EFFECTS OF SHARE PRICE VOLATILITY ON STOCK MARKET PERFORMANCE OF COMPANIES LISTED ON RWANDA STOCK EXCHANGE IN RWANDA

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Abstract: **Globally, share price volatility is the unavoidable market phenomenon that reflects on fundamentals of finance, information in the market and investor expectations. Share price volatility disturbs the proper operations of the financial system and negatively affects stock market performance. High volatility above a mark raises the investment's risk profile hence possibility of losses is paramount. This study assessed the effects of stock price volatility on stock market performance companies listed on the Rwanda Stock exchange. The study was guided by the following specific objectives; to determine the effect of exchange rate on the stock market performance of firms listed in Rwanda Stock, to determine the effect of interest rate on the stock market performance of firms listed in Rwanda Stock, to determine the effect of inflation rate on the stock market performance of firms listed on Rwanda Stock exchange. The study adopted descriptive research design and the population contained all the eight companies listed in the Rwanda Stock Exchange (RSE). A census survey was conducted on all the eight listed firms and purposive sampling technique was used to sample the respondents to participate in the study. Data was analyzed using descriptive statistics, correlation analysis and regression analysis using SPSS version 21. Correlation and regression methods used to carry out the inferential analysis. Statistical t-test and F- test was used to test the significance of explanatory variables on dependent variable. The study found that Exchange rate had a positive influence on the stock market performance in Agricultural, Industrial allied sectors and a negative influence on Finance and investment sectors and commercial and services sectors. Inflation had a positive influence on the stock market performance in investment sector and a negative influence on all the other sectors. Interest rate had a positive influence on the stock market performance in Commercial, sectors and a negative influence on Investment sectors. The study also found that fuel prices had a negative influence on the stock market performance in the Automobile sectors while having a positive influence on the stock market performance in all the other sectors. The findings showed that the type of sector characteristics had a moderating effect on the relationship between macroeconomic variables of exchange rate, Interest rate, Inflation, and the stock market performance at the RSE.**

Keywords: **Exchnge rate, Share price volatility, Rwanda stock exchange.**

1. INTRODUCTION

1.1 Background:

Globally, with the advent of information technology, especially the internet-based applications in the capital markets at the global level, information describing the macro and microenvironment of economies is readily accessible (Pal and Mittal, 2011). Great economies of this world are judged on the basis of how well their financial systems are developed among other yardsticks. Ahmed (2008) posit that a financial system is a set of institutions and markets permitting the exchange of contracts and the provision of services for the purpose of allowing the income and consumption streams of economic agents to be desynchronized hence, made less similar.

Fabozzi and Drake (2009) opine that financial markets' economic functions include price discovery, liquidity and reduced transaction costs. Price discovery means that exchanges of buyers and sellers in a financial market determine the price of the traded financial assets. Equally, they define the required return that participants in a financial market demand in order to buy a financial instrument. Because the motivation for those seeking funds depends on the required return that investors demand, it is this function of financial markets that signals how the funds available from those who want to lend or invest funds allocated among those needing funds and raises those funds by issuing financial instruments which occurs in a structured manner in securities exchanges.

Securities exchanges render themselves to the trading of various financial assets otherwise referred to as instruments. Samuelson and Nordhaus (2010) defines financial asset as claims to the income generated by real assets or claims on income from the government. They range from ordinary shares to bonds to derivatives, a hierarchical formation which depicts the level of development of a particular exchange.

Ordinary shares bestow voting rights to the holder, may exist perpetually except in liquidation, and earn a return relative to the firms return. These characteristics makes shares the most preferred instruments among investors yet the most risky, the fact that rational investors are risk averse notwithstanding (Parameswaran, 2011)**.** The risk of the shares arises because prices at which they have been bought may rise or fall in the course of trading. On another front, the risk may present as failure by the issuer to pay the anticipated return in the form of dividend.

The price of a share of at any time, or its market value, represents the price that buyers in a free market are willing to pay for it. Fabozzi and Drake (2009) describe this as the market value of shareholders' equity which is the value of all owners' interest in the company. In essence it can be deduced that price of a share today is the present value of the dividends and share price the investor expects to receive in the future. The price therefore represents the uncertainty associated with receiving future payments, timing of future payments, and a compensation for tying up funds to the investor.

A further expounding on the role of a market price of a share has been provided by Howells and Bain (2008) who states that it represents an opportunity cost since it appears in the wealth constraint as the amount that has to be paid, or is received, per unit of the share price volatility, hence the basis of economic analysis. On the other hand, price conveys information meaning that today's share price reveals information about prices in the future.

It can also be inferred that prices guide investors' actions yet their reliability as a guiding factor depends on investors ability to predict share prices changes occurring in the future knowing that they are bound to vary from time to time. This variability can also be referred to as share price volatility. According to Kullapom & Lalita, (2010) share price volatility is a systemic risk faced by investors who possess ordinary share investments. Statistically, volatility is defined as the variation or dispersion or deviation of an asset's returns from their mean. According to (Damodaran , 2012), volatility is the deviation of mean returns from expected returns and therefore represent either positive or negative volatility otherwise known as upside or downside risk. This portends that large values of volatility reflect returns fluctuating in a wide range hence more risk. Accordingly, the higher the volatility of prices, the lesser the attractive the shares to shareholders and so it is expected that in the long run, the valuation of company's shares will reduce.

Andersen *et al* (2016) describes volatility as fluctuations observed in some phenomenon over time. They continue to explain that within the context of economics, it is used slightly more formally to describe, without a specific implied metric, the variability of the random (unforeseen) component of a time series. It is also widely measured using the standard deviation of a random variable (Kullapom & Lalita, 2010). For empirical purposes, volatility according to Damodaran (2012) can be estimated either as historical or implied. In which case historical volatility is one which of a series of share prices where we look back over the historical price path of the particular share. On the other hand, implied volatility is the volatility of the underlying asset price that is implicit in the market price of an option according to a particular model. This study limited itself to the empirical analysis of historical volatility.

According to Islam *et al* (2014) this approach borrows from modern asset pricing theory and its emphasis on so-called factor models, or models that assume a firm's stock return is governed by factors such as the overall market return, the return on a portfolio of firms sampled from the same industry, or even changes in economic factors such as inflation, changes in oil prices, or growth in industrial production. If returns have a factor structure, then the return volatility depend on the volatilities of those factors.

Firm specific factors that estimate the expected returns on risky securities are categories as either fundamental or technical factors, as such the attendant analysis is also either fundamental or technical analysis. Fundamental analysis

which posits that that price volatility can be explained by the financial performance of the firm at hand meaning that financial statements would be a one stop shop for predicting stock price movements including volatility and technical analysis whose stand point is that price volatility can be explained by studying patterns of prices and returns under the assumption that these patterns are discernible (Fabozzi & Drake, 2009).

Nazir, Nawaz, Anwar and Ahmed (2010) used 73 firms listed in Karachi Stock Exchange (KSE) as sample and studied the relationship between share price volatility and dividend for the period of 2003 to 2008 to which they reported that share price volatility has significant negative association with dividend yield and dividend payout. A study by Hussainey *et al*. (2011) attributed the high volatility of equity returns in Nigeria Stock Exchange to changes in key macroeconomic variables such as the credit to the private sector of the economy, inflation, exchange rate, international oil prices, interest rates, broad money supply as well as measure of real economic activity.

The Rwandan financial market is mainly composed of Money markets, Securities markets and Foreign exchange markets. The money markets dominate the Rwandan financial market with 96.5 percent (of which 60.9% is from Treasury bill for the Government) of total outstanding amount. The securities market in Rwanda is dominated by Government bonds operations. The Rwanda Stock Exchange (RSE) is Rwanda's principal stock exchange. It was founded in January 2011. The RSE is operated under the jurisdiction of Rwanda's Capital Market Authority (CMA), previously known as Capital Markets Advisory Council (CMAC), which in turn reports to the Ministry of Finance and Economic Planning (Logie et al. 2008).

Eight Companies are listed at RSE: Bralirwa (brewing and bottling), Rwanda Commercial Bank (banking and finance), Nation Media Group (publishing, printing, broadcasting and television), Bank of Kigali (banking and finance), Uchumi Supermarkets (supermarkets) and Equity Group Holding Limited (banking and finance) Crystal telecom and I & M bank (Rwanda Stock Exchange book, Feb. 2017). The stock market reflects a country's prosperity and prospects. Most developing nations give top priority to the development of a stock exchange and think of it as a symbol that they truly entered the modern age (Mwangi, & Murigu, 2015). The Stock market development has a positive effect on economic growth. Therefore, the government of Rwanda has a goal to develop the economy by 2020. And there is a need to stimulate availability of long term capital in this regard-capital formation. The government has to encourage participation and growth of the stock market, thereby facilitating the growth, flow, and regulation of the stock market. The government ensures that investors are protected, advises and guides companies seeking capital and provides an important infrastructure and conducive environment for business development. This study identifed factors that determine financial performance of firms listed on Rwanda Stock Exchange. These goes to show that there is a paucity of empirical evidence on the interaction between fundamental variables identified in this study and share price volatility in Rwanda Stock Exchange a gap this study intended to fill.

1.2 Statement of the Problem:

Government of Rwanda has a goal to develop the economy by 2020 therefore it has to encourage participation and growth of the stock market by facilitating the growth, flow, and regulation of the stock market. The government ensures that investors are protected by providing advises and guidelines for companies seeking capital. Important infrastructures and conducive environment are provided for business development (Mittal, 2009). Rwanda Stock Exchange has listed a number of companies both domestic and foreign in the near past. With integration of foreign companies, firms would raise as much capital as they desire, and profits would consequently go up. This is however not the case in 2017, as KCB and NMG both foreign companies from Rwanda listed in RSE barely traded any shares while domestic companies like BK and Bralirwa listed on the same traded profitably.

The extent to which the subject of share price volatility has been studied cannot be gain said. As numerous as the studies, so are the methodologies, interests and focus applied. A case in point Chiang and Kee (2009) and Nyamongo and Misati, (2010) among others, have studied volatility of share return and its determinants from a macroeconomic perspective to which they report that inflation and interest rate affect share return volatility. Equity return in these cases has been used as a proxy for price derived from periodic stock market index in the respective study areas. While the findings in these studies are weighty and important, their efforts could be complemented by alternative methodology of cross sectional study as opposed to time series applications. These studies have also based their analysis on aggregation of prices represented in the market indices, a condition which assumes homogeneous performance across companies listed irrespective of sector of operation. Perspectives of individual firm performance is important, especially if a bottom up approach of portfolio construction is used by investors a gap this study sought to address. This study weighed in on this gap. In addition, the RSE has gone through the developmental phase of securitization and demutualization. In measuring share price volatility, this study intended on explaining the effects of these milestones

1.3 Research Objectives:

1.3.1 General Objective:

The general objective of this study was to investigate the effect of share price volatility on stock market performance for companies listed at the Rwanda Stock Exchange.

1.3.2 Specific Objectives:

The following specific objectives guided the study:

1. To determine the effect of exchange rate on the stock market performance of firms listed in Rwanda stock exchange.
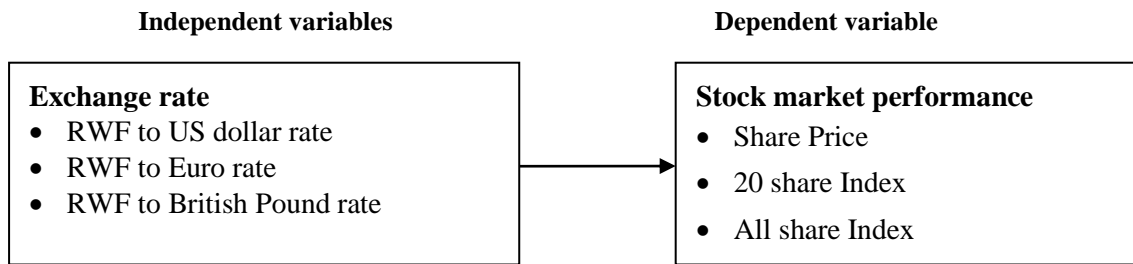
2. CONCEPTUAL FRAMEWORK

Independent variables   **Dependent variable**

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Exchange rate                                    Stock market performance
 • RWF to US dollar rate                           • Share Price
 • RWF to Euro rate                                • 20 share Index
 • RWF to British Pound rate                       • All share Index
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Figure 2.1: Conceptual framework

3. TARGET POPULATION

The target population for this study was the firms listed at Rwanda Stock Exchange (RSE) as at the year 2016. By the end of the year 2016, there are 8 firms listed at the Rwanda stock exchange. The target population was 40 employees of the 8 firms. These employees included the finance manager, company secretary, purchasing manager, investment manager and floor managers at the offices of each of the selected listed companies at Rwanda Stock Exchange.

4. RESEARCH FINDINGS AND DISCUSSION

4.1 Descriptive Statistics:

To understand the characteristics of the respondent firms and the Rwanda Stock Exchange in respect to the variables of the study, descriptive statistics in the forms of means, standard deviations, maximum and minimum values, skewness and kurtosis were generated and represented in the form of tables both for the whole sample (8 firms).

Table 1: Share price volatility Variables

	Mean	Std. Dev	Skewness	Kurtosis
Exchange rate	72.452	6.0245	.111	.054
Interest rates	8.2145	3.1075	.174	-0.444
Inflation	10.547	2.0147	.345	.690

Table 1 shows the descriptive statistics of macroeconomic variables used in the study. The values of skewness and kurtosis in the table indicate that Exchange rates, Interest Rates, and Inflation Rates, variables are positively skewed and are leptokurtic with higher than normal kurtosis. The results show that the values of skewness for all series are not significantly different from zero hence data series are not seriously departing from normality.

4.2 Market Analysis:

Table 2: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	120.450	5	20.075	35.037	.000[b]
	Residual	32.659	32	.573		
	Total	153.109	37			
a. Dependent Variable: Stock market performance						
b. Predictors: (Constant), Exchange rates, Interest Rates, Inflation Rates,						

From the ANOVA analysis results Table 2, Exchange rates, Interest Rates and Inflation Rates, have a combined significant influence on stock market performance at the RSE given that the overall p value is equal to 0.000 is less than the confidence level equal to 0.05 in this study. The regression analysis results in the ANOVA output table indicates that the overall regression model predicts the stock market performance significantly well at 95% confidence level which indicates that statistically, the model applied can significantly predict the changes in the stock market performance.

Table 3: Model Coefficients of share price volatility and stock market performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.765	.428		4.125	.000
	Exchange rates	-2.189	.156	-.163	-3.215	.000
	Interest rates	-.355	.136	-.349	-2.875	.006
	Inflation	-4.243	.113	-0.046	-2.381	.000

From the coefficient in Table 3 when all the variables are regressed together, the four macroeconomic variables have significant influence on the stock market performance at the RSE. Exchange rate, Interest rate and Inflation rate have a negative influence on the stock market performance. On a simple regression relationship, the constant had a positive coefficient of 18.765, implying holding Exchange rates, Interest Rates and Inflation Rates, constant, there are other factors influencing stock market performance at the RSE.

From the coefficients of the exchange rate were generated from the data analyzed as presented in Table 4.3 which shows that exchange rate significantly contributes to the model since the p-value equal to .000 is less than .05 significance level. Negative coefficient equal to -2.189 shows that exchange rate and stock market performance move in the opposite direction at the RSEand that a unit change in exchange rate would lead to 2.409 units change in the stock market capitalization. The study findings on the effect of exchange rate on the stock market performance at the RSE indicated that exchange rates have significant negative effect on stock stock market performance corroborating research findings of of Adjasi (2008) who found that there is negative relationship between exchange rate volatility and stock stock market performance in Ghana stock market and that depreciation in the local currency leads to an increase in stock stock market performance in the long run. However, the results contradict the findings of Desislava Dimitrova (2005) who studied the link between the stock market and exchange rates and found that in the short run, an upward trend in the stock market may cause currency depreciation, whereas weak currency may cause decline in the stock market.

The coefficients of interest rate as presented in Table 4.4 shows that interest rate significantly contributes to the model since their p-values equal to .000 is less than .05 significance level. Negative coefficient of interest rate equal to -0.355 shows that, interest rate and stock market performance move in the opposite direction at the NSE. A unit change in interest rate would lead to 0.355 units change in the stock market performance. The findings also support those of Kyereboah-Coleman and Agyire (2008) who also found that interest rates have significant effect on stock market Performance. The findings however contradict those of Kuwornu and Owusu-Nantwi (2011) who found that interest rate has no significant effect on market capitalization. The relationship between stock Performance and interest rates reflects the ability of an investor to change the structure of her portfolio (Apergis and Eleftheriou, 2002). The findings can be explained by the substitution effect in the market. Higher interest rates mean that investors tend to invest in other available securities that offer better Performance therefore pushing the stock prices down (Hsing, 2004).

The coefficients of inflation rate as shown in Table 4.4 indicates that inflation rate has a significant Negative influence stock stock market performance because their p-value equal to .006 is less than .05 significance level. The coefficient of inflation rate equal to -4.243 shows that inflation rate and stock market performance at the Rwanda Stock Exchange move in the opposite direction. A unit change in inflation rate would lead to 4.243 units change in the stock market performance at the NSE. The results of this study on effects of inflation on stock market performance are very coherent with the findings of Floros (2004), Ugur (2005), Pesaran et al (2001), Crosby (2001), Spyros (2001), who found a negative relationship between inflation and stock market Performance.

5. CONCLUSIONS

The contribution of exchange rate on the stock market performance in Rwanda was found critical due to its significant influence on the market capitalization. Rwanda as country experiences challenges in management of exchange rates owing to be a net importer with most of the imports being oil and machinery. Over the years, the francs have been

unstable against the hard currencies of the world implying that even the foreign debts denominated in forex end up becoming a great burden on Rwandan economy. Glut in the tea export markets have also seen Rwanda receiving poor coffee payments while coffee is the major export earner of Rwanda. All these factors among other have left the value of Rwanda francs eroded. Due to the great role played by exchange rate in an economy in influencing stock market performance of companies, the management of these companies needs to institute great measures to cushion themselves against forex losses. Such measures may include borrowing foreign denominated loans, employing hedging strategies to cushion themselves from future losses e.g. use of derivatives, setting subsidiaries in stable currency countries as well as close monitoring of movements of francs against the major world currencies.

5.1 Recommendations:

The Government of Rwanda need to constantly review the macroeconomic policies to ensure the country is always cushioned against the external shocks like the credit crunch as well as oil crisis. To afford this, national policies as well as regulatory frameworks governing key sectoral reforms with large external dependencies need to be instituted like the imports of oil and machinery and foreign debts and loans. Concerted efforts between various governments as well as policy makers need to be grounded on the policy to drive crucial enablers of the country towards self-sustenance curbing heavy import impacting on our balance of payment problems. Such drivers on oil exploration, minerals and food security will go a long way in ensuring the franc remain stable, inflation is tamed, interest rates do not sky rocket while money supply is controlled by use of domestic instruments to stabilize inflation and interest rates

5.2 Areas for further research:

A study can be designed to find out the impact of country economic growth on the firm value of mutual funds companies. This will give an indication on the effects of country economic growth on mutual funds.

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