MODELLING SHARE PRICE BEHAVIOUR IN NIGERIA

DARLINGTON OSAREMWINDA OGBEIDE,
OSAZEE FRANK OGIEVA [*]

ABSTRACT: *The study examines the relationship between selected variables (interest rate, exchange rate, money supply, real domestic product, inflation rate, crude oil price and political instability) and share price behaviour in Nigeria ranging from 1985-2016. The study adopted the a-Augmented Dickey-Fuller unit root and the Johansen co-integration test. Error Correction Model was employed to determine the short run impact of the variables and multivariate ordinary least square (ols) with an ar (1) error fitted to the data to determine the long run impact of the variables. The study revealed that crude oil price, money supply and real domestic product have significant impact on share price behaviour in the short run while all the selected variables (interest rate, exchange rate, money supply, real domestic product, inflation rate, crude oil price and political instability) have no significant impact on share price behaviour in the long run. The study also reveals a negative relationship between interest rate, exchange rate, inflation rate and political instability and share price behaviour in the short run while in the long run, all the variables are positively related to share price behaviour except exchange rate and political instability which had negative relationships.*

KEY WORDS: *Share Price Behaviour, Interest Rate, Money Supply, Inflation Rate, Crude Oil Price, Political instability, Real Gross Domestic Product, Exchange Rate.*

JEL Classification: *C22, G10, G12.*

1. INTRODUCTION

In recent times, the inherent dynamics and high volatility of emerging market like Nigeria have been mirrored profoundly in the gyration of share prices on the floor of the Nigerian Stock Exchange. The market has exhibited a vagary of movements that

[*] *Department of Business Administration, Faculty of Management Sciences, University of Benin, Benin City, darlington.ogbeide@uniben.edu*
Ph.D., ACA, Department of Business Administration, Faculty of Management Sciences, University of Benin, Benin City, osazee.ogieva@uniben.edu

have culminated into returns diminutions and capital depreciations across all sectors (Abosode & Oseni, 2011). In Nigeria, just like in many other countries of the world, the question of what determines share price behaviour (upward and downward) is seen to provoke diverse answers from different circles. The known efficient market theory believe that stock prices reflect everything that is known about a company and hence can be predicted based on fundamental analysis, while proponents of technical analysis attempt at forecasting future security prices based on historical data. No wonder then that the factors driving share price behaviour have become issue of concern to both researchers in academics and professional portfolio managers. While few researchers have approached share price behaviour from the micro perspective, few others approached it from macro perspective. Empirically, share prices behaviour have been influenced by various factors, however, the nature and the size of such an influence varies across countries and time as a result of different institutional structures that affect the link between share prices behaviour and such variables. In this context, developed and emerging stock markets are expected to differ in terms of the sensitivity of their share prices to economic conditions due to different legal, institutional structures and time lag. Again, at the different countries level, studies conducted on the share price behaviour showed divergent outcomes, even though it seems that some determinants commonly appeared for all stock markets (Rahman, Sidek & Tafri, 2009).

Moreover, the various empirical studies done in Nigeria such as Udegbunam & Eriki, 2001; Isenmila & Erah, 2012; and Osamwonyi & Evbayiro-Osagie, 2012 to mention but a few have showed mixed results and conclusions. In some studies, strong positive relationships are found to exist between share price behaviour and macroeconomic fundamentals and in some the relationship is a bit weak. Other researchers report different results. This mixture of findings and conclusions emanates from differences in methodology, variables used and the period of study (time lag). There is also disparity in study area that fundamentally affects the behaviour of these variables and therefore it is difficult to generalize the results due to the various conditions that surround each stock market environment. This serves as the basis for further empirical investigation especially in the face of economic recession in the country. Therefore, in this study, we model share price behaviour using some selected macroeconomic variables.

2. EMPIRICAL LITERATURE

The empirical literature is divided into three sections. The first section focuses on interest rate, exchange rate, money supply, RGDP, inflation rate and share price behaviour. The second section focuses on crude oil price and share price behaviour and the third section focuses on political instability and share price behaviour.

2.1. Interest Rate, Exchange Rate, Money Supply, RGDP, Inflation Rate and Share Price Behaviour.

Various empirical studies regarding interest rate, exchange rate, money supply, RGDP, inflation rate and share price behaviour show mixed results and conclusions.

The mixture of findings and conclusions emanates from differences in methodology, variables used and the period of study. For instance, Ratanapakorn and Sharma (2007) investigated the relationship between the US stock price index and six macroeconomics variables (industrial production, money supply, treasury bill rate, government bond rate, inflation and Japanese Yen/US dollar exchange rate over the period of 1975-1999. They observed that the stock prices are negatively related to the long run term interest rate and positively related to money supply, industrial production, inflation, exchange rate and short term interest rate.

AL-Mutairi and AL-Omar (2008) studied the effect of macroeconomic variables and the behaviour of Kuwait stock exchange during the period from 1995 to 2005 using monthly data for both the market and its sub sectors. Interest rate, money supply, inflation, and. government expenditure are the macro variables used, while market activity is represented by the value of traded shares. Vector autoregression technique was employed to achieve this goal. The study indicates that macroeconomic variables have the expected but a limited impact on the activities of the Kuwait Stock Exchange. The results of the study indicate a negative and long term effect of both interest rate and. inflation, a positive and. long term effect of both money supply, and government expenditure. These results are typical for emerging markets such as that of Kuwait Stock Exchange where speculation dominates the activities in such markets (AL-Mutairi & AL-Omar, 2008).

Rahman, Sidek &Tafri (2009) explored the interactions between selected macroeconomic variables and stock prices in Malaysia. Some conventional econometric techniques were applied along with a battery of complementary tests to trace out both short and long run dynamics. Upon testing a vector error correction model, it was discovered that changes in Malaysian stock market index do perform a co-integrating relationship with changes in money supply, interest rate, exchange rate, reserves and industrial production index. The lag exclusion test shows that all six variables contribute significantly to the co-integrating relationship. This shows that the Malaysian stock market is sensitive to changes in the macroeconomic variables. Furthermore, based on the variance decomposition analysis, the study showed that Malaysian stock market has stronger dynamic interaction with reserves and industrial production index as compared to money supply, interest rate, and exchange rate.

Furthermore, Osamwonyi & Evbayiro-Osagie (2012) examine the relationship between macroeconomic variables and the Nigerian stock market index. The study considers the yearly data of several macroeconomic variables of interest rates, inflation rates, exchange rates, fiscal deficit, GDP and money supply from 1975 to 2005; and it tries to reveal the relative influence of these variables on the All Share Index (a proxy for stock prices) of the Nigerian stock market. The Vector Error Correction Model (VECM) was used to study the short-run dynamics as well as long-run relationship between the stock market index and the six selected macroeconomic variables from the Nigerian economy. The major finding is that macroeconomic variables influence stock market index in Nigeria.

Malaolu, Ogbualor & Orji (2013) examined the macroeconomic determinants of stock price movements in Nigeria. Both the long-run and short run dynamic relationships between the stock price movement and the macroeconomic variables

were analyzed with time series data that spanned from 1985 to 2010 using the Engle-Granger two-step co-integration test. The result showed that there is no co-integration between the variables, indicating the absence of long run relationship. Results of the regression indicate that the monetary policy variables (real exchange rate, real interest rate and money supply) as well as political instability are not the determinants of stock price movements in Nigeria; however, inflation was found to be a major determinant of stock price movements. Additionally, Wiredu, Suleman & Adjartey (2013) investigated the determinants of stock prices in Ghana using a regression model with ARIMA errors. The results showed that a regression model with AR (1) errors was best for modeling the stock prices. The results of the study showed that the Gold price and the 91-day Treasury bill do not contribute significantly to the variation in the stock prices. The Cocoa price and the Consumer Price Index were positively related to the Stock price while the Broad Money supply was negatively related to the Stock price.

2.2. Crude oil price and share price behaviour

While there is strong presumption in the financial press that oil prices drive the stock market, the empirical evidence on the impact of oil price shocks on share prices has been mixed (Kilian & Park, 2007). Recent empirical research has found evidence of a relationship between oil price movements and share prices (Sadorsky, 2008). For instance, findings by Maghyereh (2004) findings imply that oil shocks have no significant impact on stock index returns in emerging economies.

Adaramola (2012) examines the long-run and short-run dynamic effects of oil price on stock returns in Nigeria over 1985:1–2009:4 using the Johansen co-integration tests. A bi-variate model was specified and empirical results showed a significant positive stock return to oil price shock in the short-run and a significant negative stock return to oil price shock in the long-run. The Granger causality test shows strong evidence that the causation runs from oil price shock to stock returns; implying that variations in the Nigerian stock prices are explained by oil price volatility.

Furthermore, Isenmila and Erah (2012) examine the relationship between shares prices and macroeconomics factors in the Nigerian stock markets. The study adopts a time-series research design while secondary data in quarterly estimates for All share index, oil prices, money supply, Gross Domestic Product, Exchange rate, inflation and interest rate for the period 2000Q1- 2010Q4 were used for the analysis. The method of data estimation is the co-integration and error correction methodology (ECM). The study revealed that oil prices was observed to be negatively related to stock returns in both the long run and the short run dynamic model for both one and two period lags respectively. Additionally, Ogiri, Amadi, Uddin and Dubon (2013) investigate the relationship between oil prices and stock market performance in Nigeria. Different empirical methods including the Johansen's co-integration model, the augmented Dickey-Fuller test, the Vector error correction (VEC) model, as well as the Vector auto regression (VAR) estimation model, were used in the study. The results of the study showed that oil price changes are important factors in explaining stock price movement. Specifically, the findings showed that there are significant links between oil prices and stock market performance.

Aigbovo and Izekor (2015) examined the impact of macroeconomic variables namely exchange rates, inflation rates, interest rates, money supply, industrial production index and oil price on stock market index in Nigeria. The period covered is from 2000-2010. The multivariate Ordinary Least Square (OLS) and Error Correction Model (ECM) was employed for the long run and short run respectively. The result of the study revealed that oil price is positively related to stock market index (proxy by all share index) both in the short run and in the long run.

2.3. Political Instability and Share Price Behaviour

Ashfaque and Nasir (1997) opined that political instability is one of the main causes which affect the capital inflows of a country. More importantly, stock market has been found to respond significantly to changes in political environment (Shrestha & Subedi, 2014).

Ahmed and Rajaguru (2010) investigate the impacts of political instability on financial market by using data for period January 1999 to September 2006 in Pakistan. They use high frequency data from the indicators (exchange rate, stock prices) of financial market on daily observation to perform empirical estimation. Granger causality test and Markov switching VAR model was used for estimation. The study concludes that political shocks have impact on currency market and impact on stock prices leading to slowing down the economy. Malaolu *et al.* (2013) examined the macroeconomic determinants of stock price movements in Nigeria. Both the long-run and short run dynamic relationships between the stock price movement and the macroeconomic variables were analyzed with time series data that spanned from 1985 to 2010. The result revealed that there is negative relationship between political instability and stock price movement in Nigeria. He concluded that political instability is not a determinant of stock price movements in Nigeria.

Shrestha and Subedi (2014) examined the determinants of the stock market performance in Nepal using monthly data for the period of mid-August 2000 to mid-July 2014. The impact of major changes in politics was also assessed. Empirical results obtained from OLS estimations revealed that the performance of stock market is found to respond positively to inflation and broad money growth, and negatively to interest rate. The findings also revealed that political uncertainty had a negative relationship with Nepal stock market index.

Asterion and Sarantidis (2016) examined the relationship between political instability and stock market returns using quarterly time series data from 1993 to 2013. Five different political instability indicators were constructed in order to measure political uncertainty. The study utilizes the Exploratory Factor Analysis, Principal Component Analysis and GARCH-M methodologies. The findings indicate a direct negative relationship between the political instability and stock market returns

3. THEORETICAL FRAMEWORK

The Arbitrage Pricing Theory (APT), introduced by Ross (1976), establishes the theoretical framework to link stock returns with several variables which can

influence the source of income volatility (Rahman, *et al*. 2009).It is a multi factor model which shows linear relationship between stock price and macroeconomic factors. It mainly measures the sensitivity of stock price to those variables and show in beta (Roll & Ross, 1980). There are several parts of Arbitrage Pricing Theory (APT). First the APT does not assume that market must be efficient. Second, APT can consider multiple variables instead of one at the same time (Franke, 1984). Thirdly, the covariance of APT is the market return (Huberman & Wang, 2005). According to Sabetfar, Cheng, Mohamad, and Noordin (2011), the APT does not limit to market risks but assumes that the market is in equilibrium with no riskless profit. This is due to the fact that the arbitragers will compensate all the riskless profit until zero when they realize that there is an arbitrage profits. Then, the market will turn back to equilibrium. Thus, no investors can earn extra profit in this case.APT theory was adopted for this study since there is a linkage between the share price behaviour and the various variables highlighted.

4. METHODOLOGY

The data for this study were secondary. The data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin. The study employed annual time series data from 1985 to 2016.

4.1. Model Specification

The model for this study is specified as follows:

$$\Delta SPB_t = \delta_0 + \delta_1 \Delta INTR_{t-1} + \delta_2 \Delta EXRT_{t-1} + \delta_3 \Delta MOS_{t-1} + \delta_4 \Delta RGDP_{t-1} + \delta_5 \Delta INFR_{t-1} + \delta_6 \Delta COP_{t-1} + \delta_7 \Delta PIS_{t-1} + ECM(-1) + \varepsilon_t$$

where:
$SPB = $ Share Price Behaviour (proxy by All Share Index)

$INRT = $ Interest Rate

$EXRT = $ Exchange Rate

$MOS = $ Money Supply [proxy by broad money supply (M2)]

$RGDP = $ Real Gross Domestic Product

$INFR = $ Inflation Rate

$COP = $ Crude Oil Price

$PIS = $ Political Instability (dummy variable that takes the form of 0 and 1 was applied, where 0 stands for military regime and 1 for civilian regime)

$\delta_0 = $ Constant

$\delta_1\ to\ \delta_7 = $ Coefficients or parameters to be estimated

$\varepsilon = $ Stochastic error term

A priori expectation

$\delta_2, \delta_3, \delta_4 > 0$ and $\delta_1, \delta_5, \delta_6, \delta_7 < 0$

4.2. Estimation Technique

In attempt to model share price behaviour in Nigeria, the study employed Augmented Dickey-Fuller (ADF) unit root test to check whether the series under consideration were stationary. Johansen co-integration test was also employed to establish a long run equilibrium between the selected variables and share prices behaviour, Error Correction Mechanism (ECM) was employed since it contains full information on the dynamic short run interactions among the co-integrating variables and Ordinary Least Square (OLS) was also employed to check for the long run relationship between share price and the explanatory variables. The model was estimated with the aid of econometric software package, E-views 8.0.

5. PRESENTATION AND ANALYSIS OF EMPIRICAL RESULTS

This section deals with the presentation and analysis of the empirical results obtained from the estimation exercise. It is made up of the descriptive statistics, correlation matrix, unit root test, co-integration test, model estimation and interpretation as well as discussion of findings.

5.1. Descriptive Statistics

Table 1 below presents a descriptive statistics of time series data for both the dependent and independent variables. The essence of this is to indicate the level of disparity among the variables

Table 1. Descriptive Statistics of Variables

	SPB	INTR	EXRT	MOS	RGDP	INFR	COP	PIS
Mean	261078.6	1.243750	87.28674	4697.320	33919.94	19.87281	41.50594	0.562500
Median	16194.45	4.300000	107.0250	1073.890	24477.91	11.90000	25.69000	1.000000
Maximum	1935084.	25.30000	281.0000	21791.28	69023.93	72.84000	109.4500	1.000000
Minimum	159.8000	-43.60000	0.890000	22.30000	14953.91	5.380000	12.28000	0.000000
Std. Dev.	539592.2	17.49116	73.53274	6589.226	18129.20	18.66347	31.86798	0.504016
Skewness	2.061753	-1.080274	0.423444	1.287176	0.743151	1.567737	1.043907	-0.251976
Kurtosis	5.750326	3.773284	2.464633	3.281435	2.083272	4.042963	2.653052	1.063492
Jarque-Bera	32.75680	7.021249	1.338448	8.941992	4.065981	14.55862	5.972459	5.338708
Probability	0.000000	0.029878	0.512106	0.011436	0.130943	0.000690	0.050477	0.069297
Obser-vations	32	32	32	32	32	32	32	32

Source: Researcher Computation (2017) using E-views 8.0

Table 1 above shows the descriptive statistics of the variables used in the analysis. The table showed that between 1985-2016, the average Share Price Behaviour

(SPB), Interest Rate (INTR), Exchange Rate (EXRT), Money Supply (MOS), Real Gross Domestic Product (RGDP), Inflation Rate (INFR), Crude Oil Price (COP) and Political Instability (PIS) is 261078.6, 1.24, 87.29, 4697.32, 33919.94, 19.87, 41.505 and 0.5625 respectively. This indicates that the variables exhibit significant variation in term of magnitude, suggesting that estimation levels may introduce some bias in the result. In terms of the level of variability as revealed by standard deviation (539592.2) of the Share Price Behaviour (SPB), the selected variable had standard deviation relative to the mean value over the period. The descriptive statistics for the explanatory variables also shows that Real Gross Domestic Product (RGDP) seems to be the most volatile variable in the set since it possesses the highest standard deviation value among the explanatory variables. This is followed by Money Supply (MOS) and Exchange Rate (EXRT) with standard deviation values of 6589.23 and 73.53 respectively. It was also observed that the Share Price Behaviour (SPB), Exchange Rate (EXRT), Money Supply (MOS), Real Gross Domestic Product (RGDP), Inflation Rate (INFR) and Crude Oil Price (COP) were positively skewed while Interest rate (INTR) and Political Instability (PIS) were negatively skewed. The descriptive statistic also revealed that most of the variables used in the study were normally distributed except for Exchange Rate (EXRT) and Real Gross Domestic Product (RGDP) as observed from the Jarque-Bera statistics.

5.2. Correlation Analysis

In attempt to explore the relationship between the dependent variable and explanatory variables used in the study, we carried out correlation analysis using Pearson product moment correlation method. The correlation matrix table is used to determine the direction and strength of the relationship between the variables. The results are presented in Table 2 below:

Table 2. Correlation Matrix

	SPB	INTR	EXRT	MOS	RGDP	INFR	COP	PIS
SPB	1							
INTR	-0.019005	1						
EXRT	0.347733	0.221538	1					
MOS	0.308809	0.180219	0.842927	1				
RGDP	0.417274	0.205956	0.902172	0.964692	1			
INFR	-0.228089	-0.382402	-0.427796	-0.329411	-0.385973	1		
COP	0.591060	0.132534	0.664927	0.751342	0.840849	-0.394195	1	
PIS	0.428155	0.217031	0.902074	0.616135	0.749236	-0.517170	0.666337	1

Source: Researcher's Computation (2017) using E-views 8.0

Table 2 shows that how the variables relate to one another in the sample data from 1985-2016. The table shows that the coefficient of correlation of a variable to itself is 1.000. This indicates that there exists a perfect correlation between a variable with respect to itself. The results show that there exists a positive relationship between SPB and EXTR, MOS, RGDP, COP and PIS with coefficient of 0.3477, 0.3088, 0.4173, 0.5911 and 0.4282 respectively. This shows that a very strong relationship exists between share price behaviour and the selected variables in Nigeria. On the other

hand, INTR and INFR had a negative relationship with SPB with a coefficient of -0.0190 and -0.2281. This indicates that interest rate and inflation rate negatively affect share price behaviour.

5.3. Unit Root Test

Before analysing the econometric model specified. It is imperative to find the properties of the data employed. Thus, Augmented Dickey-Fuller (ADF) unit root test was employed to determine whether the series are stationary or not. The results of the unit root test are shown below

Table 3. Results of Augmented-Dickey Fuller Tests

Variables	ADF t-statistics	1% Critical value	5% Critical value	Order of integration	Remarks
INTR	-5.320178*	-3.661661	-2.960411	1(0)	Stationary
Dspb	-5.755513*	-3.670170	-2.963972	1(1)	Stationary
dINTR	-6.737362*	-3.679322	-2.967767	1(1)	Stationary
dINFR	-3.640194*	-3.711457	-2.981038	1(1)	Stationary
dCOP	-4.903797*	-3.670170	-2.963972	1(1)	Stationary
dPIS	-5.477226*	-3.670170	-2.963972	1(1)	Stationary
Dspb	-4.845109*	-3.769597	-3.004861	1(2)	Stationary
dINTR	-4.969765*	-3.752946	-2.998064	1(2)	Stationary
dEXRT	-6.982729*	-3.679322	-2.967767	1(2)	Stationary
dMOS	-11.44486*	-3.679322	-2.967767	1(2)	Stationary
dRGDP	-4.603491*	-3.679322	-2.967767	1(2)	Stationary
dINFR	-5.822552*	-3.724070	-2.986225	1(2)	Stationary
dCOP	-6.801926*	-3.689194	-2.971853	1(2)	Stationary
dPIS	-9.000000*	-3.679322	-2.967767	1(2)	Stationary

Source: Researcher's Computation (2017)
***Significant at 1% and 5% level**

The result of the unit root tests at levels (Table 3) shows that only INTR was stationary at levels since while SPB, EXRT, MOS, RGDP, INFR, COP and PIS were non-stationary at levels respectively. In order to ensure stationarity of the entire variable, there was the need to take the first difference of the variables to obtain stationarity. Only dSPB, dINTR dCOP and dPIS were stationary at 1% and 5% level of significance while dINFR was stationary only at 5% level of significance since its absolute ADF test statistics value of -3.640 is greater than the absolute critical value of -2.981.

At the second difference, all the variables became stationary. dSPB, dINTR, dEXRT, dMOS, dRGDP, dINFR, dCOP and dPIS were all stationary 1% and 5% level of significance. Thus, all the variables are integrated of order two 1(2).

5.4. Johansen Co-integration Test

Having established that the variables are characterized by a unit root process, the co-integration test is further employed to determine whether a long-run relationship exist among the variables. We then proceed to test for co-integration between SPB and the regressors (INTR, EXRT, MOS RGDP, INFR, COP and PIS). The results of the co-integration test are shown in the table below

Table 6. Co-integration Test Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.971491	367.8155	159.5297	0.0000
At most 1 *	0.909542	261.0890	125.6154	0.0000
At most 2 *	0.862779	189.0028	95.75366	0.0000
At most 3 *	0.788298	129.4178	69.81889	0.0000
At most 4 *	0.701996	82.84053	47.85613	0.0000
At most 5 *	0.606682	46.52111	29.79707	0.0003
At most 6 *	0.460745	18.52702	15.49471	0.0169
At most 7	6.88E-07	2.07E-05	3.841466	0.9986

Source: Research Computation (2017) using E-views 8.0.
Trace test indicates 7 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.971491	106.7265	52.36261	0.0000
At most 1 *	0.909542	72.08617	46.23142	0.0000
At most 2 *	0.862779	59.58498	40.07757	0.0001
At most 3 *	0.788298	46.57727	33.87687	0.0009
At most 4 *	0.701996	36.31942	27.58434	0.0029
At most 5 *	0.606682	27.99409	21.13162	0.0046
At most 6 *	0.460745	18.52700	14.26460	0.0100
At most 7	6.88E-07	2.07E-05	3.841466	0.9986

Source: Research Computation (2017) using E-views 8.0.
Max-eigenvalue test indicates 7 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

An examination of the co-integrating test results reveal that both trace and maximum Eigen value statistics indicate seven (7) co-integrating equation(s) at 5% significant level. This is because both the trace statistics and maximum Eigen value statistics are at this level greater than the 5% critical value respectively. Thus, the results indicate the existence of co-integration among the variables, and as such, a long run equilibrium relationship exists among them.

5.5. Error Correction Model Analysis

The short run adjustment dynamics can be represented by an error correction model. According to Engel and Granger (1987), once a set of variables are stationary and a co-integration has been established, any dynamic analysis should incorporate the error correction mechanism, which measure deviation from the long-run equilibrium. Also, it is able to determine the speed at which the explained variable returns to equilibrium after deviation has occurred. The result from ECM is presented below.

Table 7. Parsimonious Error Correction Model Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	149699.5	97609.81	1.533652	0.1459
DSPB(-2)	0.688713	0.207905	3.312626	0.0047
DINTR(-2)	1755.928	2309.391	0.760342	0.4588
DINTR	-3074.162	2940.798	-1.045350	0.3124
DEXRT(-1)	-6704.215	4418.813	-1.517198	0.1500
DEXRT	-3901.576	5501.066	-0.709240	0.4891
DINFR(-2)	-5229.866	3896.520	-1.342189	0.1995
DINFR	-3234.631	3820.175	-0.846723	0.4105
DCOP(-2)	-20933.44	7946.847	-2.634182	0.0188
DCOP	5910.776	5209.261	1.134667	0.2743
DMOS	335.0675	101.4602	3.302452	0.0048
DRGDP(-2)	150.6597	53.48252	2.816990	0.0130
DPIS	-61555.17	501928.9	-0.122637	0.9040
ECM(-1)	-0.560705	0.159462	-3.516232	0.0031
R-squared	0.717235	Mean dependent var		927.3941
Adjusted R-squared	0.472172	S.D. dependent var		378317.2
S.E. of regression	274854.2	Akaike info criterion		28.19214
Sum squared resid	1.13E+12	Schwarz criterion		28.85221
Log likelihood	-394.7860	Hannan-Quinn criter.		28.39887
F-statistic	2.926734	Durbin-Watson stat		1.911524
Prob(F-statistic)	0.024936			

Source: Researcher's Computation (2017) using E-views 8.0.
P=0.05

The econometric result in the above table shows the overall fit is strong with an R-squared of approximately 72%. This indicates that the explanatory variables

(DINTR, DEXRT, DMOS, DRGDP, DINFR, DCOP and DPIS) jointly explain 72% systematic variation in the dependent variable (DSPB) while 38% of the systematic variations in share price behaviour were left unexplained by the model which has been captured by the error term. This implies that other factors apart from interest rate (DINTR), exchange rate (DEXRT), money supply (DMOS), Gross Domestic Product (GDP), inflation rate (DINFR), crude oil price (COP) and political instability (DPIS) also affect Nigeria's share price behaviour in the short run. The F-statistic of 2.9267 is significant at 5% level which indicate the overall statistical significant of the model. Thus, there is a statistical significant relationship between the dependent (DSPB) and the explanatory variables put together. The Durbin Watson Statistic of 1.9115 shows the absence of autocorrelation.

On the basis of the individual statistical significance, the above result revealed that in the short run, DSPB (-2) (last two years SPB) has a positive and significant impact on current share price behaviour (DSPB). It shows the persistence behaviour, in other words, chartist behaviour in stock market. We can infer from the result that a unit increase or decrease in last two years DSPB (-2) results in approximately 69% increase or decrease in current share price behaviour. The result also revealed that DINTR (-2) (last two years INTR) and current INTR have no significant relationship with current share price behaviour. The result showed that last two years' interest rate has a positive relationship with share price behaviour while current interest rate is negatively related to share price behaviour. Similarly, it is observed that previous year exchange rate [DEXRT (-1)] and current exchange rate (DEXRT) have a negative relationship with current share price behaviour but were not statistically significant. Furthermore, the results also showed that last two years' inflation rate [DINFR (-2)] and current inflation rate (DINFR) have a negative relationship with current share price behaviour but were not statistically significant. In terms of a crude oil price, the result showed that last two year crude oil price [DCOP(-2)] has a negative and significant impact on current share price behaviour. On the other hand, current crude oil price (DCOP) has no significant impact on current share price behaviour. The result also that current money supply (DMOS) has a positive and significant impact on current share price behaviour. Similarly, last two-year real gross domestic product [DRGDP (-2)] has a positive and significant impact on current share price behaviour. Political instability (DPIS) has a negative relationship with share price behaviour but not statistically significant. The coefficient of the ECM was correctly signed and significant at 5% level. Thus, the model is able to correct for any deviation in share price behaviour from short-run equilibrium situation to long-run equilibrium. It shows that 56 percent disequilibrium in share price behaviour in the previous year is corrected in the current year. This means that the speed of adjustment to long-run when there is a temporary disequilibrium would be relatively fast. The strong significant of the ECM is an indication of the existence of a strong long-run equilibrium relationship between SPB and the explanatory variables.

5.6. Long-run Analysis

The long-run relationship between the dependent variable (SPB) and the regressors (INTR, EXRT, MOS, GDP, INFR, COP, PIS) is estimated using Ordinary Least Square (OLS) technique. The result is presented in table 8 below

Table 8. Long run Analysis Result

Dependent Variable: SPB

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	176589.9	1010041	0.174834	0.8628
INTR	185.2629	3253.038	0.056951	0.9551
EXRT	-1227.766	6096.949	-0.201374	0.8423
MOS	25.45274	105.8203	0.240528	0.8121
RGDP	11.03818	38.84604	0.284152	0.7790
INFR	380.8184	4926.148	0.077306	0.9391
COP	8889.336	6486.467	1.370443	0.1844
PIS	-154542.1	635476.6	-0.243191	0.8101
AR(1)	0.705938	0.169995	4.152688	0.0004
R-squared	0.658873	Mean dependent var		269495.4
Adjusted R-squared	0.534827	S.D. dependent var		546372.2
S.E. of regression	372645.6	Akaike info criterion		28.73234
Sum squared resid	3.06E+12	Schwarz criterion		29.14866
Log likelihood	-436.3513	Hannan-Quinn criter.		28.86805
F-statistic	5.311509	Durbin-Watson stat		1.589081
Prob(F-statistic)	0.000864			
Inverted AR Roots	.71			

Source: Researcher's Computation (2017) using E-views 8.0 p 0.05

The results in the table 8 revealed that about 66% of the systematic variation in share price behaviour in the long run has been explained by the independent variables (interest rate, exchange rate, money supply, Real Gross Domestic Product, Inflation rate, crude oil price and political instability). After adjusting for the degree of freedom the model explained about 54% of the total systematic variations in share price behaviour as shown by the adjusted R-squared of 0.5348. On the basis of the overall significant of the model as shown by the F-statistics, it was observed that the overall model is statistically significant since the F-value of 5.311 was significant at 5% level of significance. Thus, all the explanatory variables jointly have a significant impact on Nigeria's share price behaviour in the long run and the existence of the hypothesis of a significant relationship between the dependent variable (SPB) and all the independent variables in the long run is validated. The Durbin-Watson statistics of 1.589 showed that there is absence of autocorrelation in the model.

On the basis of the individual statistical significance as shown by the t-statistics, the result revealed that all the independent variables (that is interest rate, exchange rate, money supply, Gross Domestic Product, Inflation rate, crude oil price and political instability) had no significant impact on Nigeria's share price behaviour in the long run. While interest rate, money supply, Real Gross Domestic Product, Inflation rate and crude oil price were positively related to share price behaviour in the long run, exchange rate and political instability are negatively related to share price behaviour. The dummy variable used to capture political instability shows an expected negative coefficient.

6. DISCUSSION OF FINDINGS

The results of the foregoing empirical analysis are far reaching, inclusive and worth mentioning. The objective of the study is to examine how interest rate, exchange rate, money supply, Real Gross Domestic Product, inflation rate, crude oil price and political instability influence share price behaviour either in the short run or in the long run.

Firstly, the dynamic approach to empirical analysis shows that interest rate is negatively related to share price behaviour in the short run and positively related to share price behaviour in the long run. The negative relationship between interest rate and share price behaviour implies that low interest rate makes shares more attractive because of low cost of credit as well as low opportunity cost foregone by holding bank deposits. Hence, depositors may use their deposits to buy stock on the one hand and on the other hand, people can borrow at the low interest rates from banks and financial institution to make investment in share market. The positive relationship implies that high interest rates would reduce the present value of cash flows, which would reduce the attractiveness of investment, hence, shrinks the value of stock returns. The result is consistent with the findings of Malaolu *et. al* (2013) and Inyiama and Nwoha (2014), Shrestha and Subedi (2014)

Secondly, exchange rate is negatively related to share price behaviour in both the short run and long run. The negative relationship could be attributed to the instability in the foreign exchange market which can lead to crisis of confidence that could cause capital flight, or a large-scale withdrawal of short-term credit facilities. If there is high exchange rate it would encourage round tripping and discourage stock market investment. It will cause operating cost upward movement and lower corporate profit in the real sector: The higher the operating cost, the lower the profit. When the value of the currency is dropping, the incentive to invest by foreign investors in the domestic economy is lost. This would have a negative effect on the stock market and share prices. The result is consistent with the findings of Malaolu *et al.* (2013) and Inyiama and Nwoha (2014).

Thirdly, money supply is positively and significantly related to share price behaviour in the short run and also positive but statistically insignificant in the long run. The positive sign of the money supply in both the short run and the long run variable meets our economic a priori expectation. It shows how frequent changes in the variable unleash deviations on the steady growth rate. Growth in money supply leads to

greater demand for shares as result of portfolio substitution with ample liquidity. Given the limited supply of shares, this exerts upward pressure on share prices. Moreover, the significant short run effect of money supply and share price behaviour show that when there is an increase in money supply, investor will have more money, increase liquidity on cash for buying securities, and thus market prices will increase. Thus, share prices are directly proportional to money supply. This result is consistent with the findings of Rahman *et al.* (2009), Osamwonyi and Evbayiro-Osagie (2012), and Shrestha and Subedi (2014).

Fourthly, real gross domestic product is positively and significantly related to share price behaviour in the short run while it is positively and statistically insignificant to share price behaviour in the long run. An increase in economic activity causes stock market returns to increase. This means that an upward movement in GDP could raise share prices due to the potential for higher profits arising from a healthy business climate. However, when the GDP is on the downward trend, there is likelihood of stock prices dropping. The result is consistent with the findings of Rahman *et al.* (2009), Osamwonyi and Evbayiro-Osagie (2012).

Inflation rate is negatively related to share price behaviour in the short run but positively related to share price behaviour in the long run. This explanation for this relationship is that increasing inflation in the economy pushes the prices of share and thus market index upward, especially when returns to stock are expected to rise. A rise in the rate of inflation increases the nominal risk free rate and raises the discount rate. Cash flow does not rise at the same rate as inflation, and the rise in discount rate leads to lower shares prices. The result is consistent with the findings of Al-Mutari and Al-Omar (2008) and Malaolu *et. al* (2013). On the other hand, our findings of a positive long run relationship between inflation rate and share price behaviour implies that higher inflation induces investors to invest in equity as a hedge against inflation, thereby pushing up share prices. The finding is consistent with the studies of Ratanapakorn and Sharma (2007), Inyiama and Nwoha (2014) and Shrestha and Subedi (2014).

Crude oil price is positively related to share price behaviour both in the short run and in the long run. This relationship may be due to the fact that companies in energy, industrial and material sectors depend on crude oil which drive their production processes and hence they react to increase in crude oil price. Although cost pressure rises due to higher oil prices, their profit margins may even be enhanced due to global economic boom. The result is consistent the findings of Maghyereh (2004), Adaramola (2012) and Aigbovo and Izekor (2015).

Lastly, political instability is negatively related to share price behaviour in both the short run and the long run. The negative relationship conforms to a priori expectation in the sense that political and civil crisis can discourage potential investors from investing their liquid fund as a result of perceived danger of insecurity to their investment. This no doubt would lead to a downward pressure in the demand for stock which will be accompanied by fall in price. The result is consistent with Malaolu *et. al* (2013) and Asterion and Sarantidis (2016).

7. POLICY IMPLICATION

A number of policy implications can be drawn from this study. First, share price behaviour has been quite responsive to changes in the selected variables. Hence, predicting share price via changes in these variables becomes possible and this aid economic forecast, planning and growth. Second, share investors seem to watch the political development closely. Hence, a positive political development with stability can promote share market further which can play a vital role for financial intermediation and resource mobilization through capital market.

8. CONCLUSION AND RECOMMENDATIONS

The study examines the relationship between selected variables (interest rate, exchange rate, money supply, real domestic product, inflation rate, crude oil price and political instability and) share price behaviour in Nigeria. Since share price tends to be highly sensitive and volatile, we examine what determines share price behaviour using annually data culled from 1985-2016.The Johansen co-integration test affirmed that long run equilibrium exist between share price behaviour and the variables used. Error correction model and multivariate ordinary least square with an AR (1) error fitted to the data were employed in estimating the specified models. The study revealed that crude oil price, money supply and real domestic product have significant impact on share price behaviour in the short run while all the selected variables (interest rate, exchange rate, money supply, real domestic product, inflation rate, crude oil price and political instability) have no significant impact on share price behaviour in the long run. The study also reveals a negative relationship between interest rate, exchange rate, inflation rate and political instability and share price behaviour in the short run while in the long run, all the variables are positively related to share price behaviour except exchange rate and political instability which had negative relationships.

Based on the findings of this study, it is therefore recommended that policies to tame domestic inflationary pressures should be vigorously pursued in a bid to counter its negative influences on share price behaviour. Secondly, better and realistic exchange rate policies should be adopted to enhance the performance share in Nigeria. Thirdly, the economy should be diversified from its mono-cultural dependence on crude oil to other sector. Finally, share investors seem to watch the political development closely. Hence, a positive political development with stability can promote share market further which can play a vital role for financial intermediation and resource mobilization through capital market.

REFERENCES:

[1]. **Abosede, A.J.; Oseni, J.E.** (2011) *Theoretical analysis of firm and market-specific proxies of information asymmetry on equity prices in the stock markets*. Australian Journal of Business and Management Research, 1(2), pp.1-13

[2]. **Adam, A.M.; Tweneboah, G.** (2008) *Macroeconomic factors and stock market movement: Evidence from Ghana.* MPRA Paper No. 112556, University Library of Munich, Germany

[3]. **Adaramola, A.O.** (2012) *Oil price shocks and stock market behaviour: The Nigerian experience.* Journal of Economics, 2(1), pp.19-24

[4]. **Ahmed M.K.; Rajaguru, G.** (2010) *The impact of political events on financial market volatility: Evidence using a Markov Switching process.* Working Paper Series; No. 43

[5]. **Aigbovo, O.; Izekor, A.O.** (2015) *The impact of macroeconomics variables on stock market index in Nigeria.* African Journal of Management Sciences, 1(1), pp.18-40

[6]. **AL-Mutairi, A.; AL-Omar, H.** (2008) *Macroeconomics determinants of the behaviour of Kuwait Stock Exchange.* Studies in Business and Economics (SBE), 13(1), pp.39-50

[7]. **Asaolu, T.O.; IIo, B.M.** (2012) *The Nigerian Stock Market and oil price: A cointegration analysis.* Arabian Journal of Business and Management Review, 1(5), pp.28-36

[8]. **Ashfaque, H.K.; Nasir, M.K.** (1997) *Foreign direct investment in pakistan: policies and trends.* The Pakistan Development Review, 36(4), pp. 959-985

[9]. **Asterion, D.; Sarantidis, A.** (2016) *Political instability and stock market returns: Evidence from OECD Countries.* Economics and Business Letters, 3(4), pp.113-124

[10]. **Engle, R.F.; Granger, C.W.J.** (1987) *Cointegration and error correction representation, estimation and testing.* Econometrics, 55(1) pp.231-276

[11]. **Franke, G.** (1984). *On tests of the arbitrage pricing theory.* Operations-Research-Spectrum, 6(2)*,* pp. 109-117

[12]. **Gatua, F.K.** (2013) *Analysis of share prices determinants at Nairobi Securities Exchange*, MBA Thesis, University of Nairobi, Kenya.

[13]. **Inyiama, O.I.; Nwoha, C.** (2014) *Macroeconomic variables and share price movements in Nigeria Brewery Industry: Evidence from Nigerian Breweries Plc*. European Journal of Accounting, Auditing and Finance Research, 2(5), pp.19-31

[14]. **Isenmila, P.A.; Erah, D.O.** (2012) *Share prices and macroeconomic factors: A test of the arbitrage pricing theory (APT) in the Nigerian Stock Exchange*. European Journal of Business and Management, 4(15), pp.1-12

[15]. **Kilian, L.; Pack, C.** (2007). The *impact of oil price shocks on the U.S. stock market.* Journal of Business Management, 4(2), pp.112-120

[16]. **Lee, C.M.C.** (2001) *Market efficiency and accounting research: A discussion of capital market research in accounting.* Journal of Accounting and Economics, 1(3), pp.31-45

[17]. **Maghyereh, A.** (2004) *Oil price shocks and emerging stock markets: A generalized VAR approach.* International Journal of Applied Econometrics and Quantitative Studies, 1(2), pp. 27-40

[18]. **Malaolu, V.A.; Ogbuabor, J.E.; Orji, A.** (2013) *Determinants of stock price movement in Nigeria: Evidence from monetary variables.* Journal of Economics and Sustainable Development, 4(14), pp. 61-68

[19]. **Maysami, R.C.; Koh, T.S.** (2000) *A vector error correction model of the Singapore Stock Market.* International Review of Economics and Finance, 9(2), pp.79-96

[20]. **Meristem Research** (2008) *Stock market sentiments*. Meristem Securities Limited, 124 Norman Williams, Ikoyi South/West Lagos, August 15.

[21]. **Obodos, E.** (2005) *Predicting stock market prices in Nigeria: A preliminary investigation.* Unpublished MBA Thesis, University of Benin, Benin City, Nigeria.

[22]. **Ogiri, H.I.; Amadi, S.N.; Uddin, M.M.; Dubon, R.** (2013) *Oil price and stock market performance in Nigeria: An empirical analysis.* American Journal of Social and Management Sciences (AJSMS), 4(1), pp. 20-41

[23]. **Osamwonyi, I.O.; Evbayiro-Osagie, E.I.** (2012) *The relationship between macroeconomic variables and stock market index in Nigeria.* Journal of Economics, 3(1), pp.55-63

[24]. **Rahman, A.A.; Sidek, N.Z.M.; Tafri, F.H.** (2009) *Macroeconomic determinants of Malaysian Stock Market.* African Journal of Business Management, 3(3) pp.95-106

[25]. **Ratanapakorn, O.; Sharma, S.C.** (2007) *Dynamics analysis between the US stock returns and macroeconomics variables.* Applied Financial Economics, 17(4), pp.369-377

[26]. **Roll, R.; Ross, S.A.** (1980) *An empirical investigation of the arbitrage pricing theory.* The Journal of Finance, 35(5), pp.1073-1103

[27]. **Sabetfar, P.; Cheng, F. F.; Mohamad, S.; Noordin, B. A.** (2011) *Test of arbitrage pricing theory on the Tehran Stock Exchange: The case of a Shariah-compliant close economy.* International Journal of Economics and Finance, 3(3), pp.109-118

[28]. **Sadorsky, P.** (2008) *Assessing the impact of oil prices on firms of different sizes*: *It's tough being in the middle*

[29]. **Shrestha, P.K.; Subedi, B.R.** (2014) *Determinants of stock market performance in Nepal.* NRB working paper issues, NRB-WP-24

[30]. **Udegbunam, R.I.; Eriki, P.O.** (2001) *Inflation and stock price behaviour: Evidence from Nigerian Stock Market*. Journal of Financial Management and Analysis, 14(1), pp.1-10

[31]. **Wiredu, S.; Suleman, N.; Adjartey, B.M.** (2013) *Determinants of stock prices in Ghana.* Current Research Journal of Economic Theory, 5(4), pp.66-70