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Articles

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Portfolio Investment and Growth Rate of GDP in Nigeria

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Abstract

The study empirically examines the place of foreign portfolio investment in macroeconomic performance of Nigerian economy over period of 1986 to 2017. The methods of estimation implemented in the study include; VAR estimation techniques which included the impulse response functions and the forecast error variance decomposition; and VECM for determination of co-integrating relationship. Concisely, we found insignificant effect of FPI in stimulating macroeconomic growth performance in Nigeria. The core of our analysis is that foreign portfolio investment is not a strong forecaster of itself. The study so upholds that foreign portfolio had exerted somewhat insignificant positive effect on Nigeria's macroeconomy. This could be pointing towards to lack of buoyancy in Nigerian financial markets. Thus, strategies to be adopted towards foreign portfolio investment in Nigeria should comprise a combination of investment incentives designed to promote foreign portfolio investment inflow as well as regulatory measures aimed at maximizing the country's net benefits from the investment inflow. Favourable policies as regards foreign portfolio investment inflows should be implemented by the Nigerian government to attract foreign portfolio into the Nigeria.

Keywords: foreign portfolio investment, macroeconomic performance, Nigeria.

1. Introduction

Foreign portfolio investment (FPI) is a transaction in which securities are held purely as a financial investment, which can be liquidated depending on the investment horizon of the holder (Ogujiuba, Obiechina, 2012). It involves the inflow of foreign capital into an economy in order to take advantage of the domestic financial market. This often happens when a misalignment of interest rates allows a return higher than what is commensurate with the level of risks to be undertaken possible. Portfolio investment could be in the money or capital market. More often, such investment is made in the domestic capital markets to take advantage of a bullish trend. This has been on the increase of recent due to the internationalisation of the capital market, but is seen as the major cause of hot flows that in itself causes capital flight and is currently been blamed for the downturn of the Nigerian Stock Exchange.

The recent market bubbles aided the inflow of portfolio funds, which many overseas hedge funds took advantage of to make quick returns. From the study of Beaker, Harvey & Lundblad (2005), capital inflows benefited equity markets with above average financial development, than

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legal systems and better quality institutions, which mostly are still fledgling and nascent in most of the emerging markets of Africa. According to Masoud & Abu (2014), financial market stability and condition influence investors' foreign capital flows to developing countries. Uncertainty that characterizes Nigerian business environment is an unpalatable conditions may have discouraged foreign investors from investing in the capital and money market (Kohli, 2003; Okonjo-Iweala, 2013).

Macroeconomic performance remained positive in second half of 2017, averaging about 1.0 % for 2017; driven by the continued recovery of oil production, sustained growth in agriculture and the positive impact on investment and other private sector activities from the improved availability of foreign exchange to support imports. In recent time, Nigeria's economic growth is declining due to the COVID-19 pandemic. The motivation and rationale for this study could be detailed to the extent that Nigeria is suffering from shortage of investible capital required for economic growth. But, the country has enormous economic growth potentiality in light of human and non-human capital resources which are the preconditions for economic growth. Unfortunately, the favourable economic growth in Nigeria has not been accomplished over the past years due to some extent poor capital supply.

Moreover, empirical evidence regarding the favourable contribution of capital inflows on economic growth has been mixed. There is the widely held view that FDI has been directed at developed countries (Bhavan, 2003). On basis of foregoing, appreciating the effect of foreign portfolio investment on Nigerian economy is a key policy concern because it could further drive the country's level of economic development. Further, it is pertinent to mention that enormous research efforts have queried and hitherto continue to inquire about what constitutes the key determinants of foreign capital flows, mostly from the advanced industrialised economies to emerging and developing countries' counterpart.

In our next section, we have literature review followed by a description of theoretical framework, research methodology and the data sources. Empirical results and stylized facts about the trend of foreign portfolio flows into Nigeria are reported and analysed in section four, while section five is devoted to summary, and concluding comments.

2. Discussion

Generally, foreign capital inflows depends on a variety of features of the host economy which include among others; its market size, level of education, institutional environment, tax laws, and overall macroeconomic and political environment (Alfaroo et al., 2004; Aurangzeb, UI Haq, 2012). All these internal factors are mainly as a result of the domestic policies. Among the policies are:

a. Price stabilization: This should be accompanied by improved fiscal policy fundamentals and greater macroeconomic stability. However, price stabilization may lead to increase in consumption which will increase the rate of importation and international indebtedness in the short run.

b. Institutional reforms: The reforms of the institutions such as the liberalization of the domestic capital market will attract capital inflow. This is because they can compete favourably with the firms in the developing countries (Khaddaraoui, 2012).

c. Investment policies: Policies that are towards the increase the rate of return on domestic investment projects, such as tax credits, tax reliefs, reduction/elimination of tariff and debt-equity swaps. Tariff cuts in the face of downward price rigidity, which induce (temporarily) excessively high prices of domestic goods and, hence, a current account deficit on the expectations that the relative price of importable with respect to domestic goods will increase over time (Kohli, 2003; Bakare, 2011).

The external factors among others include: fall in international interest rates and lack of world recession: this will increase profit opportunities in the financial centres as compared to the presence of recession. These factors can however have an important "cyclical" or reversible component (Chakraborty, 2001; Anyanwu, 2007; Alfaro et al., 2014).

Jarita et al (2009) survey the relationship between foreign portfolio investment and economic performance in Malaysia using Granger causality text non causality text to establish the course of causality between foreign portfolio investment and economic performance. Tokunbo et al (2010) analysed the direction and significance of the effect of FPI on economic growth in Nigeria for sample period of 1990–2005. The study revealed that FPI impacted positively and significantly on economic growth in Nigeria.

The results of Oguiuba et al. (2012) show that the response of the GDP to shocks from FPI is not instantaneous. Basu & Krishna (2002) reported that international portfolio financial flows has failed to

promote economic growth due to high incidence of uncontrolled capital outflows. Durham (2003) observes that foreign portfolio capital investment has no effect on economic growth in Indian. According to Ghose (2004), positive contribution of foreign capital to economic growth in developing countries is via positive productivity spill overs to domestic enterprises. Alfaro et al. (2004) found that although foreign capital investment alone plays an ambiguous role in contributing to economic growth, countries with a well-developed financial markets gain significantly from such investment. The study by Yasmin (2005) reported significant economic growth effect of portfolio investment in Pakistan.

Ekeocha et al. (2012) argue that portfolio investment is significantly germane in the investment environment of Nigeria considering the saving-investment gap. Also, in India, Narayan (2013) shows existence of long-run equilibrium relationships exist between FPI and GDP growth and points out that foreign capital negatively and considerably impacts on economic growth in petroleum-exporting countries. Findings of Nwosa & Amassoma (2014) suggest that foreign portfolio investment could help to reduce pressure on exchange rate. Kulshrestha (2014) indicate that foreign portfolio capital flows are invariably short term and speculative and are often not related to economic fundamentals but rather to whims and fads prevalent in international financial markets. Alfaro & Chanda (2003) argue that potentials of foreign capital investment could be severely impeded if there is absence of well-developed financial markets, which is widely the case in African countries.

Lebragacio (2010) finds that FPI stoutly contributes positively to GDP growth. Findings of Nwosa & Amassoma (2014) suggest that foreign portfolio investment could help to reduce pressure on exchange rate. Kulshrestha (2014) indicate that foreign portfolio capital flows are invariably short term and speculative and are often not related to economic fundamentals but rather to whims and fads prevalent in international financial markets. According to Kandil & Trebelsi (2015), portfolio financial flows had significant effects on the macroeconomic performance in Turkey from 2001 to 2009. This was however attributed to the sterilization policy that controlled inflationary tendencies in the domestic economy. The investigation of Elekwa et al. (2016) also revealed that portfolio investment impacts positively and significantly on employment growth in Nigeria.

Nwinee & Olulu-Briggs (2016) explored on macroeconomic dynamics and capital inflows in Nigeria. Empirical findings revealed the existence of long-run relationship among the variables of the study while the Granger causality test showed uni-directional causality flowing from interest rate to foreign portfolio investment and a bi-directional causality between interest rate and inflation. Foreign exchange rate was found to negatively affect capital inflows. The investigation of Elekwa et al. (2016) also revealed that portfolio investment impacts positively and significantly on employment growth in Nigeria.

The empirical findings regarding effect of FPI on economic growth is yet to arrive at consensus. Some studies, namely; Reisen & Soto (2001); Cooper & Hardt (2000), Yang (2003); Yasmin (2005); Li, & Liu (2005); Shahbaz, Muhammad & Rahman, (2010); Fosu & Magnus (2006); Batten & Vo (2009); Nwosa & Amassoma (2014); Kargi (2014); and Nwinee & Olulu-Briggs (2016) substantiate its positive impact on the economic performance. Others such as Okon, (2012), Mencinger (2003); Carkovic & Levine (2005); Johnson (2006); Türkcan, Duman, & Yetkiner (2008); Herzer (2012); Kolawole (2013), Clemens, Kenny, Moss, (2004) ascertained its negative effects articulating worries about its volatility and the economy's vulnerability to its inflows and outflows. The contradiction between the empirical findings of previous studies has created a lot of problems in the establishment of direction of the relation between international capital flows and economic growth. This is another gap the study attempt to situate empirically.

Theory and Framework

In line with endogenous growth AK model Rebelo (1991) and following Bailliu (2000), foreign residents invest in the domestic economy and foreign donors grant financial aids to the recipient economy to augment deficiency in domestic savings so that if capital flows in, on net, then a larger pool of savings is available for investment than in absence of capital flows (CF) such that capital market equilibrium and long-run economic growth rate becomes respectively:

$$\phi^*(S + CF) = I^* \quad (1)$$

$$gdp^* = A^* \frac{1}{Y} - \delta = A^* \phi^* \left(\frac{S + CF}{yY} \right) - \delta \quad (2)$$

Equation (1) describes the numerous avenues that capital inflow can influence the long run growth in a small but open economy such that $(\phi^* > \phi)$ and $(A^* > A)$ if fresh portfolio flows stimulates investment (Bailliu, 2000). Translating this theory into empirical specification, we have the general model specification for the macroeconomic impact of capital inflow on the Nigeria economy as:

$$\Delta(gdp) = \alpha_0 + \beta_{1i}\Delta(dsv) + \alpha_{2i}\Delta(fpi) + u_i \quad (3)$$

Where, GDP is economic growth as measured by Nigeria's GDP, H is potential growth conditioning variable which is aggregate domestic saving (dsv), FPI is foreign portfolio investment. To capture the dynamics that drives the relationship between foreign portfolio investment inflows with macroeconomic performance, a vector auto regression (VAR) model representation of equation (3.12) is thus specified:

$$Z_t = A_0 + A_1 Z_{t-1} + \dots + A_k Z_{t-k} + u_t \quad (4)$$

Where Z_t is a k vector of exogenous variables which for the purpose of the present study include Nigeria's gdp, dsv and fpi since our VAR model is a generalized univariate AR model which allows for more than one evolving variable. In effect, for purpose of this study, we specify a VAR (3), that is, a VAR model in three variables.

$$\begin{bmatrix} Z_{1,t} \\ Z_{2,t} \\ Z_{3,t} \end{bmatrix} = \begin{bmatrix} A_{10} \\ A_{20} \\ A_{30} \end{bmatrix} + \sum_{i=1}^k \begin{bmatrix} A_{1,i} & A_{1,2} & A_{1,3} & A_{1,4} & A_{1,5} & A_{1,6} \\ A_{2,1} & A_{2,2} & A_{2,3} & A_{2,4} & A_{2,5} & A_{2,6} \\ A_{3,1} & A_{3,2} & A_{3,3} & A_{3,4} & A_{3,5} & A_{3,6} \end{bmatrix} \begin{bmatrix} Z_{t,t-1} \\ Z_{t,t-1} \\ Z_{t,t-1} \end{bmatrix} + \begin{bmatrix} u_{1,t} \\ u_{2,t} \\ u_{3,t} \end{bmatrix} \quad (5)$$

Where A_{10} , A_{20} , and A_{30} are constant term, A_{11} , A_{12} , A_{13} , A_{14} , ..., A_{36} are coefficients of variables taking into consideration lag length. Given that our VAR equations provides short-run estimates, long-run relationship is estimated with VECM. The VECM methodology recognizes numerous co-integrating relations such that we treat all variables as endogenous and tests relating to the long-run parameters are conducted. Accordingly, our VECM add error correction term to our VAR model while simultaneously taking into cognizance any co-integrating relationships among the variables. Hence, our model specification become:

$$\ln gdp_t = \alpha_1 + \sum_{i=1}^n \beta_i \ln gdp_{t-i} + \sum_{i=1}^n \varpi_i \ln dsv_{t-i} + \sum_{i=1}^n \delta_i \ln fpi_{t-i} + \Theta_1 ecmt_i \quad (6)$$

$$\ln fpi_t = b + \sum_{i=1}^n \phi_i \ln fpi_{t-i} + \sum_{i=1}^n \lambda_i \ln gdp_{t-i} + \sum_{i=1}^n \omega_i \ln dsv_{t-i} + \Theta_2 ecmt_i \quad (7)$$

$$\ln dsv_t = \alpha_3 + \sum_{i=1}^n \varpi_i \ln dsv_{t-i} + \sum_{i=1}^n \theta_i \ln gdp_{t-i} + \sum_{i=1}^n \rho_i \ln fpi_{t-i} + \Theta_3 ecmt_{3t} \quad (8)$$

The methods of estimation implemented in this study are the VAR estimation techniques which included the impulse response functions and the forecast error variance decomposition. Also, we estimated the VECM for determination of co-integrating relationship among the components of foreign capital flows. In addition, the study carried out the principal component estimations. The VECM estimation procedure requires three phases and these include, estimating an unrestricted VAR involving potentially non-stationary variables; testing for co-integration using Johansen test; and estimating and analyzing the VECM results.

The essence of specifying VAR equations was to obtain the impulse response functions and forecast error variance decomposition to explain the various shock effect of variables to one another. The impulse responses trace the effects of an innovation or shock to one endogenous variable on all other endogenous variables in the VAR. In this study, the impulse response functions were estimated to explain the innumerable shock effect of variables to one another thereby analysing the effect of one standard deviation shock to one of the variables on the current and future values of all the endogenous variables. This is because an innovation to any variable does not only affect the variable itself but is transmitted to other endogenous variables through the dynamic structure of the VAR. Unit Root test was carried out on the log of the variables using Kwiatkowski-Philips-Schmidt-Shin (KPSS) test.

Trend and Empirical Analysis

Trends of Foreign Portfolio Investment (FPI) in Nigeria

Figure 1 reports the trends of FPI in Nigeria from 1986 through to 2017, our sample period of analysis. The figure shows that not until 2012, the flow of foreign portfolio investment to Nigeria has been progressively declining. According to NBS (2017), capital inflow rose from US \$ 5.516 billion in 2016 to US \$ 7.329 billion in 2017, portfolio investment in Nigeria pushed the country's total capital importation to US \$ 12.228 billion in 2017, representing 60 % increase of capital imported, an increase of US \$ 7.104 billion or 138.7 % from the figure recorded in 2016. The total capital imported in the fourth quarter of 2017 was US \$ 5.382 billion. This was an annual growth of 247.5 % and quarterly growth of 29.9 %.

FPI

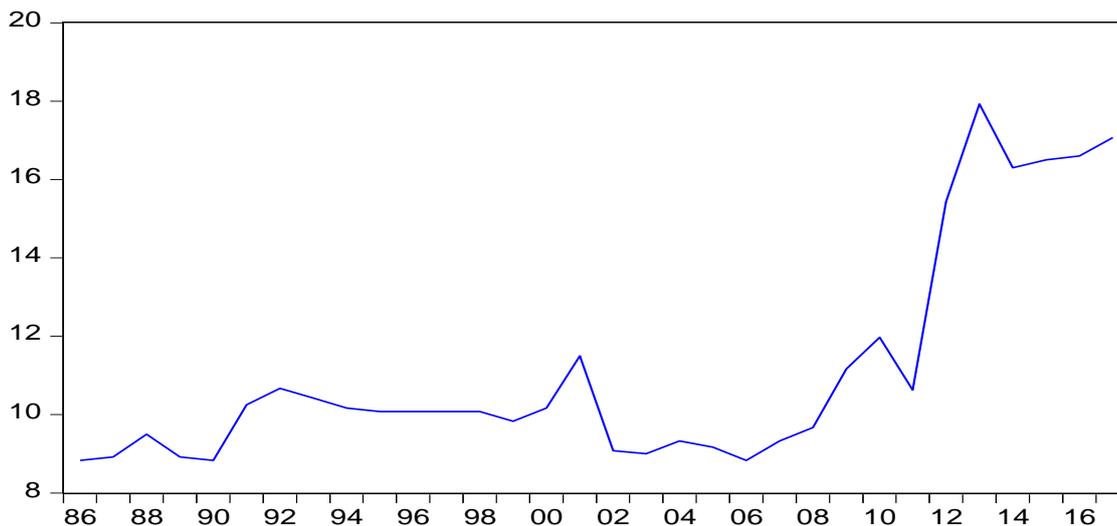


Fig. 1. Trends of Foreign Portfolio Investment (FPI) in Nigeria (1986–2016)

Source: Author's plot using World Development Data

Portfolio investment which recorded US \$ 3.477.5 million in fourth quarter of 2017, stayed leading component of capital inflow to Nigeria and contributed 64.6 % of total amount (US \$ 5.382 billion). It increased significantly to 1,123.5 % or US \$ 3.193 billion from US \$ 284.2 million to US \$ 3.477 billion, expanding faster than two other components of capital importation in Q4 2016 which stood at US\$284.2 million (CBN, 2017). Portfolio investment was the main driver of capital importation in fourth quarter of 2017. The increase in portfolio investment was driven by a strong growth in money market instruments, which recorded US\$2.178 billion.

Equity, which had been main driver of portfolio investments in previous quarters, dropped by US \$ 942.9 million from US \$ 1.932 billion in Q3 2017 to US \$ 989.2 million in Q4 2017. Also, bonds recorded an increase of US \$ 194.1 million, from US \$ 115.4 million in Q3 to US\$309.5 million in Q4 of the same year. Other investment accounted for US \$ 1.526 or 28.4 % of total capital flows to Nigeria in the fourth quarter of 2017. The US \$ 1.526 billion recorded by Other investment was mainly in the form of loans, which was US \$ 1.091 billion in fourth quarter, followed by other Claims which recorded US \$ 425.7 million, and then trade credits which reported US \$ 10 million, having posted no inflows since Q4 2016 (CBN, 2018). This class of capital importation grew 65.96 % annually and by 21.2 % when compared to previous quarter.

In fourth quarter of 2017, capital inflow stood at US \$ 5.32 billion and investments in portfolio assets were highest by 59 % while investments into real economy were mere 8 %. Nigeria saw bulk of its foreign inflow from the United States, United Kingdom, and Belgium. The total capital imported in fourth quarter of 2017 was US \$ 5,382.9 million; this was an annual growth of 247.5 %, and quarterly growth of 29.9 %. As at the end of 2017, Nigeria recorded a significant US \$ 12.2 billion total capital inflow which represents an increase of US \$ 7,104.4 million or 138.7 % compared to 2016 inflows.

The growth in capital inflow in 2017 was mainly driven by an increase in portfolio investment, which rose by US \$ 5,516.2 million from the previous year to reach US \$ 7,329.1 million in 2017 and accounting for 60 % of capital imported (NBS, 2017). During the reference quarter total capital imported when compared to previous quarter increased by US \$ 1,237.8

million. Turbulence in international oil market pushes investment in Nigeria's petroleum further away, as year on year capital inflow dips by 85.7 %. Foreign capital investment inflow into the oil sector dropped further by US \$ 178.42 million, about N35.684 billion in one year, from December 2014 to December 2015. The banking sector which attracted the major value of capital inflows in the third quarter of 2016 recorded a decline of US \$ 394.22 million, or 70.96 %, in fourth quarter of 2016 (NBS, 2016). Capital inflows from the United Kingdom was the highest and this amounted to US \$ 482.89 million, or 31.18 % of the total.

3. Results

The implication of our results of KPSS trend-stationary processes is that the mean of economic growth as measured by GDP, foreign direct investment, remittances, official development assistance, domestic savings and foreign portfolio investment can be growing or decreasing over time; nevertheless, when there is an impulse or a one standard error shock to economic growth as measured by GDP, foreign direct investment, remittances, official development assistance, domestic savings and foreign portfolio investment, trend-stationary processes are mean-reverting, that is, transitory.

By extension therefore, economic growth as measured by GDP, foreign direct investment, remittances, official development assistance, domestic savings and foreign portfolio investment will all converge again towards the growing mean, which was not affected by the shock while unit-root processes, for the stationary variables, there has to be a permanent impact on the mean (i.e. no convergence over time). This is the rationale that drives our preference for the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test results. In effect, variables in this study are 1(1) meaning that the variables became stationary after first difference.

Table 1. Kwiatkowski-Phillips-Schmidt-Shin Test Results

Variables	KPSS Test	Critical Values	Remark
DlnGDP	0.120615**	0.146000	Pass
DlnFDI	0.089517**	0.146000	Pass
DlnRMT	0.163024*	0.216000	Pass
DlnODA	0.111872**	0.146000	Pass
DlnDSV	0.200000*	0.216000	Pass
DlnFPI	0.085530**	0.146000	Pass

Source: Author's estimation using Eviews 9 Results

Notes: * (**) Significant at 1 % (5 %) respectively; the unit root test includes an intercept and a linear trend

The JML approach was employed in the co-integration tests to examine whether the variables under study are co-integrated. This suggests that the variables are co integrated and all drive the interactions towards a stable long-run convergence. Tables 6, 7 below present the results of the co-integration test. Co-integration test was conducted using reduced rank procedure developed by Johansen (1988) and Johansen & Juselius (1990). Table 10, shows the co integrating results beginning with the alternative hypothesis that there are no co integrating vectors ($r = 0$) the result showed that there exist (3) co integrating relation as the trace statistic (s) at 151.8609, 94.97766, and 54.48845 are larger than their respective critical values at 95.75366, 69.81889, and 47.85613.

The maximum statistic(s) reported two co-integrating vectors at 56.88328, and 40.48921 which exceeds 40.07757 and 33.87687 respectively. Accordingly, reject the null hypothesis of no co-integration between the economic growth and foreign direct investment, remittances, official development assistance, domestic savings and foreign portfolio investment at 5 % level of significance in favour of the alternative hypothesis. This suggests that the variables are co integrated and all drive the interactions towards a stable long-run convergence.

Table 2. Co-integration Results

Johansen Unrestricted Rank (Trace Value Test) Results			
Hypothesis	Statistical value	5 % Critical value	Eigenvalue
r = 0	151.8609**	95.75366	0.849848
r = 1	94.97766**	69.81889	0.740666
r = 2	54.48845**	47.85613	0.595531
r = 3	27.33305	29.79707	0.354647
r = 4	14.19433	15.49471	0.307552
r = 5	3.168669	3.841466	0.100236
Johansen Unrestricted Rank (Max-Eigen Test) Results			
Hypothesis	Statistical value	5 % Critical value	Eigenvalue
r = 0	56.88328**	40.07757	0.849848
r = 1	40.48921**	33.87687	0.740666
r = 2	27.15541	27.58434	0.595531
r = 3	13.13872	21.13162	0.354647
r = 4	11.02566	14.26460	0.307552
r = 5	3.168669	3.841466	0.100236

Source: Author's estimation using Eviews 9 Results

Notes: **Significant at 5 % the test includes an intercept and a linear trend

Lag Selection Results

As shown in Table 3, lag order chosen by LR, FPE, SC and HQ is 1. So, we reported VAR estimates with one-period lag. The optimal lag as chosen by the information criteria suffixes because including more lags than necessary would have resulted in over fitting our model which could have led us to higher mean-square forecast error of our VAR model (see Lütkepohl, 1993). The use of autoregressive lag of each variables in our VAR estimation facilitated neutralization of bias that would have resulted from failure to control for auto-regression/auto-correlated errors.

Table 3. VAR Lag Order Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1089.23	NA	2.57e+25	75.53376	75.81665	75.62236
1	-942.949	221.9571*	1.35e+22*	67.92756	69.90778*	68.54774*
2	-878.784	70.8034	2.76e+2	65.98510*	69.6626	67.13687
3	-827.433	35.41391	2.99e+21	64.9265*	70.30136	66.6098*

Source: Author's estimation using Eview 9 Results

Table 4 shows percentage of forecast error variance due to each shock in the VAR model over ten-year horizon. In short term, own shock appears to account largely for macroeconomic growth performance over entire period of analysis explaining 100 percent in first period, 98.323 % in tenth period. The insignificant contribution of FPI flows towards decomposition of forecast error variance of macroeconomic growth performance is extremely pronounced. Overall, foreign portfolio flows are insignificant determinant of macroeconomic growth process in Nigeria.

Table 4. Forecast Variance Decomposition of Macroeconomic Growth Performance

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	169.524	100.00	0.0000	0.0000
2	179.927	98.899	0.1593	0.0060
3	183.176	98.436	0.1668	0.0060
4	183.875	98.352	0.1669	0.0110
5	184.042	98.330	0.1670	0.0122
6	184.081	98.324	0.1670	0.0124

7	184.091	98.323	0.1670	0.0125
8	184.093	98.323	0.1670	0.0125
9	184.094	98.323	0.1670	0.0125
10	184.094	98.323	0.1670	0.0125

Source: Author's estimation using Eviews 9 Results

Table 5 shows that 67.5 % of variance in forecast error of domestic savings seems to be explained by itself in first year while in tenth year of forecasting 66.99 % of variance is explained by its own error variance. Domestic savings does dominate its own innovations.

Table 5. Forecast Variance Decomposition of Domestic Savings

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	429.48	5.8148	67.476	0.0000
2	432.04	5.8903	67.267	0.1515
3	432.91	5.8805	67.002	0.3844
4	432.95	5.8918	66.990	0.3881
5	432.96	5.8922	66.989	0.3883
6	432.96	5.8925	66.989	0.3883
7	432.96	5.8926	66.989	0.3883
8	432.96	5.8926	66.989	0.3883
9	432.96	5.8926	66.989	0.3883
10	432.96	5.8926	66.989	0.3883

Source: Author's estimation using Eviews 9 Results

Table 6 shows that foreign portfolio investment does not dominate its own innovations since variance of its forecast declined from 84.9 % in short-run of analysis to 51.4 % in long-run period. In other words, moving into future, forecast error variance of foreign portfolio investment itself drops significantly denoting that foreign portfolio investment is not a strong forecaster of itself. The variance in forecast error of GDP growth, and domestic savings jointly explained about 60.9765 % while variance in forecast error of foreign portfolio investment only contributed about 55.126 % towards forecasting in fifth year of analysis. This implies that orthogonal shocks to other variables in system do significantly increase variance of forecast error in foreign portfolio investment.

Table 6. Forecast Variance Decomposition of Portfolio Investment

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	1.1805	30.6736	10.2373	84.9113
2	1.3095	41.3303	25.2007	71.2503
3	1.5163	54.5671	34.4117	60.3213
4	1.6027	35.391	35.7125	56.0626
5	1.6165	35.213	25.7635	55.1260
6	1.6546	24.523	25.5309	53.3660
7	1.6707	24.296	25.4303	52.3705
8	1.6792	24.650	25.4996	51.8823
9	1.6887	24.931	25.4385	51.8414
10	1.6973	24.977	25.4379	51.3543

Source: Author's estimation using Eviews 9 Results

Table 7. Response of Macroeconomic Performance

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	107.3414	0.0000	0.0000	0.0000
2	81.3097	52.5014	48.765	-31.788
3	77.4440	61.3651	56.259	-9.6045
4	61.2776	58.0243	57.926	-24.930

5	30.7729	85.6081	64.622	-4.2160
6	55.0658	95.0625	48.565	11.1558
7	64.0925	80.3986	39.619	0.99380
8	68.1035	87.7625	29.947	10.8769
9	73.1684	90.9514	26.736	7.48657
10	62.5543	96.6217	32.894	7.19879

Source: Author's estimation using Eviews 9 Results

Table 8. Response of Nigeria's Domestic Savings

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	-17.3826	85.9780	206.4501	0.0000
2	144.0792	7.9599	85.4717	125.898
3	61.7039	33.0283	57.8102	344.013
4	105.2434	49.9641	64.3669	171.105
5	-144.633	21.5566	28.7797	69.5071
6	-8.0363	120.3739	77.5455	81.7171
7	18.5377	32.6658	35.8884	88.0159
8	-0.6555	5.5431	19.9629	39.6753
9	50.3371	6.4958	10.6030	-7.70165
10	-6.1993	4.7061	18.5265	15.1846

Source: Author's estimation using Eviews 9 Results

Table 8 shows response of domestic savings to one standard error impulse in domestic savings, to one standard error impulse in GDP and portfolio investment. These impulses cause huge positive response in savings. Only at the end of the third, sixth and eighth periods were negative response in domestic saving recorded.

Table 9 shows impulse response of foreign portfolio investment to a unit of standard error impulse in domestic savings, to a unit of standard error impulse in GDP growth rate, and to a unit of standard error impulse in foreign portfolio investment. The results seem consistent with others previously analysed since foreign portfolio investment responded positively and negatively to shocks in other variables at the end of different years of analysis.

Table 9. Response of Foreign Portfolio Investment Flows to Nigeria

Periods	S.E.	D(lngdp)	D(lndsv)	D(lnfpi)
1	-0.0968	-0.2844	1.0878	-0.0968
2	-0.1158	0.4100	-0.1961	-0.1158
3	0.5587	0.1787	-0.4062	0.5587
4	0.2457	-0.1954	0.2304	0.2457
5	-0.0470	0.1648	0.0216	-0.0470
6	0.0077	0.2726	0.1432	0.0077
7	-0.0376	0.1703	0.0263	-0.0376
8	0.1185	0.0838	0.0335	0.1185
9	0.1128	0.0521	0.1245	0.1128
10	0.0754	0.1432	-0.0335	0.0754

Source: Author's estimation using Eviews 9 Results

One standard error shock to GDP leads to a 0.0968 units decrease in foreign portfolio investment after one year, which corresponds to 9.68 % drop in portfolio investment when translated into original level. In second case, however, one standard error shock to GDP leads to a 0.1158 units decrease in foreign portfolio investment after two years and this relates to 11.58 percentage points decline in inflow of portfolio investment in Nigeria. Nevertheless, at end of tenth year, one standard error impulse in GDP induces about 7.54 % increase in inflow of portfolio investment to Nigeria.

Analysis of Estimated VECM Results

In Table 10, results of the VECM are reported. Given that the correction term should be in negative number and if positive value means explosive and not reasonable, with cointeq1 estimated coefficient is -0.675 for the GDP equation. It thus indicates that about 68 percent of this disequilibrium in economic growth is corrected annually in Nigeria. This shows that any short run disequilibrium in economic growth of real GDP in Nigeria, adjustment of about 68 % will be restored in the long run. This goes to show that Nigeria's economic growth process corrects its preceding period disequilibrium at a speed of 68 percent annually. The model so acknowledged substantial speed of adjustment year on year for realisation of long run equilibrium economic growth position.

By implication, disequilibrium in portfolio investment that is restored within a year in Nigeria is very weak and at best infinitesimal. Accordingly, speed at which economic growth returns to equilibrium after a change in *fpi* and *dsv* is 68 %. The speed at which foreign portfolio investment flows to Nigeria is restored to equilibrium after a change in *gdp* and *dsv* is 29.5 %. The speed at which domestic savings returns to equilibrium after a change in *fpi* and *gdp* is 51.9 %. The VECM analysis is relatively exclusive since it provides the short run behaviour of the relationships within a simultaneous system and also reports the long run co-integrating relationship based on the error correction term. Thus, in our VECM, causality was expressed by dynamics such that variables adjust to deviations from the equilibrium. Hence, there are variable that bears the main burden of this adjustment while others are zero loading coefficients as they do not adjust. What this VECM analysis means therefore is that short-run dynamics are rather about the inertia of motion.

Given long-run exogeneity, growth elasticity of foreign portfolio investment is -1.899843. It is highly elastic but negative such that 1 % change in foreign portfolio investment will lead to a decline in economic growth by 1.90 %. In other words, a strong negative relationship exists between economic growth and foreign portfolio investment over the period of study. In effect, our VECM estimates articulates elasticity coefficient of foreign portfolio investment is greater than one indicating a more than proportionate decrease in economic growth. The inference is that capital inflows in the form of portfolio investment from abroad and it has contributed less productively to macroeconomic performance in Nigeria. The elasticity coefficient of domestic savings in Nigeria is 0.646029 indicating a less proportionate change in economic growth associated with the change in savings. It passes the significant test at one percent level and so indicates that one percent change in domestic savings will stimulate economic growth by 2.99 %. The F-statistic (11.3937) with zero probability is significant at 1 % level and has a strong explanatory power (R-squared is 0.828345). The ratio of the mean of economic to standard error of estimates is low at 1.778. It shows that the estimation is not affected by the serial correlation.

Table 10. Estimated Results

VECM Short-run Results			
Variable	D(lngdp)	D(lndsv)	D(lnfpi)
Intercept	101.4036 (2.329)	-202.642 (-2.803)	-0.136 (-0.248)
CointEq1	- 0.675* (-2.230)	-0.519* (-4.177)	-0.295 (-0.490)
D(lngdp(-1))	0.7007** (2.222)	2.114* (4.039)	0.001 (0.146)
D(lndsv(-1))	-0.0212 (0.2093)	0.402 (1.729)	0.002 (1.265)
D(lnfpi(-1))	0.7999 (1.4512)	58.690 (1.812)	0.231* (8.941)
R-Squared	0.908	0.935	0.523
Adj. R-Squared	0.828	0.879	0.409
Sum Sq. Resi	138432.6	381777.6	21.94853

S.E. Equation	96.06686	159.5363	1.209643
F-Statistic	11.39370	16.68504	1.265622
Log Likelihood	-163.976	-178.686	-37.1095
Akaike AIC	12.27424	13.28869	3.524799
Schwarz SC	12.93431	13.94877	4.184873
Mean Dependent	170.777	21.23379	0.261034
S.D. Dependent	231.8705	459.131	1.28206
VECM Estimates of long-run dynamics			
Cointegrating Eq	CointEq1		
Intercept	-366.5798		
lngdp(-1)	1.000000		
lndsv(-1)	2.992266* (0.36703) [8.15274]		
lnfpi(-1)	-1.899843** (0.63852) [-2.97539]		
R-squared	0.908042		
Adj. R-squared	0.828345		
F-statistic	11.39370		
SC	71.48461		
LL	-884.9986		
Determinant Resid Covariance	1.29E+19		
Akaike Information Criterion	67.24128		
Determinant Resid Covariance	6.76E+20		

Source: Author's estimation using Eviews 9 Results

Notes: *(**)(***) Significant at 1 %, 5 %, 10 % respectively

4. Conclusion

There has been a remarkable flow of foreign portfolio investment in Nigeria which has stimulated an intense debate about its impact on economic growth. While theoretical debate on the issue by proponents tends to project the view that foreign portfolio investment expansion in developing countries exerts a positive influence on the level and growth rate of aggregate economic performance, critics express concern about its volatile nature. The study therefore sets out to examine role of foreign portfolio investment in macroeconomic growth process of Nigeria economy using VAR/VECM techniques. The study so upholds that foreign portfolio had exerted somewhat insignificant positive effect on macroeconomic performance in Nigeria due perhaps to lack of buoyancy in the Nigerian financial markets. Favourable policies as regards foreign portfolio investment inflows should be implemented by the Nigerian government to attract foreign portfolio into the Nigeria.

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