Exchange Rate Volatility, Foreign Private Investment and Performance in Nigeria's Capital Market

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Abstract: Studies abound on exchange rate volatility and foreign investments in Nigeria. However, this study investigated the asymmetric effects of exchange rate volatility and foreign private investment on the Nigeria's capital market performance. Data obtained on capital market performance, foreign private investment, exchange rate volatility, and gross capital formation between 1986 and 2017 were analysed using the non-linear autoregressive distributed lag technique. The results showed that in the long run volatility of exchange rate, foreign private investment, and capital market performance are co-integrated. Besides, the study revealed that exchange rate volatility has asymmetric effects on capital market performance while foreign private investment exerts linear effects on capital market performance in both time horizons.

Keywords: Exchange Rate Volatility, Foreign Investments, Capital Market Performance, Asymmetric Approach.

1. Introduction

The degree of investment in a particular country is largely determined by the availability of investible capital in the country. According to Nwosa and Amassoma (2014), investment capital is mobilized primarily through domestic savings augmented by foreign capital flows in bridging the domestic savings-investment gap in the economy. Given the fact that foreign capital flows augment domestic capital, many developed countries of the world have attained all-round development through a substantial domestic capital and a large share of foreign capital flows. As a result, most developing economies seek foreign investment capital to augment their locally mobilized capital which is usually insufficient in most of these low-income countries.

The flow of foreign capital across many countries has been made possible through foreign private investments (FPI) which comprises direct investments and portfolio investments (Ajayi, Adejayan and Obalade 2017). Foreign direct investment refers to investments by foreign investors in terms of the acquisition of firms and the construction of new production facilities

in the host economy. World Bank (1996) defined foreign direct investment as any investment made with the intention to acquire a long-lasting management interest in a business entity that operates in another country different from that of the investor. Similarly, foreign portfolio investment has been described as an investment flow in terms of financial assets (cash, stock and bonds) among countries of the world for profit maximization purposes (Baghebo and Apere, 2014), nevertheless, it is different from foreign direct investment in that it lacks the elements of lasting interest and control (Kirabaeva and Razin, 2010).

One important factor to be considered in foreign capital flows is the exchange rate (Uwabanmwen and Ajao, 2012). Exchange rate plays a crucial role in transactions that involve the movement of funds, however, fluctuations and shocks that accompany foreign capital movements result in exchange rate instability (Caporale, Thouraya and Christophe, 2009) which consequently influences investment decisions of both existing and potential foreign investors on the volume of capital to be invested in the host country. Thus, exchange rate movements significantly dictate the direction and magnitude of capital inflow to all countries of the world. In Nigeria, the exchange rate regime has undergone radical changes given the different systems of exchange rate operations since independence. Nigeria operated a fixed administration of exchange rate system since 1960 and experienced a stable exchange rate until 1986 when the structural adjustment program (SAP) was introduced. From the time, the outlook of exchange rate movements has been governed by the flexible exchange rate system, yet, exchange rate movement continues to exhibit instability (Osinubi and Lloyd, 2009).

Moreover, the capital market is one of the most effective channels through which investments are made. In Nigeria, the incorporation of Lagos stock exchange (LSE) in 1961 which was later changed to Nigeria Stock Exchange (NSE) in 1977 and the establishment of Securities and Exchange Commission (SEC) in 1980 are medium through which both medium and long-term investments were made in Nigeria (Esosa, 2011). However, after the world financial crisis of 2008 in which Nigeria capital market experienced huge financial losses with the rest of the world, the total annual market capitalization of the NSE increased from ₦9.918 trillion in 2010 to ₦19.077 trillion in 2013 but remained at ₦21.128 trillion in 2017 (CBN 2017).

Controversy abounds in the literature on the effects of foreign private investment on the performance of capital market. Studies by Eniekezimeme, (2013); Baghebo and Apere, (2014); Ajayi, Adejayan and Obalade, (2017) indicated that foreign private investment has positive effects on capital market performance while Aregbesola, (2016); Odo, Anoke, Nwachukwu

and Agbi, (2016); Adebisi and Arikpo (2017) revealed that foreign private investment negatively affects capital market performance. Other studies by Adaramola (2012), Okwuchukwu (2015), Abimbola and Olusegun (2017) Fapetu, Adeyeye, Seyingbo and Owoeye (2017) revealed that exchange rate volatility positively influence capital market performance, although, Zubair and Aladejare (2017) showed a weak effect of exchange rate volatility on capital market performance.

Given the controversies on the exchange rate volatility and foreign private investment effects on capital market performance, there is a need to examine the effects of exchange rate volatility on capital market performance in Nigeria. This is because the knowledge of how exchange rate volatility and foreign private investment affect capital market performance is crucial for policy objective purposes. Campa and Goldberg (1999) argued that exchange rate uncertainty affects investment behavior and firm profitability, hence, this study examined the effects of depreciation and appreciation of exchange rate as well as the effects of inflow and outflow of foreign private investment on capital market performance in Nigeria.

2. Literature Review

2.1. Arbitrage Pricing Theory

Arbitrage pricing theory as propounded by Ross (1976) provides an alternative approach to capital asset pricing model (CAPM) in determining the relationship between capital investment returns and macro-economic variables. This theory postulates that capital asset returns are associated with business risks which make it difficult to achieve arbitrage profits (Huberman, 1982). According to the theory, stock returns depend on both anticipated and unanticipated risks. Investors will incorporate the anticipated risks into the expected returns of their investments; however, stock returns are largely influenced by unanticipated risks especially the systematic (market-related) risks since the unsystematic risks can be avoided through diversification of investments (Roll and Ross, 1995).

Risks occur as a result of changes in certain market fundamentals like exchange rate and interest rate (Mlambo, Maradza and Sibanda, 2013). Arbitrage pricing theory postulates that a direct relationship exists between the interest rate and capital flows but an inverse relationship has been observed between the volatility of exchange rate and capital flows and this is expected to result in a deleterious effect on capital market performance. Thus, this study adopts the arbitrage pricing model as its theoretical framework to examine how exchange rate volatility and foreign private investment affect capital market performance in Nigeria.

2.2. Empirical Review

Eniekezimeme (2013) studied the effect of foreign portfolio investment on the growth of capital market in Nigeria between 1980 and 2010. The study analysed the channel through which portfolio investment affect market growth. In examining the relationship between portfolio investment and capital market growth, Engle-Granger cointegration and ECM-error correction techniques were used. The results of the study revealed that a long-run relationship exists between the variables and that foreign portfolio investment has a positive impact on capital market growth in Nigeria.

Ajayi, Adejayan and Obalade (2017) investigated the impact of foreign private investment on the development of capital market in Nigeria. Johansen cointegration and ECM-error correction techniques were employed to examine the relationship that exist between foreign private investment and the development of capital market in both time horizons. The study showed that there exists a long-run relationship between foreign private investment and capital market development and also concluded that foreign private investment had a positive and significant impact on capital market development in Nigeria.

Baghebo and Apere (2014) studied the relationship among foreign portfolio investment, market capitalisation, and Nigeria's economic growth between 1986 and 2011. The techniques of Johansen's cointegration test and ECM-error correction model were used in determining the long-run relationship and the impact of foreign portfolio investment on economic growth. The results showed that the long-run relationship exists among portfolio investment, market capitalisation, trade openness, and gross domestic products. The study also revealed that foreign portfolio investment and market capitalization have positive long-run effects on economic growth in Nigeria.

The study by Odo, Anoke, Nwachukwu and Agbi (2016) examined the effect of foreign direct investment on the growth of stock market in Nigeria from 1984 to 2015. The study used a cointegration and VECM-vector error correction techniques to estimate the relationship between FDI and the growth of stock market. The study revealed that long-run relationship exists between FDI and stock market growth but FDI exerts a negative impact on stock market growth both in the long and short run.

Aregbesola (2016) examined the relationship between capital market development and foreign direct investment inflow to Africa. Using a VECM-vector error correction model to analyse the causal relationship between FDI and six largest and oldest capital markets in Africa, the study revealed that the capital market in Africa could not attract a large share of FDI flow.

Thus, the study concluded that a strong capital market will help attract FDI flows to Africa in both time horizons.

Adebisi and Arikpo (2017) surveyed the financial market performance and foreign portfolio investment nexus between 1984 and 2015 in Nigeria. Using the ARDL- autoregressive distributed lag model to examine the long and short-run relationship between foreign portfolio investment and financial market performance, the study showed that long-run relationship does no exist between financial market performance and foreign portfolio investment. Also, the study revealed no relationship between them in the short run.

Zubair and Aladejare (2017) investigated the volatility of naira on stock market performance in Nigeria. Generalised autoregressive conditional heteroscedasticity technique was used and the results of the analysis showed that there exists a weak relationship between exchange rate volatility and stock market capitalisation for the period under study.

Abimbola and Olusegun (2017) studied exchange rate volatility effects on stock market performance and total output in Nigeria. Vector autoregressive (VAR) and Granger causality models were employed to determine the direction of causation among the variables. It was found that a positive relationship exists among exchange rate volatility, the performance of stock market, and total output.

Adaramola (2012) appraised the effects of exchange rate volatility on stock market behaviour in Nigeria. Using the Johansen cointegration approach and error correction model to examine the effects of exchange rate volatility on stock market performances, the results indicated the existence of long-run relationships as well as positive significant effects of exchange rate volatility on stock market performance in the short run.

Okwuchukwu (2015) observed the relationship among exchange rate volatility, performance of stock market, and FDI in Nigeria. Cointegration test and an ECM-error correction models were employed to investigate the long-run relationship as well as the impact of exchange rate volatility and the performance of stock market on inward FDI. The results of the study revealed the existence of a long-run relationship among the variable of interest.

3. Methodology

As its theoretical framework, this study adopts the arbitrage pricing model (APT) to examine the effect of investment capital uncertainty on the performance of the capital market. Mlambo *et al.* (2013) opined that risks occur as a result of changes in certain market fundamentals like exchange rate and interest rate. However, the arbitrage pricing theory (APT)

postulates that a direct relationship exists between the interest rate and capital flows but exchange rate volatility and capital flows are negatively related which subsequently affect capital market performance.

Following the arbitrage pricing theory, the relationship among exchange rate volatility, foreign private investment, and capital market performance is examined. According to Ajayi, Adejayan, Obalade (2017), foreign private investments (comprising of direct investment and portfolio investment) is expected to give positive effects on capital market performance. Conversely, exchange rate volatility is expected to produce a negative effect on capital market performance (Ross, 1976). Thus, the functional relationship between the performance of the capital market (CAP) and foreign private investments (FPI) is expressed as:

$$CAP = f(FPI) \tag{i}$$

Furthermore, exchange rate volatility (EXV) being a measure of domestic currency with respect to another currency shows how the strength of a nation's currency affects foreign private investment (FPI) inflows. According to Fapetu *et al.* (2017), the inflow and outflow of financial assets (bonds and stock) in an economy is affected by the investors' expectation of the local currency movement, hence, the depreciation (appreciation) of the local currency against the foreign currency will encourage capital outflow (inflow) which subsequently reduces (increases) the value of financial assets in the country and affect capital market performance. The studies of Omorokunwa and Ikponmwosa (2014), Fapetu *et al.,* (2017) and Mbanasor and Obioma (2017) identified foreign private investment (FPI) as a function of exchange rate volatility (EXV).

$$FPI = f(EXV) \tag{ii}$$

Therefore, equation (3.1) can be restated by incorporating exchange rate volatility to formulate a model that explains the relationship between foreign private investment and capital market performance. Other exogenous variables that affect capital market performance is the gross capital formation (GCF). Thus, the linear relationship among exchange rate volatility, foreign private investment, and capital market performance is expressed as;

$$CAP_t = \alpha_0 + \alpha_1 FPI_t + \alpha_2 EXV_t + \alpha_3 GCF \tag{iii}$$

The natural logarithm of the FPI, and GCF variables are taken except for the EXV variable that is in its rates values. CAP represents the growth rate of market capitalisation. Thus, the stochastic form of equation (iii) is expressed as;

$$CAP_t = \alpha_0 + \alpha_1 FPI_t + \alpha_2 EXV_t + \alpha_3 GCF + \varepsilon_t \tag{iv}$$

ε_t represents error term.

In examining both the short and long-run effects of foreign private investment and exchange rate volatility on capital market performance, this study employed the autoregressive distributed lag (ARDL) model as specified in equation (v) below;

$$\Delta CAP_t = \Phi_0 + \sum_{i=1}^{q} \psi_I \Delta CAP_{t-1} + \sum_{i=0}^{q} \varpi_i \Delta EXV_t + \sum_{i=0}^{q} \nu_i \Delta \ln FPI_t + \sum_{i=0}^{q} \sigma_i \Delta \ln GCF_t +$$
$$\Phi_1 CAP_{t-1} + \Phi_2 EXV_{t-1} + \Phi_3 \ln FPI_{t-1} + \Phi_4 \ln GCF_{t-1} + \varepsilon_t$$

(v)

Equation (v) evaluates long-run relationships and short-run dynamics among the variables included in the ARDL model assuming that a linear relationship exists among exchange rate volatility, foreign private investment, and capital market performance. However, linearity in a relationship hinders policy intervention (Demir, 2015), thus, the propositions of nonlinear ARDL model propounded by Shin, Yu and Greenwood-Nimmo (2014) enhance policy-making by modeling the existence of asymmetric relationship among variables in one single model. Following the study by Demir (2015), this study seeks to examine the nonlinear relationship among exchange rate volatility, foreign private investment, and capital market performance. The nonlinear model is expressed as;

$$\Delta CAP_t = \Phi_0 + \sum_{i=1}^{q} \psi_I \Delta CAP_{t-1} + \sum_{i=0}^{q} \nu_i \Delta \ln FPI_t + \sum_{i=0}^{q} (\theta_i^+ \Delta FPI_{t-i}^+ + \theta_i^- \Delta FPI_{t-i}^-) + \sum_{i=0}^{q} \lambda_i \Delta EXV_t + \sum_{i=0}^{q} (\vartheta_i^+ \Delta EXV_{t-1}^+ + \vartheta_i^- \Delta EXV_{t-1}^-) +$$
$$\Phi_1 CAP_{t-1} + \Phi_2 \ln FPI_{t-1} + \Phi_3 FPI_{t-1}^+ + \Phi_4 FPI_{t-1}^- + \Phi_5 EXV_{t-1} + \Phi_6 EXV_{t-1}^+ + \Phi_7 EXV_{t-1}^- + \varepsilon_t$$

(vi)

Where CAP_t is the dependent variable, FPI_{t-i}^+, FPI_{t-i}^- and EXV_{t-i}^+, EXV_{t-i}^+ are the partial sum of positive and negative changes in identifying asymmetric effects of FPI_t and EXV_t on both in the long and short run as developed by Shin *et al.* (2014). This study used the standard GARCH (1, 1) model in estimating exchange rate volatility.

4. Sources of Data

The annual data from 1986 to 2017 on the foreign direct investment, foreign portfolio investment, interest rate, and the growth rate of capital market performance were obtained from the Statistical Bulletin of Central Bank of Nigeria, 2017. The monthly data from 1986 to 2017 on the exchange rate was used to generate exchange rate volatility and annual data on gross capital formation was obtained from the World-Bank Development Indicator (WDI), 2017.

5. Results and Discussions

5.1. Descriptive Statistics of Data

The descriptive statistics of the data series used in the study is as presented in Table 1. The mean and median figures are within maximum and minimum range which implies a good level of consistency. The skewness statistics reveal that all the variables are positively skewed. The kurtosis of capital market performance, exchange rate volatility and foreign private investment variables exceed 3, showing that the series of data is leptokurtic (peaked) while gross capital formation variable is platykurtic because the kurtosis are below 3, meaning that its distribution is flatter compared with the normal distribution. Finally, the probability that the Jarque-Bera statistics, in absolute value, exceeds 5% significance level for all the series is being tested and it was found that the p-values are generally low for most of the series except capital market performance which exceeds 5% significance level. Generally, the null hypothesis which states that each variable is normally distributed is rejected.

Table 1: Summary of Descriptive Statistics

	CAP	EXV	FPI	GCF
Mean	0.252229	0.003846	611.0595	3.70E+12
Median	0.260165	0.001410	237.4833	4.37E+11
Maximum	1.000987	0.030958	3278.883	1.71E+13
Minimum	-0.320928	7.49E-05	0.887400	1.18E+10
Std. Dev.	0.294163	0.006039	887.5955	5.69E+12
Skewness	0.406784	3.022983	1.924570	1.286143
Kurtosis	3.694979	13.73687	5.898892	2.968052
Jarque-Bera	1.526517	202.4454	30.95928	8.823561
Probability	0.466145	0.000000	0.000000	0.012134
Sum	8.071330	0.123085	19553.90	1.18E+14
Sum Sq. Dev.	2.682495	0.001131	24422597	1.01E+27
Observations	32	32	32	32

Note: FPI, GCF, CAP and EXV represent foreign private investment, gross capital formation, capital market performance and exchange rate volatility.

5.2. Unit Root Tests

Table 2 showed the behavior of variables at the level and first difference. It could be seen that all of these series could effectively be said to be stationary when they are in the level except for foreign private investment and gross capital formation variables. Thus, the null hypothesis which states that a variable under investigation has a unit root can be rejected for all of the data series after taken the first difference of non-stationary variables using ADF and PP tests. The ADF and PP tests results from Table 2 showed the

stationarity od all variables either at the level or at the first difference in both ADF and PP tests. This implies that the non-stationarity of all data becomes stationary when they are differenced once.

Table 2: Unit Root Test

	ADF Test			PP Test		
Variable	Level	First Diff.	Status	Level	First Diff.	Status
CAP	-4.3669	———-		-4.3000	———-	
	(0.0017)***	———-	I (0)	(0.0020)***	———-	I (0)
EXV	-7.9113	———-		-7.1319	———-	
	(0.0000)***	———-	I (0)	(0.0000)***	———-	I (0)
FPI	-1.8479	-5.2767		-2.4445	-14.6656	
	(0.3510)	(0.0002)***	I (1)	(0.1385)	(0.0000)***	I (1)
GCF	1.8462	-4.2503		1.7615	-4.2269	
	(0.9996)	(0.0024)***	I (1)	(0.9995)	(0.0025)***	I (1)

Note: FPI, and GCF represent the natural logarithm of foreign private investment and gross capital formation. Other variables like CAP, INT, and EXV represent the capital market performance, real interest rate, and exchange rate volatility. The values in the bracket ( ) are the probability values; (***) indicates significant at 5%.

5.3. Lag Order Selection Criteria

There is a need to identify the appropriate lag length to be able to achieve reliable and consistent results in the analysis. The maximum lag length of four (4) was selected on the Eviews9 software and the optimal lag length one (1) was chosen for all information criteria.

Table 3: Selection Criteria of Lag Order

Lag	LogL	LR	FPE	AIC	SC	HQ
0	43.15142	NA	7.17E-07	-2.79653	-2.606215	-2.73835
1	116.2015	120.0109*	1.24e-08*	-6.871538*	-5.919964*	-6.580633*
2	129.3236	17.80853	1.64E-08	-6.66597	-4.953138	-6.14234
3	139.5767	10.98546	3.07E-08	-6.25548	-3.781385	-5.49912
4	158.9907	15.25388	3.85E-08	-6.49934	-3.263984	-5.51026

Source: Author's Computation, 2019.

5.4. Exchange Rate Volatility, Foreign Private Investment, and the Performance of Nigeria's Capital Market: Co-integration Test

The bounds test investigates the presence of long-run relationship among the variables used in the study and the result is as reported in Table 4. It is observed that the F-statistic (4.3308) is greater than the upper bound value (3.79) at a 5% significant level which necessitates the rejection of the null hypothesis of no long-run relationship. Hence, the alternative hypothesis is accepted, which stipulates that there is a long-run relationship among

exchange rate volatility, foreign private investment, capital market performance, and other variables included in the model.

Table 4: Bound Test Result
Null Hypothesis: No Co-integration

Variables	F-statistic	K
	4.3308	5
Critical Value	Lower Bound I(0)	Upper Bound I(0)
10%	2.26	3.35
5%	2.62	3.79
1%	3.41	4.68

Source: Author's Computation, 2019.

5.5. Effects of Exchange Rate Volatility and Foreign Private Investment on Capital Market Performance.

The effects of exchange rate volatility and foreign private investment on capital market performance were examined by estimating the Non-ARDL model specified in equation (v). The coefficients of exchange rate volatility (-81.236 and -35.465) revealed that exchange rate volatility has asymmetric and negative effects on capital market performance in the long run since the positive and negative coefficients are not the same. Also, in the short run, the coefficients of exchange rate volatility (-75.535 and -32.977) are not the same, hence, the effects of exchange rate volatility on capital market performance is asymmetric and negative in the short run. Thus, the study showed that the effects of exchange rate volatility on capital market performance is non-linear and negative in both time horizons. This study supports the findings of Campa and Goldberg (1999) which revealed that firm performance (measured by profitability) is highly exposed to exchange rate elasticity. Hence, this study established that exchange rate volatility negatively affect capital market performance in line with the arbitrage pricing theory (APT) which postulates a negative relationship between exchange rate volatility and capital flows which subsequently reduces the value of financial assets and capital market performance (Ross, 1976).

On the other hand, the coefficients of foreign private investments (positive and negative changes) exerted linear and positive effects on capital market performance though not significantly different from zero. The results of the study revealed that the positive coefficient (0.127) and negative coefficients (0.127) of foreign private investment exhibit the same effect on capital market performance in the long run. Similarly, the positive (0.118) and negative (0.118) coefficients of foreign private investment are the same

in the short run. This also implies that foreign private investment has positive and linear effects on capital market performance in both time horizons. This finding conforms to the *a priori* expectations and supports the studies by Baghebo and Apere (2014) and Ajayi *et al.* (2017) which revealed that capital flow has positive effects on capital market performance.

Thus, exchange rate volatility has negative and asymmetric effects on capital market performance as expected. This is in support of the arbitrage pricing theory which postulates that there exists an inverse relationship between exchange rate volatility and capital flows and this is expected to have negative effects on capital market performance. Conversely, foreign private investment has a positive and linear effects on capital market performance in the long-run and short-run as expected. In addition, the coefficients of gross capital formation (0.0974 and 0.0906) showed negative effects of gross capital formtion on capital market performance both in the long run and short run respectively.

The error correction term (ECT (-1)) value (-0.9298) refers to the speed of adjustment. The ECT value implies that about 93% of the previous period disequilibrium is corrected for by the system annually. Hence, capital market performance will adjust quickly to changes in exchange rate volatility and foreign private investments.

Table 5: Non-Linear ARDL Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long-run Estimates				
EXV_t^+	-81.236	47.88541	-1.69647	0.1027
EXV_t^-	-35.4655	27.31874	-1.29821	0.2066
FPI_t^+	0.127911	0.125426	1.01981	0.3180
FPI_t^-	0.127613	0.127894	0.997801	0.3283
GFC_t	-0.09744	0.120905	-0.80591	0.4282
C	1.607265	2.838386	0.56626	0.5765
Short-run Estimates				
ΔEXV_t^+	-75.5359	43.79056	-1.72494	0.0974*
ΔEXV_t^-	-32.977	25.16576	-1.31039	0.2025
ΔFPI_t^+	0.118936	0.118784	1.001277	0.3267
ΔFPI_t^-	0.118658	0.118947	0.99757	0.3284
ΔGFC_t	-0.0906	0.115209	-0.78641	0.4393
$ECT(-1)$	-0.92983	0.186096	-4.99654	0.0000***
$\varepsilon_t^+ = \varepsilon_t^- = 0$	1.405373			
	(0.2623)			
$WaldTest(\chi^2)$	5.621492			
	(0.2293)			

Source: Author's Computation, 2019.

5.6. Diagnostic Test of the Model

Table 6 shows that the Jarque-Bera probability value (0.5048) is greater than 5% levels of significance which implies the rejection of the null hypothesis that the model is not normally distributed. The residual diagnostic test applied to the model also showed no existence of serial correlation. Conversely, the Table shows that the probability value (0.8253) greater than 5% significant level implying that the null hypothesis of homoscedasticity cannot be rejected. Hence, this necessitates the acceptance of the null hypothesis and therefore concludes that the model has equal variance (homoscedasticity).

Table 6: Diagnostic Test Results

Diagnostic Test Statistic		
Test	*Value*	*p-value*
χ^2 Normal	1.366926	0.5048
χ^2 Serial LM Test	0.794470	0.3820
χ^2 Hetero Test	0.467685	0.8253

Source: Author's Computation, 2019.

6. Conclusion

The long-run nexus among exchange rate volatility, foreign private investment, and capital market performance was examined by the study. The results showed that all the variables used in the model cointegrated in the long-run. In addition, the study showed that exchange rate volatility has negative and asymmetric effects on capital market performance in both time horizons. Conversely, foreign private investment exerts positive and linear effects on capital market performance both in both time horizons. Moreover, gross capital formation showed a negative impact on capital market performance in both time horizons.

7. Policy Recommendations

Given the existence of asymmetric relationship that exists between exchange rate volatility and capital market performance both in the long and short run, this study recommends that monetary authorities should coordinate the operations of the economy in such a way that the currency (Naira) is strengthened against foreign currencies since the expectations of foreign investors on the local currency motivate them to invest heavily in the country. This is because the appreciation of the local currency will determine the volume of foreign capital that flows into the country which subsequently influence the capital market performance.

References

Abimbola, A. B., & Olusegun, A. J. (2017). Appraising the exchange rate volatility, stock market performance and aggregate output nexus in Nigeria. *Bus. Eco. J* 8: 290. doi: 10.4172/2151-6219.1000290.

Adaramola, A. O. (2012). Exchange rate volatility and stock market behaviour: The Nigerian experience. *European Journal of Business and Management,* 4*(5).*

Adebisi, A. W., & Arikpo, O. F. (2017). Financial market performance and foreign portfolio inflows to Nigeria: Autoregressive distributive lag approach. *International Journal of Research - Granthaalayah*, 5*(6)*, 673-688. *https://doi.org/10.5281/zenodo.833973*

Ajayi, L. B., Adejayan, A. O., & Obalade, A. A. (2017). Impact of foreign private investment on the development of Nigerian capital market. *International Journal of Economics, Business and Management Research,* 1*(2).*

Anyanwu, K. N. (2011). The impact of foreign direct investment on Nigeria's economic growth. (Unpublished Thesis). Anambra, Nigeria: Nnamdi Azikiwe University.

Aregbesola, R. A. (2016). The relationship between capital market development and inflow of foreign direct investment to africa – A VECM-conditioned impulse. Article in Revista Kasmera, *https://www.researchgate.net/publication/303750805*

Baghebo, M. & Apere, T. (2014). Foreign Portfolio investment and economic growth in Nigeria. *International Journal of Business and Social Science,* Vol. 5, No. 11(1); October 2014.

Bollersler, T. (1986). Generalized autoregressive conditional heteroskedasticity. *Journal of Econometrics.* 31, pp. 330-327.

Campa, J. M. and Goldberg, L. S. (1999). Investment, Pass-Through and Exchange Rates: A Cross Country Comparison. *International Economic Review,* Vol. 40, No. 2, Pp. 287-314.

Caporale, G. M., Thouraya H. A. & Christophe R. (2009). Sources of exchange rate volatility and international finance integration. A dynamic GMM panel data approach. Brunel University, West London, Economics and Finance Working Paper Series No. 21.

Central Bank of Nigeria (2016). Statistical Bulletin and National Bureau of Statistics Publication of the year 2016.

Eniekezimene, A. F. (2013). The impact of foreign portfolio investment on capital market growth: evidence from Nigeria. *Global Business and Economics Research Journal*, 2(8): 13-30.

Fapetu, O., Adeyeye, P. O., Seyingbo, O. A. & Owoeye, S. D. (2017). Exchange rate volatility and stock market performance in Nigeria. *Nigerian Journal of Management Sciences, 6*(1), pp 308-317

Huberman, G. (1982). A Simple Approach to Arbitrage Pricing Theory. *Journal of Economic Theory* 28, 183 – 191 (1982).

Kirabaeva, K. & Razin, A. (2010). Composition of capital flows: A survey. *National Bureau of Economic Research.* Working Paper 16492. *http://www.nber.org/paper/w16492.*

Mbanazor, C. O. & Obioma, J. (2017). Exchange rate fluctuations and foreign private investments in Nigeria. *IIARD International Journal of Economics and Business Management,* 3(8), pp. 1-23.

Mlambo, C., Maradza, A. & Sibanda, K. (2013). Effects of exchange rate volatility on the Stock Market: A Case Study of South Africa. *Mediterranean Journal of Social Sciences. Vol 4 No 14 November 2013.*

Nwosa, P. I. & Amassoma, (2014). Capital inflows and exchange rate in Nigeria. *Mediterranean Journal of Social Sciences.* Vol 5 No 7. May 2014.

Uwabanmwen, A. E. & Ajao M. G. (2012). The determinants and impacts of foreign direct investments in Nigeria. *International Journal of Business and Management;* Vol. 7 (24).

Odo, S. I., Anoke, C. I., Nwachukwu, J. O. & Agbi, E. P. (2016). Impact of foreign direct investment on stock market growth in Nigeria. *Asian Research Journal of Arts & Social Sciences 1(2): 1-14, 2016, Article no.ARJASS.28573.*

Okwuchukwu, O. (2015). Exchange rate volatility, stock market price and foreign direct investment in Nigeria. *International Journal of Academic Research in Accounting, Finance and Management Sciences* Vol. 5. No. 2, April 2015, pp. 172 – 184.

Osaze, E. B. (2011). 'The historical evolution of the Nigerian capital market' [Online] The-Historical-Evolution-of-the-Nigerian-Capital-Market Accessed 16 September 2014. Available from: *http://www.proshareng.com/articles/2349/*

Osinubi, T. S., Lloyd, A. A. (2009). Foreign direct investment and exchange rate volatility in Nigeria. *International Journal of Applied Econometrics and Quantitative Studies* V6-2(2009).

Roll, R. & Ross, S. A. (1995). Arbitrage Pricing Theory Approach and Strategic Portfolio Planning. *Financial Analysts Journal /* January-February, 1995.

Ross, S. A. (1976). The Arbitrage Theory of Capital Asset Pricing. *Journal of Economic Theory* (December, 1976): 341 – 360.

World Bank, (1996). World Debt Tables: External Finance for Developing Countries, Vol. 1 (Analysis and Summary Tables), Washington, D.C.: The World Bank.

Zubair, Z. A. & Aladejare, S. A. (2017). Exchange rate volatility and stock market performance in Nigeria. *Asian Journal of Multidisciplinary Studies,* 5(11) November, 2017.