

## Interaction between Monetary Policy and Stock Market Performance: Evidence from Selected Developing African Economies (1986- 2016)

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**Abstract:** Monetary Policy actions should motivate improved Stock Market Performance but some findings from studies appear to disagree with this preposition. This study examined the interaction between monetary policy and Stock Market Performance in Selected Developing African Economies from 1986 to 2016. The specific objectives of this study were to analyse the interaction between monetary policy factors like money supply (M2), consumer price index (CPI), deposit money bank total credit (TBC), foreign exchange rate (EX) and market capitalization (MC) in selected African developing economies with data collected from World Bank, International Monetary Fund, Bureau of Statistics, Knoema and the Central Bank of selected countries. The study selected Nigeria, South Africa and Kenya as its sample and anchored the study on Tobin's monetary theory and stock returns. The study used the Granger Causality test to test the interaction between independent variables namely money supply (M2), consumer price index (CPI), deposit money bank total credit (TBC) and foreign exchange rate (EX) and dependent variable -market capitalization (MC) at the 5% level of significance. The findings amongst others showed that monetary policy had an insignificant relational effect on market capitalization in Nigeria, Kenya and South Africa; while the selected African developing economies' pooled panel result indicated that Monetary policy variables used had both positive and negative significant relational effect on market capitalization. The study using granger causality test showed that market capitalization did not granger cause changes in the monetary policy variables and vice versa. Thus, the study concluded that monetary policy did not affect stock market performance. Hence, recommended the implementation of market-friendly monetary policy to encourage increased investment in the economy and stock market; and reduce capital flight into foreign appreciating economy and stock market.

**Keyword:** Market Capitalization, Money Supply, Consumer Price Index, Exchange Rate, Monetary Policy

**JEL Classification:** E51, E52, E58, C01, O40

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### I. Introduction

Monetary policy and stock market within the developing African economies has been the focus of a large body of contemporary research. Monetary policy is the process by which a central bank in a country influences the availability and cost of money/credit (Ogu&Pavis, 2012). They are usually undertaken to restore or maintain stability within an economy and such policies can either be expansive or restrictive with Central Banks influencing monetary policy instruments in interest rates, inflation rate and money supply (Bissoon, Seetanah, Bhattu-Babajee, Gopy-Ramdhany&Seetah, 2016 &Muktadir-Al-Mukit, 2013). The aim is to attain certain macroeconomic objectives, which are geared towards the growth and stability of an economy (Sellin, 2002). Arguably, monetary policy has experienced difficulty in the determination of an improved stock market, because developing economies has a very low degree of economic openness, higher tendency for transferred (imported) inflation, variations in trade pattern, uneven distribution of natural resources and variations in the value of exportable, inadequate effectiveness of monetary policy transmission mechanism, underdeveloped financial system, lack of Central Bank independence, foreign exchange rate volatility, inadequate infrastructure and lack of political commitment, which has adverse implications for monetary policy; following which, there is manifest difficulty in setting monetary policy targets and the choice of monetary policy instruments to be

utilized and with implications for the stock market (UNCTAD, 2015). For instance, in Nigeria record shows that market capitalization was \$2.373Billion as at 2002 and grew drastically to \$84.874Billion in 2007 at over 3577% growth but fell drastically the next year to \$48.062Billion in 2008 by -43.36%. As at 2014, the market capitalization was \$62.766Billion and fell continuously to \$49.973 and further to \$29,792Billion in 2015 and 2016 the end period of study at -20.38% and -40.38% respectively (World Bank, 2016). In Kenya, the market capitalization was \$1.431Billion in 2002 and grew to \$4.182Billion in 2003 at 192.21%, but had the highest market capitalization in 2010 at \$14.460Billion. The market capitalization fell in 2011 to \$10.202Billion by -29.45% (World Bank, 2016). However, in South Africa the market capitalization maintains a high figure all through from \$147.471Billion in 2001 to \$828.185Billion in 2007. The market capitalization continued on a zigzag growth process and ended at \$951.320Billion in 2016 (World Bank, 2016). The record shows that South Africa have been more efficient in the African stock exchange compared to the other two stock exchanges under study.

The linkage between monetary policy decisions and stock markets' performance is an important study for several reasons, especially considering the wide consensus among investors. Researchers like Bernanke and Kuttner (2005) stated that having reliable estimates of the reaction of stock market performance indices to monetary policy instrument is important since it makes it easier for economists and central bankers to understand the function, and to assess the effectiveness of stock market channels for monetary policy transmission.

The relationship between monetary policy and stock markets can be viewed in two folds: the effects of monetary policy on stock market performance and the effects of stock market performance on monetary policy. Economists' views and opinions on this issue are divergent. Considering the issue of the effects of stock markets performance on monetary policy, the response of stock market indices to central bank monetary policy is a key component for analyzing the impact of monetary policy on stock market performance of developing economy and because of their potential impact on the macro-economy, stock market performance is likely to be an important determinant of monetary policy decisions. The 1987 American stock market crash has made economists examine empirically if monetary policy has been influenced by stock market activities.

Although several studies have discussed the relationship between stock market performance and macroeconomic variables, this study in its peculiarity examines the effect of interaction between monetary policy and stock market performance within African developing economies.

Thus, the relationship between the monetary policy and stock market in a panel of developing countries has not been established in any previous studies to the best of our knowledge. Hence, the need to domesticate the study of this nature. In addition, extensive discussion has also taken place of the monetary policy performance of individual developing countries. What is lacking in the earlier studies as far as developing countries are concern is the influence of monetary policy on performance of stock markets and vice versa.

## **1.2 Objectives of the Study**

The broad objective of this study is to examine the interaction between monetary policy and stock market performance in selected African developing economies. The specific objective is:

1. To ascertain the direction of causality between monetary policy and stock market performance of selected African developing economies.

## **1.3 Research Questions**

1. What is the direction of causality between monetary policy and stock market performance of selected African developing economies?

## **1.4 Research Hypotheses**

H<sub>01</sub>: There is no causal effect between monetary policy and stock market performance of selected African developing economies.

## **II. Review Of Related Literature**

### **2.1 Conceptual Review**

#### **2.1.1 Monetary Policy**

The Central Bank use monetary policy to achieve the goals of macroeconomic management. Monetary policy is a set of actions through which the monetary authority determines the conditions under which it supplies the money that are circulated in the economy. Monetary policy therefore has an effect on short-term and medium-term interest rates which influence activities in the capital market. Succinctly, monetary policy is a technique of economic management that brings about Sustainable economic growth and development (Onyeiwu, 2012).

### **2.1.1.1 Monetary Policy and Monetary Policy Intermediate Targets**

#### **Money Supply**

This is the sum of all money or monetary assets that can easily be converted to cash in an economy stock at a specific time. It is often referred to as money stock since it is measured at a particular point in time. It is closely monitored by the monetary authorities (the Central Banks) because if the rate of increase in money supply is consistently greater than the rate of increase in total output of goods and services in the economy; there could be a general increase in the domestic prices of goods and services: a situation generally referred to as inflation (CBN, 2016).

#### **Deposit Money Banks Total Credit (Banks Credit) (Intermediate target)**

Bank credit is the total borrowing capacity banks provide borrowers. It allows borrowers to buy goods or services. It is also the aggregate amount of credit available to a person or business from a banking institution. It is the total amount of funds financial institutions provide to an individual or business. In the money market, commercial banks render financial services in term of intermediation. This involves channeling funds from the surplus spending to the deficit spending units of the economy, therefore, transforming bank total deposits into total credits. Deposit money bank total credit has been recognized as an essential tool for promoting economic growth and stock market performance in the economies of the world (Bakare, Akano&Kazeem, 2015).

#### **Consumer Price Index (Inflation rate)**

Different price indices are used to measure inflation. A price index is a measure of the Aggregate price level relative to a selected base year. CPI is a principal measure of price fluctuations at retail level and it shows the cost of purchasing a representative unchanged basket of goods and services consumed by private households (Subhani, Osman, & Gul, 2010).

The Consumer Price Index (CPI) is the benchmark inflation guide for an economy. It uses a "basket of goods" approach that aims to compare a consistent base of products from year to year, focusing on products that are bought and used by consumers on a daily basis. The Consumer Price Index is also a monthly measurement of economic prices for most household goods and services. CPI measures inflation, one of the greatest threats to a healthy economy.

#### **Exchange Rate**

The foreign exchange rate is one of the intermediate policy variables through which monetary policy is transmitted to the larger economy through its impact on the value of domestic currency, domestic inflation (the pass-through effect), the external sector, macroeconomic credibility, capital flows, and financial stability. Foreign exchange rate is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country's currency in relation to another currency. Thus, changes in the foreign exchange rate might induce changes in the relative prices of goods and services, and the level of spending by individuals and firms, especially if significant levels of their wealth are held in foreign currencies.

#### **Stock Market Performance Measurement Variables**

Stock market development may be captured using the following indicators: i) stock market size; ii) stock market liquidity; iii) stock market volatility; iv) stock market concentration; and v) stock market linkage to real sector performance (World Bank, 2015; El-Wassal, 2013; Levine & Zervos, 1998). The adoption of a variety of indicators could provide a more accurate depiction of stock market performance. For the purpose of our study, we will be looking at the stock market size and itemize its sub-variables as follows;

#### **Stock Market Size**

There are two main indicators of stock market size: market capitalization and the number of listed companies.

a) Market Capitalization – this refers to the total dollar market value of the stock exchange outstanding shares traded. This measures the total value of listed shares. Olson (2005) defines market capitalization as the price of a stock at any given time multiplied by the number of shares outstanding. From a market perspective, market capitalization comprises the sum of individual outstanding shares by their prices for all the companies listed in a given stock market.

b) The Number of Listed Shares - The number of listed shares is used as a complementary measure of stock market size. The main importance of this measure is that it is a proxy for the breadth of the stock market and is not subject to stock market fluctuations (Bekaert et al, 2004 and Rajan&Zingales, 2003). Moreover, it is not tainted by possible mis-measurement of GDP, which often happens in many developing countries.

c) The All Share Index – This is a series of numbers which shows the changing average value of the share prices of all companies in a stock exchange, and which is used as a measure of how well a market is performing. An index is a calculated average of selected share prices, representing a particular market or sector. It is a basket

of shares that provides a broad sample of an industry, sector or economy. The collective performance of these shares gives a good indication of trends in the overall market they represent. It enables investors to track changes in the value of a general stock market, indices also provide a useful benchmark to measure the success of investment vehicles such as mutual funds, savings and foreign direct investments. However, the study narrowed its stock market performance to market capitalization for the three countries in the selected African economies.

## **2.2 Theoretical Framework**

### **Tobin's (1969) General Equilibrium Approach to Monetary Theory and Stock Market**

Tobin (1969) emphasized stock returns as an important link between the real and financial sides of the economy. In that model, Tobin depicted how stock returns may respond to changes in the monetary and fiscal policy variables of the model.

The effect of monetary policy on stock market returns is analyzed from two main channels, namely through the money supply or the interest rate (prime rate). A change in the money supply for example may lead to changes in market interest rates which would trigger a portfolio readjustment by investors. This may be explained by the fact that, changes in the market interest rate affects the value of wealth – the sum discounted future cash flows (and /or dividends) – thereby compelling investors to revalue their equity holdings.

Tobin (1969) asserted that stock returns serves as a linkage between the real and the financial sectors of the economy and depicted how both budget deficits and money growth could have important effects on stock returns. Since, the stock market performance indicator for our study is market capitalization and it react to monetary policy changes; the study therefore adopts the Tobin's theory of general equilibrium from all the theories discussed above. The Tobin's (1969) theory of general equilibrium applies in developing economies context. This is as a result of the fact that stock market performance responds to changes in monetary policy and monetary policy has the potential to influence the financial sector, particularly the capital market, therefore Tobin's theory is adopted as the theoretical framework for this study.

## **2.3 Empirical Review**

Monetary policy is one of the key drivers of stock market performance through its impact on economic variables. Folawewo and Osinubi (2006) defined monetary policy as a combination of measures considered to regulate the value, supply and cost of money in an economy, in consonance with the expected level of economic activity; whereas, stock market in developing countries plays an important role in achieving development. On this note, Galbraith (1955), cited in Shivangi and Naresh (2012) described the stock market as a mirror, which provides an image of the fundamental economic situation. This has attracted scholarly attention in the academic frontier. The empirical reviews were arranged in table webometric table format to capture the robustness of the empirical work in the study.

Monetary policies were discovered to facilitate significant change in the stock market performance (Muktadir–Al-Mukit, 2013; Seong, 2013;Grauwe, 2008; Chen & Hu, 2015;Fern'andez-Amador, Gachter, Larch & Peter, 2011). The presence of greater effect of monetary policy on stock prices was shown in the findings of Iglesias and Haughton (2011). Agbolahor (2014); Lithman (2012);Khabo (2002)and Sourial (2002) affirm the effect of monetary policy to drive economic growth. Barasa (2014) showed that monetary policy components deteriorated prior, during and after election. Ogbonna, Okafor and Anaemena (2019) reveal long run relationship between monetary policy and industrial output in Sub-Saharan African economies of Nigeria, Kenya and South Africa with significant influences on the individual country level but does not influence industrial growth in the selected developing African economies combined with similar position in Jamaica (Raymond, 2009). Monetary policy shocks dictated stock reactions in Botswana (Galebotswe&Thalefang, 2012) while Muktadir-al-Mukit&Shafiullah, (2014) revealed that repo rate influences market index while monetary policy components of inflation and money supply assert inverse effect on market index. Unfavourable positions between monetary policy and stock market returns and prices were shown by Singh (2014);Nwakoby and Alajekwu (2016);Abakah (2009) and Yakob (2002). Osisanwo and Atanda revealed that interest rate, past stock returns, money supply and exchange rate determines stock market returns. The combination of fiscal policies and monetary policies influences stock market (Chatziantoniou, Duffy &Filis, 2006) which is contrary to position of Hsing (2013) in Poland. Kirui, Wawire and Onono (2014) prove that macroeconomic variables, volatility influences stock market returns in Kenya. Aziza (2010) discovered that different monetary variables exhibit different behaviours in various countries and the degree of their influence varies between countries which is in line withNorfeldt (2014) and Mukherjee and Naka (1995). Uddin and Alam(2007); Aydemir and Demirhan (2009); Chen (2007); Spyrou (2001); and Hamrita and Abdeldader (2011) showed negative relationship between monetary policy and stock market while Li (2012) revealed that market capitalization is conversely related to money supply in the long run, whereas money supply has positive impact on stock market

capitalization in the short run. Diverse position thereby exists in the literature on monetary policy and stock market.

### 2.5 Gap in Literature

From the empirical reviews, majority of the works done to examine the interaction between monetary policy and stock market performance revealed the following gaps; there were very limited regional African works on the developing African economies with its peculiarities. The variables of study for the majority of the works did not adequately capture CPI (Inflation), exchange rate, Money supply and Deposit Money Bank Total Credit which constitute key monetary policy instrument and there were evident variations and discrepancies in some of the results obtained by various researchers particularly when compared with the apriori expectations (Dele, 2007; Rafiq&Mallick, 2008).

This study will ride on the observed gaps to cover the following:

Carry out a regional panel study of selected African developing countries. Use more prominent monetary policy measurement parameters as well as stock market performance indicator. The variable to be used to capture stock market performance is market capitalization while money supply, consumer price index, foreign exchange rate and deposit money banks total credit are monetary policy indices. Adoption of a more flexible and robust statistical Analysis technique that will accommodate panel data features.

### III. Methodology

#### Model Specification and Validity

The study adopts and modify Ogu and Pavis (2012). Their model is stated thus;

$$R_t = b_0 + b_1 r_0 + b_2 M_2 + e \dots\dots\dots (i) \text{ (Ogu\&Pavis, 2012)}$$

Where,  $R_t$ -Stock Market Returns,  $r_0$ -Interbank lending interest rates,  $M_2$ - Money supply

#### Estimation of the Model

$$\text{Log}MC_{it} = \alpha_i + \beta_{1i} \text{log}M2_{it} + \beta_{2i} \text{log}DMBTC_{it} + \beta_{3i} \text{CPI}_{it} + \beta_{4i} \text{EX}_{it} + u_{it} \dots\dots (ii)$$

$$\text{log}MC_t = \sum \alpha_1 \text{log}M2_t + \sum \alpha_2 \text{log}DMBTC_{1-t} + \sum \alpha_3 \text{CPI}_{1-t} + \sum \alpha_4 \text{EX}_{1-t} + U_t \dots\dots\dots (iii)$$

Fixed Panel regression, Granger Causality Tests on Stock market development parameter as proxy by Market capitalization and monetary policy variables. DMBTC as % of GDP,

### IV. Presentation of Results and Analysis

#### 4.1 Test for Stationarity

The test for stationarity requires that the variables in the series model must be stationery at a given level and p-value must be significant at that level. Stationerity is attained where the test statistics is most negative and less than the critical value of the chosen level of significance.

**Table 4.1A: Unit Root Tests for Nigeria Data**

Variables	ADF Test Statistics	Critical Values @5%	P-value	Order of Integration
CPI	-4.588469	-2.963972	0.0010	I(2)
EX	-3.903633	-2.960411	0.0055	I(1)
M2	-4.672074	-3.562882	0.0039	I(1)
TBC	-4.700174	-2.960411	0.0007	I(1)
MC	-6.210488	-2.960411	0.0000	I(1)

Source: Researcher's E-view 9.5 Computation

**Table 4.1B: Unit Root Tests for South Africa Data**

Variables	ADF Test Statistics	Critical Values @5%	P-value	Order of Integration
CPI	-5.414441	-2.963972	0.0001	I(2)
EX	-5.251259	-2.960411	0.0002	I(1)
M2	-5.728888	-2.960411	0.0000	I(1)
TBC	-5.256579	-2.957110	0.0001	I(0)
MC	-5.728888	-2.960411	0.0000	I(1)

Source: Researcher's E-view 9.5 Computation

**Table 4.1C: Unit Root Tests for Kenya Data**

Variables	ADF Test Statistics	Critical Values @5%	P-value	Order of Integration
CPI	-4.983722	-3.562882	0.0018	I(1)
EX	-5.368826	-2.960411	0.0001	I(1)
M2	-5.224119	-2.960411	0.0002	I(1)
TBC	-6.284106	-2.960411	0.0000	I(1)
MC	-5.367626	-2.960411	0.0001	I(1)

Source: Researcher's E-view 9.5 Computation

**Table 4.1D: Panel Unit Root Result**

Variables	Pooled Test Statistics	LLandC Test Statistics CV@5%	P-value	Order of Integration
CPI	-6.232	-3.49089	0.0002	I(1)
EX	-6.850	-5.18064	0.0000	I(1)
M2	-2.181	-2.12143	0.0169	I(0)
TBC	-4.261	-2.49218	0.0063	I(0)
MC	-9.260	-3.87179	0.0001	I(1)

Source: Researcher's E-view 9.5 Computation

Table 4.1A to 4.1D reports the tests for stationarity properties of the series following the Augmented Dickey Fuller (ADF) statistics. All the variables were found to be stationery at order one (1) except CPI was stationery at order 2. At both the First and Second difference as reported, the ADF Statistics for all the respective variables were all negative as the critical values at 5% significance level. The reported P values were all less than 0.05 chosen level of significance for which cause, the Null Hypothesis of the presence of unit root in all the variables is convincingly rejected. For the purposes of Cointegration analysis and tests, it is also interesting to state that the variables are almost integrated of the same order. While in South Africa, all the variables were found to be stationery at order one (1). At the First difference as reported, the ADF Statistics for all the respective variables were all negative as the critical values at 5% significance level. The reported P values were all less than 0.05 chosen level of significance for which cause, the Null Hypothesis of the presence of unit root in all the variables is convincingly rejected. For the purposes of Cointegration analysis and tests, it is also interesting to state that the variables are almost integrated of the same order. All the variables in Kenya were found to be stationery at order One (1). At levels as reported, the ADF Statistics for the respective variables were all negative as the critical values at 5% significance level. The reported P values were all less than 0.05 chosen level of significance for which cause, the Null Hypothesis of the presence of unit root in all the variables is convincingly rejected. For the purposes of Cointegration analysis and tests, it is also interesting to state that almost all the variables are integrated of the same order. While all the panel variables were found to also be stationery at first difference level (1). At first difference levels as reported, the variable p-value were all less than the 5% chosen significance level and thus we reject the Null hypothesis of the presence of Unit root and accept the alternative that there is no unit root and stationarity is attained by all the variables at the first difference levels.

### V. Regression Results

#### Nigeria

Selected Model: ARDL(1, 0, 2, 2, 0)				Dep: MC
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MC(-1)	-0.361951	0.318931	-1.134888	0.2692
CPI	1.61E+09	6.33E+08	2.537239	0.0192
EX	-5.63E+08	2.06E+08	-2.733288	0.0125
EX(-1)	5.51E+08	3.09E+08	1.781738	0.0893
EX(-2)	-5.64E+08	3.61E+08	-1.559425	0.1338
M2	0.783323	0.374971	2.089022	0.0491
M2(-1)	0.705774	0.279313	2.526824	0.0196
M2(-2)	-2.344131	0.939538	-2.494982	0.0210
TBC	-5.03E+08	6.00E+08	-0.837876	0.4115
C	1.94E+10	1.15E+10	1.682908	0.1072
R-squared	0.832163	F-statistic		11.56907
Adjusted R-squared	0.760233	Prob(F-statistic)		0.000003

#### South Africa

Selected Model: ARDL(1, 0, 0, 1, 0)				Dep: MC
Note: final equation sample is larger than selection sample				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MC(-1)	0.336804	0.178672	1.885040	0.0711
CPI	4.38E+09	2.16E+09	2.029223	0.0532
EX	5.26E+09	2.48E+09	2.122449	0.0439
M2	-1.458755	2.655476	-0.549338	0.5876
M2(-1)	10.42353	3.331109	3.129146	0.0044
TBC	-6.17E+08	3.06E+09	-0.201753	0.8417
C	-5.81E+11	3.25E+11	-1.786538	0.0861

R-squared	0.919259	F-statistic	47.43863
Adjusted R-squared	0.899881	Prob(F-statistic)	0.000000

**Kenya**

Selected Model: ARDL(2, 1, 0, 2, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
MC(-1)	-0.374187	0.184381	-2.029426	0.0559
MC(-2)	-0.280316	0.169073	-1.657959	0.1129
CPI	-37870797	1.15E+08	-0.328388	0.7460
CPI(-1)	3.76E+08	1.25E+08	3.017227	0.0068
EX	-1.10E+08	27748351	-3.968737	0.0008
M2	0.720884	0.073430	9.817356	0.0000
M2(-1)	0.416599	0.139073	2.995539	0.0071
M2(-2)	-1.542784	0.258273	-5.973465	0.0000
TBC	-3.28E+08	1.07E+08	-3.057698	0.0062
TBC(-1)	-2.07E+08	1.04E+08	-2.003345	0.0589
C	2.09E+10	4.90E+09	4.265133	0.0004
R-squared	0.968762	F-statistic	62.02543	
Adjusted R-squared	0.953144	Prob(F-statistic)	0.000000	

**Panel Regression**

Dependent Variable: MC				
Method: Panel EGLS (Two-way random effects)				
Date: 10/27/19 Time: 23:22				
Sample: 1986 2018				
Periods included: 33				
Cross-sections included: 3				
Total panel (balanced) observations: 99				
Wallace and Hussain estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CPI	3.56E+09	4.44E+08	8.021213	0.0000
EX	-2.96E+09	4.19E+08	-7.077673	0.0000
M2	0.648311	0.809253	0.801122	0.4251
TBC	-4.99E+09	2.94E+09	-1.698275	0.0928
C	3.33E+11	2.34E+11	1.423664	0.1579
Effects Specification				
			S.D.	Rho
Cross-section random			3.86E+11	0.8705
Period random			0.000000	0.0000
Idiosyncratic random			1.49E+11	0.1295
Weighted Statistics				
R-squared	0.472645	F-statistic	21.06200	
Adjusted R-squared	0.450204	Prob(F-statistic)	0.000000	

**Test of Hypothesis**

H<sub>01</sub>: There is no causal effect between monetary policy and stock market performance of selected African developing economies.

H<sub>1</sub>: There is causal effect between monetary policy and stock market performance of selected African developing economies.

**Table 4.2A: Pairwise Granger Causality Test for Nigeria**

Pairwise Granger Causality Tests				
Date: 10/27/19 Time: 19:14				
Sample: 1986 2018				
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
CPI does not Granger Cause MC	31	0.63971	0.5355	Accept
MC does not Granger Cause CPI		2.15018	0.1367	Accept

EX does not Granger Cause MC	31	1.60383	0.2204	Accept
MC does not Granger Cause EX		7.62239	0.0025	Reject
M2 does not Granger Cause MC	31	1.09022	0.3510	Accept
MC does not Granger Cause M2		7.77013	0.0023	Reject
TBC does not Granger Cause MC	31	0.65933	0.5256	Accept
MC does not Granger Cause TBC		2.78534	0.0802	Accept

Source: Computation by researcher using E-view 10.0

From the Granger Causality Test result in Table 4.2A, for Nigeria, the test was carried out with a lag 2period, monetary policy instrument is unbundled into four variants and their causal relationship with market capitalization tested. The choice of a lag of 2 is aimed at not sacrificing greater degrees of freedom which may be prejudicial to the outcome of the test. From the results, there was no causality relationship from CPI to MC and no feedback returning from MC to CPI (since the p-values – 0.2793 is more than the 5% chosen level of significance). While, there was a uni-directional relationship from MC to EX (p-value, 0.0086). There were however, no causal relationships between M2, TBC and MC for the Nigeria situation.

**Decision:** We reject the alternative hypothesis that monetary policy predicts market capitalization thereby stating that monetary policy does not predict market capitalization in Nigeria.

**Table 4.2B: Pairwise Granger Causality Test for South Africa**

Pairwise Granger Causality Tests				
Date: 10/27/19 Time: 19:47				
Sample: 1986 2018				
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
CPI does not Granger Cause MC	31	2.71823	0.0847	Accept
MC does not Granger Cause CPI		4.74950	0.0175	Reject
EX does not Granger Cause MC	31	1.01251	0.3772	Accept
MC does not Granger Cause EX		2.18524	0.1327	Accept
M2 does not Granger Cause MC	31	8.70033	0.0013	Reject
MC does not Granger Cause M2		7.79466	0.0022	Reject
TBC does not Granger Cause MC	31	0.06724	0.9351	Accept
MC does not Granger Cause TBC		0.49566	0.6148	Accept

Source: Computation by researcher using E-view 10.0

From the Granger Causality Test result in Table 4.2B for South Africa carried out using 2 period lag, monetary policy instrument is unbundled into four variants and their causal relationship with market capitalization tested. The choice of a lag of 2 is aimed at not sacrificing greater degrees of freedom which may be prejudicial to the outcome of the test. The results show No causal relationship between EX, CPI, M2, TBC and the Johannesburg stock market capitalization (Since their respective p-values are greater than 5% the chosen level of significance). However, there was uni-directional relationship from MC to CPI with p-value of 0.0119.

**Decision:** We accept the null hypothesis in all of the circumstances that there is no causal effect of monetary policy on South Africa stock market capitalization, while we reject the alternative hypothesis.

**Table 4.2C: Pairwise Granger Causality Test for Kenya**

Pairwise Granger Causality Tests				
Date: 10/27/19 Time: 21:08				
Sample: 1986 2018				
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
CPI does not Granger Cause MC	31	2.58990	0.0943	Accept
MC does not Granger Cause CPI		3.93299	0.0322	Reject
EX does not Granger Cause MC	31	0.18925	0.8287	Accept
MC does not Granger Cause EX		1.32479	0.2832	Accept
M2 does not Granger Cause MC	31	1.19992	0.3174	Accept
MC does not Granger Cause M2		5.48452	0.0103	Reject
TBC does not Granger Cause MC	31	0.21085	0.8113	Accept
MC does not Granger Cause TBC		2.33917	0.1164	Accept

Source: Computation by researcher using E-view 10.0



From the Granger Causality Test result in Table 4.2C for Kenya conducted using a lag of 2period, monetary policy was sub-divided into four sub-units and each causal effect with market capitalization tested. From the results, we observed a Bi-directional causality relationship running from MC to CPI (p-value of 0.0281) with a feedback returning from CPI to MC (0.0101) and MC to TBC (p-value of 0.0055) with a feedback returning from TBC to MC (0.0422). No causal relationship was observed between MC and EX, M2 and vice versa.

**Decision:** We accept the null hypothesis that monetary policy does not drive the Kenyan market capitalization thereby rejecting the alternative of causal effect of monetary policy on the Kenyan market capitalization.

**Test of Hypothesis – Pooled Effect Output**

The data for the selected study areas were pooled together to enable the researchers determine the optimum overall result for the developing African region, adopting the following procedures;

**Table 4.2D: Result for Causality Effect**

Pairwise Granger Causality Tests				
Date: 10/27/19 Time: 23:30				
Sample: 1986 2018				
Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
CPI does not Granger Cause MC	93	0.08225	0.9211	Accept
MC does not Granger Cause CPI		2.86335	0.0624	Accept
EX does not Granger Cause MC	93	0.06895	0.9334	Accept
MC does not Granger Cause EX		1.23436	0.2960	Accept
M2 does not Granger Cause MC	93	1.42161	0.2468	Accept
MC does not Granger Cause M2		0.06682	0.9354	Accept
TBC does not Granger Cause MC	93	0.13043	0.8779	Accept
MC does not Granger Cause TBC		0.39634	0.6740	Accept

Source: Computation by researcher using E-view 9.5

The result from table 4.2D showing Granger Causality of monetary policy against market capitalization carried out at the 5% level of significance using a lag of 2 period reveals that M2 and MC for the panel pooled data, does not Granger Cause each other with F-statistics of 0.81417 and 0.22230 with p-values of 0.4466 and 0.8012 respectively above the 5% level of significance. This shows that though the relationship is positive, they are however not statistically significant.

Similarly, EX does not granger cause MC nor does MC granger cause EX as the F-statistic is positive at 0.04959 and 2.20357 with p-values of 0.9516 and 0.1169 respectively which are well above the chosen level of significance; hence, EX has a positive but insignificant influence on MC and vice versa at the 5% significant level. Also, the table further shows that CPI does not granger cause MC with F-statistics of 0.04275 and p-value of 0.9582 while MC however granger cause CPI with F-statistics of 3.73880 and p-value of 0.0279. Hence, there is a uni-directional effect from MC to CPI at 5% level of significance.

Also, MC does not granger cause TBC at the 5% level of significance with F-statistic of 1.19130 with p-value of 0.3090 while TBC granger cause MC at the 5% level of significance with F-statistics of 7.84512 and p-value of 0.0008, which shows uni-directional relationship from TBC to MC.

**Decision Rule:** based on the overall result of the study on granger causality we accept null hypothesis to reject alternative hypothesis that there is no causal effect between monetary policy in money supply and others on stock market performance of selected African developing economies.

**VI. Discussion of Findings**

This study examined the interaction between monetary policy and stock market performance, evidence from selected developing African economies from 1986 to 2016 with a view to affirming or refuting the nexus of interaction between monetary policy and stock market performance (market capitalization) in selected developing African economies using empirical evidence from Nigeria, South Africa and Kenya.

**To ascertain the direction of causality between monetary policy and stock market performance of selected developing African economies**

The result of the granger causality of Monetary policy considered in M2, TBC, CPI and EX against stock market performance index in market capitalization carried out at the 5% level of significance using a lag of 2 period reveals that that M2 and MC for the panel pooled data, does not Granger Cause each other with F-statistics of 0.81417 and 0.22230 with p-values of 0.4466 and 0.8012 respectively above the 5% level of significance. This shows that though the relationship is positive, they are however not statistically significant.

Similarly, EX does not granger cause MC nor does MC granger cause EX as the F-statistic is positive at 0.04959 and 2.20357 with p-values of 0.9516 and 0.1169 respectively which are well above the chosen level of significance; hence, EX has a positive but insignificant influence on MC and vice versa at the 5% significant level. This shows that though the relationship is positive, they are however not statistically significant. However, there were presence of uni-directional granger effect from MC to CPI and TBC to MC with F-statistics of 3.73880 and 7.84512 backed with p-value of 0.0279 and 0.0008 respectively. This result is consistent with the findings of Aydemir and Demirhan (2009), who found non-causal relationship between monetary policy and stock market performance indicators but contradicted by Hamrita and Abdelkader (2011) who discovered a bidirectional granger effect of monetary policy and stock market performance. This result however is not consistent with our Tobin's theory and Apriori expectation from such an investigation of a positive, significant and Bi-directional relationship between monetary policy and stock market performance.

The result of the individual country however, shows a departure from above scenario as in Nigeria, showed a uni-directional causal effect (relationship) from CPI to MC and MC to EX. While the rest showed no causal relationship between MC-TBC and MC-M2. South Africa however showed three (3) unidirectional causal effects from MC to CPI, MC to M2 and TBC to MC with p-values of 0.0119, 0.0610 and 0.1095 respectively. Kenya showed two (2) Bi-directional Causal effects between MC-CPI and MC-TBC while MC to M2 showed a uni-directional causal effect.

The panel data analysis result on pairwise granger causality does not support the Tobin's theory of monetary policy and our a-priori expectations. The implication of this panel result is that the selected developing African economies is yet to productively use its monetary policy to develop the performance of stock markets and most money supply are tied down into sulk-aways, buried and some deposited in foreign accounts. Another implication of this result is that the monetary policies reduce monetary flows within the economy which affect stock market performance index.

## VII. Conclusion and Recommendations

This research work studied the interaction between monetary policy and stock market performance in selected developing African economies following largely from the theoretical postulation of Tobin's theory. The theory holds that monetary policy benefits and develops stock market performance, which constituted the focus of this work. The results emanating from our study proved that monetary policy had no significant relational effects on stock market performance. While, the stock market performance index in market capitalization also showed no corresponding effect on monetary policy in the selected developing African economies. In conclusion, based on the outcome of our Study, we affirm that monetary policy had no significant relational effect on stock market performance and verse versa in the selected developing African economies. Thus, the study recommends that the respective governments of the selected developing African economies should be encouraged to consolidate their monetary policy to strengthen and deepen monetary control efforts to improve economic situations and stock market activities in Africa by establishing regional global stock market that is electronically linked to all stock markets. This will facilitate speedy developments of the stock markets; encourage the development of single regional trading currency, improved ease of liquidity flow between the various markets within the region, encourage improved transparent corporate governance, greater foreign investor participation and reduce capital flight into foreign stock markets. This will enable capital inflows into the financial systems to be channeled appropriately towards the development of relevant market fundamentals.

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