

“Empirical analysis of the effect of exchange rate volatility on share returns: Evidence from mining companies listed on the Johannesburg Stock Exchange, South Africa”

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EMPIRICAL ANALYSIS OF THE EFFECT OF EXCHANGE RATE VOLATILITY ON SHARE RETURNS: EVIDENCE FROM MINING COMPANIES LISTED ON THE JOHANNESBURG STOCK EXCHANGE, SOUTH AFRICA

Abstract

Exchange rate volatility is a critical macroeconomic risk factor in emerging markets, particularly for export-oriented sectors such as mining in South Africa. The South African mining sector is inherently affected by exchange rate volatility, yet it is the economy's largest foreign-currency earner through the export of mining resources. The study examines the effect of exchange rate volatility on mining companies' share returns within South Africa. The study applies the system Generalized Method of Moments (GMM) estimator to account for both endogeneity and dynamic effects, using panel data from 15 Johannesburg Stock Exchange-listed mining companies over the period 2011 to 2024. The empirical results reveal that exchange rate volatility has a positive and significant effect on the share returns of mining companies, with a coefficient of 0.808, and on total returns (1.094). This indicates that higher currency risk is related to higher return premiums. In contrast, a negative and significant relationship exists between exchange rate volatility and share prices (99.45), implying an adverse valuation effect during heightened uncertainty. Regarding the control variables, GDP growth has a positive effect on share returns (8.978), while oil prices exhibit a negative relationship (−0.327). The results of the study support the risk-return trade-off and the flow-oriented exchange rate approach. The study therefore shows that exchange rate volatility plays a dual role through the enhancement of returns while depressing valuations. This highlights the benefits of implementing currency risk management strategies for investors and policymakers.

Keywords

exchange rate, volatility, returns, mining, risk, GDP, oil, unemployment

JEL Classification

G12, G11, F21, G32

INTRODUCTION

The increasing integration of emerging economies into global financial markets has amplified exposure to exchange rate fluctuations, making currency volatility a central source of macroeconomic risk. In resource-dependent economies such as South Africa, this risk is particularly pronounced within the mining sector, which constitutes a major contributor to export earnings and foreign exchange inflows. Reliance on international commodity markets inherently exposes mining firms to exchange rate movements, thereby linking currency dynamics directly to firm performance and market valuation.

Despite the structural importance of exchange rate movements, the effect of exchange rate volatility on firm-level stock performance re-

mains theoretically ambiguous and empirically unresolved. On one hand, currency fluctuations may enhance competitiveness and increase export revenues, thereby improving firm performance. On the other hand, heightened volatility introduces uncertainty, distorts investment planning, and may adversely affect firm valuation. This duality creates a fundamental scientific problem regarding the direction, magnitude, and transmission mechanisms through which exchange rate volatility influences stock market outcomes.

The problem is further intensified in emerging markets, where financial systems are more sensitive to external shocks, and where institutional and structural factors amplify macroeconomic transmission effects. In the context of South Africa's mining sector, the interaction between exchange rate volatility and stock performance remains insufficiently understood at the firm level, particularly in terms of how volatility simultaneously affects returns and valuation. This lack of clarity necessitates a focused empirical investigation into the role of exchange rate volatility as a determinant of mining companies' share performance.

1. LITERATURE REVIEW

The relationship between exchange rate volatility and stock returns has been thoroughly examined in the context of global finance; however, it remains theoretically contested and empirically inconclusive. The relationship remains one of the most debated issues in international finance, particularly within emerging market contexts where macroeconomic instability and structural vulnerabilities amplify financial transmission mechanisms. This ambiguity surrounding the relationship is highly pronounced in emerging markets, which are characterized by macroeconomic instability and structural features that amplify financial market sensitivities (Adnan & Isma'eel, 2021; Olukole et al., 2025). Recent literature continues to highlight that exchange rate volatility is a dominant driver of financial market risk, particularly in economies such as South Africa, where currency movements play a central role in transmitting global shocks to domestic markets (Adeniyi & Kumeka, 2020; Hakim & Kusmanto, 2020). Despite extensive empirical investigation, the direction and magnitude of this relationship remain theoretically ambiguous and empirically inconclusive.

The theoretical foundation of this relationship is rooted in the flow-oriented model developed by Dornbusch and Fischer (1980), who claim that exchange rate movements affect stock prices through their impact on trade competitiveness, real output, and firm profitability (Nugroho & Robiyanto, 2021; Al Amosh, 2025; Dumrongwong, 2020). In export-oriented industries, currency deprecia-

tion enhances international competitiveness and increases revenue streams, while appreciation reduces export performance and profitability (Alagidede & Panagiotidis, 2010). This transmission mechanism is particularly relevant for mining firms, whose revenues are largely denominated in foreign currencies and whose cost structures are partially domestic, thereby creating asymmetric exposure to exchange rate movements (Dahel & Laabas, 1999).

In addition to the flow-oriented model, the concept of exchange rate exposure is used, which captures the sensitivity of firm value to currency fluctuations through transaction, translation, and economic exposure channels (Marozva, 2020; Perera, 2016). These exposures are particularly pronounced in multinational and export-intensive firms, where exchange rate fluctuations directly affect cash flows, balance sheet valuations, and long-term investment decisions. Transaction exposure arises from fluctuations in cash flows denominated in foreign currencies, while translation exposure affects financial reporting through the conversion of foreign-denominated assets and liabilities (D. Truong & M. Truong, 2022; Yuan et al., 2022). These exposures, transaction and translation, are imperative in shaping firm-level responses to exchange rate changes, particularly for multinational and export-oriented companies (Phylaktis & Ravazzolo, 2005).

The available empirical evidence on the relationship between exchange rate volatility and stock returns can be placed into three categories: posi-

tive, negative, and insignificant or mixed effects. The first category is in support of a positive relationship between the variables by suggesting that higher exchange rate volatility increases risk premiums and expected returns. Studies such as Adler and Dumas (1984), Apergis et al. (20112), Rai and Garg (2021), and Shaik and Rehman (2023) find that volatility acts as a systematic risk factor that is priced in financial markets, and this assertion is consistent with the risk–return trade-off theory. This entails that investors demand higher compensation for bearing currency risk, which leads to increased stock returns. According to this perspective, exchange rate volatility represents a systematic risk factor that is priced in financial markets, leading to higher expected returns as compensation for increased uncertainty. Studies employing advanced econometric techniques, including GARCH-based models and dynamic panel estimators such as Bonga-Bonga and Mpoha (2025), Nikpey Pesyan et al. (2026), and Oyadeyi (2026), confirm that volatility can enhance return premiums, particularly in emerging markets characterized by high macroeconomic risk.

The second category of empirical evidence identifies a negative relationship between the variables by arguing that exchange rate volatility introduces uncertainty that negatively affects firm valuation and investment decisions as it raises transaction costs, discourages investment, and reduces firm valuation. A recent systematic review synthesizing over 40 studies which include Jefferis and Okeahalam (2019), Prasetyono (2020), and Sikhosana and Aye (2018) conclude that exchange rate volatility predominantly exerts a negative impact on financial performance, particularly through its adverse effects on profitability and investment stability. Hakim and Nugroho (2023) further allude that enhanced exchange rate volatility discourages investment, reduces capital inflows, and depresses stock prices. This contribution is consistent with behavioral finance theories (Harasty & Roulet, 2000), which emphasize the role of uncertainty and investor sentiment in amplifying market reactions to macroeconomic shocks.

The third category, within empirical evidence, reports insignificant or mixed effects, thereby indicating that the relationship between exchange

rate volatility and stock returns is neither stable nor uniform across markets. Studies such as Adeniyi and Kumeka (2020), Almumani (2014), Hidayatullah and Manda (2021), and İlhan and Akdeniz (2020) find no statistically significant relationship, suggesting that financial markets may efficiently incorporate exchange rate information. These studies argue that financial markets may efficiently incorporate exchange rate information, thereby neutralizing its impact on stock returns under certain conditions. Similarly, Rai and Garg (2021) and Salim and Prasetya (2022) report weak linkages, particularly during periods of economic stability. Weak or insignificant relationships are often observed during periods of macroeconomic stability, indicating that the influence of exchange rate volatility is context-dependent and influenced by broader economic conditions.

Moreover, beyond the linear relationships as found in available finance literature, recent studies emphasize nonlinear and asymmetric dynamics. Empirical evidence shows that the impact of exchange rate volatility varies across different volatility regimes, with stronger effects observed during periods of financial stress and market turbulence. For instance, studies such as Kumar (2019) and Shaik and Rehman (2023), which employ quantile-based approaches, demonstrate that low levels of exchange rate volatility may negatively affect stock returns, while high volatility levels are associated with positive return dynamics. Sikhosana and Aye (2018) show that exchange rate volatility affects stock returns differently during periods of appreciation and depreciation, while Banda and Haabazoka (2024) and Kristianti and Foeh (2020) highlight the role of structural breaks and regime shifts. Regime-switching models reveal that stock return sensitivity to exchange rate movements increases significantly during high-volatility periods, reflecting heightened risk pricing in turbulent markets. These findings suggest that the impact of exchange rate volatility is conditional on macroeconomic environments and firm-specific characteristics.

Another important dimension emerging in recent literature is the role of volatility spillovers and interconnectedness across financial markets. Studies show that exchange rate volatility is not an isolated phenomenon but is closely linked

to stock market volatility through bidirectional spillover effects (Ahmadian-Yazdi et al., 2025; Heydarian et al., 2025). These spillovers are particularly pronounced during crisis periods, such as the COVID-19 pandemic, where increased financial integration amplifies cross-market transmission mechanisms (Ullah & Nobanee, 2025). This interconnectedness underscores the importance of considering exchange rate volatility within a broader financial system framework.

In addition to exchange rate volatility, macroeconomic variables play a crucial role in determining stock returns (Al-Qudah, 2020; Javangwe & Takawira, 2022). GDP growth is widely recognized as a proxy for economic performance and is positively associated with stock returns due to improved corporate earnings and investment opportunities (Bartram & Bodnar, 2007; Makoni, 2020; Sivilianto & Endri, 2019). Interest rates influence the cost of capital and investment decisions, with higher rates generally exerting downward pressure on stock prices (Jefferis & Okeahalam, 2019; Karim, 2016; Kumar, 2019). Oil prices, particularly relevant for mining firms, affect production costs and profitability, often leading to negative impacts on stock returns (Almumani, 2014; Banda & Haabazoka, 2024; Sadorsky, 2021). Unemployment serves as an indicator of economic health and consumer demand, and it indirectly influences firm performance and stock market outcomes (Apergis et al., 2011; Aryanti & Jayanti, 2020).

Furthermore, emerging literature highlights the importance of institutional and structural factors in moderating the exchange rate and stock return relationship. Factors such as financial market development, regulatory frameworks, and monetary policy regimes influence how exchange rate volatility is transmitted to stock markets. In emerging economies, weaker institutional structures and higher exposure to external shocks tend to amplify the effects of exchange rate volatility on financial markets.

Despite extensive research, there is no consensus in the literature regarding the direction or magnitude of the relationship between exchange rate volatility and stock returns. Moreover, existing studies largely focus on aggregate market indices or cross-country analyses, with limited attention

given to sector-specific dynamics in emerging markets. In particular, the mining sector in South Africa remains under-explored, despite its high exposure to exchange rate fluctuations and its critical role in the economy. Two gaps remain evident, and these include the notion that most empirical studies focus on aggregate market indices, thereby overlooking firm-level heterogeneity and sector-specific dynamics. Also, limited attention has been given to export-oriented sectors such as mining in emerging markets, where exchange rate exposure is particularly pronounced. This lack of sector-specific evidence constrains the generalizability of existing findings and highlights the need for disaggregated empirical analysis. Therefore, this study seeks to address these gaps by examining the effect of exchange rate volatility on mining companies' share returns in South Africa using firm-level panel data.

This study aims to empirically examine the effect of exchange rate volatility on mining companies' share returns in South Africa, contributing sector-specific evidence to the ongoing debate.

The hypotheses of the study are as follows:

- H1: *Exchange rate volatility has a significant effect on mining companies' share returns.*
- H2: *Exchange rate volatility has a significant effect on mining companies' share prices.*
- H3: *Macroeconomic control variables have a significant effect on mining companies' share returns.*

2. METHODOLOGY

This study employs a quantitative research design to analyse the effect of exchange rate volatility on mining companies' share returns. The study focuses on listed mining companies as the sector is particularly exposed to exchange rate movements through its export revenues, foreign currency transactions, and globally determined commodity prices. The sample consists of 15 mining firms listed on the Johannesburg Stock Exchange, observed over the period 2011–2024. The selection of the 15 mining companies is based on data availability, continuous listing on the Johannesburg

Stock Exchange over the study period, and representation across major mining subsectors. The final sample was determined by data availability and the requirement that sufficient observations were available for the panel data estimation. This ensures consistency in panel structure and reduces survivorship bias. The focus on listed firms reflects their sensitivity to both financial market dynamics and macroeconomic conditions, making them suitable for examining exchange rate exposure. Firm-level data were obtained from the IRESS database, while macroeconomic variables were sourced from the South African Reserve Bank and the World Bank. The dataset includes exchange rate volatility, return on assets (ROA), interest rates (INT), GDP growth (GDPG), unemployment, and oil prices (OIL).

The independent variables considered in this study are outlined in Table 1.

Table 1 shows the independent and control variables considered in the study. The principal explanatory variable is exchange rate volatility (EXCVOL), and ROA, INT, GDPG, UNEMP, and OIL were included as control variables. The dependent variables capture three dimensions of mining company stock market performance, which include share returns (SR), total returns (TR), and share prices (SP). Exchange rate volatility shows the degree of uncertainty associated with changes in the exchange rate. Since the study's main objective is to examine the effect of currency uncertainty rather than simply the exchange rate level, the empirical specification uses exchange rate volatility as the principal explanatory variable. The control variables are included to lower omitted variable bias coming from firm profitability and the macroeconomic conditions that may simultaneously influence mining company stock performance and exchange rate dynamics.

A two-step System Generalised Method of Moments (SGMM) estimator was adopted to address dynamic endogeneity, unobserved firm-specific heterogeneity, and potential simultaneity between exchange rate volatility and the stock market outcomes. System GMM was best suited for this setting because the models have lagged dependent variables and potentially endogenous explanatory variables. The estimator combines equations in first differences with equations in levels, using appropriate lagged values as internal instruments. This approach permits the estimation to exploit both within-firm variation and information contained in levels and differences of the variables. Using a two-step estimator provides an efficient GMM estimator under heteroskedasticity and serial correlation. Robust standard errors are reported to account for heteroskedasticity and within-panel dependence. The instrument set is restricted to avoid instrument proliferation, which can weaken the Hansen test and overfit the endogenous variables. Therefore, the number of instruments does not exceed the number of cross-sectional units.

Potential endogeneity is relevant in that exchange rate volatility and stock market performance can influence one another. Also, there is a risk that company-level profitability may respond to shifts in financial market conditions. The SGMM approach addresses these concerns by using internal instruments based on the suitable lags of the endogenous and predetermined variables. Instrument validity is assessed using the Hansen test of overidentifying restrictions, and the Sargan test is reported as an additional diagnostic, though its reliability is sensitive to heteroskedasticity. The Arellano-Bond tests for first- and second-order serial correlation are also reported.

Table 1. Independent variables

Type	Variable	Expected Sign	Data source
Independent variables	Exchange rate volatility	Negative	IRESS research domain
	Return on Assets (ROA)	Positive	IRESS research domain
Control variables	Interest rate (INT)	Positive/negative	SARB
	GDPG	Positive	World Bank
	Unemployment rate (UNEMP)	Negative	World Bank
	Oil price (OIL)	Negative	World Bank

The model specification is expressed as:

$$\Delta SP_{it} = (1-\alpha)\Delta SP_{it-1} + \beta_1 \Delta ERV_{j,it} + \beta_2 \sum_{j=1}^n \Delta CV_{j,it} + \mu_i + \Delta e_{it}, \quad (1)$$

$$\Delta SR_{it} = (1-\alpha)\Delta SR_{it-1} + \beta_1 \Delta ERV_{j,it} + \beta_2 \sum_{j=1}^n \Delta CV_{j,it} + \mu_i + \Delta e_{it}, \quad (2)$$

$$\Delta TR_{it} = (1-\alpha)\Delta TR_{it-1} + \beta_1 \Delta ERV_{j,it} + \beta_2 \sum_{j=1}^n \Delta CV_{j,it} + \mu_i + \Delta e_{it}, \quad (3)$$

where SP_{it} represents the mining company's share price at time t ; SR_{it} represents the mining company's share returns at time t ; TR_{it} represents the mining company's total returns at time t ; SP_{it-1} represents the mining company's share price measure in time $t-1$; SR_{it-1} represents the mining company's share returns measure in time $t-1$; TR_{it-1} represents the mining company's total returns measure in time $t-1$; ERV_{it} represents the exchange rate volatility for the mining company i in time t ; $CV_{j,it}$ represents a vector of control variable j of company i at time t . These variables include exchange rate volatility, interest, unemployment, $GDPG$, ROA , and oil price. α represents the autoregressive coefficient; β represents the coefficient for the sensitivity of the independent variables; $\epsilon_{i,t}$ represents the error term; μ_i represents the dummy for the COVID-19 period.

Diagnostic tests, including AR(1), AR(2), Sargan, and Hansen tests, are employed to validate model specification and instrument validity.

3. RESULTS

This section presents the results of the study, including correlation analysis and empirical data.

The results in Table 6.2 show the correlation matrix between variables in the study by clearly stating how the variables are related to each other. The results show a positive and significant correlation between SR and TR (0.99) at the 1% significance level. The correlation matrix shows a negative and significant correlation between OIL and EXCVOL (−0.13). The outcomes clearly show that as oil prices go up, the exchange rate volatility goes down.

Table 2 shows a positive and significant correlation between ROA and SP (0.20). ROA is a profitability ratio that shows how efficiently a company uses its assets at hand to make a profit, and any increase in ROA would attract traction from investors who would increase their appetite for demanding a given class of shares (Kristianti & Foeh, 2020). As a result, the share price would rise due to market forces, demand, and supply. It can further be noted that there is a negative and significant correlation between ROA and SR (−0.13), and the same correlation exists between ROA and TR (−0.12).

Table 2 also shows a positive and significant correlation between INT and OIL (0.42), which implies that an increase in oil prices causes interest rates to rise. The reason behind this relationship is that as oil prices rise, it results in inflation, and as the central bank responds to curb inflation, the interest rate will rise as a monetary policy tool. There is also a positive and significant correlation between $GDPG$ and the variables, which include OIL (0.21) and INT (0.11). The negative correlation between $GDPG$ and EXCHVOL emanates from the notion

Table 2. Correlation matrix

Variables	SP	SR	TR	EXCVOL	OIL	ROA	INT	GDPG	UNEMP
SP	1.0000								
SR	(0.0152)	1.0000							
TR	(0.0045)	0.9995***	1.0000						
EXCVOL	(0.0083)	0.0501	0.0539	1.0000					
OIL	0.1219	0.0825	0.0875	−0.1311*	1.0000				
ROA	0.2004***	−0.1304*	−0.1248*	0.0317	0.0251	1.0000			
INT	(0.0236)	(0.0061)	(0.0041)	(0.0890)	0.4274***	(0.0337)	1.0000		
GDPG	(0.0051)	0.1050	0.1058	−0.4696***	0.2189***	0.0224	0.1143*	1.0000	
UNEMP	0.1360**	0.1245*	0.1305*	0.1613**	0.6560***	0.0589	0.1294*	(0.0185)	1.0000

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

that increased volatility in the exchange rate results in increased uncertainty and transaction costs, which can hinder trade, investment, and economic growth (İlhan & Akdeniz, 2020). Furthermore, the positive correlation between GDPG and OIL is due to the notion that as the economy grows, productivity and investments follow, and this causes pressure on the demand for oil resources; consequently, oil prices increase. The correlation results show that as GDPG increases, INT will also increase, and this is caused by increased returns on investments through interest, which has a positive effect on GDPG. A high interest rate attracts foreign investors to invest in the most productive sectors in the local economy, which results in an improvement in economic growth through investment and consumption (Mieg, 2022).

Panel data show a positive and significant correlation between UNEMP and different variables: SP (0.13), SR (0.12), TR (0.13), EXCVOL (0.16), OIL (0.65), and INT (0.12). The positive and significant correlation between unemployment and stock price is due to the activities of the central bank in response to curbing the high unemployment rate through interest rate reduction (Gakhar & Kundlia, 2021). The same effect applies between UNEMP and SR, since there is a positive and significant correlation, as well as between UNEMP and TR. The positive correlation between UNEMP and EXCVOL is caused by high uncertainty in the exchange rate, which makes investors limit their investments, causing layoffs, thereby exerting pressure on the unemployment rate. Also, a positive correlation between UNEMP and OIL is mainly

Table 3. Empirical results

Variables	2-Step System GMM	2-Step System GMM	2-Step System GMM
	SR	TR	SP
L.SR	−0.0590 (0.0406)		
L.TR		0.0522 (0.0750)	
L.SP			0.363** (0.107)
EXCVOL	0.808** (0.299)	1.094** (0.370)	−99.45* (46.49)
ROA	−0.613* (0.312)	0.285 (0.699)	−154.9 (75.68)
INT	27.82 (17.83)	43.89* (19.91)	−4107.8* (1531.0)
GDPG	8.978* (4.087)	10.63* (5.249)	813.0 (407.0)
UNEMP	42.48** (14.27)	47.47** (15.93)	649.3 (445.5)
OIL	−0.327** (0.114)	−0.404** (0.123)	11.00** (3.311)
COVID_19	−56.03** (19.09)	−44.00 (31.22)	4140.9 (2669.7)
N	135	135	180
Groups	10	10	10
Instruments	8	8	8
AR(1)	−0.22	−1.71	−0.71
AR(2)	−0.11	−1.40	−1.12
Sargan test	2.61	2.70	2.71
Hansen Test	4.01	1.96	0.97

Notes: Robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

caused by an increase in oil prices, which results in an increase in business operating expenses at the expense of profitability.

Table 3 presents the empirical results.

The empirical findings indicate that exchange rate volatility has a positive and statistically significant effect on share returns ($\beta = 0.808$, $p < 0.01$) and total returns ($\beta = 1.094$, $p < 0.01$). However, a negative and significant relationship is observed between exchange rate volatility and share prices ($\beta = -99.45$, $p < 0.05$).

Among control variables, GDP growth exhibits a positive and significant effect on returns, while oil prices negatively affect returns. Unemployment shows a positive association with returns, and interest rates display mixed effects across model specifications. The diagnostic tests confirm the model validity, with no evidence of second-order autocorrelation and acceptable instrument validity.

For hypothesis testing, the hypotheses are evaluated through coefficient estimates and statistical significance of the 2-step SGMM models. A hypothesis is considered supported once the coefficient is statistically significant at the 5% level or better and its direction is consistent with the outlined empirical relationship.

H1: Exchange rate volatility has a significant effect on mining companies' share returns.

The results support *H1*. Exchange rate volatility has a positive and statistically significant impact on mining companies' share returns, with a coefficient of 0.808 and a p-value below 0.01. This implies that increased exchange rate volatility is linked to higher share returns, *ceteris paribus*. *H1* is therefore supported. The outcome aligns with the risk-return trade-off view, which implies that investors require compensation for bearing additional systematic currency risk. In the case of mining sector companies in South Africa, the positive coefficient reflects the export orientation of the sector, in which exchange rate uncertainty can be linked to higher return premiums.

H2: Exchange rate volatility has a significant effect on the mining companies' share returns.

The outcome from the study supports *H2*. Exchange rate volatility has a negative and statistically significant effect on the share price. The negative coefficient shows that greater exchange rate volatility is aligned with lower share valuations, *ceteris paribus*. As such, *H2* is supported. The outcome demonstrates that exchange rate volatility is bound to raise the compensation demanded by shareholders for bearing currency risk while lowering the valuation investors attach to mining companies. This offers evidence of a dual transmission mechanism through which currency risk affects South Africa's mining sector.

H3: The control variables have a significant effect on the mining companies' share returns.

There is mixed evidence for *H3*, in that GDPG has a positive and statistically significant coefficient of 8.978, and unemployment proved to have a positive and statistically significant coefficient of 42.48. However, oil prices possess a negative and statistically significant coefficient of -0.327 , and the interest rate is statistically insignificant within the share return model, while ROA has a significant negative coefficient of -0.613 . The findings show that various control variables are individually significant determinants of the mining companies' share returns; however, their effects are heterogeneous in terms of magnitude and direction. As such, this makes *H3* partially supported.

Overall, the hypothesis testing results provide strong evidence that exchange rate volatility is a vital determinant of mining companies' stock market performance. Therefore, *H1* and *H2* are supported, and *H3* had partial support centred on the individual significance of the control variables.

4. DISCUSSION

The empirical findings reveal that exchange rate volatility exerts a positive and statistically significant effect on share returns, supporting the risk-return trade-off theory. This result is consistent with Apergis et al. (2011), who find that macroeconomic risk is positively priced in emerging market returns. Similarly, Shaik and Rehman (2023) demonstrate that volatility acts as a systematic risk factor influencing asset pricing. However, this finding contrasts with Rai and Carg (2021), who

report weak or insignificant relationships, suggesting that sector-specific exposure in the mining industry intensifies sensitivity to exchange rate fluctuations.

The negative relationship between exchange rate volatility and share prices indicates that increased uncertainty reduces firm valuation. This aligns with Prasetiono (2020), who argues that exchange rate instability discourages investment and reduces demand for equities. It also supports the findings of Jefferis and Okeahalam (2019), who highlight the adverse effects of macroeconomic instability on stock market performance.

The positive and significant effect of GDP growth on share returns confirms the pro-cyclical nature of stock markets. It is consistent with Makoni (2020), who documents a strong link between economic growth and market performance. GDP growth is driven by the corporate sector's efficient use of available resources and by the efficient allocation of these resources into productive sectors by both the government and the corporate sector (Kaul, 2020; Yahaya & Bello, 2026). When resources are channeled where they are used most effectively, this would enhance productivity in the economy. A productive economy rewards investment, and it is an incentive for investors, as they are guaranteed a return (Makoni, 2020). A growing economy is characterized by rising returns on investment and expanding overall markets, including foreign exchange, stock, bond, and derivative markets (Adnan & Isma'eel, 2021).

Conversely, the negative impact of oil prices is consistent with Sadorsky (2021) and reflects the cost pressures faced by energy-intensive indus-

tries such as mining. Mining sector organizations use oil products in their operations, and changes in oil prices directly affect both SR and TR. Higher oil prices raise operating expenses, which in turn reduces income after finance charges and taxes (Gakhar & Kundlia, 2021; Oyadeyi, 2026). Lower income means fewer funds are distributed to shareholders, leading to reductions in both SR and TR. Higher oil prices can also reduce overall productivity through operational downsizing to minimize expenses. The burden of higher oil prices is passed on to consumers, reducing consumption and investment (Karim, 2016).

The observed positive relationship between unemployment and stock returns may appear counter-intuitive but can be explained by monetary policy responses. This finding aligns with Alagidede and Panagiotidis (2010), who suggest that rising unemployment may trigger expansionary monetary policies, thereby stimulating stock market performance. An increase in unemployment can be a good sign, signaling a likely decrease in interest rates, and this can be good news for stock returns, with specific reference to those companies that heavily rely on interest rates (Ghazanvi & Akram, 2025; Mieg, 2022). Companies with a huge capital portion in debt finance will benefit from an interest rate reduction, which is a strategy used by the central bank when pursuing the economic expansion motive (Cakici & Zarembo, 2022).

Overall, the results demonstrate that exchange rate volatility has a dual effect, simultaneously increasing expected returns while reducing firm valuation. This duality reflects the complex interplay between risk compensation and market uncertainty in emerging economies.

CONCLUSION

This study examined the effect of exchange rate volatility on mining companies' share returns in South Africa. The findings reveal that exchange rate volatility positively influences share returns and total returns, while negatively affecting share prices, indicating a dual effect of risk compensation and valuation pressure. Additionally, GDP growth enhances returns, whereas oil prices exert a negative influence, reflecting macroeconomic transmission effects within the mining sector. These results imply that exchange rate volatility should be incorporated into asset pricing and portfolio management strategies, while policymakers should prioritize exchange rate stability to reduce valuation distortions. Future research should explore nonlinear dynamics and extend the analysis to other sectors and emerging markets.

AUTHOR CONTRIBUTIONS

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APPENDIX A

Table A1. List of companies

1	AFRICAN RAINBOW MINERALS LTD (ARM)
2	AFRIMAT LTD (AFRI)
3	ANGLO AMERICAN LTD (ANGLO)
4	ARCELORMITTAL SA LTD(ARC)
5	GLENCORE PLC (GLEN)
6	HULAMIN LTD (HULA)
7	INSIMBI INDUSTRIAL HOLDINGS LTD (INS)
8	KORE POTASH PLC (KORE)
9	KUMBA IRON ORE LTD (KUMBA)
10	MASTER DRILLING GROUP LTD (MAST)
11	MERAPE RESOURCES LTD (MERA)
12	ORION MINERALS LTD (ORI)
13	SABLE EXPLORATION & MINING LTD (SAB)
14	SOUTH32 LTD (SO3)
15	THARISA PLC (THA)