

# Exchange Rate Volatility and Share Market Prices. A Case of Rwanda Stock Exchange

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**Abstract:** Rwanda's currency experienced depreciation of 6% against a dollar between 2015 and 2021 while the RSE index declined by 4.8% and All Share Index declined by 1.7%. The study focused on establishing the relationship between exchange rate and share market performance in relation to stock prices in Rwanda Stock Exchange. The study was guided by three specific objectives which included; to examine whether inflation affects share prices, to establish whether GDP affects share prices and lastly to assess whether BOP affects share prices at RSE. This study made use of correlational and descriptive research designs. The population of the study was 120 units obtained from secondary data sources concerning the variables within the study period and supplemented with 10 RSE officials who were knowledgeable about Rwanda stock market. The study utilized both primary data collected through interviews and monthly secondary data from documentation sources from World Bank, CMA, BNR and NISR for a period of 10 years from 2012 to 2021. The study adopted census sampling technique. E-views software version 7 was used to analyze the data descriptively by computing means, frequencies and percentages and inferentially through conducting regression analysis and testing hypothesis. Data presentation was done by use of tables and graphs. Diagnostic and unit root tests were conducted on secondary data before analysis to ascertain model relevance. Diagnostic and unit root findings indicated that the secondary data used passed the diagnostic tests of normality, autocorrelation, heteroscedasticity, model stability and stationarity. Descriptive findings indicated that over 70% of respondents did agree to a large extent that Inflation, GDP and BOP affected share prices. Additionally, the coefficients of Inflation, GDP and BOP and moderating variable lending rates in the regression model were found to be -2.317, -5.759, -0.534 and 0.236 with corresponding P values of 0.0000, 0.0091, 0.0220 and 0.0035 respectively. Therefore, these macroeconomic factors cause volatility in exchange rates hence significantly affecting the share prices negatively. Lending rates brought stability in exchange rates, thereby causing positive significant effect on share prices. The study recommended RCMA to strengthen derivatives market to hedge against market risks and portfolio managers to watch the stock market trends to either dispose or hold stocks in case they predict instability or stability in exchange rates appropriately. Additionally, macroeconomic factors including Inflation, GDP and BOP should be stabilized to avoid exchange rate instability thereby stabilizing the share prices.

**Keywords:** Exchange Rate, Volatility, Macroeconomic Variables, Share prices

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## I. INTRODUCTION

### 1.1. Background

Economic performance of a country is measured by a number of parameters, with share market performance being one of them. Share market plays a key role in linking buyers and sellers of stocks. Share market acts as a conduit of transmitting funds from surplus sectors of an economy to deficit sectors thus ensuring market liquidity. Share markets brokers act as a link between surplus and deficit units (Alile, 1984). On a global scale, various studies have been undertaken to find out whether there is a close relationship between parameters of exchange rate and stock indices and they have reported different results. For example, studies by Jorion (2011) found out that USA and European markets did not have any correlation with the prevailing exchange rate. However, in the Indian and Japan's stock exchange context, the study found a close association between share market and exchange rate. Zhao (2011) carried out a study in Hong Kong, China, to establish how exchange rate affects stock on capital markets; the findings did not establish any association between the variables. However, the two exhibited bidirectional relationship.

In the Africa context, studies have been conducted on exchange rate volatility focusing on macroeconomic factors and stock market performance in various countries. For example, Ifuero & Esther (2012) in Nigeria and Adjasi *et al.* (2008) in Ghana and Asaolu *et al.* (2011) carried out the study to establish the effect of macro-economic factors on securities exchange markets of the two Western African countries. In Ghana, the

scholar established that the volatility of the Ghana's currency had an impact on share market which were also supported by study in Nigeria. Asaolu *et al.* (2011) also explored nine major factors of the economy and identified exchange rate as one of the key determinants of shares prices. Earlier study carried in Nigeria, Ajayi *et al.* (2012), had an indication that domestic value influences the share prices. He cited that currency depreciation has long and short term effect on securities. He further recommended that, appropriate monetary policies by regulators should be undertaken to stabilize the share prices. Regionally, studies have reported the role of variation of currency value on monetary policy adoption in a given country. Kirui *et al.* (2014) in Kenya pointed out that devaluation of a currency can be adopted by Central banks as an expansionary policy tool in an export-oriented country to increase the level of exports of a country. The study concluded that exchange rate has positive impact on share prices of a country. Rate of return of assets is influenced by domestic currency of a country. Capital inflows can determine the level of investments. Exchange rate have a direct impact on return on assets (Adjasi&Biekpe, 2005). Whenever a currency appreciates, the country will have high purchasing power thus earning high returns on investments (Tudor, 2009). Kim (2015) cited that profitability of a firm is reflected in share prices of a company. He further noted that depreciation of a domestic currency for an exporting country, whose trade receivables are denominated in foreign currency; would have a positive impact on its share prices because the country will receive more thus boosting its profitability in nominal terms. Otherwise, for the country having foreign debts, depreciation of its own currency will have a negative effect on its share prices because the country will have to pay more to buy a foreign currency to settle its debts. According to Ochieng (2016), local and foreign investors are participants in the capital markets. The foreign investors have to pay attention to conversion of their currency into home currency. The favorable exchange rate would attract more investors than a country that has unfavorable exchange rate. After the Second World War, Bretton Wood Convention, 1944 was meant to stabilize most economies by maintaining exchange rate' stability. A country could adopt either fixed exchange rate or floating exchange rate or both. Floating exchange rate is dictated by demand and forces of a currency. The higher demands for a foreign currency would exert pressure on a local currency and thus, depreciation of a local currency.

In the Rwandan context, investors' exports goods to foreign markets and revenue generated from exports would be invested in stock exchange market. If the local investors achieve higher returns, they would invest the proceeds on companies listed on share market. Higher capitalization of shares boosts market prices (Ferreira *et al.*, 2019), (Adjasi *et al.*, 2008), pointed out other major factors of the economy other than exchange rate. Gross Domestic Product, Exports, Investment climate, and balance of payment, were identified as major factors that influence exchange rate of a currency. Volatility of Rwandan Francs due to various major factors of the economy is an area of focus because the Rwandan market seems be appealing and very attractive to foreign investors. The Rwandan government has given investment incentives to promote capital markets. Taxation is one of the key fiscal policies. Since foreign investors are motivated with profits on their investments, it is worth investigating how exchange rate would have an impact on share prices. Since capital market will denote economic performance of a country; therefore, there is a requisite to study how the exchange rate' volatility affects share prices of companies listed on Rwanda Stock Exchange.

## **1.2 Statement of the problem**

Exchange rate volatility which refers to the fluctuations in rate of exchange is widely recognized as very influential in the stock exchange market. The fluctuations are widely due to macroeconomic factors that can affect the stock exchange market by causing changes in rate of exchange (Hassan *et al.*, 2018). An increase in GDP of a country can lead to increased income which encourages investments in stocks hence the share prices can ultimately rise due to the increased investment demand on stocks. Additionally, inflation can lead to depreciation of the currency, increased volatility which ultimately scares away investors on shares and other securities. Balance of Payment which refers to net exports also leads to fluctuations on exchange rate which can destabilize the prices of securities (Hassan *et al.*, 2018).

Rwanda's currency has experienced a depreciation of 6% against USA dollar over the last four years while the RSE index declined by 4.8% and All Share Index declined by 1.7%. The depreciation trend exhibited could be having a negative effect on the prices of quoted companies on RSE. Most companies listed on RSE largely trade at international level by use of dollar-currency. The major predictors of exchange rate comprise of Gross Domestic Product, Balance of Payment and Inflation (Innocent *et al.*, 2018). The predictors of exchange rate over the recent past have been dynamic; Inflation rates has increased by an average of 4.5% over the past four years. It is also worth to note, Rwanda's current balance has shown a trade deficit of an average of -10% over the same period; G.D.P has increased by an average of 7.0 % between 2016 and 2019 Shula (2017) noted that share prices are sensitive on Gross Domestic Product of an economy. It was observed that Zambia was trading at a BOP of -10% in 2017 which could largely influence share prices (Calderon, 2018). Shareholders are influenced by returns on investments (Ferreira 2019, Akechet *et al.*, (2017). Profitability of the firm determines the returns on investments. Currency depreciation results to exchange rate risk thus exchange loss. The exchange

loss will deprive dividends pay-out to shareholders hence affecting the share prices. Dividend payout and profitability of a firm are among factors which reflects share prices. Studies exist in other countries on the relationship between exchange rate volatility and share prices but little has been done in Rwanda in this area despite the unattractive performance of share price exhibited. Therefore, it is based on this backdrop that this study sought to examine the effect of exchange rate volatility on share prices in Rwanda Stock Exchange.

### **1.3 objectives of study**

- i. To determine whether inflation volatility affects the share market prices of listed companies in Rwanda stock exchange.
- ii. To establish whether Gross Domestic Product affects the share market prices of listed companies in Rwanda stock exchange.
- iii. To assess how Balance of Payment affects the share market prices of listed companies in Rwanda stock exchange.

## **II. LITERATURE REVIEW**

### **2.1 Empirical Review**

A study was carried out in Karachi Pakistan, to establish how inflation as a macro-economic factor affects the share prices. The researcher employed Vector Auto-regression Model, and the conclusion was: stock prices were influenced by inflation level; the lower the inflation, the stable the stock prices (Mahmoud *et al.*, 2015). Similar findings were observed by other scholars like Tangjitprom (2011) in Thailand, Shahzadi&Choham (2012) in Karachi Pakistan, Hossain & Afzal (2011) in Dhaka in Bangladesh, and they confirmed that effective macro-economic policies were necessary to counter inflation and stabilize share prices

Similar research was conducted by Arash& Chin (2019) to examine the impact of inflation and share market in developed countries members of G-7 countries: USA, France, Britain, German, Italy, Canada and Japan. The findings were similar like those in Karachi, Dhaka, Thailand, that: Inflation determines the stability of share prices. Within the Eastern African context, Kenya being the country under study, Danson & Cyrus(2013) analyzed the effect of inflation on NSE market by utilizing multiple linear regression model. The findings from his study was that inflation was a critical factor in determination of share market in the Nairobi Stock Exchange. He further proposed that macro-economic and fiscal policies tools could be employed by the government to stabilize market prices and hence stability in the capital market.

A study by Gwahula (2018) in Dar-es-Salaam Stock Exchange Market evaluated how market prices in DSE were influenced by major factors of the economy by use of multiple regression model. The study reported that inflation could not be traced as having any effect on market prices on Dar-es-Salam Stock Exchange Market. These results were however different from those conducted at NSE Kenya where the association between inflation and share market were observed to be negative.

In Rwanda Stock Exchange, the study was carried by Innocent *et al.*, (2018), to establish whether major factors of the economy were closely related with pricing of the share market. The study adopted descriptive design with secondary data used solely in achieving objectives. Inflation was cited as one of the main factors that influenced the share market at RSE; the two variables exhibited inverse relationship; it was concluded that the decrease in market prices was as a result of increase in inflationary pressure. The study recommended control of inflation in order to enhance share price performance. In Istanbul Stock Exchange, Kilicarslan (2018) did his study to establish how major factors of the economy in Turkey influenced exchange rate volatility. Balance of payment and exchange rate were the study variables; co-integration was used in data analysis. The two variables showed a close long run association between BOP and exchange rate. Additionally, it was found that BOP and currency movement are positively related. The study concluded that the more the country had involved in external trade exposure, the more the stability in exchange rate' condition. These findings were also echoed by Rose & Jose (2020) who conducted a study in India using the causality approach and found that there was a bi-directional causality between Nifty returns and exchange rate. The study by Calderon and Kubota (2018), analyzed 82 industrialized countries. The analysis utilized panel regression model. It was noted from the research findings that by improving Balance of Payment, exchange rate' volatility could be lowered and thus escalate share prices. Asiana and Kumah (2010) affirmed the conclusion by examining a number African countries.

The study was carried in Ghana by Adusei&Gyapong (2017)1975-2014 to establish how macro-economic factors influenced market volatility, the study utilized Partial least squares structural equation modelling approach. The research pointed out that current account is very vital in forecasting exchange rate movements in Ghana Stock Exchange. The study concluded that current account heavily influence exchange rate volatility hence should be improved through increased exportation. This study however did not go ahead to look at how exchange rate volatility affect share prices which is very important for the performance of stock market. The current study concentrated in determining how exchange rate volatility affect share prices.

Hassan *et al.*, (2017) conducted a study to evaluate major factors of the economy that were behind the exchange rate volatility in Nigeria. The study adopted ARDL and Granger Causality Test. The data 1989-2015 was utilized by using time series. Findings did indicate that macroeconomic factors particularly trade openness and oil price have statistically insignificant effect on exchange rate volatility. Additional GDP was found to have negative insignificant effect on exchange rate volatility. However, interest rates and fiscal policy were found to be statistically significant. The study recommended favorable fiscal policies and reduced interest rates to reduce instability in exchange rate. The current study adopted multivariate OLS model in the analysis and determined the effects of exchange rate volatility on share prices by looking at the macroeconomic factors which deviates from Hassan's study.

In India, D.V Lokeswar (2012), explored to establish a link between GDP and share market. The multiple regression models were employed; the scholar concluded that direct relationship existed between market prices and the GDP of a country; by transitivity, higher GDP would escalate performance in companies and leverage stock prices in the share market. The study recommended efforts to be made towards improving GDP in order to improve market prices performance. The current study however explored the same in the Rwandan context to ascertain any deviations.

The GDP was a principle in influencing market prices in Pakistan Muhammad & Sharif (2012). The macro-economic were put into study and the behavior of stock prices of listed companies over ten years were established. The findings were similar with D.V Lokeswar (2012). The study carried in Zambia by Hunjra (2014) agreed with major studies carried out in Europe and other parts of West African scholars that GDP and stock prices had a positive relationship. The study model was linear regression. The findings from the study pointed out that GDP was a paramount factor investors were to put into consideration in determination of foreign markets to invest in. The current study however gives the Rwandan context. Hunjra (2014) had a different findings and view about the relation between GDP and market prices in the short-run. The study was conducted in Pakistan stock market using Granger causality and cointegration techniques. The findings did indicate that Inflation and GDP had no significant relationship with stock prices in the short run while in the long run there was presence of significant relationship. This study did not however explore the effects of these macroeconomic factors on stock prices which this study explores in addition to focusing in the Rwandan context.

In Nigeria, Adaramola (2011) investigated how major factors of the economy influenced share prices. The study considered share market as dependent on major factors of the economy. The scholar embraced regression model to analyze the secondary data under the period of study. The findings showed that there existed a positive correlation between GDP and market prices in Nigeria even though the effects were not reported by the study. The current study filled this gap by reporting the findings for Rwandan case as regards macroeconomic factors and share price performance.

In Kenya, Wycliffe & Peter (2014), conducted a study to establish a relationship between Gross Domestic Prices and market prices. Share Index were used as a measure for market prices The GDP and share index had positive relationship. Contrary to the study, Ndunda *et al.*, (2016) carried out the same study and observed that major factors of the economy have a weak relationship on share index of quoted companies on NSE. The current study dealt with the Rwandan case in order to see if there are deviations. For the case of Rwanda, scholars have not put much emphasis on this area to extensively establish how exchange rate affects the prices of quoted companies on RSE.

Similar studies have been carried by Innocent *et al.*, (2018) focusing on general major factors of the economy and share markets by use of Vector Auto-regression model by use of market capitalization. The findings indicated that GDP had weak influence on RSE companies. A study carried out by Ndamukunda *et al* (2016), had a contrasting findings, and showed inferred that general economic factors such as GDP have a great influence on listed companies on Rwanda Stock Exchange.

A cross -section study was conducted, Mahmudur & Gazzi (2009), to establish how interest rates and stock prices interact for developed and emerging markets; the sample included countries from Asia, South Africa, Europe and Africa. The outcome of the study pointed out that interest rates had an inverse relation on share market. The findings from this study suggested that interest rate should be kept in check for stabilization of market prices Similar study of interest rates and market prices was conducted in the USA, Europe and China by Aloui&Jarboui (2017). The casualty between the variables were tested and the findings from the study postulated that market prices and exchange rate have a bigger impact association in the countries under study.

The study carried in China, Yin and Yang (2013) was conducted to establish how commercial interest rates do affect performance of share markets. The study suggested that commercial banks interests influence share markets this could be possible because borrowing of quoted companies could result decline in profits and hamper the dividend payment of companies thus decline in market prices of shares. In Ghana, Anthony & Frank (2008), a study was to examine the behavior of major factors of the economy and stock performances on the Ghana Stock Exchange by use ALSI index. The study showed that the lending rates by commercial banks and a

negative effect on share market performance. He further pounded that lending rates tend to discourage investments and eventually reduction in prices.

The study was carried out in Nigeria by use of Ordinary Least Square model to determine the relationship between lending rates and stock prices; the finding indicated that there is weak association between market prices and interest rates. The scholar indicated that interest and exchange rate were fundamental monetary tools used to attract foreign direct investment. Lower interest rates could attract foreign firms in a country and more listing could mean increase in stock prices. The current study reported the findings for the Rwandan context regarding lending rates and stock prices. The study of share market returns and interest rates have not been ventured by scholars in Rwanda, except few studies (Innocent *et al.*, (2018), the researcher pointed out that interest rate do not have any causation on share prices

## **2.2 Critique of Literature and Research Gap**

The literature of the study has been discussed in detail in the local and global context. A number of studies have intensively explored the impact of exchange rate' instability and variations in prices of stocks. Some study findings have established a clear association between the two variables while others have postulated and disputed the relationship between the two variables. The parameters of exchange rate' instability, Gross Domestic Product and inflation are the main variable under the study. In the review, some studies have pointed out existence of association between market prices and exchange rate. Some researchers like Kilicarslan (2018), Gwahula R. (2018), Yin and Yang (2013), Calderon and Kubota (2018), their findings affirmed that there is a bigger impact association between major factors of the economy and market prices on the stock exchange markets.

The study by Obwogi&Laichema (2015), Aritabel (2009), Balla& Hassan (2018), looked into share capitalization and exchange rate. Some other studies have indicated that there is insignificant association of market prices and major factors of the economy (Innocent *et al.*, 2018, Ndunda *et al.*, 2016, Hunjra, 2014) It has been noted that previous studies have not categorically analyzed the exchange rate and share market variables except few cases (Onyango *et al.*, .2018, Kirui *et al.*, 2014); but most studies looked exchange rate grossly as a macro-economic predictor of exchange rate. The similar studies have only been carried by (Innocent *et al.*, (2018); National Bank of Rwanda key repo rate and market capitalization were the variables under consideration.

In Rwandan context, the study about exchange rate and share markets have not been investigated exhaustively despite existence of share market over a decade. The similar studies have only been carried by (Innocent *et al.*, (2018); National Bank of Rwanda key repo rate and market capitalization were the variables under consideration. Having that the topic under study has not been explored by researchers, the study of exchange rate' volatility and share market will fill the gaps noted in the study.

## **2.3 Arbitrage Pricing Model**

The Arbitrage Pricing Theory incorporates major factors of the economy that affects pricing the value of assets. The study of exchange rate and market prices can be associated with Arbitrage Pricing Theory, because, the required rate of returns influence the stock market prices The higher the cost of capital, the lower the market prices lower cost. Therefore, it is very vital to evaluate parameters which affect the required return of securities.

The model has risk free and premium of the general economic factors (Fabozzi and Drake, 2009). Among the variables include GDP, Lending rates, trade openness and other factors. APM is preferred to CAPM model because it establishes a ground for evaluating share prices. The theory holds under the premise of ceteris paribus which is: there investors are rational, taxes do not exist, and on-existent of arbitrage gains, variance of market returns is finite and normal distribution and their free interaction of demand and supply forces in the capital markets (. Onyango *et al.*, 2018)

The model has been widely employed in various studies and very popular in share market studies. APT theory establish the relationship between share market returns and macro-economic variables 2018), Akech (2017), Innocent (2018) and Bala *et al.*, (2018)

This study has considered exchange rate as one of the macro-economic factor which influence the share prices, and therefore makes this more useful and vital for this research.

Market risk in international trade is more emphasized in terms currency fluctuation and this might deplete the firm's earnings and exert downward pressure on share prices. The APT theory suits the study as it explains a multi-component of macro-economic factor.

### III. METHODOLOGY

Descriptive and correlational research designs were adopted. The population size was 84 units which included monthly panel secondary data collected for the mentioned population for a period of 10 years (2012-2021). This period was chosen due to availability of data and it covered the period of operation of RSE. The study utilized secondary data which was collected through documentary sources which included Capital Market Authority, Rwanda Stock Exchange, National Bank of Rwanda, World Bank and National Institute of Statistics of Rwanda. Additionally, Interview with the staff of RSE was also conducted. Data was analyzed using E-views Version 7 software and presented in tables and graphs. Time series statistical tests were conducted on the data accordingly and multiple linear regression adopted to study the effects of independent variables on dependent variable.

### IV. RESEARCH FINDINGS

#### 4.1 Descriptive statistics of variables

**Table 1: Summary of descriptive statistics**

Variable	Observation	Mean	Maximum	Minimum	Std Dev.
Market Price Per share	120	163.08	260	100	49.36
Consumer Price Index	120	115.18	137.6	87.4	13.33
Gross Domestic Product	120	7.68	11.1	0.30	2.71
Balance of Payment	120	-63.19	102	-112.71	59.76

Source: secondary data, 2012-2021

The means for market price per share, consumer price index, gross domestic product and balance of payment were 163.08, 115.18, 7.68 and -63.19 respectively within the study period. The results also indicate that the market price per share reached an all-time high of 260 and lowest of 100 with high standard deviation of 49.36 within the study period an implication of high spread of market share prices. The findings also indicate that GDP grew by an average of 7.68% while inflation stood at an average of 15.18% which is undesirable. The findings also indicate that Rwanda's BOP recorded an average deficit balance of 63.19 billion of Rwf which implied that on average the imports value were more than the exports value within the study period. Gross domestic product had the smallest deviation from the mean meaning that GDP growth changes were on small percentages year in year out within the study period.

#### 4.2 Diagnostic tests

##### 1. Normality Test

**Table 2: Jacque-Berra Normality Test of Data**

Histogram-Normality Test	Value
Jacque-Berra Statistic	4.548
Probability	0.1029
Critical Value at 5%	5.991

Source: secondary data, 2012-2021

Jacque Berra statistic value was 4.548 which was less than critical value at 5% (5.991) an indication that the null hypothesis cannot be rejected. Moreover, the probability value is 0.1029 which is greater than 5% hence we accept the null hypothesis which states the data fits the normal distribution.

##### 2. Serial Correlation

**Table 3: Breusch-Godfrey Serial Correlation Test of data**

F-Statistic	2.87
Probability	0.0626
Critical Value at 5%	3.84

Source: Researcher, 2021

The P value (0.0626) is more than 0.05 hence we fail to reject the null hypothesis of residuals are serially uncorrelated. Hence the study conclude that the residuals of the data are serially uncorrelated.

### 3. Heteroscedasticity

**Table 4: Breusch Pagan Godfrey Heteroscedasticity test of data**

F-Statistic	2.58
Probability	0.501
Critical Value at 5%	3.84

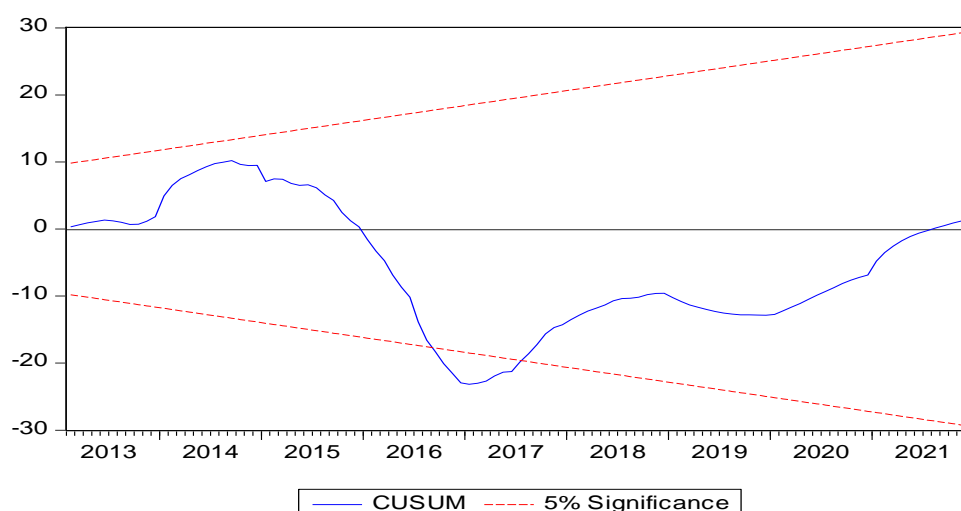
Source: Researcher, 2021

F statistic value was 2.58 which was less than the critical value of 3.84 and the probability value was 0.501 greater than 5%. These results indeed indicated that the null hypothesis of presence of homoscedasticity rather no extreme variability in the data set was accepted. Therefore, the data set used in this study obeyed the OLS assumption of no heteroscedasticity in the data set.

### 4. Stability test of model

The results did indicate that most of the residuals lied within the 5% significance range of errors. Only the residuals from 2016M11 to 2017M03 were not within the range which represents a smaller percentage of the total residuals. These results indicated that the regression model used in this study is stable.

**Figure 1: CUSUM Test Result for Regression Model Stability**



### 5. Unit Root Test Results

**Table 5: Unit Root Test Results of study variables**

Variable	Intercept	Trend and intercept	Status
Market Price per share	-11.33	-11.46	Stationary
P-Value	(0.0001)	(0.0000)	
Consumer Price Index	-7.07	-7.08	Stationary
P-Value	(0.0000)	(0.0000)	
Gross domestic Product	-8.94	-8.95	Stationary
P-Value	(0.0000)	(0.0000)	
Balance of Payment	-8.94	-8.94	Stationary
P-Value	(0.0000)	(0.0000)	
<b>Critical Values</b>			
<b>1%</b>	<b>-3.51</b>	<b>-4.07</b>	
<b>5%</b>	<b>-2.90</b>	<b>-3.47</b>	
<b>10%</b>	<b>-2.59</b>	<b>-3.16</b>	

Source: Secondary data, 2012-2021

The study adopted ADF unit root test method. The ADF value for market price per share, consumer price index, gross domestic product and balance of payment were all greater than the critical values both at 1%, 5% and 10%. Additionally, the P values for all the variables were 0.0000 except for Market price per share at intercept which reported P Value of 0.0001. These P values are all less than 5%. This implied that the null

hypothesis of presence of unit root in the series was rejected and the alternative hypothesis of absence of unit root was accepted. Therefore, the researcher concluded that the data used in this study was stationary making the regression model adopted in this study appropriate.

### 4.3 Regression results

**Table 6: Regression analysis results**

	<b>Coefficient</b>	<b>Standard error</b>	<b>T statistics</b>	<b>probability</b>
Coefficient	426.79	53.978	7.907	0.0000
Inflation	-2.317	0.419	-5.530	0.0000
GDP	-5.759	2.154	-2.673	0.0091
BOP	-0.534	0.229	-2.335	0.0220
Lending rates	0.236	0.536	-3.624	0.0035
R squared	0.30			
F statistics	11.437			
Probability(F statistics)	0.0000			

**Source: Secondary data, 2021**

The coefficients of Inflation, GDP, BOP and lending rates were -2.317, -5.759, -0.534 and 0.236 respectively. This implied that inflation, GDP and BOP had negative effects on share prices within the study period. A one percent change in inflation, GDP, BOP leads to 231.7%, 575.9% and 53.4% opposite change in share prices *ceteris paribus*. However, a one percent change in central bank lending rates leads to a 23.6% change in share prices in the same direction keeping other factors constant. The Probability values for Inflation, GDP, BOP and lending rates were 0.0000, 0.0091, 0.0220 and 0.0035 respectively which were all less than 0.05. This is an indication that these variables had negative significant effects on share prices within the study period. The regression model connecting Inflation, GDP, BOP and market price per share was therefore fitted as:

$$MPS = 426.79 - 2.317INF - 5.759GDP - 0.534BOP$$

The above model indicate that share price is negatively related to inflation, GDP and BOP. A unit increase in inflation, GDP and BOP leads to 2.317, 5.75 and 0.534 units' reduction in share prices respectively.

R squared value was found to be 0.30 implying that inflation, GDP and BOP explains 30% of the variations in share prices with the remaining 70% explained by other determinants of share prices. The F statistics value was 11.437 with P value of 0.000. This was an indication that the regression model used in this study to assess the effects of exchange rate volatility on share prices is appropriate which confirms the previous results on the time series diagnostic tests which indicated that the model is stable and that it obeys the OLS assumptions hence appropriate for this study.

The opinion of the staff of RSE was also gathered to reinforce the secondary data findings concerning the effects of inflation, GDP and BOP on share market prices. According to the findings, majority of respondents were of the opinion that GDP, Inflation and BOP affect share prices to a large extent with over 70% supporting in each case. The mean values for effects of inflation, GDP and BOP we 2.9, 3.0 and 2.7 respectively. This implied that the effects of these variables on share prices were averagely to a large extent.

## V. CONCLUSION AND RECOMMENDATIONS

### 5.1 Conclusion

The study focused on three objectives namely to determine the effects of inflation volatility on share prices, to establish effects of GDP on share prices and to determine the effects of balance of payment on share prices of listed companies in Rwanda. The study concluded that all the three variables had significant negative effect on share prices of listed companies. These variables cause instability in exchange rate hence negatively affecting share prices of listed companies.

In summary exchange rate volatility negatively affects share prices since the changes in the macroeconomic variables causes instability in the exchange rate hence negatively affecting share prices. However, lending rates which was used as an intervening variable had significant positive effect on share prices.

### 5.2 Recommendations

This study found a negative effect of exchange rate volatility on share prices of listed companies. Based on this, the study recommends that Rwanda Capital Market Authority should aim at strengthening the derivatives market so that derivative instruments can be traded by investors to hedge against market risks thereby improving their confidence on stock markets. This will aid in reducing instability of the exchange rates and improve share prices.

Secondly portfolio managers should be very vigilant and closely monitor forex market behavior for decisions on stock trading. They should be able to dispose of their stock holdings if they predict an increased



exchange rate volatility and on the other hand hold more stocks if they predict stability in exchange rates. This will be important in managing the share prices hence profitable to the company.

Lastly, the study recommends that macroeconomic factors particularly GDP, BOP and Inflation should be kept stable with little fluctuations in order to achieve stability in exchange rates hence positive effect on share prices can be achieved. Central bank should also stabilize the lending rates in order to build confidence on investors on shares which ultimately leads to better share prices.

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