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Macroeconomic Variables and Foreign Portfolio Investment Volatility in Nigeria

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Abstract:

The study aims to check the impact of macroeconomic variables on foreign portfolio investment (FPI) volatility in Nigeria using time series data from January, 2014 to December, 2019 obtained from the Central Bank of Nigeria. The test revealed that previous month's volatility in FPI, inflation rate and all share indexes were significant determinants of FPI volatility in Nigeria. Based on the findings, it was recommended among other things that these factors that influence foreign portfolio investment oscillation should be regulated by the appropriate government agencies to ensure more serene investment clime.

Keywords: Inflation, exchange rate, volatility, portfolio

1. Introduction

National economies in all parts of the world have become more closely linked by way of a growing volume of cross-border transactions, not only in terms of goods and services but even more so with respect to foreign portfolio investment (FPI). According to Onuorah and Akujuobi (2013), FPI is the inflow of funds into a country where foreigners make purchase in the country's stock and bond markets. This occurs when investors purchase controlling interest in foreign companies or buy securities or notes (ERP, 2006). This type of investment has become an increasingly significant part of the world economy over the past three decades and an important source of fund to support investment, not only in developed but also developing economies of the world.

Foreign portfolio investment experiences wide investment swings, fluctuations or volatility like other foreign investments in times of macroeconomic policy changes. Macroeconomic variables are the indicators that constitute economic system; they are mainly concerned with forecasting of national income through analysis of major economic factors that reveal predictable patterns and trends, and their influence on one another (Rudiger& Stanley, 2009). Behaviour of the whole economy is reflected in macroeconomic variables characterized by boom and recessions, the overall economic output of goods and services, the rate of inflation and unemployment, interest rate, the balance of payment and exchange rate (Abel, Bernake&Croushore, 2008).

Historically, foreign portfolio investment plays a prominent role in shaping a country's socio-economic development. Onuorah and Akujuobi (2013) observed that a significant relationship exists between macroeconomic variables and foreign portfolio investment in Nigeria. Similarly, Jarita and Salina (2009) revealed that economic growth causes changes in foreign portfolio investment. This is in line with the findings of Ibrahim and Akinbobola (2017), Okpoto (2015), and Baghebo and Apere (2014). The association between inflation rate and foreign portfolio investment in China had been observed by Haider, Khan and Abdulahi (2016). Negative and insignificant relationship between foreign portfolio investment had been observed by Abel, Ebele and Ndi (2009). Insignificant effect on foreign portfolio investment had been noticed by Levchenko and Mauro (2007). The paper is divided into five sections; section one is the introduction, section two deals with review of related literature. Three and four focused on the research methodology, analysis and interpretation of empirical results. Section five has the conclusion and recommendations.

2. Review of Related Literature

Ezeanyeji and Ifeako (2019) examined the impact of foreign portfolio investment on economic growth in Nigeria from 1986 to 2017. Similarly, Shanab (2017) examined the effect of foreign portfolio investment (FPI) on capital market indices in Nigeria for the period 2005 - 2016. Using series quarterly data from 2007Q1 to 2015Q4, Haider, Khan and Abdulahi (2016), investigated the impact of stock market performance and inflation on foreign portfolio investment (FPI)

in China. In a comparative analysis, Yahya, Shujahat and Muhammad (2015) examined the volatile nature of foreign portfolio investments due to macroeconomic factors in four South Asian countries, namely, Sri Lanka, India, Pakistan and China. In another study, Karimo and Tobi (2013), using LAVAR Granger causality test, examined effects of macroeconomic uncertainty on foreign portfolio investment unpredictability in Nigeria. Shedding more light on the empirical ambiguity of macroeconomic variables and foreign portfolio investment, Onuorah and Akujuobi (2013) investigated the impact of macro-economic variables on foreign portfolio investments in Nigeria from 1980 to 2010. Using regression analysis, the study revealed a co-integrating relationship between the variables. Among the variables used for the study, money supply (MS) and GDP had an indirect relationship with FPI while inflation rate, exchange rate and Interest Rate, were clearly linked to FPI. Also, no long run or short run relationship existed between interest rate, exchange rate, foreign portfolio investment, GDP, MS and inflation rate. The study recommended that good macroeconomic policy implementation and domestic investments strategic blueprint should be made to enhance effective and optimum investments holding and supervision, giving significant consideration to the growth of infrastructures and employment generation in the country.

Jarita and Salinah (2009) investigated the relationship between volatility of foreign portfolio investment and real gross domestic product (RGDP) in Nigeria. The study used quarterly data covering the period, 1991 to 2006. The study adopted Granger causality test to establish the direction of causality between the two variables. Variance decomposition and impulse response function was applied for further inference. The study revealed that economic growth causes change in foreign portfolio investment and its volatility and not vice versa. The study suggest that economic growth is the major pull factor in attracting foreign portfolio investment into the country and recommends a healthy economy for sustainable growth so as to build investors' confidence in the economy.

Ekeocha (2008) investigated the determinant of foreign portfolio investment in Nigeria. The study covered from 1986 to 2006 converted into quarterly series. The study adopted error-correction model for the analysis. It was revealed that foreign portfolio investment, though volatile in nature, is an important source of fund to support investment in an economy that has a wide saving-investment gap like Nigeria. The study recommended that government should be more proactive in attracting more foreign portfolio investment.

In summary, it could be said that findings from the above empirical studies are inconclusive and somewhat conflicting. These cryptic may be due to differences in theoretical views and methodological approach. The gaps identified in the studies include factors such as time coverage, data set, methodology and area of study which this study fills by investigating the impact of macroeconomic variables on foreign portfolio investment volatility in Nigeria.

3. Research Methodology

3.1. Research Design and Sources of Data

This research is designed to investigate the impact of macroeconomic variables on foreign portfolio investment volatility in Nigeria from January, 2014 to December, 2019. An *ex post facto* (after-the- fact) research design was used for the seventy-two months study period. The choice of this period allows for a significant period before and after the conduct of the 2015 general elections being the most tensed general elections since the return of democracy 20 years ago. Within this period, the economy witnessed withdrawal of investments by investors in the stock market, high exchange and monetary policy rates, inflation and the longest recession in the history of Nigeria's democracy. Data for this study was obtained from the Nigerian Stock Exchange fact book, Central Bank of Nigeria Statistical Bulletin and monthly economic report.

3.2. Model Specification

The model for the regression analysis used to estimate the impact of macroeconomic variables on foreign portfolio investment volatility in Nigeria was anchored on the work of Onuorah and Akujuobi (2013), though with little modification to suit the current study. Onuorah and Akujuobi (2013) investigated the impact of macro-economic indicators on the performance of foreign portfolio investment in Nigeria for the period 1980 to 2010 and had their model expressed as:

FPI = f(GDP, EXCR, ITR, IF, MS)(1) where: FPI = Foreign Portfolio Investment, GDP = Gross Domestic Product, EXCR = Exchange Rate, ITR = Interest Rate, IF = Inflation Rate, MS = Money Supply The model was expressed explicitly as: $LNFPI = \alpha_0 + \alpha_1 LNGDP + \alpha_2 LNEXCR + \alpha_3 LNITR + \alpha_4 LNIF + \alpha_5 LNMS + \mu_i$(2) Where: $\alpha 0$ = Constant (Intercept), α_1 = Coefficient of GDP, α_2 = Coefficient of EXCR, α_3 = Coefficient of ITR, α_4 = Coefficient of IF, α_5 = Coefficient of MS, and μ = Error term. Onuorah and Akujuobi (2013)'s model was adapted for the present study but with little modifications in line with the broad objective of the study and was specified as: FPV = f(GDP, EXR, MPR, INF, ASI)(3) The new variables in the model have over time proved to be strong determinants of foreign portfolio investment volatility as observed by Ozurumba (2012), and this informed the decision to include them in the model, unlike money supply in Onuorah and Akujuobi (2013)'s model which has an indirect relationship with FPI. Thus, the econometric form of the equation above is stated as:

 $FPV = \beta_0 + \beta_1 LnGDP_t + \beta_2 EXR_t + \beta_3 MPR_{t+} \beta_4 INF_t + \beta_5 LnASI_t + \mu_i.....(4)$

The idea behind the partial log-linearization was to standardize model and hence reduce the computational complexity of some variables in the model.

where;

FPV = Foreign Portfolio Investment Volatility

GDP = Gross Domestic Product

EXR = Exchange Rate

MPR = Monetary Policy Rate

INF = Inflation Rate

ASI = All Share Index

Ln = natural logarithm

t = time /period of study $\beta_1, \beta_2, \beta_3, ..., \beta_n$ = parameter estimate of the independent variables

 μ = stochastic variable measuring unexplained variations.

3.3. Method of Data Analysis

The empirical analysis of the impact of macroeconomic variables on foreign portfolio investment volatility commenced with the test of volatility using ARCH model. The Augmented Dickey-Fuller (ADF) based test for unit root was used for stationarity test and consequently ARDL estimation of long-run and short-run effects of macroeconomic variables on foreign portfolio investment volatility in Nigeria was done. The monthly time series data used for the analysis comprised of foreign portfolio investment volatility as dependent variable while, gross domestic product, exchange rate, monetary policy rate, inflation rate and all share index represented the independent variables. The data was extracted from various versions of the NSE fact book and CBN statistical bulletin as well as the CBN monthly economic report. The estimation period covered a period of 72 months from January, 2014 to December, 2019.

3.3.1. Volatility Test

In this study, the Autoregressive Conditional Heteroskedasticity (ARCH) model introduced by Engle (1982) was used to capture the extent of foreign portfolio investment volatility in Nigeria. The choice of the model is based on its empirical use in the various areas of econometric modeling, especially in financial time series analysis (Akpokoje&Omojimite 2009; Olowe, 2009) and its approach in modeling financial time series with an autoregressive structure in that heteroskedasticity observed over different periods may be auto-correlated. The arch model is given as follows:

$$Y_i = \beta_0 + \beta_1 X_t + u_t$$

$$u_i \sim N(0, \alpha_0 + \alpha_1 u_{i-1}^2)$$

The error term is assumed normally distributed with zero mean and conditional variance depending on the squared error term lagged one time period. The conditional variance is the variance given the values of the error term lagged once, twice etc:

$$\sigma_t^2 = \operatorname{var}(u_t \setminus u_{t-1}, u_{t-2}, \dots) = E(u_t^2 \setminus u_{t-1}, u_{t-2})$$

Where σ_t^2 is the conditional variance of the error term. The ARCH effect is then modelled by:

$$\sigma_i^2 = \alpha_0 + \alpha_1 u_{i-1}^2$$

This is an ARCH(1) model as it contains only a single lag on the squared error term, however it is possible to extend this to any number of lags. If there are q lags it is termed an ARCH(q) model.

4. Empirical Results

	Month/Year	FPV(%)	GDP(₦'B)	EXR(₦/\$)	MPR (%)	INF(%)	ASI
1	January, 2014	22.01	681.8	160.23	12	8.4	41476.22
2	February, 2014	-17.15	845.9	163.62	12	8.3	39699.83
3	March, 2014	68.34	968	164.61	12	8.2	38404.05
4	April, 2014	18.01	802.2	162.19	12	8.1	38880.16
5	May, 2014	-36.57	776.5	161.86	12	8	39207.76
6	June, 2014	66.66	1034.6	162.82	12	8	41562.1
7	July, 2014	-52.49	1027.4	162.25	12	8	42736.18
8	August, 2014	64.81	842.8	161.99	12	8	41783.83
9	September,2014	149.05	913.2	162.93	12	8	40935.1
10	October, 2014	-61.19	784	164.64	12	8	39287.46
11	November, 2014	-11.66	752.8	171.1	13	8	34588.42
12	December, 2014	54.69	674	180.33	13	8	32316.31
13	January, 2015	-32.49	692.1	181.78	13	8.1	30125.6

	Month/Year	FPV(%)	GDP(₦'B)	EXR(₦/\$)	MPR (%)	INF(%)	ASI
14	February, 2015	8.99	554.8	194.48	13	8.1	29387.08
15	March, 2015	-4.2	808.7	197.07	13	8.2	30361.73
16	April, 2015	8.08	472.2	197	13	8.2	34683.8
17	May, 2015	-29.89	462.5	197	13	8.3	34413.51
18	June, 2015	12.29	462.6	196.92	13	8.4	33503.3
19	July, 2015	13.99	679.3	196.97	13	8.5	31475
20	August, 2015	-32.03	682.6	197	13	8.6	30138.08
21	September,2015	-11.49	543.9	197	13	8.7	30189.15
22	October, 2015	-12.64	478.2	196.99	13	8.8	29973.81
23	November, 2015	24.69	646.6	196.99	11	8.9	28453.92
24	December, 2015	-46.53	476.2	196.99	11	9	27245.48
25	January, 2016	-0.18	453.3	197	11	9.1	24884.47
26	February, 2016	-35.69	397.3	197	11	9.4	24155.04
27	March, 2016	40.77	421.1	197	12	9.8	25677.8
28	April, 2016	-5.71	391.3	197	12	10.2	24955.8
29	May, 2016	44.35	384.9	197	12	10.7	26729.98
30	June, 2016	102.58	382.8	231.76	12	11.4	28502.36
31	July, 2016	-44.82	792.5	294.57	14	12	28445
32	August, 2016	48.1	602.8	309.73	14	12.7	27528.92
33	September,2016	-29.65	611.5	305.23	14	13.5	27964.84
34	October, 2016	-23.52	559.7	305.21	14	14.2	27663.26
35	November, 2016	-22.18	419.5	305.18	14	15	26002.22
36	December, 2016	34.14	470.9	305.22	14	15.7	26215.35
37	January, 2017	16.01	414.8	305.2	14	16.4	26306.07
38	February, 2017	-28.79	548.1	305.31	14	17	25376.93
39	March, 2017	46.83	483.2	306.4	14	17.3	25297.69
40	April, 2017	-38.49	503.6	306.05	14	17.6	25518.5
41	May, 2017	403.1	528.4	305.54	14	17.6	27705.98
42	June, 2017	-9.87	514.7	305.72	14	17.6	32951.67
43	July, 2017	-41.7	802.1	305.86	14	17.5	33850.98
44	August, 2017	330.46	663	305.67	14	17.53	36956.04
45	September,2017	-70.74	850.7	305.89	14	17.17	35378.89
46	October, 2017	-18.3	674.5	305.62	14	16.97	36467.74
47	November, 2017	129.93	658.6	305.9	14	16.76	37029.32
48	December, 2017	90.67	707.4	306.31	14	16.5	38404.53
49	January, 2018	-47.1	705.7	305.78	14	16.2	42624.26
50	February, 2018	-51.07	716.6	305.9	14	15.93	42748.43
51	March, 2018	55.29	713.1	305.74	14	15.6	42299.29
52	April, 2018	-7.79	736	305.61	14	15.2	40793.5
53	May, 2018	-3.45	829	305.83	14	14.79	40141.58
54	June, 2018	-22.72	797.2	305.87	14	14.37	38268.12
55	July, 2018	-58.65	971.3	305.81	14	13.95	37084.45
56	August, 2018	84.87	756.4	306.06	14	13.55	35517.4
57	September,2018	10.61	836.6	306.27	14	13.16	33102.46
58	October, 2018	0.67	710.2	306.5	14	12.78	32636.92
59	November, 2018	-14.33	977.6	306.71	14	12.41	31821.72
60	December, 2018	-34.32	801.9	306.92	14	12.1	30861.73
61	January, 2019	21.07	773.4	306.85	14	11.8	30619.53
62	February, 2019	57.97	800.4	306.77	14	11.56	31981.18
63	March, 2019	-41.07	829.8	306.92	13.5	11.4	31376.65
64	April, 2019	35.73	763.1	306.96	13.5	11.31	29675.89
65	May, 2019	7.85	716	306.95	13.5	11.3	29657.7
66	June, 2019	16.89	788.4	306.95	13.5	11.3	29966.87
67	Julv. 2019	-35.94	961.7	306.94	13.5	11.29	27718.26
68	August. 2019	23.04	925.7	306.93	13.5	11.27	27525.81
69	September.2019	36.68	902.1	306.92	13.5	11.26	27630.56
70	October. 2019	-20.7	894.1	306.96	13.5	11.3	26355.35
71	November, 2019	-11.26	858.9	306.93	13.5	11.35	27002.15
72	December. 2019	-35.43	869.6	306.95	13.5	11.35	26842.07
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Table 1: Data Presentation

Sources: NSE fact book and CBN statistical bulletin and monthly economic report, 2019. (FPV data were computed from FPI data on NSE fact book using rate of return)

4.1.Test for FPI Volatility

Table 2 reports the results of the ARCH-LM test for the FPI series.

F-statistic	0.298922	Prob. F(1,68)	0.5863			
Obs*R-squared	0.306367	Prob. Chi-Square(1)	0.5799			
Table 2: Heteroskedasticity Test: Arch						

Source: Author's Computations (2020) Using Eviews 10.0

From Table 2, it can be seen that the hypothesis of no significant heteroskedasticity is accepted for the FPV series and this implies that there was no significant volatility clustering in the series. It then implies that there was no persistence of volatility in foreign portfolio investments. Hence, the study applied the Autoregressive Distributed Lag (ARDL) for the data analysis.

4.2. ARDL Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FPV(-1)	-0.358127	0.123971	-2.888794	0.0057
LOG(GDP)	21.34662	49.94460	0.427406	0.6710
EXR	-0.186569	0.630217	-0.296040	0.7685
MPR	-21.95003	24.73363	-0.887457	0.3792
MPR(-1)	54.45556	29.06363	1.873667	0.0669
MPR(-2)	-41.18246	22.94394	-1.794916	0.0788
INF	-4.396568	110.7105	-0.039712	0.9685
INF(-1)	193.4691	196.3746	0.985204	0.3294
INF(-2)	-565.7278	193.5101	-2.923505	0.0052
INF(-3)	229.8880	200.8205	1.144744	0.2579
INF(-4)	503.7291	191.0174	2.637085	0.0112
INF(-5)	-353.1586	105.7808	-3.338588	0.0016
LOG(ASI)	551.4750	195.4754	2.821199	0.0069
LOG(ASI(-1))	-1014.276	282.7557	-3.587113	0.0008
LOG(ASI(-2))	659.7143	305.1878	2.161667	0.1626
LOG(ASI(-3))	8.990779	303.5048	0.029623	0.9765
LOG(ASI(-4))	-274.1823	193.3763	-1.417870	0.0356
С	711.0794	1090.813	0.651880	0.5175
R-squared	0.539380			
Adjusted R-squared	0.509165			
F-statistic	2.992563			
Prob(F-statistic)	0.001396			
Durbin-Watson stat	2.104191			

Table 3: ARDL Long-Run Estimates Source: Author's Computations (2020) Using Eviews 10.0

The adjusted R-squared of the long-run model showed that the explanatory variables, that is, macroeconomic variables (GDP, INF, EXR, ASI and MPR) accounted for approximately 50.91% of the total variations in FPV to Nigeria over the study period. The F-statistic, on the other hand, confirms that the collective effect of selected macroeconomic variables was significant. This implied that the overall estimated regression model was well specified.

The estimated coefficient of FPV(-1) implies that previous month's FPV caused current month's FPV to decrease by approximately 0.358127. GDP, EXR and MPR did not have statistically significant effect on FPV. Also, inflation rate, that is, INF had statistically significant negative effect on FPV at lag 2 and 4 but positive effect at lag 5 in the long run. It could be said that in the long run, inflation and all share index were the most significant macroeconomic variables that affected FPV.

The ARDL approach involves estimating the error correction model (ECM) to determine the short-run dynamics of the coefficients of the model. When there is co-integration as indicated by the bounds test, it means that there is a long-run equilibrium relationship between the variables. However, due to temporary or permanent disturbances economic systems are not usually in full equilibrium. For this reason, the short-run behaviour of variables becomes an important aspect of study. The error correction mechanism (ECM) associated with the ARDL model was presented below in Table 4.

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
DLOG(GDP)	0.304586	0.101029	3.014837	0.0097
D(EXR)	-0.045344	0.029419	-1.541311	0.1382
D(MPR)	-21.95003	19.59967	-1.119918	0.2682
D(MPR(-1))	41.18246	19.55535	2.105943	0.0404
D(INF)	-4.396568	90.98058	-0.048324	0.9617
D(INF(-1))	185.2693	110.2331	1.680705	0.0992
D(INF(-2))	-380.4585	125.6778	-3.027252	0.0039
D(INF(-3))	-150.5705	110.5156	-1.362437	0.1793
D(INF(-4))	353.1586	90.84291	3.887575	0.0003
DLOG(ASI)	551.4750	162.4345	3.395060	0.0014
DLOG(ASI(-1))	-394.5228	174.0760	-2.266382	0.0279
DLOG(ASI(-2))	265.1916	173.7240	1.526511	0.1333
DLOG(ASI(-3))	274.1823	165.4696	1.656995	0.1039
ECM(-1)	-0.358127	0.116273	-3.080052	0.0046
R-squared	0.800907	Mean dependent var		0.017015
Adjusted R-squared	0.761088	S.D. dependent var		121.6935
S.E. of regression	59.48209	Akaike info criterion		11.17008
Sum squared resid	194596.5	Schwarz criterion		11.56495
Log likelihood	-362.1976	Hannan-Quinn criter.		11.32633
Durbin-Watson stat	2.104191			

Table 4: Error Correction Mechanism (ECM) Source: Author's computations (2020) using EViews 10.0

The significance of the error correction mechanism, that is, ECM(-1) at 1% level indicates evidence of causality running from the explanatory variables to FPV. The coefficient of ECM(-1) reported is -0.358127, indicating that about 35.81% of disequilibrium in the system was corrected in one (1) month. The coefficient of the ECM is within the range of what is theoretically accepted (that is between 0 to -1).

As it can be seen that D(GDP) has a positive sign and is statistically significant at 5% level, indicating that changes in short-run GDP could accelerate FPI volatility (FPV) in Nigeria. Also, the positive and significant estimated coefficient of inflation (INF) is indicative of the fact that fluctuations in domestic prices could spur the incidence of FPV. Furthermore, there was evidence that changes in monetary policy rate (MPR) caused FPV to increase in the short-run.

4.3. Diagnostic Tests

The model was subjected to diagnostic tests and there was no evidence of serial correlation norheteroskedasticity as the p-values of the test statistics were greater than the 0.05 critical value. Hence, the null hypothesis of no serial correlation and heteroskedasticity were accepted respectively. The summary of the diagnostic test was presented in Table 5.

Test	p-value	Decision				
Breusch-Godfrey Serial Correlation LM Test:	0.2811	No serial correlation				
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.1905	No Heteroskedasticity				

Table 5: Diagnostic Test Results

Source: Author's Computations (2020) Using Eviews 10.0

4.4. Discussion of Findings

The finding that GDP had positive influence on FPV in the short run is attributed to the fact that foreign investors see low economic growth as an indicator of unstable and unsafe investment clime. The insignificant long-run effect of GDP on FPV was attributed to the fact that Nigeria's GDP is low to reflect economic prosperity. Hence, if home economy produced less goods and services, foreign investors might see such economy as risky. This is in consonance with Haider, Khan and Abdulahi (2016); Atobrah (2015); Ahmad, Draz and Yang (2015), who noted that domestic economic growth influences foreign investors' decision to invest in an economy. Also,Yahya, Shujahat and Muhammad (2015) found that FPV was associated with dismal economic performance of recipient economy.

It was also found that inflation had negative long-run influence on FPV and positive short-run effect on FPV. In both cases, inflation rate was found to be significant. This could indicate that high inflation rate erodes the real value of domestic assets, thus discourages portfolio investments in assets denominated in Naira. As such, higher inflation is likely to drive FPV, especially in the short-run. This is in consonance with Raghavan and Selvam (2017); Yahya, Shujahat and Muhammad, (2015), who attributed high FPV to inflationary pressure in the short-run.

The study also found that monetary policy rate (MPR) had a negative long-run influence on FPV and a positive short-run effect. The negative coefficient of MPR implies that FPV reduced as the CBN applied the policy rate to manage the economy. Thus, foreign investors were attracted to invest in assets denominated in Naira. This is in tandem with the postulations of Harry Markowitz's Portfolio Theory that investors are mostly attracted to assets with higher returns given minimal level of risk. The short-run positive coefficient could be as a result of gradual response to monetary policy by

foreign portfolio investors. These findings are in consonance with Nwosa (2012); Chaudhry, Farooq and Mushtaq (2014); Anachotikul and Zhang (2014) who observed that the level of monetary policy influenced FPV.

The negative influence of exchange rate on FPV implies that volatility of FPI was caused by exchange rate. However, in both the short and long-run, exchange rate had no significant influence on FPV. This means that investors look out for investment opportunities in countries whose currency is expected to strengthen against that of the investor in order to periodically convert back earnings at a more favourable rate. This is in contrast to studies by Yahya, Shujahat and Muhammad, (2015); Ahmad, Draz and Yang (2015); that exchange rate significantly influenced FPV in the long-run.

The negative coefficient of ASI is indicative of the fact that performance of domestic capital market influenced decision of foreign investors. The findings specifically showed that long-run ASI influenced FPV negatively.

5. Summary

The study examined the impact of macroeconomic variables on foreign portfolio investment (FPI) volatility in Nigeria using monthly time series data. The findings suggested that FPI volatility and some of the macroeconomic variables such as, GDP, monetary policy rate, inflation rate, and all share index had long-run relationship. It further showed that previous month's volatility in FPI, inflation rate and all share index were significant determinants of FPI volatility in Nigeria. Furthermore, the ARCH model result showed that there was no persistence of volatility in foreign portfolio investments in Nigeria.

6. Conclusion

The study concludes that the macroeconomic variables considered in the study were significant in explaining FPI volatility in Nigeria. Furthermore, FPI volatility (FPV) was not persistent over a long period, which might be due to the changes in the economic conditions as shown by the macroeconomic fundamentals of the country. The selected macroeconomic variables have high dispersion from their mean values, which indicates macroeconomic instability. Also, this could be due to changes in economic policies over the period. Hence, it was concluded that macroeconomic variables as considered in this study could drive FPI volatility overtime.

7. Recommendations

Based on the findings, the following recommendations were made:

- Appropriate government agencies should ensure the existence of more serene investment clime so as to reduce volatilities in FPI inflows into the country.
- Furthermore, it is needful to ensure stability in the domestic capital market so as to attract foreign portfolio investments large enough to bridge the resource gap in Nigeria.

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