

## The dynamic relationship between exchange rates and stock market trends in Tanzania

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<https://doi.org/10.51867/ajernet.7.1.96>

### ABSTRACT

The purpose of this study was to analyse the impact of the exchange rate on stock market prices in Tanzania. The study used Stock Index Prices data of all firms listed at the Dar es Salaam Stock Exchange Market, and the Exchange Rate data were collected from the Bank of Tanzania website. The research used data from 2020 to 2024 to capture recent post-pandemic dynamics. The research used a descriptive case-based study design that allowed for a quantitative data analysis. In addition, the study included the analysis of other macroeconomic variables such as Gross Domestic Product [GDP] and inflation as control variables. The Granger Sim Causality Test was used to test the direction of the relationship between the exchange rate and stock market prices. The Unrestricted Vector Autoregressive Model was used to analyse the impact of the exchange rate on stock market prices after exhibiting the absence of co-integration among the variables. The other model used to test the robustness of the unrestricted VAR was the ARIMA model. The results show that there is a positive unidirectional relationship between exchange rate and stock market prices, with a causation running from exchange rate to stock market prices using the Granger causality test. The results of the study reveal that the average stock index was 2298.79, and it was 1898.472, 5.437, and 5.93 for exchange rate, GDP, and inflation, respectively. The correlation between stock prices and the exchange rate of a dollar against Tanzanian shillings was 0.228, which was a positive correlation. The regression analysis using the OLS shows a positive relationship between the exchange rate and stock market prices. The relationship was found to be statistically significant because the p-value < 0.05 at 95%. The graphical trend analysis shows that there is a co-movement between the exchange rate and stock market prices. The relationship between exchange rate and stock market prices was further examined using an unrestricted Vector Autoregressive Model, and similar results confirmed that there is a positive association between the two variables. The model was tested for stability, and it was found to be stable, as all variables lay within the unit root. It found that there is no long-run association between the exchange rate and stock price as tested by using the co-integration test. The analysis will help authorities in the capital markets formulate policies and analyse their investments to increase their wealth and explore better ways to stabilise the economy. On the other hand, the Bank of Tanzania and other monetary authorities should make stronger policies to keep exchange rates stable. Also, investors, portfolio managers, and stockbrokers should all include changes in exchange rates in their investment analysis and portfolio management plans. By keeping an eye on foreign exchange trends, investors can use this information to guess how the stock market might change.

**Keywords:** Exchange Rate, Granger Causality, Stock Market Prices, Tanzania, Macro-Economic Variables

### I. INTRODUCTION

The exchange rate implies the price at which one currency is exchanged for another, while the share price refers to the value at which the stock is traded on the market (Nordin et al., 2020). The relationship between the exchange rate and stock price has received attention from both policymakers and academics (Abusaba et al., 2025a). This attention was due to the essential role of the stock market in promoting domestic savings of the economy. In the global economy, exchange rates play a crucial role in facilitating international trade and capital movement between countries. Zaman et al. (2025) concluded that exchange rate policies affect not only the commodities market but also the stock market, then investors and portfolio managers should monitor changes in exchange rates. The stock market, being a key player in economic activity and investment potential, is very sensitive to macroeconomic indicators, including foreign exchange rate fluctuations (Jameel & Teng, 2021). Tanzania, being one of the developing countries, faces different challenges in its economic growth. One of the challenges is the fluctuation in foreign exchange rates, which adversely affects imports, exports, the purchasing power of the shilling, and returns on the stock market. As one of the macroeconomic variables, foreign exchange rate fluctuations may affect the whole economy by affecting other microeconomic variables of the economy. One of the impacts of foreign exchange rate fluctuations is the variation in stock market prices.

Mahmoud et al. (2024) argues that a change in exchange rates could change stock prices because variations in exchange rates alter firms' profits (not only for multinational and export-oriented firms, but for domestic firms as well) and this in turn affects stock prices. Many factors, such as enterprise performance, dividends, stock prices of

other countries, gross domestic product, exchange rates, interest rates, current account, money supply, employment, their information etc. have an impact on daily stock prices (Suwadia et al., 2024). Especially, the continuing increases in the world trade and capital movements have made exchange rates one of the main determinants of business profitability and equity prices (Moussa et al., 2021).

The Tanzanian stock market is still considered small and under-researched in comparison with neighbouring countries in the region. Furthermore, the Tanzanian shilling has experienced periodic volatility caused by internal economic dynamics, global commodity price fluctuations and geopolitical uncertainties (Hafidh, 2024). While numerous global studies have researched the relationship between exchange rates and stock market prices, many of these studies have been conducted in developed and emerging economies (Samarawickrama & Pallegedara, 2023). Such countries have a highly liquid and diversified stock market (Suwadia et al., 2024). In the case of Tanzania, there is limited research that specifically studied how exchange rate fluctuation affects the level of the stock market. The existing literature on Tanzania tends to either generalise the findings across multiple macroeconomic variables. This raises important questions about whether and how exchange rate movements affect stock market prices and to what extent these relationships align with existing theories and evidence from other markets. This study will be crucial for policymakers, investors, brokers, and financial analysts who seek to reduce the risk caused by exchange rate fluctuations in stock prices, which will lead them to make informed investment decisions. This study aims to investigate the impact of exchange rate fluctuations on stock market prices in Tanzania, filling a gap in the literature and contributing to the body of knowledge.

### **1.1 Research Objective**

To determine the relationship between foreign exchange rate fluctuations and stock market prices.

## **II. LITERATURE REVIEW**

### **2.1 Theoretical Review**

The exchange rate is the purchasing power of one currency in terms of another currency. This study aims to analyze the relationship between the foreign exchange rate and stock market prices. There are many theories linking the foreign exchange rate and stock market prices. These theories are discussed below.

#### **2.1.1 The Traditional Approach Theory**

This theory postulates that the currency depreciation favours exports, making corporate firms earn high profit resulting in higher stock prices in the short run. Solnik (1987) argued that a real currency appreciation reduces companies' competitiveness to export, while real currency depreciation enhances their ability to export in the short run. According to the traditional approach, changes in exchange rates lead to changes in stock prices and vice versa for the latter. From the view of the traditional approach, the appreciation (depreciation) of local currency increases (decreases) indebtedness in foreign currency and increases (decreases) production cost, particularly in developing economies. Developing economies mean that the country's production relies greatly on imported raw materials. A simple explanation is that appreciation (depreciation) of the exchange rates affects the performance of firms on domestic as well as international markets, and this in turn affects the share price of the firm (Huy, 2011).

#### **2.1.2 Portfolio Adjustment Theory**

According to Dornbusch and Fischer (2003), portfolio adjustments occur whenever there is a change in the stock prices. If stock prices are on the increase, they will attract more foreign capital. A rising stock market would attract a capital flow that increases the demand for domestic currency and causes the exchange rate to appreciate. However, a decline in the stock prices will result in deterioration of shareholders' wealth, leading to a reduction in the country's wealth. This may lead to a fall in the demand for money, and monetary authorities reduce the interest rates to mitigate this situation. When interest rates are lower, capital may flow out of the country to take advantage of higher interest rates in other parts of the world, resulting in currency depreciation. The impact of higher interest rates is mitigated, however, if inflation in the country is much higher than in others, or if additional factors serve to drive the currency down. Therefore, according to this theory, lower stock market prices may lead to currency depreciation. Therefore, in the portfolio approach, stock prices would lead exchange rates with negative correlation (Tabak, 2006).

### **2.2 Empirical Review**

Several studies have been conducted in both developed and developing countries on the relationship between foreign exchange rate fluctuations and stock market prices; the results are very contradictory in different countries and markets. For example, the research conducted by Moussa et al. (2021) investigated the asymmetric effect and dynamic relationships between stock prices and exchange rate volatility the case of Canada, Japan, Denmark, Hong

Kong, Singapore, Mexico and Brazil, covering the period from 2000 to 2026. The results suggest asymmetric responses in the stock price exchange rate linkage with a strong correlation.

El-Diftar (2023) found a significant relationship between the exchange rate and stock market returns in his study on the impact of the exchange rate on the stock market performance of the seven emerging countries. The study revealed the cointegration relationship between the exchange rate and the stock market price. Nadya (2023) in the study on the symmetric and asymmetric effects of the exchange rate on Indonesian stock prices used both autoregressive distributed lag and nonlinear techniques covering the period from January 2022 to December 2022, the study revealed in both models a long and short-term symmetric relationship between the exchange rate and stock market price. Moreover, a negative relationship exists between the exchange rate and stock market price.

According to Subhan et al. (2023) explore the dynamic relationship between exchange rate and stock prices using the monthly data taken from January 2010 to December 2018 for Pakistan. The study employed a statistical analysis, such as the ADF test, the cointegration test and the VAR model, which revealed that there is a relation between stock prices and the exchange rate for Pakistan.

The study by Singh Chauhan et al. (2024) examine the causality relationship between exchange rate and stock prices using the co-integration methodology and Granger causality tests for the Indian stock market using the data from 2009 to 2023. They found that there is a positive relationship between the exchange rate and stock prices. Moreover, the paired Granger causality test suggests that the exchange rate significantly predicts the stock price.

Mahmoud et al. (2024) found a positive co-integration relationship between exchange rate and stock prices in their study on the dynamics between exchange rate and stock price in the Egyptian market, and using the Granger causality test, they found the direction of the relationship to run from stock prices to exchange rate during the sampled period from 2019 to 2023. A study conducted by Amado and Choon (2020) on the impact of changes in the exchange rate on the stock market in Indonesia. Using a quantitative approach and the ARDL model to analyse time series data suggests that a relationship exists in Indonesia between exchange rate fluctuation and stock market price. In addition, Matsvai (2025) examined the relationship between the exchange rate and stock market prices in Zimbabwe. Using the co-integration and Granger causality tests found that the only country for which exchange rate and stock prices were co-integrated over the entire period is Zimbabwe, where there is weak long-run unidirectional Granger causality running from exchange rate to stock prices.

Umoru et al. (2025) in examining the relationship between exchange rate and stock prices for BRICS countries for the period from January 2000 to January 2023 by using linear and non-linear Granger causality tests. Our empirical results show that stock prices and exchange rates have linear and non-linear bi-directional causality in most cases. The results support both the portfolio balance and the goods market theories for BRICS countries. Other researchers noticed the negative relationship between share prices and the exchange rate. For example, Huy et al. (2020) conducted the study on exchange rate movement and stock market performance in South Africa. Covering the period from 1980 to 2020, the data analyzed by autoregressive distributed lag. The study revealed that exchange rate movement and stock market performance have a negative relationship. The results reported a stable long-run and a negative short-run relationship between the exchange rate and share prices for the period under study.

### III. METHODOLOGY

#### 3.1 Research Design

The research used a descriptive case-based study design that allowed a quantitative data analysis. The study intended to determine the relationship between the exchange rate and stock prices. The research used conceptual modelling to investigate this relationship. The study is based on cross-sectional and longitudinal horizons.

#### 3.2 Data and Sample

Four years of daily data (2020- 2024) were gathered from Dar es Salaam Stock Exchange and the Bank of Tanzania. The population of my study was all 28 listed firms at DSE since DSE is the measure of the overall stock market. Due to the nature of the topic, the research used secondary data sources, whereby daily foreign exchange rates and stock prices data were collected from 2020 to 2024. The study covers the post-COVID-19 period and the global currency period, making it suitable to examine the relationship between the exchange rate and stock price movement. The researcher collected daily foreign exchange rates data from the BOT and stock prices data from DSE. The study used a convenience sampling technique to select data since there are few listed companies at Dar es Salaam Stock Exchange.

#### 3.3 Data Analysis Technique

The methodology of this research is based on conducting the following tests: unit root, co-integration test, Granger-Sim Causality test, Wald Exclusion test, and estimating the *Unrestricted VAR* Model as a primary model. This study employed information criteria tests in order to ascertain the optimum lag length. The relationship between



the variables was also estimated by using Johansen and Juselius (1990) co-integration test. This test is based on two tests: Trace and maximum Eigen value test. Both tests are applying the procedure of maximum likelihood. The researcher performed the unrestricted Vector Auto Regression analysis. The following were the models of the study:

$$Y_t = \alpha_0 + \sum_{i=1}^p \alpha_i Y_{t-i} + \sum_{i=1}^p \beta_i X_{t-i} + \mu_t \dots\dots\dots (1)$$

$$X_t = \delta_0 + \sum_{i=1}^p \delta_i X_{t-i} + \sum \lambda_i Y_{t-i} + v_t \dots\dots\dots (2)$$

### IV. FINDINGS & DISCUSSION

#### 4.1 Descriptive Analysis

Descriptive statistics are used to describe the basic features of the data in a study. They provide simple summaries about the sample and the measures. Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. With descriptive statistics, you are simply describing what is or what the data shows. We use descriptive statistics simply to describe what's going on in our data.

According to Devinta Taubah et al. (2024) descriptive statistics are used to present quantitative descriptions in a manageable form. In a research study, we may have lots of measures. Descriptive statistics help us to simplify large amounts of data sensibly. Each descriptive statistic reduces lots of data into a simpler summary.

**Table 1**  
*Descriptive Statistics*

Variables	N	Range	Minimum	Maximum	Mean	Std. Dev.
DSEI	985	1312.09	1538.06	2850.15	2.2988E3	347.77161
EXRATE	985	673.00	1575.77	2248.77	1.9001E3	260.76613
GDP	985	1.50	4.70	6.20	5.4373	0.68440
INFLA	985	5.80	4.00	9.80	5.9303	1.09541

The descriptive analysis of exchange rate and stock market prices, the DSEI is the Dar es Salaam Stock Exchange Index, EXRATE is the exchange rate of Tanzania Shillings against a Dollar, GDP is the Gross Domestic Product represented as a percentage increase and INFLA is the monthly inflation in percentages. In analysing the relationship between the exchange rate and stock market prices, the metric above was used to give a summary description of the data collected. The result showed that the maximum value of DSEI, exchange rate, and GDP and inflation data was 2850.15, TZS 2248.77, 6.2% and 9.8%, respectively. The minimum value of DSEI, exchange rate, GDP and inflation data was 1538.06, TZS6.67, 4.7%, and 4.0%, respectively. The range of the data for DSEI, exchange rate, GDP and Inflation was 1312.090, TZS 2242.10, 1.50% and 5.80%, respectively. The average performance stock market at the Dar es Salaam stock exchange was at 2298.79 with a standard deviation of 347.59. The average exchange rate Tanzania Shillings to a US Dollar is TSH 1898.472/= with a standard deviation of TZS 267.357. The average inflation stood at 5.930% while its standard deviation was 1.095. The average of GDP increase was 5.437% with a standard deviation of 0.684.

#### 4.2 Normality Test

The normality test helps to find the nature of data. For this purpose the Jacque Bera Test, Shapiro-Wilk Test, Anderson- Darling Test and Lilliefors Test were used to test the normality of the sample data as shown in Table 2 below.

**Table 2**  
*Normality Test*

Variable\Test	Shapiro-Wilk(W)	Anderson-Darling(A <sup>2</sup> )	Lilliefors(D)	Jarque-Bera(JB)
DSEI (TZS)	0.881 (0.000)	41.433 (< 0.0001)	0.170 (<0.0001)	1156.438 (< 0.0001)
EX.RATE	0.192 (< 0.0001)	9.555 (0.000)	0.325 (< 0.0001)	2.1E7 (< 0.0001)
GDP (%)	0.720 (< 0.0001)	125.019 (< 0.0001)	0.309 (0.000)	151.654 (< 0.0001)
INFLATION (%)	0.966 (< 0.0001)	10.506 (< 0.0001)	(0.109) < 0.0001	17.147 (0.000)

Table 2 shows the *p-values* under the two-tailed test at 5% level of significance. The null hypothesis for this test was that the variable, from which the sample data was extracted, follows the normal distribution, and the alternative hypothesis was that the variable from which the sample extracted does not follow the normal distribution.

The data follows a normal distribution when the p-value is greater than the level of significance (alpha). Hence, reject the null hypothesis for all variables, meaning that the sample data does not follow the normal distribution. Since the rejection risk of the alternative hypothesis is lower than 0.01% for DSEI, exchange rate and GDP and lower than 0.02% for inflation, the sample data shows that it is nearly normally distributed data.

### 4.3 Correlation Analysis

For the best model, the correlation had to be kept at minimum levels. Therefore, to reduce the correlation between the exchange rate and GDP, the researcher used the residual GDP.

**Table 3**

*The New Correlation Table*

	<b>EX.RATE</b>	<b>GDP (RESID)</b>	<b>INFL(RESID)</b>
EX.RATE	1		
GDP (RESID)	-.426**	1	
INFL(RESID)	-.129**	.037	1

The table above indicates the correlation among the variables in which the EX. RATE stands for exchange rate in Tanzania Shillings against a US Dollar, GDP (RESID) is the residual GDP, and INFL(RESID) is the residual Inflation.\*\* indicates moderate correlation among the variables, and the correlation is significant at the 0.01 level (2-tailed). The table above shows the correlation among exchange rate, GDP, and inflation. As shown above, there was a strong correlation of 0.548 between GDP and Inflation and a strong correlation of -0.838 between the exchange rate and the Gross Domestic Product. There was a moderate correlation of 0.422 between the exchange rate and inflation. For the best model, the correlation had to be kept at minimum levels. Therefore, to reduce the correlation between the exchange rate and GDP, the researcher used the residual GDP.

### 4.4 Unit Root Test

In addition, the unit root test and stationary test were conducted using the Augmented Dickey Fuller Test as presented in the tables below.

**Table 4**

*Unit Root Test*

<b>AT LEVEL</b>				<b>AT FIRST DIFFERENCE</b>				
Variables	ADF Test Statistic	Critical Value @ 5%	Prob Value	ADF Test Statistic	Critical Value @ 5%	Prob Value	Max Lag	Order of Integration
DSEI	-2.428719	-2.8643	0.1341	-42.9251	-2.864269	0.0001	1	1(1)
Exchange Rate	-0.407824	-2.8643	0.9053	-19.4226	-2.864287	0.0000	1	1(1)
Residual GDP	-1.662734	-2.8643	0.4500	-34.8784	-2.864269	0.0000	1	1(1)
Residual Inflation	-2.654475	-2.8643	0.0825	-36.9525	-2.864269	0.0000	1	1(1)

From the table above we can see that DSEI, exchange rate, DGP and inflation are found not stationary at level form. This is because the ADF test results show that the t- statistic is greater than the test critical values at 5% level of significance. Then the variables had to be differenced in order to make it stationary as shown in the table above.

#### 4.4.1 Lag Order Selection Criterion

**Table 5**

*Lag Order Selection Criterion*

Lag	LogL	LR	FPE	AIC	SC	HQ
0	6.532500	NA	1.17e-05	-0.005184	0.014814	0.002425
1	6414.509	12750.36	2.43e-11	-13.09009	-12.99010	-13.05204
2	6479.626	129.0341*	2.20e-11*	-13.19064*	-13.01065*	-13.12215*
3	6487.832	16.19410	2.23e-11	-13.17468	-12.91471	-13.07576
4	6492.820	9.802198	2.28e-11	-13.15214	-12.81217	-13.02278
5	6502.740	19.41458	2.31e-11	-13.13969	-12.71974	-12.97990
6	6508.089	10.42302	2.36e-11	-13.11789	-12.61794	-12.92766
7	6514.156	11.77485	2.41e-11	-13.09765	-12.51762	-12.87689
8	6518.258	7.927090	2.47e-11	-13.07320	-12.41327	-12.82210

FPE= Final Prediction Error, AIC= Akaike Information Criterion, SC= Schwarz Information Criterion and HQ= Hannan Quinn Information Criterion. \* indicates lag order selection by the Criterion  
As shown in the table above, all tests jointly selected lag 2, the lag

#### 4.4.2 Co-integration Test

**Table 6**

*Unrestricted Co-Integration Rank Test*

Hypothesized No. of CE(s)	Eigen value	Trace			Maximum Eigen value		
		Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.014210	33.03575	47.85613	0.5548	14.02564	27.58434	0.8208
At most 1	0.008061	19.01012	29.79707	0.4922	7.931451	21.13162	0.9078
At most 2	0.006678	11.07867	15.49471	0.2067	6.566650	14.26460	0.5416
At most 3*	0.004594	4.512015	3.841466	0.0336	4.512015	3.841466	0.0336

The \* denotes the rejection of the hypothesis at the 0.05 level, and the \*\* is the MacKinnon-Haug-Michelis (1999) *p-values*

The test was conducted using the Johansen Co integration test. The null hypothesis was that there is co-integration among the variables at 5% level of significance. The trace test and maximum Eigen value test both agree concurrently that there is no co-integration among the variables at 5% level of significance. This is because the *p-values* are greater than the levels of significance, and the 5% critical values are greater than both Trace values and Maximum Eigen Statistics. However, the results show that there are at most three co-integrating equations, as shown by both test statistics, although it was generally concluded that there is no co-integration. This rejects the existence of long run relationship between the exchange rate and stock prices.

#### 4.4.3 Pairwise Granger Causality Test

The pair-wise Granger Causality Test was analysed to find the relationship between the exchange rate and stock market prices at the Dar es Salaam Stock Market. A table below gives a brief summary of this analysis.

**Table 7**

*Pairwise Granger Causality Test*

Null Hypothesis:	Obs	F-Statistic	Prob.
DSEI TZS 01 does not Granger-cause EX RATE	984	0.09711	0.7554
EX RATE01 does not Granger Cause DSEI TZS 01		55.8797	2.e-13

The table below describes the causality relationship between the exchange rate (TZS: USD) and stock prices at the Dar es Salaam Stock Exchange (DSE Index prices). Since the *p-value* is less than the 5% level of significance under the second null hypothesis and greater than 5% under the first null hypothesis, we reject the second null

hypothesis that the exchange rate does not Granger-cause the stock price and accept the first null hypothesis that the stock price does not Granger-cause the exchange rate. The results were similar for the first five lags, indicating a unidirectional relationship between the two variables, and this suggests that responses in the exchange rate to stock prices will be observed within five working days. From the sixth lag onwards, the test did not show any causal relationship between the two variables. Therefore, the dependent variable is DSEI and the independent variable is the exchange rate.

#### 4.5 Model Fit

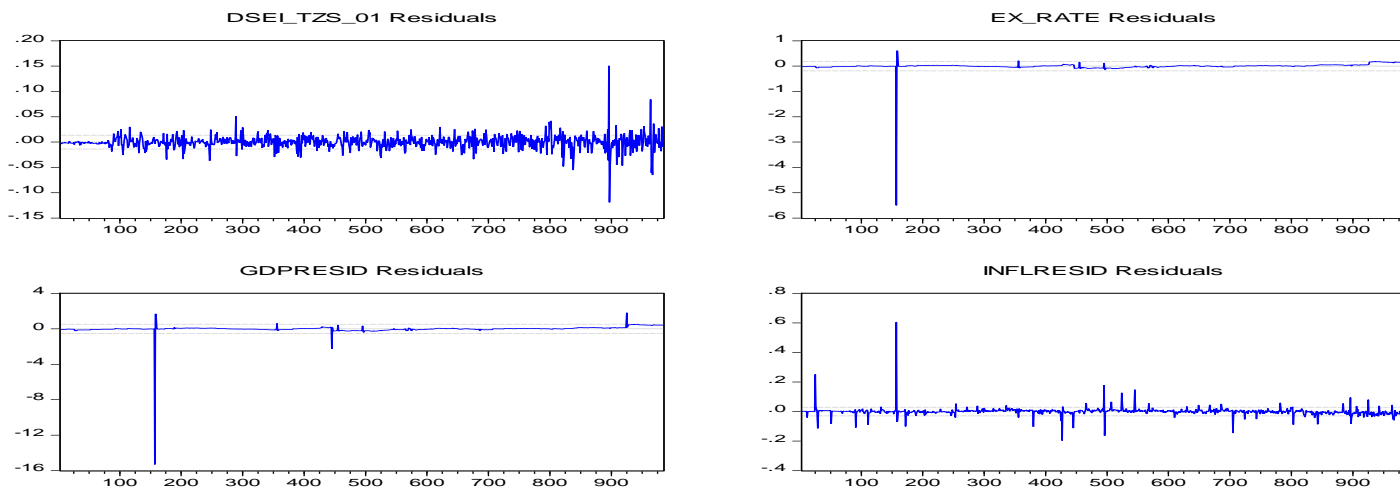
The coefficient fitness was analyzed using the variance inflation factor (VIF). All parameters were analysed at normal standards since their VIFs were all at 1. The model is statistically significant with an adjusted  $R^2$  of 50.6%, the F-statistic is sufficiently large at 337.250, and the Variance Inflation Factors are all at normal levels. All coefficients were significant with *t-values* greater than 2. This model best explains the data collected by 51%. OLS, ARIMA and unrestricted VAR Models were used to obtain the best model. The ARIMA model gave the same results as those provided by the OLS Model. However, because the variables used were macroeconomic, the unrestricted Vector Autoregressive Model (VAR) was used in finding the good representative model. The unrestricted VAR Model is one of the most commonly used models for applied macroeconometric analysis and forecasting in central banks. An unrestricted VAR includes all variables in each equation. According to Christopher Sims (1942) of Princeton University and the 2011 Nobel Prize in Economics, in his book “Macroeconomics and Reality” in 1980, argued that conventional macro models were “incredible” because they were based on non-credible identifying assumptions. He further argued that the conventional models were restricted VARs, and the restrictions had no substantive justification based on incomplete and/or non-rigorous theory, or intuition; therefore, economists should instead use unrestricted models, e.g. VARs.

**Table 8**

*Vector Autoregressive Estimate (VAR System), Lag Order Two*

Variable	Coefficient	Std. Error	t-ratio	p-value
const	0.052493	0.0208249	2.521	0.0119**
dsei_1	0.749490	0.0281245	26.65	5.22e-118***
dsei	0.245591	0.0280681	8.750	9.24e-018***
exrate	0.027187	0.0027728	9.805	1.04e-021***
exrate_1	-0.029042	0.0027766	-10.46	2.43e-024***
Inflresid	0.256315	0.0180943	14.17	1.45e-043***
Inflresid_1	-0.252962	0.0181193	-13.96	1.61e-040***
Statistic	Value	Statistic	Value	
Mean dependent var	7.728279	S.D. dependent var	0.162624	
Sum squared resid	0.149854	S.E. of regression	0.012391	
R-squared	0.994230	Adjusted R-squared	0.994194	
F(6, 976)	28028.34	P-value(F)	0.000000	
rho	-0.037969	Durbin-Watson	2.075468	
Statistic	Value			
Log-likelihood	2924.8325			
Determinant of covariance matrix	0.00015244509			
AIC	-5.9366			
BIC	-5.9018			
HQC	-5.9233			
Portmanteau test: LB(48)	37.5047, df = 46 [0.8096]			

The DSEI, INFLRESID, and EX\_RATE represent the stock price index, residual inflation, residual GDP and the TZS: USD exchange rate, respectively. The dsei\_1 and dsei\_2 are the first and second lag of the stock price index. Exrate\_1 is the first lag exchange rate, and inflresid\_1 is the first lag inflation residuals. The model above is the best model for explaining the relationship between the exchange rate and stock market prices. The adjusted R-squared was 99.4%, the F- statistic was 28028.34, very large enough to support the adjusted  $R^2$ . However, AIC and BIC were sufficiently kept at lower levels. The regression parameters for the residual GDP variable was regarded as zero following the LR Test which show that the *chi-square* and the *p-value* were 2.23608 and 0.134822 respectively. The residuals were stationary and hence supporting the model to be the best model for explaining the relationship between exchange rate and stock market prices as presented in figure 1 below .



**Figure 1**  
*Vector Autoregressive Residuals*

**Table 9**  
*Post Estimation Diagnostics Tests*

Test	F-Statistic	P-Value	Prob. R-Square
Heteroskedasticity Test	1.934306	0.0273	0.0280
Serial Correlation LM Test	0.725746	0.6689	0.6608

In the regression of the Tanzanian shillings to the USD exchange rate on stock prices, the residuals were found to be heteroskedastic, as evidenced by a significant F-statistic of 1.934306 using the Breusch-Pagan-Godfrey test, with a probability of 0.0273, which is less than the 0.05 level of significance. The observed R-squared had a probability less than the 5% level of significance. This is evidence that the residuals are heteroscedastic, but the residuals are not serially correlated. In the regression of the Tanzanian shilling exchange rate to USD on stock prices, the low F-value of 0.725746 with a probability of 0.6689 and the observed R-squared of 0.6608, which is higher than 0.5, reveal that there is no serial correlation in the error component. The absence of serial correlation in the error term is a pointer to the fact that valid statistical inference on the relationship between the stock market and the USD exchange rate is discernible when stock price serves as the dependent variable. In effect, the regression for stock prices performed better than that of the exchange rate of the Tanzanian shillings and hence may be relied upon for forecasting the relationship between exchange rate variability and stock prices in Tanzania.

**4.5.1 The Synthesis of Analytical Evidence**

The presence of positive relationship between exchange rate and stock market prices in this study is similar to the findings achieved by Muizz Abdul Wadud et al. (2024) in their study conducted in a group of Indonesia the period 2017 to 2021, the evidence suggested that there is a positive relationship between the foreign exchange market and Jakarta Islamic Index. Similar results were also evidenced by Adhikari and Maheshwari (2025) between the Nepalese Stock Exchange Index and the USD Exchange rate, Wei (2021) in China and Uguru et al. (2024)) in Nigeria. This study also analyzed the co-movement among the variables and found that no such co-movement existed, similar to Umoru, et al. (2025). The graphical presentation shows a similar finding.

The results of the causal relationship between exchange rate and stock market prices which indicated that the causality runs from Tanzania Shillings to USD exchange rate as shown by Granger-Sim causality test and Vector Error Correction Model in this study corroborates with the findings by (Osagie Adenomom et al., 2025; Rady et al., 2024; Yandes et al., 2024). The co integration relationship in this study resembles the study conducted by (Khel & Shah, 2025) in Asian Pasific stock market, (Septriawan et al., 2025) in Indonesia, (Subagio & Rahayu, 2024) in Jakarta Islamic Index, (Agrawal & Kumar, 2025; Mohanty et al., 2023) in India, (Trecy et al., 2024) in South Africa, (Huy et al., 2020; Subhan et al., 2023) which evidenced the absence of long run relationship between exchange rate and stock prices. The results of heteroscedasticity in this analysis are similar to Munandar et al. (2021), which showed that the residuals are heteroscedastic. The absence of serial correlation in this research is similar to the findings by (Muazu et al., 2024). On examining the above results with theories, the results concur with the Traditional Approach Theory, the International Capital Flows Theory, the Good Market Hypothesis, and the Deterministic Stock Valuation Model.

## V. CONCLUSION & RECOMMENDATIONS

### 5.1 Conclusion

This study examined the relationship between the exchange rate and stock market prices in Tanzania from 2020 to 2024 using daily data. The analysis of inflation, GDP, and the exchange rate was conducted. The Dar es Salaam Stock Exchange Index (DSEI) was used to assess the performance of the stock market. We employed several econometric methods, such as descriptive statistics, unit root tests, correlation analysis, the Johansen co-integration test, the Granger causality test, and Vector Autoregressive (VAR) modeling. The descriptive statistics showed that GDP, inflation, the stock market index, and the exchange rate all experienced slight variations over the course of the study. The normality tests indicated that the variables weren't perfectly normally distributed, but they were fairly close. The overall results show that short-term changes in exchange rates have a significant effect on stock market prices, but there is no long-term equilibrium between the two variables in Tanzania during the study period. These results support the Traditional Flow Model, which states that changes in exchange rates affect a company's competitiveness and profitability, ultimately influencing its stock value.

### 5.2 Recommendations

The study showed that changes in exchange rates have a big effect on stock market prices. Because of this, the Bank of Tanzania and other monetary authorities should make stronger policies to keep exchange rates stable. Controlling too much volatility in the foreign exchange market can help make the capital market more stable and give investors more faith in it. Investors, portfolio managers, and stockbrokers should all include changes in exchange rates in their investment analysis and portfolio management plans. Changes in exchange rates cause changes in stock market prices. By keeping an eye on foreign exchange trends, investors can use this information to guess how the stock market might change. Companies that trade on the Dar es Salaam Stock Exchange should use good strategies for managing foreign exchange risk, especially if they do business around the world. Changes in exchange rates can affect how much money a company makes from exports, how much it costs to buy things from other countries, and how much money it makes from imports. This could change how much the company is worth on the market. This study gives us some important information about how Tanzania's exchange rates and stock market prices are connected, but there are still some things that need to be looked into more. Future research should employ broader stock market indicators, such as the Tanzania Share Index (TSI), to achieve a more thorough evaluation of overall market performance. Finally, researchers could use different econometric models, like GARCH models or structural VAR models, to get a better idea of how changes in the exchange rate affect the stock market.

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