang, H. (2022). ESG performance, investors' heterogeneous beliefs, and cost of equity capital in China. *Frontiers in Environmental Science, 10,* 992559. https://doi.org/10.3389/fenvs.2022.992559

46. Tang, H. (2022). The effect of ESG performance on corporate innovation in China: The mediating role of financial constraints and agency cost. *Sustainability, 14*(7), 3769. https://doi.org/10.3390/su14073769

47. Trong, Nguyen N., & Nguyen, C. T. (2021). Firm performance: the moderation impact of debt and dividend policies on overinvestment. *Journal of Asian Business and Economic Studies, 28*(1), 47-63. https://doi.org/10.1108/JABES-12-2019-0128

48. Tsang, A., Frost, T., & Cao, H. (2023). Environmental, social, and governance (ESG) disclosure: A literature review. *The British Accounting Review, 55*(1), 101149. https://doi.org/10.1016/j.bar.2022.101149

http://dx.doi.org/10.21511/imfi.22(3).2025.07

49. Vardarlıer, P., & Al, M. (2022). The Effect of Emotional Intelligence Levels on Leadership: An Application in the Energy Sector. In *Multidimensional Strategic Outlook on Global Competitive Energy Economics and Finance* (pp. 55-67). Emerald Publishing Limited. https://doi.org/10.1108/978-1-80117-898-320221007

50. Venturelli, V., Pedrazzoli, A., Pennetta, D., & De Novellis, G. (2024). Assessing the influence of ESG washing on bank reputational exposure: A cross-country analysis. *Business Ethics, the Environment & Responsibility*. https://doi.org/10.1111/beer.12727

51. von Deimling, C., Eßig, M., & Glas, A. H. (2022). Signalling theory. In *Handbook of Theories for Purchasing, Supply Chain and Management Research* (pp. 445-470). Edward Elgar Publishing. https://doi.org/10.4337/9781839104503.00033

52. Wang, W. (2024). ESG performance on the financing cost of A-share listed companies and an empirical study. *International Journal for Housing Science and Its Applications, 45,* 1-7. Retrieved from https://housing-science.org/2024%28issue%201%29/20242-01-IJHSA.pdf

53. Xiong, W., Dong, M., & Xu, C. (2023). Institutional investors and corporate social responsibility: Evidence from China. *Emerging Markets Finance and Trade, 59*(10), 3281-3292. https://doi.org/10.1080/1540496X.2022.2088351

54. Yang, X., Bao, J., & Zhang, K. (2024). Environmental, social and governance (ESG) performance and abnormal positive tone. *Sustainability Accounting, Management and Policy Journal, 16*(2), 351-388. https://doi.org/10.1108/SAMPJ-01-2024-0045

55. Yu, Z., Farooq, U., Alam, M. M., & Dai, J. (2024). How does environmental, social, and governance (ESG) performance determine investment mix? New empirical evidence from BRICS. *Borsa Istanbul Review, 24*(3), 520-529. https://doi.org/10.1016/j.bir.2024.02.007

56. Zahid, R. A., Saleem, A., & Maqsood, U. S. (2023). ESG performance, capital financing decisions, and audit quality: empirical evidence from Chinese state-owned enterprises. *Environmental Science and Pollution Research, 30*(15), 44086-44099. https://doi.org/10.1007/s11356-023-25345-6

57. Zahid, R. M., Hussain, M., Wang, S., Younas, M. W., & Maqsood, U. S. (2023). *Common Institutional Ownership and ESG Performance: Evidence from China*. Retrieved from https://www.researchgate.net/publication/374174004_Common_Institutional_Ownership_and_ESG_Performance_Evidence_From_China

58. Zahid, Z., Zhang, J., Shahzad, M. A., Junaid, M., & Shrivastava, A. (2024). Green Synergy: Interplay of corporate social responsibility, green intellectual capital, and green ambidextrous innovation for sustainable performance in the industry 4.0 era. *Plos one, 19*(8), e0306349. https://doi.org/10.1371/journal.pone.0306349

59. Zeng, Y., Zhao, X., & Zhu, Y. (2023). Equity incentives and ESG performance: Evidence from China. *Finance Research Letters, 58,* 104592. https://doi.org/10.1016/j.frl.2023.104592

60. Zhang, F., Lai, X., & Guo, C. (2024). ESG disclosure and investment-financing maturity mismatch: Evidence from China. *Research in International Business and Finance, 70,* 102312. https://doi.org/10.1016/j.ribaf.2024.102312

61. Zhang, K. Q., Tang, L. Z., & Chen, H. H. (2021). The impacts of environmental performance and development of financing decisions on economic sustainable performance: from the view of renewable and clean energy industry. *Clean Technologies and Environmental Policy, 23*(6), 1807-1819. https://doi.org/10.1007/s10098-021-02068-1

62. Zhou, Y., Wang, Z., Zheng, S., Zhou, L., Dai, L., Luo, H., & Sui, M. (2024). Optimization of automated garbage recognition model based on resnet-50 and weakly supervised cnn for sustainable urban development. *Alexandria Engineering Journal, 108,* 415-427. https://doi.org/10.1016/j.aej.2024.07.066