FOREIGN EXCHANGE RATE DYNAMICS AND THE NIGERIAN CAPITAL MARKET PERFORMANCE

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Abstract.
A stable foreign exchange and a well-regulated fiscal policy are crucial to a healthy and viable capital market performance of any nation. This study seeks to investigate the effects of foreign exchange rates dynamics on the Nigerian capital market performance. Secondary data sourced from the Nigerian stock exchange and the Central Bank of Nigeria Annual reports spanning from 1986 to 2015. The data obtained were subjected to both normality and co-integration tests. The study employed Vector Error Correction Model to investigate the impact of foreign exchange on the Nigerian capital market performance using market capitalization as the dependent variable and the official foreign exchange rate as the independent variable. Other control variables such as interest rate, inflation rate and the gross domestic product were introduced to have holistic assessment of the market performance. The result reveals that foreign exchange, interest rate, inflation rate and GDP have negative significant impact on the Nigerian capital market at 5% and 1% respectively. Thus, the study concluded that foreign exchange dynamics have significant negative effects on the Nigerian capital market performance. Based on the findings, the study recommends that the Nigerian capital market should be made viable and attractive to all investors particularly the local investors so as to instill confidence in the market by channeling long-term fund to improve viable sectors of the economy such as agriculture. Also, the CBN should put in place appropriate monetary policies that will stabilize the Naira so as to encourage foreign investors’ patronage that will enhance the Nigerian market capitalization.

Keywords: Market Capitalization, exchange rate dynamics, interest rate, inflation rate and GDP

JEL Classification: L10, E40, E31, O40

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1. **INTRODUCTION**

The performance of any economy depends largely on the efficient performance of its capital markets. Thus, an efficient capital market is the backbone of a country’s financial management (Adeoye, 2015); the capital market is an institution that is crucial to the socio and economic growth of a nation through the intermediation function by channeling long term fund from the surplus unit to the deficit unit thus stimulating capital formation and socio economic development. The capital market is an institution that strikes a balance by mobilizing fund from the surplus unit thereby ensuring efficient resource allocation to the productive sector of the economy in order to enhance and promote economic growth. Therefore, lack of adequate financial resources in an economy could affect every economic segment; the government, foreign investors, local investors, private firms and household sectors which may invariably impact negatively on the political and social stability of any country (Kareem, Sanni, Raheem, and Bakare, 2013).

An economy with a poor functional capital market will be less attractive to foreign investors due to illiquidity and high transaction cost, consequently direct investment is adversely affected (Geert and Campbell, 1997). Thus, the capital market provides liquidity, contributes to capital formation and investment, risk reduction by offering opportunities for portfolio diversification. As such, a country will not only be less attractive to foreign investors but also impose major economic penalties on domestic firms. On the other hand, a country will attain financial stability and monetary policy effectiveness through a stable foreign exchange rate system and continuous growth in her capital market.

Foreign exchange rate is the price of the domestic currency in terms of other currency usually determined in principle by the interplay of supply and demand in a free market environment (Onyeizugbe and Umeagugesi, 2013). Exchange rate, according to Mohammed and victor, (2015) is a strong economic indicator for assessing the overall performance of any economy; it is also one of the major macro-economic variables that reflect the strength or weakness of an economy. Therefore, a persistently strong currency is a reflection of a strong economy while conversely; a persistently weak currency is a reflection of a weak and vulnerable economy.

The Nigerian capital market has been recording a declining performance since 2008 global financial crisis as indicated by the market fundamentals. Market capitalization dropped by 51% from USD 82.17 billion in 2007 to USD 33.99 billion in 2009. Also Facts from the Nigerian capital market outlook for 2014 revealed that, bearish sentiments prevailed in most commodities based economies including the Nigerian market, as market capitalization retreated by 13.15% (24.95% in $-terms) from N13.23 trillion ($82.80 billion) in 2013 to N11.49 trillion ($61.72 billion) in 2014 and the NSE All Share Index (ASI) slid by 16.14%. The capital market, declining performance for most of the years was perhaps due to foreign investors steadily retreating from the market, due to currency risk arising from the devaluation of naira by the

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Central Bank of Nigeria and the recovery of developed economies (NSE, 2014). The uncertainty in the economy owing to instability of the foreign exchange rate in the country as a result of the fall in crude oil prices and related pressure on the naira; the impact of CBN monetary policy change in a bid to improve the declining foreign reserves, has led investors to increasingly adopt a flight to quality strategy resulting to persistence decline in the capital market performance.

As such, fluctuation in the exchange rate have real economic costs that affect price stability, firm’s profitability and the general economic stability which has implications for the financial system of a country especially the capital market. Hence, this study seeks to investigate the effect of foreign exchange dynamics on the Nigerian capital market performance.

2. LITERATURE REVIEW

Olugbenga (2012) examined the short run and long run effects of exchange rate and the Nigerian stock market. Study found positive significant impact of stock market to exchange rate in the short run, while negative significant impact of stock market performance was found in the long run. Also, Owolabi and Adegbite (2013) concluded on weak impact of inflation on the Nigerian capital market performance. The study revealed negative significant relationship between inflation and market capitalization in the short run, while positive significant relationship in the long run. In addition, Usman and Adejare (2014) found a positive and significant relationship between exchange rate and market capitalization, however, the study found negative relationship between interest rate and market capitalization in Nigeria.

Mbulawa (2015) examined the connection between stock market performance, exchange rates and interest rates using the VECM model using monthly data. The study found that, interest rate had both negative and positive impact on stock market performance in the pre-hyperinflationary phase. However, exchange rate and deposit rates had positive impact on stock market performance during hyperinflationary period. Kal, Arslaner and Arslaner (2015) examined the dynamic relationship between stock, bond and foreign exchange rate of four major countries using Markov- Switching Vector Autoregressive (MS-VAR). The study asserted that, the relationship among exchange rates, stock market and bond depend on the overvaluation or undervaluation of the currencies. A negative relationship was also observed in the dynamic behavior of exchange rate volatility and the Indian stock market in the study of Najaf and Najaf (2016) and also found unidirectional causality between exchange rate and stock market.

Khalid and Khan (2017) empirically analyzed the relationship between stock market return, exchange rate, interest rate and inflation rate in Pakistan using annual data. The study used ARDL model to examine the long run co-integrating relationship between stock market return, exchange rate, interest rate and inflation rate. Findings revealed that long-run correlation between interest rate, exchange rate, inflation rate and the KSE- 100 index. The results also showed that exchange rate was insignificant but impacted positively on PSX index while inflation rate was positively significant to stock market return. However, interest rates have a negative influence on the PSX index in the long run.

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Despite the extant literatures in this field of study, studies are yet to reach a concrete stand on the dynamic impact of foreign exchange rate on the capital market performance in Nigeria. Thus, this study seeks to fill a gap in literature by assessing the effects of foreign exchange rate dynamics on the Nigerian capital market performance by examining the relationship between foreign exchange and capital market performance.

2.1 Theoretical Review

This study is anchored on the: (i) Flow Oriented Models postulated by (Dornbusch and Fisher, 1980 and Gavin, 1989) and (ii) stock-oriented model by (Branson and Frankel, 1983). The flow-oriented model suggests that, movements in exchange rates affect the international competitiveness of firms and trade balance which, in turn, affects real income and output and, eventually, the stock prices. Stock prices react to exchange rate changes and affect aggregate demand through wealth and liquidity effects, thereby influencing demand for money and the exchange rate (Gavin, 1989). Hence, the theory suggests that the dynamism in exchange rate may affect stock prices which, in turn, affect domestic and foreign investor’s investment decisions. However, the stock-oriented economic theory of exchange rate suggests that causality runs from stock prices to exchange rate changes as expectations of financial price movements affect the dynamics of exchange rates. The crux of the theory is that a rise in domestic stock prices would attract capital flows, which increase the demand for domestic currency and cause exchange rate to appreciate.

In the flow-oriented model, currency movements influence firms’ earnings and hence causes change in stock prices which in turn have an impact on the overall market performance while the stock-oriented models suggest that movements in stock prices Granger-cause movements in the exchange rate via capital account transactions. Hence, this study also tests the flow-oriented model which have not received much attention in literature particularly in Nigeria, to ascertain whether the performance of a capital market is influenced by the dynamic nature of the exchange rate.

3. METHODOLOGY

This section deals with the procedures of carrying out the study, the model specification, the research methodology as well as the methods used in analyzing the study.

3.1 Model Specification

\[ Y = \beta_0 + \beta_1 X_1 + \mu. \]  
(1)

Where Y is the dependent variable which market capitalization to proxy market performance and \(X_1\) is the independent variable to proxy foreign exchange rate. However, in order to have a holistic assessment on the capital market performance, other control variables (such as interest

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rate, inflation rate and the gross domestic product) that determine the capital market performance were included. And the model is extended as:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu. \]  

(2)

Where \( X_2 \) to \( X_4 \) are control variables. Thus, the econometrics form of the equation is given as:

\[ \text{MCAP} = \beta_0 + \beta_1 \text{FEX} + \beta_2 \text{INT} + \beta_3 \text{INF} + \beta_4 \text{GDP} + \mu \]  

(3)

Where:

- \( \text{MCAP} \) is Market capitalization
- \( \text{FEX} \) is Foreign exchange rate
- \( \text{INT} \) is the Interest Rate
- \( \text{GDP} \) is the gross domestic product and
- \( \beta_0 \) is the intercept of the relationship in the model/constant
- \( \beta_1 - \beta_4 \) are coefficients of each of the independent variables
- \( \mu \) is the error term.

The aprior expectation of the coefficient of the model is such that: \( \beta_1, \beta_2, \beta_3 < 0 \), and \( \beta_4 > 0 \). The study expects a negative relationship between market capitalization and the foreign exchange rate, interest rate and inflation rate. However, a positive relationship is expected between market capitalization and the gross domestic product.

3.2 Analytical Review Techniques

This study uses secondary data sourced from Central Bank of Nigeria annual reports and the Nigerian stock Exchange spanning from 1986 to 2015, the year 1986 which represents the year when a major shift from the fixed exchange rate to flexible exchange rate system occur in Nigeria, it also represents the year in which the structural adjustment programme was introduced which was aimed at ensuring a stable exchange rate system in the country. Unit root test using Augmented Dickey- Fuller was conducted to ensure that the regression results are not spurious, johansen co-integration was also conducted to determine the long-run relationship between the variables and also to solve the problem of non-stationarity of data. Vector Error Correction Model (VECM) was used to test for both the short run and long run dynamics of the variables. The VECM according to Stavarek, (2004) is a model that restricts the long-run behaviour of the variables in the system to converge to their long-run relationship while allowing a wide range of short-run dynamics.

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4. FINDINGS AND DISCUSSION

4.1 Unit Root Test

Unit root test was conducted using Augmented dickey fuller to test for the stationarity of data.

Table 4.1: ADF Test Result

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Value at Level</th>
<th>Prob.Value</th>
<th>ADF Cal. Value at first difference</th>
<th>Order of Integration</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMCAP</td>
<td>-1.3691</td>
<td>-2.621007</td>
<td>-8.1559</td>
<td>-3.6793</td>
<td>1(1)</td>
</tr>
<tr>
<td>LGDP</td>
<td>-1.3209</td>
<td>-2.621007</td>
<td>-5.3817</td>
<td>-3.6793</td>
<td>1(1)</td>
</tr>
<tr>
<td>INT</td>
<td>-0.8687</td>
<td>-2.621007</td>
<td>-5.5322</td>
<td>-3.6793</td>
<td>1(1)</td>
</tr>
<tr>
<td>INF</td>
<td>-2.3437</td>
<td>-2.621007</td>
<td>-3.4592</td>
<td>-3.7240</td>
<td>1(1)</td>
</tr>
<tr>
<td>EXR</td>
<td>0.0063</td>
<td>-2.621007</td>
<td>-4.9606</td>
<td>-3.6793</td>
<td>1(1)</td>
</tr>
</tbody>
</table>

Source: Author’s Computation: (2019)

Table 4.1 reveals that all the variables employed for this study were stationary at first difference 1(1) since their respective Augmented Dickey-Fuller test (ADF) statistics value is greater than Mackinnon critical value at 5% and at absolute term.

4.2. The Correlation Matrix

Table 4.2 presents the correlation matrix which seeks to establish relationships that exist between the variables.

Table 4.2: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>LMCAP</th>
<th>EXR</th>
<th>LGDP</th>
<th>INT</th>
<th>INF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMCAP</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXR</td>
<td>-0.9077</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LGDP</td>
<td>-0.9659</td>
<td>0.9265</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>-0.8205</td>
<td>-0.8544</td>
<td>-0.8333</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>INF</td>
<td>-0.2658</td>
<td>-0.4312</td>
<td>-0.3062</td>
<td>0.5957</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Source: Author’s Computation: (2019).

The result of the correlation matrix shows a negative relationship between market capitalization and exchange rate along-side other control variables used in the study (interest rate, inflation rate and gross domestic product). This implies market capitalization decreases as the value of naira depreciates every year against the US dollar, also, increase in interest rate and inflation rate, also reflects on declining performance of the market capitalization.

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51
4.3. Johansen Co-Integration Test Result

Table 4.3: Johansen Co-integration Test Result

<table>
<thead>
<tr>
<th>Hypothesized</th>
<th>Trace</th>
<th>0.05</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of CE(s)</td>
<td>Eigenvalue</td>
<td>Statistic</td>
<td>Critical Value</td>
</tr>
<tr>
<td>None *</td>
<td>0.8275</td>
<td>100.1432</td>
<td>69.8188</td>
</tr>
<tr>
<td>At most 1 *</td>
<td>0.5360</td>
<td>49.1669</td>
<td>47.8561</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.3613</td>
<td>26.8941</td>
<td>29.7970</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.2981</td>
<td>13.8894</td>
<td>15.4947</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.1173</td>
<td>3.6213</td>
<td>3.8414</td>
</tr>
</tbody>
</table>

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

<table>
<thead>
<tr>
<th>Hypothesized</th>
<th>Max-Eigen</th>
<th>0.05</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of CE(s)</td>
<td>Eigenvalue</td>
<td>Statistic</td>
<td>Critical Value</td>
</tr>
<tr>
<td>None *</td>
<td>0.8275</td>
<td>50.9763</td>
<td>33.8768</td>
</tr>
<tr>
<td>At most 1</td>
<td>0.5360</td>
<td>22.2727</td>
<td>27.5843</td>
</tr>
<tr>
<td>At most 2</td>
<td>0.3613</td>
<td>13.0046</td>
<td>21.1316</td>
</tr>
<tr>
<td>At most 3</td>
<td>0.2981</td>
<td>10.2680</td>
<td>14.2646</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.1173</td>
<td>3.6213</td>
<td>3.8414</td>
</tr>
</tbody>
</table>

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

Source: Author’s Computation (2019).

The result of the Trace test reveals that 2 co-integrating equation exist at the 5% level of significance for the model while Max-eigenvalue shows the existence of 1 co-integrating equation at 5% level of significance which signifies a long run relationship between the independent variables and the dependent variable in the model.

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4.4. Error Correction Model (ECM) Model Estimation Result

After having found long run co-integration between the variables, the study uses Error Correction Model to examine the joint impact of the independent variables (Exchange rate, inflation rate, gross domestic rate and interest rate on the dependent variable (Market capitalization).

Table 4.4: Result of the Error Correction Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D(EXR)</td>
<td>-0.0300</td>
<td>0.0125</td>
<td>-0.9389</td>
<td>0.0371</td>
</tr>
<tr>
<td>D(LGDP)</td>
<td>-0.0583</td>
<td>0.0278</td>
<td>-0.8465</td>
<td>0.0056</td>
</tr>
<tr>
<td>D(INT)</td>
<td>-0.0523</td>
<td>0.0233</td>
<td>-0.8266</td>
<td>0.0166</td>
</tr>
<tr>
<td>D(INF)</td>
<td>-0.0079</td>
<td>0.0027</td>
<td>-0.8746</td>
<td>0.0304</td>
</tr>
<tr>
<td>C</td>
<td>0.1761</td>
<td>0.2095</td>
<td>0.8409</td>
<td>0.4087</td>
</tr>
<tr>
<td>U(-1)</td>
<td>-0.3064</td>
<td>0.1192</td>
<td>-4.5510</td>
<td>0.0001</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.6924</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.6566</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>4.6569</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.0041</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>2.0670</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s Computation: (2019).

The result of the ECM shows that Exchange Rate (EXR), interest rate (INT), Inflation rate (INF) and gross domestic product (GDP) all have negative significant effect on Nigeria market capitalization (MCAP). Exchange rate is significant at 5% level with negative coefficient of -0.0300 which implies that for every 1% change in exchange rate, market capitalization will decrease by 3%. This may perhaps be due to sudden withdrawal of foreign investors from the market as a result of fall in the price of crude oil, this is in line with the study of Olugbenga, (2012) who also find negative significant effect of exchange rate on Nigeria market capitalization.

Also, interest rate was significant at 1% with a negative coefficient of -0.0523 which infers that for every 1% point increase in interest rate, market capitalization will decrease by 5%. This may be ascribed to the liquidity challenges faced in the country as a result of high cost of borrowing. According to Geert & Campbell, (1997) liquidity challenges in an economy have adverse effect on the investment which also affects market performance. This is in conjunction with the study of Usman and Adejare (2014) who found a negative effect of interest rate on market capitalization in Nigeria. Similarly, inflation rate is also significant at 5% level with a negative effect of -0.0079 which implies that for every 1% point increase in inflation rate, market capitalization will decrease by 0.8%. This is in tandem with the study of Owolabi and Adegbite, (2013) who posited that inflation rate often affect income level and investor’s appetite. This

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study found negative significant impact of inflation rate on Nigerian capital market performance. However, the study posited that inflation rate has a weak impact on the performance of the market and this can be supported by the 0.8% negative significant effect of inflation rate on the market capitalization in Nigeria.

Finally, gross domestic product has a negative coefficient of -0.0583 which is significant at 1% and implies that for every 1% decrease in GDP, Nigeria market capitalization will reduce by 5%. According to Granger (1988), a significant coefficient of the error-correction term U(-1) indicates long-run Granger causality running from the explanatory variables to the dependent variable. The coefficient of the Error Correction Model (U(-1)) equals -0.3064 which implies that the model has a self-adjusting mechanism for adjusting the short-run dynamics of the variables with their long run values.

Also, the value of adjusted $R^2$ explains that 65% of the variation in the variable market capitalization is explained by the independent variables used in the model. The value of F-statistics for the model was statistically significant at 1% level of significance, therefore the model used for this study is considered to be fit (Field, 2005). Favorably, the value Durbin Watson (DW) of 2.06 for the model shows an evidence of no serial correlation.

Thus, based on the findings, the study asserts that foreign exchange dynamics has significant but negative effect on the Nigerian capital market performance. The assertion of the study is in tandem with the flow-oriented model postulated by Dornburch and Fisher (1989) which postulates that, movement in exchange rate affects the international competitiveness of firm, real income and output and also the market at large.

5. CONCLUSION AND POLICY RECOMMENDATION

Based on the findings, the study concludes that foreign exchange dynamics has a long-run negative effect on the Nigerian capital market performance, this could be as a result of Nigerian overreliance on oil export as the only major source of foreign exchange earnings in the country, and devaluation of Naira resulting from the recent crunch in the international oil market, which negatively affects foreign reserve of the country. The study also concludes that persistence increase in interest rates, high rate of inflation and a declining gross domestic product are significant but have negative effects on the Nigerian market capitalization. The study recommends that:

i. The Federal government should diversify its resources to other viable sector of the economy like the agricultural sector, manufacturing sector, solid minerals, tourism and also improves on infrastructural development that will attract foreign investors and shift attention away from oil so as to have multiple means of foreign exchange earnings in the country. Thus, through portfolio diversification, a fall in one particular sector will not degenerate into total collapse of the market as a result of foreign exchange fluctuations, instead the performance of other sector will help create a level playing ground for the
Naira to compete with other currencies and hence encourage foreign investors participation in the Nigerian capital market thus enhance better performance.

ii. The Nigerian capital market through their intermediation function of channeling resources to deficit sector of the economy should focus more on raising capital for the development of local industries and also encourage investors to invest in stocks that will improve the development of local firms, so as to instill local investors’ confidence and also translate to better capital market performance.

iii. The Nigerian Security and Exchange Commission in conjunction with the Central Bank of Nigeria should be proactive in making extant laws (for example, the simultaneous withdrawal of foreign investors from the market, calls for the need to review the 100% foreign ownership in the domestic firms, so that the effect of foreign investors withdrawal will not have much effect on the performance of the market) that will enhance the better performance of the market taking into consideration the long run effects of all economic factors that can influence investment decisions of stakeholders in the market.

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