

SYSTEMATIC RISKS AND STOCK MARKET VOLATILITY IN KENYA

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ABSTRACT

This study sought to evaluate the relationship between systematic risk and performance of the stock market in Kenya. The study investigated the Inflation, GDP growth rate, KES-USD Exchange rate variability, 91-day T-bill rate, and Investor herd behaviour their relationship with the performance of Stock market in Kenya. These variables were selected since empirical studies have indicated that they have an important effect on the performance of the stock prices volatility. The data of these variables is also readily available from reliable sources influenced their choice. The time scope for this study is ten years (2011- 2020). This period was chosen since within that period we have experienced major events that might have influenced the stock return volatility. The events include 2013 and 2017 general elections and announcement of Covid 19 first case in Kenya in March 2020. The study used secondary data which was obtained from Central bank of Kenya, Nairobi Securities exchange, Kenya National Bureau of Statistics and the Capital markets Authority. The key source of systematic are the key macroeconomic variables with different effects on stock market volatility based on the country. There is need for stock markets and regulators to consider systematic risks when making key decisions relating to the stock market.

Keywords: *Inflation rate, GDP, Exchange rate variability, Treasury bills rate, Investor herd behavior, Stock market volatility*

INTRODUCTION

The stock market plays a very important role in raising capital for both private and public entities in order to support growth in their projects. Savers are attracted into the stock market by the opportunities available for returns in terms of value increase and bonuses. (Huang, 2016) indicated that preparing financial statements mainly aims at providing users with the required information in order to help them make economic decisions. Current and potential investors are regarded as information users which are composed of diverse aspects. Investors seek to predict the future stock yields and this can be done through investigating the future stock prices. Hence, predicting future stock price is an essential aspect considered by potential investors.

Wang and Huang, (2012) asserted that excessive volatility of stock prices in the financial markets, affects the smooth operations of financial markets and consequently adversely affects the performance of any economy. Dimitrova (2005) was in agreement with this

argument and concluded that stock markets performance is a significant indicator of the performance of a country economy. The main objective of shareholders in investing in a business is to increase their wealth. The measure of business performance must give an indication of how wealthier the shareholder, has become as a result of the investment over a specific time (Waithaka, 2014).

Stock indexes regulates the stock price fluctuations, raise capital for the government such as Euro bonds issued by the government in 2014 to 2019. The euro bond was meant to fund budget deficit, create investment opportunities and mobilizing for investments.

The volatility of stock returns represents the variability of stock price changes during a particular period of time. Despite being a measure of risk, excessive stock returns volatility or “noise” according to investors undermines the usefulness of the stock prices which is an indicator about the true intrinsic value of the firm (Karolyi, 2011). Growing inflation, fluctuations in exchange rates, broad money supply, and interest rate will increase volatility of stock returns leading to rise in risk and the investors may think of switching their investment to less risky portfolios like bonds.

Systematic risks are risk which affects the entire market (Kazi, 2004). These risk are not diversifiable within a particular market. Systematic risks include factors which contribute to un-diversifiable risks in financial market (Barnor, 2014). These risk factors cannot be eliminated or reduced by diversification of portfolio holding within a certain market. This is because they are inherent in all securities in a certain market (Granger, Yang, & Huang, 2000). Investors know that they cannot avert this type of risk by simply holding many different securities. Systematic risk factors affect the whole market and are usually beyond the influence of individual companies (Erdugan, 2012). Empirical literature proves that among the important systematic risk factors include the level of interest rates, the foreign exchange rate, the inflation rate, and the gross domestic product among others.

Joseph (2012) explains that foreign exchange rate, is the price paid for a country’s currency relative to another country’s currency. A stable exchange rate, is very useful because it facilitates accurate forecasts and planning by investors across international trade (Dimitrova, 2005). The Kenya shilling exchange rate has been fluctuating against other currencies in the global economy. The main currency against which the Kenyan currency is exchanged is the US dollar. This study used the exchange between the Kenya shilling and the US dollar as the basis of measuring the strength of the shilling (CBK, 2021).

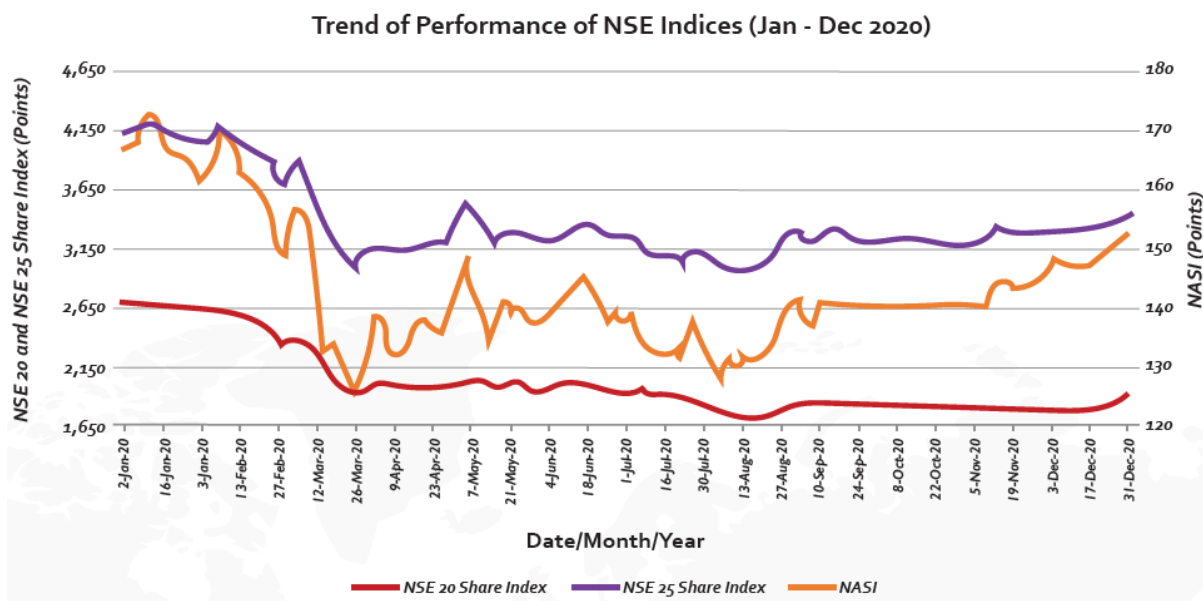
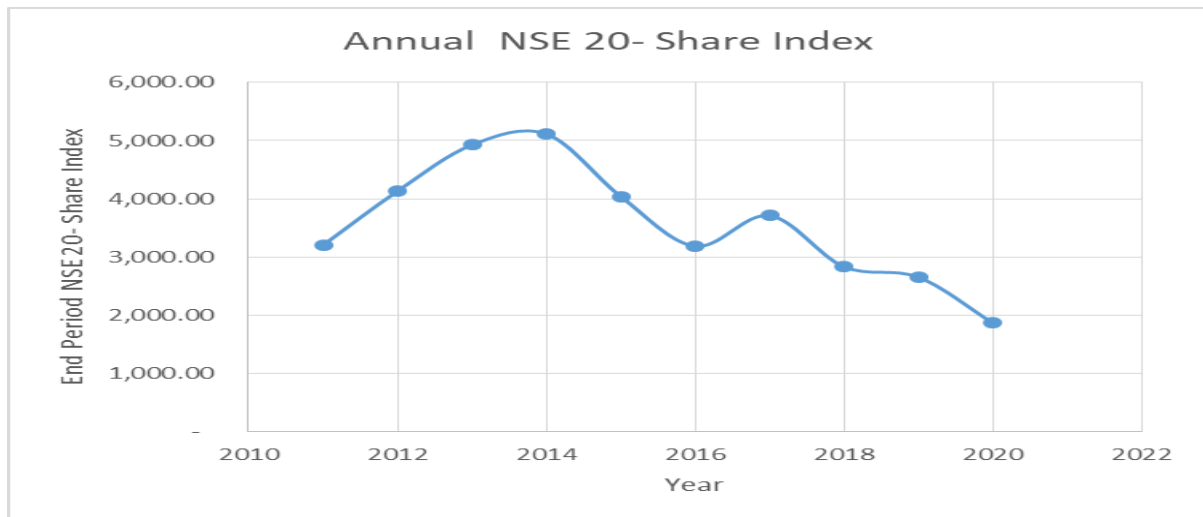
The Kenya shilling was trading at 86.32 in March 2011. In April 2013, the Kenya shilling traded at 86.16 against the US dollar, it further depreciated to 90.59 in December 2014. The shilling further depreciated to 94.60 in April 2015 and by December 2015 the shilling was trading at 102.52. In the year 2016 the Kenya shilling traded at 101.08 in April and closed at around 102.58 in December 2016. Over the period of study, the shilling was at the strongest point in January 2011 when it shilling traded at and 80.7431 and at the weakest point in December 2020, when it was trading at 111.5871 (CBK, 2020).

Inflation is the general rise in price levels (Mishkin, 2011). In periods of inflation there is a general increase in the amount of money in supply enabling investors to have more money to offer for goods. Shocks in Inflation are correlated with the movements of stock prices because inflation rate has an effect on the expected real return of investors. In January 2011 the level of inflation was at 3.93 but again rose to 6.80 in December 2011. In January 2014, inflation level stood at 5.53 but rose to 8.01 in December 2015. Inflation level closed at 5.41

in December 2020 (CBK, 2020).

Treasury bills rate is a very important factor in determining the influence of level of interest on the direction of the stock prices. If the Treasury bill rate is higher investors may prefer holding a big portion of their assets in Treasury bills. The level of Treasury bill rate in 2011 was about 16.20% and 10.36% by the year 2012. There rate rose to 11.4% in 2014 but dropped to between 8.16% and 11.49% in 2015. The Treasury bill rate in year 2016 ranged between 7.89%, 2021 it ranged between 7.1 and 6.7 % (CBK, 2020).

The performance of equity market showed a declining trend as shown below CMA 2020



Source CMA 2021

As indicated on the graph above all the three indices were depicting a volatile downward trend. The last quarter of 2020 experience less NSE 20 index Volatility Index at 0.35%, as compared to 0.59%, 0.59% and 0.65% for third, second and first quarter respectively. During the last quarter most businesses experienced a slowed return to work with the Government relaxing some of the restrictions including international travel (CMA,2021)

Stock market volatility has for long been linked to a number of factors ranging from macro-economic to behavioral. Amata (2018) outline sources of stock market volatility as dividend yield, exchange rate, interest rate, inflation rate and movement of world market index. Theories in finance have linked stock market volatility to changes in systematic risk. Theories include the Arbitrated Pricing Theory (APT) and the Efficient Market Hypothesis (EMH).

Statement of the Problem

The stock market plays a very important role in raising capital for both private and public entities in order to support growth in their projects. Following the announcement of Kenya's first coronavirus case in March 2020, the markets witnessed panic sales leading to the high volatility levels. Coronavirus pandemic market shocks greatly affected the Nairobi Securities Exchange (NSE) in the first quarter of 2020 leading to the highest NSE 20 Share and NASI Index volatility. According to the 2020 quarter one, Capital Markets Authority Soundness Report, the NSE 20 Share and NASI Index volatility for the January- March period averaged 0.65 per cent and 0.83 per cent respectively compared to 0.47 per cent and 0.53 per cent respectively record in Q4 2019 with March 2020 indicating the highest volatility during the quarter for both indices. Ksh USD exchange rate was 109 at the end of 2020 and inflation at 5.62. The International Monetary Fund (IMF) has estimated a global growth of -4.4% in 2020, down from the 2.8% growth recorded in 2019, as economies across different parts of the world recorded negative growth. Interestingly A highly volatile market will make the investors lose confidence and shy away from trading in that market. This may lead to shut down of the stock market impacting negatively on the economy.

Acikalin (2008), Baroian (2014) and Oseni and Nwosa (2011) found positive relationships between stock market returns and four macroeconomic variables while Gatuhi (2015) found that Exchange rate, Interest rate and Money supply had a positive influence, Inflation had a negative influence on the stock market returns in in Agricultural Sector. Murungi (2012) concurred with these findings on their study on the impact of inflation on stock market returns and volatility. Findings from the study revealed a negative relationship between stock returns and inflation in Kenya. Contrary, Mtuweta (2018) carried a study on macroeconomic variables and their effect on stock market returns in Kenya. The results established that exchange rates had a negative significant correlation with the performance of the NSE 20 share index value. Inflation had a negative and insignificant correlation with the same. Amata (2017) investigated the effect of macroeconomic variables on stock market volatility in Kenya and found that GDP and exchange rate did not have a direct causal relationship with stock market volatility. Kirui (2014) examined macroeconomic variables, volatility and stock market returns Gross Domestic Product, Inflation and the Treasury bill rate indicated insignificant relationships

Research objectives

The intent of the study was to investigate the effects of systematic risks on stock market volatility of listed companies in Kenya

Specific Objectives were;

- To assess the effect of inflation rate on stock market volatility of listed companies in Kenya
- To assess the effect of GDP growth rate on stock market volatility of listed companies in Kenya

- To assess the effect of KES-USD Exchange rate variability on stock market volatility of listed companies in Kenya
- To assess the effect of Treasury bills rate on stock market volatility of listed companies in Kenya
- To assess the moderating effect of Investor herd behaviour on stock market volatility of listed companies in Kenya

Research Hypothesis

The study was guided by the following null research hypothesis;

H₀₁: Inflation rate does not have a significant effect on stock market volatility of listed companies in Kenya

H₀₂: GDP growth rate does not have a significant effect on stock market volatility of listed companies in Kenya

H₀₃: KES-USD Exchange rate variability does not have a significant effect on stock market volatility of listed companies in Kenya

H₀₄: 91-day T-bill rate does not have a significant effect on stock market volatility of listed companies in Kenya

H₀₅: Investor herd behaviour has no moderating effect of on stock market volatility of listed companies in Kenya.

LITERATURE REVIEW

Theoretical Framework

Capital Asset Pricing Model

Capital Asset Pricing Model (CAPM) was a basic technique used to determine risk and performance related to a particular security. The single factor model was developed by (Sharpe, 1964). This theory was an equilibrium model which underlies all modern financial theories and heavily relied on the concept of Markowitz portfolio theory. CAPM emphasized the principles of diversification so as to create an efficient portfolio. Sharpe made several assumptions while coming up with the theory. Firstly, the theory assumes that all investors are price takers.

Lintner (1973) contends that in an efficient market with informed buyers and suppliers, no individual player can influence the price in the market, but rather adapts to the price already arrived by the competitive forces in the market. The theory also assumes a single period investment horizon, implying that investors only intend to hold the security in the current period only and are not interested in what happens afterwards in the subsequent periods (Lee & Rui, 2002). Sharpe also assures that investors can borrow or lend any amount of finances at a fixed risk free rate and that investments are limited to only publicly traded financial assets, such as stocks and bonds. Sharpe (1964) opined that investors pay no taxes on returns and no transactions cost incurred on traders when buying and selling these securities. The theory further argued all investors are rational mean variance optimizers.

Friend and Blume (1970) explores the portfolio theory by measuring performance under conditions of uncertainty by testing the CAPM. Their findings were that Sharpe, Treynor and Jensen one-parameter of portfolio performance was very biased. This is due to the fact that the estimates were grossly biased and the magnitudes of the estimates bias were related to portfolio risk (Jensen, 1968). The study found that several studies of mutual fund performance based on one parameter measures, causes significant variations when compared

to the market performance as a whole. The cause of the variances, was attributed to the one parameter measure of portfolio risk.

There is a wide and contradicting history of the determinants of stock performance in the empirical capital market research literature. Sharpe (1964) suggests a single factor model, while Merton (1992) relaxes the single period assumptions about investors, by envisioning that they optimize a lifetime consumption plan. Rubinsten (1976), Litzenberger (1978) and Breeden (1979) also developed the Consumption Capital asset Model (CCAPM). This model opined that the expected excess return on any risky assets ought to be proportional to its consumption beta. They opined that securities with more sensitivity in movements of real consumption spending have more systematic risk and therefore have higher returns. This study seeks to establish the relationship between systematic risks and the stock performance over several periods as explained by Merton (1992) that investors adopt a lifetime consumption plan.

The Keynesian Theory

This theory was developed by John Maynard Keynes (1936). Keynes's ideas referred to as Keynesianism became very influential to economic policy after great depression (Engelhardt, 2009). Keynes explained that an increase in the general price level or inflation is caused by an increase in aggregate demand which is above the aggregate supply. Keynes argues that if the economy is at full output level, an increase in government expenditure, private consumption and a rise in private investment will cause a rise aggregate demand (Reddy, 2012). The rise in aggregate demand leads to a general increase in price levels. Ifionu (2015) explains that, inflation pressure is due to the fact that at full employment of output and with maximum utilization of scarce resources, an economy cannot increase its aggregate supply to match the increasing aggregate demand.

There is empirical evidence about Keynesian propositions on the inter-relations between money supply and policy actions and interest rates for the IS-LM framework and the stock market activities (Kuwornu, 2012). Changes in Inflation levels and Money supply are intertwined and they all affect the purchasing power of investors. This has an effect on the activity on their stock markets because stocks markets act as agents of adjusting planned consumption with the current information available. Varga (2005) explains that inflation rates affect the intrinsic value of stock prices and as a consequence their desirability based of investors wealth maximization. The theory is applied in this study context because it explains the relationship between inflation and price of commodities. Shocks in Inflation are correlated with the movements of stock prices because inflation rate has an effect on the expected real return of investors. This theory is relevant in this study because it explains that changes in consumer price index have an effect on market prices. The study assessed the correlation between changes in CPI and the stock market prices volatility.

Efficient Market Theory

Efficient Market Theory was put forward by (Fama, 1970). Fama argues that the primary role of any market is allocation of ownership of the economy's capital stock. He opined that an ideal market would provide accurate signals of resource allocation. He explained than in a market, firms make production and investments decisions and investors chose securities that represent ownership of firms. Apiyeva (2007) utilized the theory and argued that a market which the securities price fully reflects all available information is an efficient market. Jensen (1968) opines that it is impossible to beat the market. This implies that an investor cannot

make abnormal profits by trading in the stock markets. Tursoy, Gungel, and Rjoub (2008) indicates that stock prices follow a random walk and it is therefore not possible to accurately predict prices based on the past trends. The theories categorizes markets based on their efficiency and brings out three forms of market efficiency. The weak form of market is a level of efficiency which prices reflect all past information that is available. Therefore, investors cannot beat the market by analyzing historical information of stocks.

The semi strong efficiency is the level of efficiency at which the prices in the stock prices reflect past and present information that is publicly available. This level is concerned more with the speed of adjustments of information to the stock market prices (Fama, 1970). The third and most advanced level off efficiency is the strong form of efficiency, in this level the stocks market prices meet the conditions of both weak and semi strong and addition requirements that the stock prices reflect future information (Handa, 2005). In this level of efficiency, there is no insider trading and the internal managers of the firm do not have vital information on future investments decisions that will enable them make more returns than the average market returns.

In the context of this study, the Nairobi stock exchange is assumed to be in the second level of efficiency, the semi strong efficiency. Nguyen, Nhan and Bach (2013) findings indicates that markets in the developing countries have developed past the weak form to the semi strong form. The level of efficiency was equally adopted by Gatuhi (2015). In this level the analysis, the focus is on the speed of adjustments of prices to the new information arriving in the market. This study aims at establishing the speed and magnitude of speed of reaction of stocks to the systematic risks.

Arbitrage Pricing Theory

This theory of was promulgated by Ross (1976) and is an extension of the Capital Asset Pricing Model (CAPM). This theory has been very instrumental in asset pricing because, unlike CAPM which suggested that asset prices are determined by one single common factor, Arbitrage pricing theory advocates that shares prices are driven by many factors (Kazi, 2004). The APT theory was mainly developed due to the dissatisfaction of CAPM and was fronted as an alternative to pricing of assets. CAPM having been derived from the first principles of expected utility theory. Ross (1976) indicates that the assumptions underlying expected utility theory made no use of common variability. APT is a factor model which includes multiple factors, that represent the fundamental risk in asset returns. The model being a multi factor allows an asset to have several measures of systematic risk. Each of the measure captures the important sensitivity of an asset to a specific factor.

Multifactor asset pricing models are based on APT and they evaluate a multifactor equilibrium in scenarios where there are many sources of risk other than the market factor (Erdugan, 2012). This reasoning is consistent with modern financial theory which has focused with systematic effects as the most likely sources of risk affecting a portfolio performance. APT opines that returns on securities are linearly related to small number k-systematic factors rather than a single factor. APT does not stipulate what the k-factors are. This has been left open for researchers to use as many factors as possible, based on the uniqueness of the markets that they are studying. Ross (1976) explained that APT incorporates multiple factors that represent the fundamental risk in asset returns. The model being a multi factor allows an asset to have several measures of systematic risks which are represented by macro-economic variables in the determination of asset price. Each of the

measure captures the important sensitivity of an asset to a specific factor.

This model has been widely accepted because it allows researchers to capture most systematic risk variables such as the level of interest rate, inflation rate, exchange rate and gross domestic product in the prediction of stocks prices. Majority of the studies on APT employed the methodology suggested by Roll and Ross (1980). Roll and Ross first estimated the expected returns and the factor coefficients on assets returns from time series data. They then used the estimates obtained in the first step to test cross section pricing conclusion on APT.

Nawalkha (2007) investigated the validity of APT. The study explained that on the onset, most researchers were very sceptical on the theory as they believed that APT offered too much for little. The major concern was the random process of identifying the factors. The study introduced a new concept of a well-diversified variable which was introduced to represent the true factors. Kazi (2004) applied the theory using a ten-year data on NYSE listed companies. By using the maximum likelihood factor analysis, they determined the number of common factors and their respective sensitivity coefficients. They run a cross section linear regression and got the risk premium for each factor. Their findings indicated that about 50% chance that the five factors identified were significant and that three to four factors explained the variations of the stock returns in the two markets. This study applied the APT theory which opines that there many factors which relate with the stock returns. The study used the theory to test the relationship between several systematic risks and the performance of stock markets in Kenya.

Empirical review

Endri, Abidin, Simanjuntak and Nurhayati (2020) examined the effect of macroeconomic variables (interest rates, inflation and exchange rates) and global stock exchanges (STI, SSE, N225, DJIA, and FTSE100) on the movement of the Indonesian stock exchange (IHSG). The research data analysis method uses the GARCH model for time series data for the period January 2012 to December 2018. The results show that the TB rate, Inflation, Exchange Rate, Straits Times Index (STI), Shanghai Stock Exchange (SSE), Shanghai Stock Exchange (SSE), Nikkei 225 (N225), Dow Jones Industrial Average (DJIA) and Financial Times Stock Exchange 100 (FTSE100) together have a significant effect on the IHSG. Partially shows the BI-rate, Inflation, and SSE have a significant negative influence, negative N225 is not significant, while the Exchange, STI, DJIA has a significant positive effect and FTSE100 has a non-significant positive effect on the IHSG.

Tarza Sokpo, Iorember and Usar (2017) investigated the effect of inflation on stock market returns on the Nigerian stock exchange market, employing a volatility modeling approach. Using monthly data on stock market returns and consumer price index inflation rate, the paper employed GARCH and E-GARCH volatility modeling techniques for analysis. The study found that CPI inflation is not an important variable in explaining stock market return volatility in Nigeria. The E-GARCH model did not find existence of asymmetry in the stock return series; that is good news and bad news have identical impact on stock returns in Nigeria. The GARCH model show high persistence in the stock returns series, though a shock to stock returns has only a temporary impact.

Khalid and Khan (2017) empirically investigated the effects of interest rates, exchange rates and inflation rates on stock market performance of Pakistan by using annual time series data covering the 1991-2017 periods. The prime intention of this research was to inspect the long-

run and short-run relationships between the KSE-100 index and macroeconomic variables by employing the econometric techniques of autoregressive distributed lag (ARDL) bounds testing procedure to cointegration and the Error Correction Model (ECM), respectively. By applying the ARDL model, the empirical results revealed the fact that there was a negative and significant impact of interest rate on the market index, whereas; the exchange rate and inflation rate have a positive impact on stock market volatility in the long-run.

Worlu and Omodero (2017) aimed at evaluating the impact of macroeconomic variables on stock market performance in Africa from the period of 2000 to 2015. Four major African countries investigated were: Ghana, Kenya, South Africa and Nigeria. The specific objectives were to establish the extent to which GDP, inflation rate and real exchange rate affect the stock market performance represented by share price index. Time series data were employed and analyzed using multiple regression and t-test for hypotheses testing. With the use of SPSS software the result revealed negative impact of GDP, inflation and real exchange rate on SPI in Nigeria. Insignificant relationship of all the variables was also observed. The result for South Africa's stock market showed that GDP and inflation had a negative impact on stock market and real exchange rate has no impact on the stock market. The impact of GDP on Ghana's stock market was negative while the others had no impact. Real exchange rate had negative impact on Kenyan stock market, but GDP and inflation had no impact.

Demir (2019) analyzed the impacts of some prominent macroeconomic factors on the Turkish Stock Market index, BIST-100 (Borsa Istanbul-100). For centuries, and mostly since the 20th century, stock markets are at the heart of economies. In our era, the largest economic crises arise from the stock market instabilities and thus, the stock markets are the focus of interest of the economy. Economists, investors, and policymakers try to predict the tendency of share prices, which substantially depend on foreign and domestic macroeconomic factors. Within this purpose, this study tries to investigate the impact of some selected macroeconomic factors on BIST-100 index over the 2003Q1–2017Q4 period. The findings obtained from the quarterly data via the ARDL Bounds Test suggest that economic growth, the relative value of the domestic currency, portfolio investments and foreign direct investments raise the stock market index while interest rate and crude oil prices negatively affect it. The results briefly reveal that the Istanbul Stock Exchange Market needs stronger domestic currency, higher international capital inflows, and lower energy and investment costs.

Papadamou, Sidiropoulos and Spyromitros (2017) addressed the issue of impacts of central banks' independence on stock market volatility. Using a simple theoretical macroeconomic model, we analytically find a positive link between stock prices volatility and central bank independence. By applying panel data analysis on a set of 29 countries from 1998 to 2005, sufficient evidence for this positive relationship is between growth rate as measured by GDP and stock market volatility.

Omolola and Adefemi (2018) employed the panel ARDL estimation technique to investigate the long run and short run effects of stock market volatility and exchange rate volatility on FDI in Nigeria using a time-series data which ranges (1990-2016). The ARCH/GARCH estimation technique was used to estimate the exchange rate volatility and stock market volatility values in which GARCH (1, 1) was employed. The pairwise granger causality test was used to check for the direction of relationship between FDI and (stock market volatility, exchange rate volatility). The result of the FDI ARDL equation reveals that there is a negative significant relationship between foreign direct investment (FDI) and exchange rate volatility (EXCHV) both short run and long run in Nigeria, and a positive insignificant

relationship between stock market volatility (STMV) and foreign direct investment (FDI) of Nigeria in the long run but a positive significant relationship between stock market volatility (STMV) and foreign direct investment (FDI) of Nigeria in the short run.

Abiola and Olusegun (2017) checked the exchange rate volatility, stock market performance and aggregate output nexus in Nigeria. Making used of quarterly time series data with the use of ARCH and GARCH model, Bayesian VAR, VAR causality and Granger Causality model. The research work found that Exchange Rate and Stock price are Volatiles and the dwindling grossly affect the aggregate output. Also, there is high degree of positive relationship between Exchange rate, Stock Price Movement and Aggregate output. More so, Exchange rate volatility granger cause Stock price movement and Aggregate Output and vice versa. Furthermore, Exchange rate volatility and Stock Market performance has a positive significant impact on Aggregate output. Finally, there is joint causal impact of volatility of exchange rate, stock price, reserve on aggregate output in Nigeria. conclusion was made that there is a clear causal relationship between exchange rate volatility, stock market performance and Aggregate Output in Nigeria. Economic growth is achieved through sound an effective exchange rate that encourages FDI and financial inflow in the stock market.

Tule, Dogo and Uzonwanne (2018) explored volatility spillovers between stock market returns and the exchange rate due to speculation of foreign investors in the stock market. We employed a multivariate GARCH model (VARMA-AGARCH model) to model the transmission mechanism of mean return, return spillover and shock spillover between the stock market and the foreign exchange market, using their return series. Results indicate the presence of a transmission mechanism between these markets. Shock spillovers however showed a stronger uni-directional transmission of shocks from the stock market to the foreign exchange market without breakpoints. When breakpoints were considered, a bi-directional spillover pattern was observed across both markets.

Endri, Abidin, Simanjuntak and Nurhayati (2020) examined the effect of macroeconomic variables (Treasury bill interest rates, inflation and exchange rates) and global stock exchanges (STI, SSE, N225, DJIA, FTSE 100) on the movement of the Indonesian stock exchange (IHSG). The research data analysis method uses the GARCH model for time series data for the period January 2012 to December 2018. The results show that the TB rate, Inflation, Exchange Rate, Straits Times Index (STI), Shanghai Stock Exchange (SSE), Shanghai Stock Exchange (SSE), Nikkei 225 (N225), Dow Jones Industrial Average (DJIA) and Financial Times Stock Exchange 100 (FTSE100) together have a significant effect on the IHSG. Partially shows the BI-rate, Inflation, and SSE have a significant negative influence, negative N225 is not significant, while the Exchange, STI, DJIA has a significant positive effect and FTSE100 has a non-significant positive effect on the IHSG.

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Ahmad Sabir, Mohammad and Kadir Shahar (2019) studied the role of overconfidence and past investment experience in herding behaviour with a moderating effect of financial literacy: evidence from Pakistan stock exchange. Researcher used a quantitative research method and a cross-sectional research design. Data was collected from 352 individual investors participating in Pakistan stock exchange via survey questionnaires. A partial least square (PLS) was used to assess the measurement model and structural equation model. Additionally, the study examines the moderating effect of financial literacy on the relationship of overconfidence and past investment experience with the herding behaviour of individual investors. The results provided strong evidence that both overconfidence and past investment experience motivate investors towards herding behaviour. It was found that financial literacy has a moderate impact on the relationship between the cognitive profile and herding behaviour.

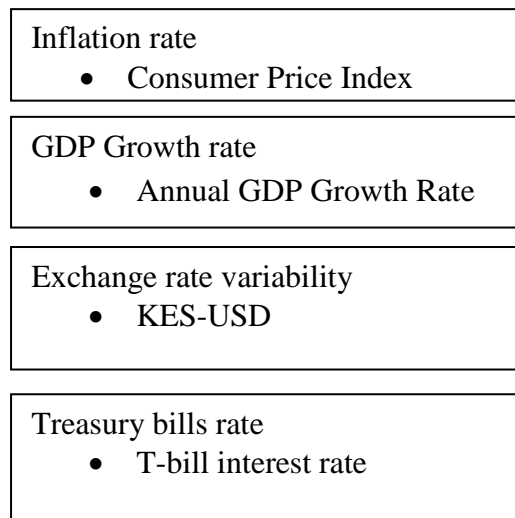
Akinsomi, Coskun, Gupta and Lau (2018) studied the impact of volatility and equity market uncertainty on herd behaviour: evidence from UK REITs. Observations of investors in 36 REITs that trade on the London Stock Exchange as at April 2016 were used to analyse herding behaviour among investors and traders of shares of UK REITs, using a Markov regime-switching model. Although a static herding model rejects the existence of herding in REITs markets, estimates from the regime-switching model reveal substantial evidence of herding behaviour within the low volatility regime. Most interestingly, the authors observed a shift from anti-herding behaviour within the high volatility regime to herding behaviour within the low volatility regime, with this having been caused by the FTSE 100 Volatility Index (UK VIX).

Amata (2017) studied the effect of macroeconomic variables on stock market volatility in Kenya. The study further explored the moderating effect of investor herding behaviour on the direct relationship between selected macro-economic variables and stock market volatility. The study adopted a descriptive research design and targeted all companies listed on the Nairobi Securities Exchange from January 2001 to December 2014. The study used secondary data on interest rate, exchange rate, inflation rate and GDP, covering a period of 14 years. The data was obtained from the Kenya National Bureau of Statistics and the Central Bank of Kenya. Data on share prices and market indices was acquired from the Nairobi Securities Exchange. Stock market volatility was measured by computing the standard deviation of the Nairobi Securities Exchange daily and monthly returns over the 14-year study period. The study used a market-wide herd index which was calculated using the Cross-Sectional Standard Deviation (CSSD) method. Data was analyzed using E-views version 8. The study employed both correlation and regression analysis. The study also established that investor herding behaviour had no direct causal relationship with stock market volatility, however, investor herding behaviour was found to significantly moderate the relationship between exchange rate and stock market volatility on the Nairobi Securities Exchange.

Conceptual framework

Independent Variables

Systematic Risk



Dependent Variable

Stock Market Volatility

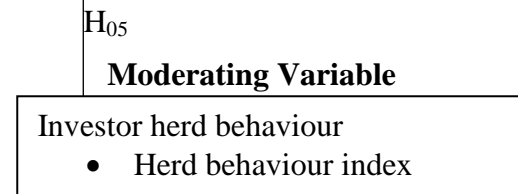
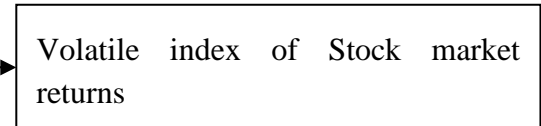


Figure 1: Conceptual Framework

Conclusions and Recommendations

From the literature review, systematic risk influence stock market volatility. The key source of systematic risks in the stock market are the key macroeconomic variables. The macroeconomic variables analyzed in this article included inflation, GDP, exchange rate and treasury bills. The variables show that the macroeconomic variables show different effects on stock market volatility based on the country. The theoretical literature shows that systematic risks cause an increase in the stock market volatility where the share prices and returns fluctuate often. Empirical research show that systematic risks lead to increased stock market volatility. Investors seek to predict the future stock yields and this can be done through investigating the future stock prices. Hence, predicting future stock price is an essential aspect considered by potential investors. There is need for stock markets and regulators to consider systematic risks when making key decisions relating to the stock market. In order to manage stock market volatility, stock markets have to ensure that the systematic risk is controlled to avoid the negative effects that may come with the risks.

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