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THE ROLE OF ESG FACTORS IN ENHANCING STOCK LIQUIDITY AND ANALYST FORECAST ACCURACY: EVIDENCE FROM THE JOHANNESBURG STOCK EXCHANGE

Keywords: ESG, liquidity, forecast accuracy, COVID-19.

J E L Classification: M40, M41, M49.

Abstract: The purpose of this study is to examine the impact of environmental, social, and governance (ESG) factors on stock liquidity and analyst forecast accuracy on the Johannesburg Stock Exchange (JSE) listed firms for the period 2012–2024. The empirical results reveal that market liquidity is positively associated with ESG and its components (environmental (ENV) and governance (GOV)). Additionally, when investigating the relationship between ESG and analysts' forecast accuracy, we find that ENV and GOV scores improve forecast accuracy, while social (SOC) scores have a negative im-

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pact. Moreover, the results reveal that ESG disclosure serves as a critical strategic tool for maintaining financial stability by reducing BAS and ERROR during the pandemic crisis (COVID_19). The study highlights the importance of ESG in enhancing liquidity and supporting sustainable finance, by providing significant implications for investors, analysts, and corporate stakeholders.

■■■ INTRODUCTION

In recent years, Environmental, Social, and Governance (ESG) considerations have emerged as critical drivers of corporate decision-making and investment strategies. Traditionally, capital markets have been primarily concerned with financial metrics like profitability, growth, and risk management. However, as global concerns regarding climate change, social inequality, and corporate governance intensify, investors are increasingly seeking to incorporate non-financial factors into their investment processes.

In South Africa, ESG factors have become an essential aspect of the country's corporate landscape, particularly as the nation grapples with socio-economic challenges such as economic inequality, high unemployment, and environmental degradation. ESG reporting is becoming an essential tool for companies to communicate their sustainability efforts and for investors to evaluate companies' long-term viability and risks. Moreover, South Africa's regulatory frameworks, such as the King IV Report on Corporate Governance serve as a global benchmark for Integrated Reporting (IR), encourage companies to adopt sustainable practices, making ESG ratings crucial for understanding corporate performance and investment decisions in the South African capital market.

Some studies have examined the impact of sustainability reports (Dhaliwal, Radhakrishnan, Tsang & Yang, 2012; Luo & Wu, 2022; Kim & Park, 2023; Ahmad, Yaqub & Lee, 2024; Primacintya & Kusuma, 2025) on the capital market. However, the evidence remains inconclusive regarding the effect of sustainability reporting on the capital market. Therefore, to fill this gap in the literature, we aim to investigate the effects of ESG ratings on stock liquidity and analyst forecast accuracy within the context of an emerging economy.

Our findings are based on a final sample of firms listed on the JSE over the period from 2012 to 2024. The empirical results reveal that market liquidity is positively associated with ESG and its components (environmental (ENV) and governance (GOV)). Additionally, when investigating the relationship between ESG and analysts' forecast accuracy, we find that ENV and GOV scores improve forecast accuracy, while social (SOC) scores have a negative impact.

Our paper makes several contributions to the literature. First, it uses data from South Africa, an emerging market, filling a gap in ESG research, which is predominantly focused on developed countries. Second, it expands on the limited empirical research on ESG's capital market effects by examining multiple economic consequences in a single study, including analyst forecast accuracy and liquidity. Finally, it enhances our understanding of the value relevance of non-financial information and its impact on financial analysts, providing valuable insights for investors who rely on forecasts to mitigate risk and make informed decisions.

The remaining sections of this paper are organized as follows. Section 2 provides the relevant literature and develop our hypotheses. Section 3 outlines the sample and research methods utilized in our study. The empirical results are presented in Section 4. Additional analyses are discussed in Section 5. Finally, Section 6 offers a summary and conclusion of our findings.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Non-financial information is a complement to the financial information used by investors to make investment decisions. Companies may opt to publish their non-financial information in a stand-alone report (e.g., corporate social responsibility (CSR) report, sustainability report, ESG report...). Recent research shows that CSR reports will improve the performance of companies and gain benefits in the capital market (Lys, Naughton & Wang, 2015). Hence, stock liquidity is one of the indicators of a firm's performance. High level of stock liquidity indicates that investors are more likely to focus on it, suggesting lower information asymmetry among market participants (Usman & Tandelilin, 2014; Nurazi, Usman & Kananlua, 2015; Harjanto, 2023). Corporate disclosure, in general, as a signal for investors and acted as a transparency mechanism to diminish information asymmetry, attracts potential investors to finance investment opportunities and facilitate decision-making. (Verrecchia, 2001; Beyer, Cohen, Lys & Walther, 2010). Empirical studies have commonly used information asymmetry as a proxy for market liquidity through the bid-ask spread (BAS) (Amihud, 2002). According to agency and signaling theory as the base arguments, greater transparency and higher level of ENV, SOC, and GOV reporting decreases the level of information asymmetry.

This research extends by referring to the previous studies testing the association between ESG performance and information asymmetry observed in other emerging economies such as Brazil and Poland (e.g., Miralles-Quirós, Miralles-Quirós & Arraiano, 2018; Pyka, Karkowska & Nocoń, 2025; Tiwary & Mishra, 2025), yet with distinct institutional characteristics. These studies show that sustainability disclosure significantly reduces information asymmetry, particularly during periods of political and economic instability. Among them, the study of Cho, Lee and Pfeiffer Jr (2013) show that CSR reporting is negatively associated with information asymmetry measured by BAS. Using Chinese publicly listed companies from 2010 to 2020, He, Feng and Hao (2023) find that ESG rating significantly improves stock liquidity. Siew, Balatbat and Carmichael (2016) and Kim and Park (2023) confirm this result for U.S. companies. These findings are consistent with previous research indicating that companies with high level of ESG can effectively reduce information asymmetry measured through the BAS, as an inverse measure for stock liquidity (Siew et al., 2016; Kim & Park, 2023).

The preceding discussion suggests the first hypothesis of this paper:

H1. ESG performance have a positive relationship with stock liquidity.

Financial analysts play a very important role in the firm as they help process and interpret publicly available accounting information, as well as create new information and make it available. Moreover, ESG ratings serve as an alternative source of information for analysts in forecasting a firm's earnings. Some research found that analysts use financial and non-financial information in their earning forecasting (Coram, Mock & Monroe, 2011; Ghosh & Wu, 2012; Dhaliwal et al., 2012; Bernardi & Stark, 2018), so it means that both types of information are important for the analyst. As a result, analysts are likely to have a better understanding of a company's fundamentals, leading to improved forecast accuracy with a reduction in earnings forecast errors.

Within the broader context of ESG, some studies have examined the impact of non-financial disclosure on information asymmetry measured through forecast dispersion or forecast errors. Specifically, Dhaliwal et al. (2012) find that the issuance of stand-alone CSR reports is associated with lower analyst forecast error. This relationship was stronger in more stakeholder-oriented countries. Luo and Wu (2022) show that ESG ratings increase analysts' forecast accuracy by reducing information risks and operation risks. More recently, Rossi and Candio (2023) show that both sustainability and an integrated report are associated with smaller forecast error, compared to those who chose to

publish an annual report for the top 600 companies listed in the Eurostoxx. We also find that the ENV scores are positively affect forecast error, independently from other controls including the SOC and GOV scores.

Based on our review of the literature, we therefore formulate the second hypotheses is as follows:

H2. ESG performance have a positive relationship with analyst forecast accuracy.

THE RESEARCH METHODOLOGY AND THE COURSE OF THE RESEARCH PROCESS

Data and Sample

The initial sample of our study consisted of one hundred (100) South African companies listed on the Johannesburg Stock Exchange (JSE) representing 97% of the market capitalization of the JSE as of 31 December 2020. Our study covers nine years from 2012 to 2024. We collect data concerning the remaining variables from Datastream, Asset4 ESG, the Institutional Brokers' Estimate System (I/B/E/S), and hand-collection for IR data.

Table 1, reveals that the final sample for BAS consists of 747 firm-year observations and the sample for ERROR consists of 727 firm-year observations.

Table 1. Sample Selection

	BAS	ERROR
	Firms-years	Firms-years
EY observations	1300	1300
Less Financial Firms	(403)	(403)
Less Missing data	(150)	(170)
Final Sample	747	727

Source: own study.

Model Specification

To examine the impact of ESG factors on stock liquidity and analyst forecast accuracy, we estimate the following models, respectively:

$$\begin{aligned}
 BAS_{it} = & \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 COVID_{it} + \alpha_3 SIZE_{it} + \alpha_4 LEV_{it} \\
 & + \alpha_5 DIV_{it} + \alpha_6 BTM_{it} + \alpha_7 ROA_{it} + \alpha_8 BETA_{it} \\
 & + \alpha_9 LNP_{it} + \alpha_{10} LOSS_{it} + \alpha_{11} ATG_{it} + \gamma_j \sum_{j=1}^{11} year \\
 & + n_k \sum_{k=1}^8 Industry + \varepsilon_{it}
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 ERROR_{it} = & \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 COVID_{it} + \alpha_3 SIZE_{it} + \alpha_4 LEV_{it} \\
 & + \alpha_5 DIV_{it} + \alpha_6 BTM_{it} + \alpha_7 ROA_{it} + \alpha_8 BETA_{it} \\
 & + \alpha_9 ANANO_{it} + \alpha_{10} LOSS_{it} + \alpha_{11} ATG_{it} + \gamma_j \sum_{j=1}^{11} year \\
 & + n_k \sum_{k=1}^8 Industry + \varepsilon_{it}
 \end{aligned} \tag{2}$$

The definitions of the variables in the above-mentioned models are outlined in table 2. All continuous variables are winsorized at the first and 99th percentiles.

Variables' Measurement

Dependent Variables

The first dependent variable is stock liquidity. The Bid-Ask Spread (BAS) is a superior proxy for liquidity in emerging markets because it directly captures the adverse selection component of transaction costs and an inverse proxy for

liquidity (Bushman, Engel & Smith, 2004; Barth, Cahan, Chen & Venter, 2017; Boujelben, Hadriche & Makni Fourati, 2024). BAS is the natural logarithm of the median value daily difference between the ask and the bid closing prices divided by the midpoint price. Lower information asymmetry encourages greater market participation and enhances investor confidence, thereby reducing the BAS. Therefore, firms disclosing high-quality ESG data are expected to exhibit a lower BAS due to increased transparency, which encourages liquidity providers (market makers) to reduce the premium charged for uncertainty (Leuz & Verrecchia, 2000).

According to Lang and Lundholm (1996), forecast accuracy is the negative of the absolute value of analyst forecast error (ERROR), deflated by stock price at the beginning of the year:

$$ERROR_{it} = (|AEPS_{it} - FEPS_{it}|)/p_{t-1}$$

Where AEPS is Actual Earnings per share in period t, FEPS is Forecasted EPS, p (t-1) represents stock price at the beginning of the year.

Independent variable

Following Usman, Bernardes, and Kananlua (2020), the ESG score is a weighted average of the three index constituents or pillars, that is environmental (ENV), social (SOC), and governance (GOV). A higher aggregate score indicates a better ESG rating. The three pillar scores were each separately considered for sensitivity analysis.

Control variables

Based on prior literature, a variety of control variables were included in all versions of equations: COVID_19 (COVID), asset growth (ATG), firm size (SIZE), loss-making firms are denoted with a dummy variable (LOSS), financial leverage (LEV), dividend payment (DIV), profitability (ROA); book-to-market ratio (BTM), and firm risk (BETA). In accordance with Sriani and Agustia (2020), the bid-ask spread version includes the LNP variable. All variables are defined in table 2.

Table 2. Variable Definitions

Variable		Definition (Datastream and Institutional Brokers' Estimate System (IBES))
Dependent variables	BAS	Bid-ask spread is the natural logarithm of the median of the daily ratio of bid minus ask price divided by the average of the bid and ask price over the period ranging from month _6 to month _6 relative to the end of the firm's fiscal year end.
	ERROR	The average absolute error of all forecasts made during the year for target earnings, scaled by stock price at the beginning of the year.
Independent variables	ESG	Represents the overall Environment, Social and Governance (ESG) rating at the end of the fiscal year (ASSET4).
	ENV	It is a score of a firm's environmental performance in period t (ASSET4).
	SOC	It is a score of a firm's social performance in period t (ASSET4).
	GOV	It is a score of a firm's corporate governance performance in period t (ASSET4).
Control variables	BETA	Beta is calculated by regressing firms' monthly return on the monthly market return over a five-year period (Beta retrieved from Datastream). Because our Beta are all between 0 and 4 we do not winsorize them (Chen et al., 2011).
	COVID	A dummy variable that equals 1 if an observation falls within the pandemic period 2020–2021 and 0 otherwise.
	SIZE	Natural logarithm of total assets at the end of the fiscal year.
	LEV	Leverage calculated as the ratio of total debt to the sum of total debt and the book value of common shareholders' equity in the firm at fiscal year-end.
	ATG	Asset growth measured as the one-year change in total assets from the prior financial year to the current financial year, scaled by lagged total assets.
	DIV	Dummy variable that equals one if the firm declares or pays a dividend in the current year, and zero otherwise.
	ROA	Return on assets calculated as the ratio of income before extraordinary items to lagged total assets.
	LOSS	Dummy variable equal to 1 if the company reported a loss for the period and 0 otherwise.
	BTM	Book-to-market ratio of equity calculated as the book value of common shareholders' equity, divided by the number of common shares outstanding multiplied by end-of-year share price.
	LNP	Natural logarithm of the adjusted price at fiscal year-end.
	ANANO	The number of analysts covering the company.

Source: own elaboration.

RESULTS

Descriptive Statistics

Table 3, Panel A summarizes the descriptive statistics of the continuous variables; Panel B presents the descriptive statistics of the dummy variables (the frequencies and the number) over the period from 2012 to 2024 and panel C presents the mean of BAS and ERROR (Pre-COVID minus COVID-19). Panel A shows that the mean (median) of the dependent variable BAS is -6,037 (-6,332). These results are consistent with those of Barth al. (2017), who reported an average value of BAS in the order of -6.07. The average forecast error is 0.037. The average level of debt is 0.341, reflecting the relatively modest weight of external financing in our sample. The mean of the firm size as measured by the logarithm of total assets is 17.174 with a low standard deviation.

The average ESG score is 56.389, indicating that 56% of firms have an excellent relative ESG performance and a high degree of transparency in publicly reporting ESG data. Regarding the three ESG Pillar scores, SOC has the highest average score, implying 59.749% of companies in our sample are characterized by relatively better SOC performance, followed by GOV and ENV disclosure. The GOV score stands as 56.476 percent and the ENV score is 50.195 percent on average.

The analysis of other ratios reveals that the average profitability (ROA) is equal to 7.213 and its values range from -30.77 to 35.89 with a standard deviation of 9.632. This provides us with information that the profitability is moderately dispersed, and some companies are not profitable with a negative return while the maximum value of profitability is 35.89. Concerning the average growth of all the firms making up our sample over the period from 2012 to 2024 is 0.123 with a standard deviation of 0.280. The analysis of table 3 shows the importance of growth opportunities (mean = 0.854). As shown in table 3 (Panel C), the univariate analysis indicates a raw increase in both the average Bid-Ask Spread (from 0.69% to 1.11%) and the forecast error (from 0.035 to 0.046) during the pandemic. These results reflect the initial systemic shock and heightened uncertainty on the Johannesburg Stock Exchange.

Table 3. Descriptive Statistics

Panel A: Continuous variables					
Variables	Mean	Std. dev	Min	Median	Max
BAS	-6.037	1.084	-7.189	-6.332	-0.405
ERROR	0.037	0.077	0	0.011	0.502
ESG	56.389	15.106	1.35	57.28	90.85
SOC	59.749	18.466	1.19	62.82	94.4
ENV	50.195	21.635	0	50.06	89.62
GOV	56.476	21.708	2.69	58.78	98.02
ATG	.123	0.280	-0.839	0.096	4.493
SIZE	17.172	1.140	12.206	17.185	20.289
LEV	0.341	0.231	0	0.347	1
BTM	0.854	1.120	-0.016	0.54	10.779
ROA	7.213	9.632	-30.77	6.56	35.89
BETA	1.077	0.872	-0.59	1.025	5.07
LNP	4.053	1.524	-4.605	4.307	7.824
ANANO	7.512	3.747	1	8	16
Panel B: Dummy variables					
Variables		Frequency		Percent of dummy=1	
LOSS		171		19.07%	
DIV		734		85.55%	
Panel C: Univariate Analysis (Mean)					
Variable		Pre-COVID		COVID-19	
BAS (%)		0.697		1.112	
ERROR		0.035		0.046	

Source: own elaboration.

Correlation matrix

Table 4 presents the Pearson's correlation analysis results in which there is no high correlation ($r > \pm 0.90$) among the independent variables of the proposed models (Hair, 2011).

Table 4 reveals that the correlations between ESG, ENV, SOC, GOV, and BAS are significantly negative different from zero. At 1% level significance level, there was a statistically significant correlation between GOV and ERROR. However, ESG, SOC, and ENV variables are insignificantly correlated with ERROR.

Regression Results

Table 5 show that ESG reporting are negatively associated to information asymmetry measured by BAS, meaning that companies with a better ESG score have smaller BAS and, therefore, higher liquidity, supporting H1. This finding highlights that firms with more transparent ESG reporting in place tend to benefit from lower asymmetry information and therefore higher liquidity. This finding is in line with Siew et al. (2016) and Kim and Park (2023) who asserts that the high quality of ESG can reduce information asymmetry measured through the BAS. Thus, we find that ESG are positively affects stock liquidity, which is consistent with the fact that ESG improve the firm's information environment while inducing additional trading by informed investors. This finding is in line with evidence from other emerging markets, such as Brazil and Poland (e.g., Miralles-Quirós et al., 2018; Pyka et al., 2025), which suggests that ESG transparency serves as a crucial mechanism for reducing information asymmetry and enhancing market liquidity. This evidence suggests that robust ESG strategies acted as an informational shield, enabling firms to maintain liquidity and transparency despite the systemic shock.

Our results support the idea that companies with strong ESG performance are likely to demonstrate increased transparency and improved communication with stakeholders. This could help reduce information asymmetry in the market, leading to a narrower BAS and enhanced liquidity. The integration of non-financial information with financial data can provide investors and managers with a more holistic and transparent view of the company. This enhanced understanding of the company's business model, strategy, and performance can increase investor confidence in the company's stock, potentially reduc-

Table 4. Pearson Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) BAS	1.00															
(2) ERROR	0.28*	1.00														
(3) ESG	-0.33*	-0.05	1.00													
(4) ENV	-0.15*	-0.04	0.74*	1.00												
(5) SOC	-0.38*	0.05	0.83*	0.56*	1.00											
(6) GOV	-0.19*	-0.12*	0.63*	0.17*	0.26*	1.00										
(7) ALTG	-0.18*	-0.20*	-0.03	-0.08	-0.01	0.00	1.00									
(8) SIZE	-0.54*	0.05	0.27*	0.23*	0.29*	0.06	0.08*	1.00								
(9) LEV	0.05	0.27*	-0.01	-0.05	0.01	0.00	0.09*	0.21*	1.00							
(10) DIV	-0.23*	-0.17*	-0.07	-0.14*	0.00	-0.01	0.08*	-0.03	-0.08*	1.00						
(11) BTM	0.36*	0.48*	-0.09*	0.06	-0.12*	-0.13*	-0.24*	0.07*	0.09*	-0.21*	1.00					
(12) LOSS	0.26*	0.34*	0.04	0.13*	0.03	-0.05	-0.23*	0.11*	0.28*	-0.24*	0.45*	1.00				
(13) ROA	-0.23*	-0.27*	-0.04	-0.13*	0.00	0.01	0.25*	-0.25*	-0.39*	0.30*	-0.51*	-0.62*	1.00			
(14) BETA	0.02	0.24*	0.25*	0.20*	0.25*	0.22*	-0.06	0.28*	0.03	-0.23*	0.36*	0.21*	-0.30*	1.00		
(15) LNP	-0.73*	-0.38*	0.16*	0.14*	0.18*	0.07	0.16*	0.46*	-0.30*	0.27*	-0.37*	-0.38*	0.38*	-0.02	1.00	
(16) ANANO	-0.56*	-0.22*	0.25*	0.12*	0.28*	0.11*	0.13*	0.37*	0.02	0.08*	-0.26*	-0.09*	0.21*	0.01	0.44*	1.00

Notes: all variables are defined in table 2. * indicates significance at the 5% and 1% level.

Source: own elaboration.

ing information asymmetry. Informed investors are typically less affected by adverse selection and more willing to participate in the market (Cheng, Dhaliwal & Neamtiu, 2011). Additionally, companies with higher ESG ratings are often viewed as more sustainable, well managed, and less risky, which can enhance investor confidence and increase demand for their shares. This increased demand can attract more investors, lead to higher trading volumes and reduce BAS, which are indicators of improved liquidity.

Our empirical evidence highlights a distinct divergence between aggregate market trends and conditional firm performance. While univariate results (Panel A) indicate a significant deterioration in market quality during the pandemic, the multivariate analysis reveals a robust “resilience effect” facilitated by ESG transparency. Specifically, the COVID-19 coefficient is significantly negative at the 1% level, suggesting that proactive communication and enhanced transparency effectively mitigated systemic risks. This implies that ESG disclosure serves as a critical strategic tool for maintaining financial stability by reducing BAS and ERROR during the pandemic crisis.

As expected, control variables SIZE, DIV, ROA, and LNP are negatively and significantly associated with BAS. Greater information will lower adverse selection, thus the firm size is negatively associated with information asymmetry, which Companies with larger firms, with higher profitability and with lower growth have smaller BAS, and they are also expected to present a greater volume of information disclosure. Additionally, and consistent with Sriani et al. (2020), BTM and ATG as proxies for growth, present a positive correlation with BAS.

Table 5. Regression of ESG on Stock Liquidity and Analyst Forecast Accuracy

	BAS	ERROR
ESG	-0.0101***	-0.0004**
	(0.0019)	(0.0002)
COVID	-0.4678***	-0.0297***
	(0.1209)	(0.0113)
ATG	0.142	-0.0207*
	(0.0904)	(0.011)
SIZE	-0.1487***	0.0138***

Table 5. Regression...

	BAS	ERROR
	(0.0364)	(0.0032)
LEV	-0.0755	0.0596***
	(0.1474)	(0.0158)
DIV	-0.1842**	0.0174**
	(0.0763)	(0.008)
BTM	0.1377***	0.0127***
	(0.0309)	(0.0033)
LOSS	0.0564	0.0215**
	(0.0772)	(0.0084)
ROA	-0.0049*	0.001***
	(0.0029)	(0.0004)
BETA	0.0026	0.0006
	(0.0297)	(0.0041)
LNP	-0.2483***	
	(0.0294)	
ANANO		-0.0037***
		(0.0009)
Industry	yes	yes
Year	yes	yes
Constant	-0.8005	-0.2138***
	(0.5095)	(0.0525)
N	537	558
Wald chi2 (28)	949.79***	143.05***

Notes: all variables are defined in table 2. *, **, *** significant at 1, 5, and 10 percent levels, respectively. Standard errors are in parentheses.

Source: own elaboration.

For analyst forecast accuracy, we find that the coefficient of ESG is significantly negative at 5% level, supporting the signaling theory, suggesting that better ESG ratings reduce analysts' forecast errors, which is consistent with Rossi and Candio (2023). These empirical findings suggest that higher levels of firms' engagements in ESG activities are negatively associated with analysts' EPS forecast errors, which indicates that high levels of ESG performance helps analysts better predict the firm-level EPS.

Regarding the COVID-19 pandemic's impact, the multivariate regression in table 5 reveals a negative and significant coefficient for the COVID dummy after controlling for ESG performance, which highlights the value of ESG as a strategic tool for financial performance in emerging markets.

Regarding control variables, SIZE, ROA, BTM, LOSS, and LEV have positive and significant coefficients. According to the results, SIZE has a positive impact on ERROR in contrast with previous research. Therefore, the results of our regression analysis show that larger companies have higher forecast errors. This suggests that larger firms on the Johannesburg Stock Exchange are associated with higher informational complexity, potentially leading to greater forecast discrepancies. The positive coefficients of control variables ROA, BTM, and LEV indicate that firms with higher profitability, firms with higher growth and higher leverage have higher forecast error. Similar to the findings of Lys and Soo (1995), ANANO has a negative coefficient, which indicates that analyst forecast accuracy increases when more analysts follow the company.

Additional Analyses

To ensure the robustness of our primary findings, we re-estimate the baseline regression model by replacing the aggregated ESG ratings with Environment, Social, and Governance separately.

Table 6 show that the coefficients of SOC and GOV scores are significantly negative at the 1% level. This result suggests that higher SOC and GOV disclosure results in reduced information asymmetry, and hence increased stock market liquidity. In contrast, the ENV scores are not statistically significant in explaining BAS. When considering the individual GOV, ENV, and SOC scores and ERROR, we find that there is a negative relationship between the ENV and GOV scores and the forecast error. In other words, our results highlight the contribution of governmental practices to lowering the forecast error and therefore affect posi-

tively analyst forecast accuracy. By contrast, a positive significant relationship is observed between the SOC score and forecast error. This can lead to more accurate forecasting by analysts, as companies with strong environmental and governance practices may be more transparent and forthcoming with information compared to those focusing on social performance alone. This, in turn, improves the overall information environment, reduces information risk, and facilitates more accurate decision-making and resource allocation.

Table 6. Additional Tests

	BAS	ERROR				
	ENV	SOC	GOV	ENV	SOC	GOV
ENV	-0.0025*			-0.0004***		
	(0.0013)			(0.0001)		
SOC		-0.0094***			0.0002	
		(0.0014)			(0.0001)	
GOV			-0.0033***			-0.0003***
			(0.0012)			(0.0001)
ATG	0.1442*	0.14*	0.1422*	-0.0136	-0.0127	-0.0124
	(0.0865)	(0.0833)	(0.0861)	(0.0095)	(0.0095)	(0.0095)
SIZE	-0.215***	-0.1827***	-0.2206***	0.0124***	0.0112***	0.0109***
	(0.0372)	(0.0362)	(0.0369)	(0.0026)	(0.0026)	(0.0026)
LEV	-0.245*	-0.2774**	-0.2356	0.0592***	0.0557***	0.0589***
	(0.147)	(0.1415)	(0.1465)	(0.0127)	(0.0128)	(0.0127)
DIV	-0.1941***	-0.1404*	-0.1993***	0.0152**	0.0133**	0.0148**
	(0.0753)	(0.0731)	(0.0751)	(0.0064)	(0.0066)	(0.0064)
BTM	0.2219***	0.1923***	0.2039***	0.0118***	0.0114***	0.0102***
	(0.0293)	(0.0286)	(0.0299)	(0.0028)	(0.0028)	(0.0028)
LOSS	0.0929	0.1066	0.0789	0.0266***	0.0258***	0.0254***
	(0.075)	(0.0723)	(0.0747)	(0.0064)	(0.0065)	(0.0064)
ROA	-0.0138***	-0.012***	-0.0129***	0.0013***	0.0013***	0.0013***
	(0.0041)	(0.004)	(0.0041)	(0.0003)	(0.0003)	(0.0003)

Table 6. Additional...

	BAS	ERROR				
	ENV	SOC	GOV	ENV	SOC	GOV
BETA	-0.063**	-0.0302	-0.0452	0.0006	-0.0009	0.0026
	(0.0295)	(0.0289)	(0.0304)	(0.0033)	(0.0034)	(0.0034)
LNP	-0.2031***	-0.2119***	-0.2101***			
	(0.0303)	(0.0291)	(0.0301)			
ANANO				-0.0039***	-0.0044***	-0.0038***
				(0.0007)	(0.0007)	(0.0007)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0466	-0.199	0.1146	-0.1998***	-0.2047***	-0.1801***
	(0.5341)	(0.5153)	(0.5363)	(0.0427)	(0.043)	(0.0434)
N	537	537	537	558	558	558
Wald chi2 (29)	876.20***	982.64***	886.29***	148.60***	137.91***	148.16***

Notes: all variables are defined in table 2. *, **, *** significant at 10, 5, and 1 percent levels, respectively. Standard errors are in parentheses.

Source: own elaboration.

CONCLUSION

In this study, we examine the impact of ESG performance on stock liquidity and analyst forecast accuracy measured by forecast error from listed firms on the JSE over the period 2012–2024. We find that ESG reporting and its components (ENV and GOV) are negatively associated with information asymmetry measured by BAS. This finding highlights that firms with more transparent ESG reporting in place tend to benefit from higher liquidity. Looking for the association between ESG and analysts' forecast accuracy, we find that ESG reporting and its components (ENV and GOV) enhanced analyst forecast accuracy. Moreover, the results reveal that ESG disclosure serves as a critical strategic tool for maintaining financial stability by reducing BAS and ERROR during the pandemic crisis (COVID_19).

Our findings have important implications. First, managers must provide comprehensive reports containing a relevant information to satisfy investors' information needs and influence their decisions, especially in the areas of employee relations, environmental policies, and product strategies. Second, this research can serve as a guide for companies that have not yet reported on ESG factors, that reporting ESG can have a positive impact on companies. Companies can reduce systematic risk and enhance the value of the firm for shareholders by reducing its cost of capital and encouraging increased investment in research and development. For investors, this research can be used as a guide for making investment decisions. Finally, regulators are expected to take regulations seriously related to environmental, social, and governance reporting.

Future research could extend the study to test whether the relation between ESG and economic consequences also holds in a new regulatory context. It would be interesting to investigate cross-country and cross-culture variations in the relationship between CSR and capital market. Furthermore, further research can consider other economic consequences.

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