FOREIGN PORTFOLIO INVESTMENT AND ECONOMIC GROWTH IN NIGERIA

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A B S T R A C T

This study examines the relationship between foreign portfolio investment and economic growth in Nigeria from 1986 to 2017. Data for the study were gathered from secondary sources. The data was analyzed with the use of both descriptive and inferential statistical methods. The Toda Yamamoto Non-Causality test was used to ascertain the relationship between Foreign Portfolio Investment and economic growth and the impulse response function was used to examine the transmission response of foreign portfolio investment to economic growth in Nigeria. The study found that there is a bi-directional relationship between foreign portfolio investment and economic growth and the impulse response revealed that economic growth would respond positively and permanently to shocks in foreign portfolio investment in Nigeria after the second period of forecast. The study recommends that policies to encourage the inflow of foreign portfolio investment in Nigeria should be vigorously pursued. Also emphasis should be geared towards efficiency in the use of foreign portfolio investment and the reduction of capital flight.

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1. INTRODUCTION

Over the years, many developing countries have relaxed their capital control mechanism and this was motivated by the need to tap new sources of external finance. The debt crisis of the 1980s buttressed the need to open up capital accounts of developing nations to attract new sources of external finance that would reduce the over reliance on debt and improve the overall structure of external obligations (Hague and Montiel 1990; Errunza, Etienne and Prasad 1992). Indeed, the shift in the structure of external debt away from official sources towards floating-rate-government guaranteed General Obligations Borrowings (GOBs) had exposed many developing countries to economic fluctuations. A number of highly indebted countries encountered many difficulties, the debt flow dried up and the restructuring of external finance assumed high importance, Foreign Portfolio Investment (FPI) emerged as one of the important alternatives (Hague and Montiel 1990; Errunza, Etienne and Prasad 1992). As a follow up to the above, foreign portfolio investment has become an increasingly important part of the world economy over the past three decades and many developed countries like China, United States of America and Japan are exploring it. In view of this, efforts are also being made by different developing countries to attract foreign portfolio investment. In Africa particularly, one of these efforts is symbolized by the successful integration of African countries into large regional blocs such as the Economic Community of West African States (ECOWAS), The Common Market of East and Southern African (COMESA), Bourse Regional De Valeurs Mobilières (BRVM), South Africa Development Community (SADC), and West Africa Economic and Monetary Union (WAEMU) (Orji, Uche and Illori, 2014). The consolidation of these regional blocs combined with a relatively conducive investment environment has helped African countries to achieve greater integration with the global economy. Consequently, there have been a perceptible pattern of inflows of foreign capital to Africa (Orji, Uche and Illori, 2014).

The need for foreign capital to supplement domestic resources is being felt more by the developing economies due to the mismatch between their domestic capital stock and capital requirements. This is evidenced in the growing attention being given to the drive for foreign capital especially in these economies. Fosu and Magnus (2006) and Omisakin, Adeniyi and Omojolaibi (2009) pointed out rightly that foreign capital inflow is an important vehicle for augmenting the supply of funds for domestic investment. Ngowi (2001) argues that African countries and other developing countries need substantial inflow of foreign capital to fill the savings and foreign exchange gaps associated with a rapid rate of capital accumulation and growth needed to overcome the widespread poverty in these countries. Levine and Zervos (1996) recorded that foreign portfolio investment is important in increasing liquidity in the capital markets which leads to deeper and broader markets. The increase in liquidity in the capital markets due to foreign portfolio investment allows domestic investors to access
financing at lower costs due to high supply of financing (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 1998; Bekaaert and Harvey, 2003). Dausa and Kassim (2009) aver that foreign portfolio investment acts as a catalyst for economic growth through its contribution towards increased wealth creation. It also helps to alleviate financial constraints faced by firms (Laeven, 2003; Knill, 2004; Beck, Demirguc-Kunt and Maksimovic, 2005). Overtime, Nigeria has embarked on extensive reforms and liberalization of her economy in order to be the choice destination of capital inflows, and it is gratifying to note that the efforts are paying off as foreign portfolio investment into the country has increased. But despite the increased inflow in foreign portfolio investment, Nigeria has recorded some form of stunted economic growths. This is amply evidenced in the fluctuating real GDP growth rate in Nigeria. The growth rate of real GDP increased from 4.28% in 2012 to 6.31% in 2014 but declined to 2.65% in 2015 and -1.65% in 2016. The growth rate of real GDP became positive (0.81%) in 2017 and Increased to 1.93% in 2018 (World Bank, 2019).

The above single digit but fluctuating growth statistics are quite disturbing. It is far from being satisfactory and obviously points towards an ailing economy. It shows that the economy is characterized by low per-capita income, high unemployment rates, and low and falling growth rates of GDP; problems which foreign portfolio investment is theoretically supposed to solve. This scenario could be attributed to the fact that the inflow of foreign portfolio investment in Nigeria is not huge and vibrant enough to redress the problem of economic growth in Nigeria. It is against this backdrop that this study examined the relationship between foreign portfolio investment and economic growth in Nigeria.

1.1 Research Questions

The research questions of the study are stated as follows.

- What is the causal relationship between foreign portfolio investment and economic growth in Nigeria?
- To what extent is the response of economic growth to shocks in foreign portfolio investment in Nigeria?

1.2 Objectives of the study

The broad objective of the study is to examine the relationship between foreign portfolio investment and economic growth in Nigeria from 1986 to 2017. The specific objectives are to:

- Ascertain the causal relationship between foreign portfolio investment and economic growth in Nigeria.
- Examine the transmission response of foreign portfolio investment to economic growth Nigeria.

1.3 Research Hypotheses

The research hypotheses derived from the research objectives are:

- $H_0$: There is no causal relationship between foreign portfolio investment and economic growth in Nigeria.
- $H_1$: There is no transmission response of foreign portfolio investment to economic growth in Nigeria.

2. THEORETICAL REVIEW

This study is hinged on the Auerbach-Kotlikoff (AK) dynamic life-cycle simulation model. The discussion of the AK framework was drawn from the studies of Pagano (1993), who used it to analyze the effect of financial flows on a closed economy, and Bailliu (2000), which extended it to include foreign capital flows. In the AK endogenous type model, aggregate output is a linear function of the aggregate capital stock, thus

$$ Y_t = A_k $$

Where

- $Y_t$ = Output
- $A_k$ = Total factor of production
- $K_t$ = Capital stock available in the economy.

The production function of this type can be viewed as a reduced form for a composite of physical and human capital, where the two types of capital are reproducible with identical technologies (Chamberlin and Yueh, 2006). In this model, only capital is subject to constant return to scale. To estimate the capital stock, we use the perpetual inventory method, which argues that the stock of capital is the accumulation of the stream of past investments. Assuming capital depreciates at a rate of $\alpha$ per period; therefore gross investment will be denoted by the following equation:

$$ I_t = K_{t+1} - (1-\alpha)K_t $$

Where

- $I_t$ = Gross investment
- $K_t$ = Capital stock available in the economy, and $1-\alpha$ = Net depreciation rate of capital.

From equation 2 above gross investment equals capital stock at the end less capital stock at the beginning taking into account depreciation of capital stock. Bailliu (2000) pointed out that in the model under study, financial intermediaries play the role of transforming savings into investment by pooling resources for investment such that saving $S_t$ equals gross investment $I_t$, assuming that $\phi_t$ is available for investment, whereas $1-\phi_t$ the flow is lost in the process of financial intermediation due to transaction costs. In the closed-economy version of the model, capital market equilibrium requires that savings by domestic residents less the cost of financial intermediation must equal gross investment. Thus, equilibrium in the capital market ensures that:
vest in riskier but more productive investments through which financial development can affect economic growth. The first
economic growth in Nigeria. This was with a view to explore the nexus between foreign portfolio investment, into higher growth, because it increases the overall investment and not
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portfolio investment and economic growth (t = 1.92, p >0.05). The result of the granger causality test revealed a bi-
economic growth (t = 2.7, p < 0.05), it also showed that democracy had a positive and significant effect on the economic growth in Nigeria (t = 3.7, p < 0.05). it also showed that democracy had a positive and significant effect on the relationship between foreign portfolio investment and economic growth (t = 1.92, p >0.05). The result of the granger causality test revealed a bi-

\[ \phi St = It \]

Where
\[ \phi S = \text{Amount available for investment through Savings less transaction costs} \]
\[ It. = \text{Gross Investment} \]

Bailliu (2000) showed that using equation 1 through 3 and dropping the time indices, the growth rate of output g can be written as:

\[ g = A\left(\frac{1}{Y}\right) - \alpha = A\phi S - \alpha \]

Where
\[ S = \text{The gross savings rate} \]

Equation 4 thus represents the steady-state growth rate of a closed-economy AK model with financial intermediation. This equation reveals two main channels through which financial development can affect economic growth. The first channel is the efficiency with which savings are allocated to investment. This will be best done by banks, whose increased participation in intermediation will result in a drop in the spread between their lending and borrowing rates. This will result in the proportion of savings channeled to investment increasing. Thus in equation 4 above, \( g \) will increase in response to an increase \( \phi \) in which is the proportion of saving funneled to investment. The other key function of financial intermediation is the allocation of funds or capital to those projects where the marginal product of capital is highest (Bailliu, 2000). In this AK model, an improvement in the allocation of capital translates into higher growth, because it increases the overall productivity of capital, \( A \).

As financial intermediation increases, banks are assumed to gain experience in evaluating alternative investment projects and are thus better able to select high yielding projects (Carkovic and Levine, 2002) In addition, they are able to channel a larger proportion of funds to projects where the marginal product of capital is higher, because they are also better able to provide risk sharing and can thus induce individuals to invest in riskier but more productive investments (Bencivenga and Smith, 1991). Bailliu (2000) showed that this AK model can be extended by incorporating external financial flows. He assumed that foreigners invest in international financial intermediaries. This investment will result to an increased pool of savings available for investment. Thus, extending equation 3 in the presence of international capital flows, the capital market equilibrium becomes:

\[ \phi^* (St + NCFt) = It^* \]

Where
\[ NCFt = \text{Net International Capital Flows} \]
\[ g* = A^* \frac{1}{Y} - \alpha = A^*\phi^* \left(\frac{S + NCF}{Y}\right) - \alpha = A^*\phi^* S^* - \alpha \]

Bailliu (2000) showed that comparing the growth rate of the AK framework with financial intermediation and international capital flows in Equation 6 and the closed economy AK model with financial mediation in Equation 5, will highlight various channels through which capital flows can influence economic growth. Foreign capital flows promote economic growth if its leads to an increase in investment. This implies that \( g^* \) will be higher than \( g \) if \( s^* \) is larger than \( s \), all other things being equal. Bailliu (2000) assumed that international finance will be used to finance investment and not consumption and investment financed by foreign capital will not crowd out domestically financed investment. In addition, foreign capital investment will foster economic growth if they lead to investments that are associated with positive spillovers. These positive externalities include competition which results in domestic firms becoming more productive.

2.1 Empirical Framework

Ibrahim, Razaq and Akinbobola (2017) examined the relationship between foreign portfolio investment, democracy and economic growth in Nigeria. This was with a view to explore the nexus between foreign portfolio investment, democracy and economic growth in Nigeria. Annual time-series data for the period 1986 to 2013 on foreign portfolio investment and maximum lending rate were obtained from Central Bank of Nigeria (CBN) Statistical Bulletin, while data on variables such as GDP growth rate and gross domestic savings were obtained from World Development Indicators (WDI) database, published by the World Bank. Data collected were analyzed with both descriptive statistics and econometric techniques. Time series properties of the variables were examined using both Augmented Dickey Fuller and Phillip Peron tests. Co-integration properties of the variables were also examined. Vector Auto-Regression technique supported by Variance Decomposition and Impulse Response analysis were employed to empirically determine the relationship between foreign portfolio investment and economic growth in Nigeria. The results showed that foreign portfolio investment inflow was more stable in democratic periods between 1999 and 2013 than the military periods between 1986 and 1998 and that the correlation between economic growth and foreign portfolio investment is positive and very significant. The result showed that in the long-run foreign portfolio investment had positive and significant effect on the economic growth in Nigeria (t = 3.7, p < 0.05). it also showed that democracy had a positive and significant effect on economic growth (t = 2.7, p < 0.05), while it has positive but not significant effect on the relationship between foreign portfolio investment and economic growth (t = 1.92, p > 0.05). The result of the granger causality test revealed a bi-
directional relationship between foreign portfolio investment and economic growth. This study differs from the study of Ibrahim, Razaq and Akinbobola (2017) as it employed the Toda Yamamoto non-causality test in establishing the nature of the relationship. Also the this study trace the channels of transmission of foreign portfolio investment to economic growth

Okafor, Ugwuegbe, Ugochukwu, and Ezeku (2016) carried out a study to establish the relationship between foreign capital inflows and economic growth in Nigeria from 1981 to 2014. In the study, foreign capital inflows were proxied by Foreign Direct Investment, Foreign Portfolio Investment and Foreign Aid while economic growth was proxied by Gross Domestic Product (GDP). The study employed annual data generated from CBN statistical bulletin, and Toda Yamamoto test of causality was used to determine the relationship between foreign capital inflow and economic growth in Nigeria. The result revealed that there is bi-directional causality running from GDP to FPI as well as from FPI to GDP. It also indicates that there is a unidirectional causality between FDI and GDP with causation running from FPI to GDP. Furthermore, the result showed a unidirectional causality between GDP and FDI with causation running from FDI to GDP. Finally, the joint causation between all the components of foreign capital inflow i.e. FDI, FPI, FA and GDP indicates that increase in foreign capital inflow causes GDP to increase positively. This study allows for further research to be undertaken on this area as the impact of foreign capital inflow on economic growth was ascertained on a composite form. Much emphasis was not given to foreign portfolio investment in Nigeria.

Elekwa, Aniebo and Oguu (2016), estimated the relationship between foreign portfolio investment and employment growth in Nigeria for the period 1980 to 2014. Johansen co-integration, stationarity, residuals, normality and heteroscedasticity tests were carried out while specification test was employed to investigate model stability. Outcome of the OLS estimation supports the general view of a positive relationship between portfolio investment and economic growth. This study fails to capture the impact of foreign portfolio investment on economic growth and also trace the transmission of foreign portfolio investment to economic growth in Nigeria. Yahya, Hashmi, and Nazir (2015), analyze the relationship between macroeconomic factors and foreign portfolio investment volatility in South Asian countries. Monthly data was collected for the period ranging from 2000 to 2012 for four Asian countries i.e. China, India, Pakistan and Sri Lanka. GARCH was used in measuring the volatility in foreign portfolio investment; the results of the Ordinary Least Square reveal that there exists a significant relationship between macroeconomic factors and foreign portfolio investment volatility. Nonetheless, the idea of using GARCH to study the volatility of foreign portfolio investment is not appropriate because of the kind of data used in the analysis. According to Hansen and Lunde (2001, ) GARCH is more applicable when dealing with hourly data, daily data or weekly data.

3. METHODOLOGY OF THE STUDY

This study used the Toda Yamamoto Non-Causality test to examine relationship between foreign portfolio investment and economic growth and the impulse response and variance decomposition was employed to trace the transmission response of economic growth to foreign portfolio investment. The time series properties of the variables were examined using Augmented Dickey Fuller, (ADF) unit root test and the Breakpoint unit root test. The theoretical framework which underpins the methodology is based on the Auerbach-Kotlikoff (AK) dynamic life-cycle simulation model modified by Bailliu (2000) which shows the relationship between foreign capital inflow and economic growth.

According to Bailliu (2000)

\[ RGDP = f(FPI) \] .........................................................7

Where:

| RGDP | Real Gross Domestic Product; |
| FCI | Foreign Capital Inflow. |

Foreign capital inflow can be decomposed into foreign direct investment (FDI), foreign portfolio investment (FPI), over-sea development assistance (ODA), foreign loan etc. For the purpose of this study, the Bailliu model of the AK framework was modified to capture the relationship between foreign portfolio investment and economic growth. The Bailliu model is therefore restated as

\[ RGDP = f(FPI) \] .........................................................8

Where:

| FPI | net foreign portfolio investment. |

Evidence from the studies of King and Levine (1993), Atje and Jovanovic 1993 documented that capital market development is robustly correlated with current and future economic growth. Errunza (2001) also avers that developed capital market create conditions necessary to attract foreign portfolio investment. Therefore, market capitalization is introduced explicitly in the model to capture the effect of capital market performance. The model is therefore stated as:

\[ RGDP = f(FPI, MCAP) \] .........................................................9

Where:

| MCAP | is market capitalization. |

Furthermore, there is need to include the external sector in the model since no country can live in autarky. When we add the Index of Trade Openness (OPNSS) to equation 3 to proxy external sector, we have:
\[ \text{RGDP} = f(\text{FPI, MCAP, OPNSS}) \] .................................10

Where OPNSS is the index of trade openness

Exchange rate and interest rate are important explanatory variables in studying relationship between foreign portfolio investment and economic growth (Brink and Viviers, 2003; Leong and Wickramanayake, 2004; Khan and Mitra (2014). These variables are included in the model because of the crucial role they play in attracting foreign portfolio investment and economic growth. Therefore, the model for the study becomes

\[ \text{RGDP} = f(\text{FPI, MCAP, OPNSS, EXC, INT}) \] .................................11

Where,

- EXR is exchange rate
- INT is interest rate

Therefore,

\[ \text{RGDP} = \text{FPI} + \text{MCAP} + \text{OPNSS} + \text{EXC} + \text{INT} + u \] .................................12

Re-specifying the above model by taking the natural logarithm for uniformity of the data, we have

\[ \ln \text{RGDP} = \ln \text{FPI} + \ln \text{MCAP} + \ln \text{OPNSS} + \text{EXC} + \text{INT} + u \] .................3.7

Converting the above equation to a probabilistic mathematical form, we have

\[ \ln \text{RGDP} = \beta_0 + \beta_1 \ln \text{FPI} + \beta_2 \ln \text{MCAP} + \beta_3 \text{OPNSS} + \beta_4 \text{EXC} + \beta_5 \text{INT} + \nu \] .................................13

Where:

- \( \beta_0 \) is the intercept,
- \( \beta_1 \) is the coefficient of foreign portfolio investment
- \( \beta_2 \) is the coefficient of market capitalization
- \( \beta_3 \) is the coefficient of openness
- \( \beta_4 \) is the coefficient of exchange rate
- \( \beta_5 \) is the coefficient of interest rate.
- \( \nu \) is the stochastic term or the error term.

4. RESULT OF UNIT ROOT TEST

Before any meaningful estimation is carried out on time series variables, it is sacrosanct to test for the existence of unit roots in the variables and hence to establish their order of integration. Thus in an attempt to normalize the data from unit root problem, we test for the presence of unit root in the variables and obtain their integrating order. If the dependent variable associated with the model is found to be integrated of the same order with the explanatory variables, then linear combination is suspected among the variables, hence co-integration test will be carried out to ascertain their long-run relationship (Ucak, Ozturk & Sarac, 2012). The test result of the Augmented Dickey-Fuller statistic for all the time series variables used in the estimation are presented in the Table 1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>At level</th>
<th>First Difference</th>
<th>Second Difference</th>
<th>1%Critical Level</th>
<th>5%Critical Level</th>
<th>10%Critical Level</th>
<th>Order of Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>lnRGDP</td>
<td>-0.630165</td>
<td>-3.062111</td>
<td></td>
<td>-3.670170</td>
<td>-2.963972</td>
<td>-2.621007</td>
<td>I(1)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.8492</td>
<td>0.0405*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnFPI</td>
<td>-0.901981</td>
<td>-1.962917</td>
<td>-3.739900</td>
<td>-3.679322</td>
<td>-2.967767</td>
<td>-2.622989</td>
<td>I(2)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.7741</td>
<td>0.3007</td>
<td>0.0086*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnMCAP</td>
<td>-1.459455</td>
<td>-4.262039</td>
<td></td>
<td>-3.670170</td>
<td>-2.963972</td>
<td>-2.621007</td>
<td>I(1)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.5404</td>
<td>0.0023*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OPNSS</td>
<td>-2.386730</td>
<td>-8.131914</td>
<td></td>
<td>-3.670170</td>
<td>-2.963972</td>
<td>-2.621007</td>
<td>I(1)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.1535</td>
<td>0.0000*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXC</td>
<td>1.791685</td>
<td>-3.134296</td>
<td></td>
<td>-3.670170</td>
<td>-2.963972</td>
<td>-2.621007</td>
<td>I(1)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.9996</td>
<td>0.0346*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT</td>
<td>-5.456801</td>
<td>-2.960411</td>
<td></td>
<td>-3.661661</td>
<td>-2.960411</td>
<td>-2.619160</td>
<td>I(0)</td>
</tr>
<tr>
<td>Prob</td>
<td>0.0001*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed from Unit Root Test Results

Note: These critical values are computed from Mackinnon (1996) and if the probability value of a particular variable is less than the 5% critical value, we reject the null hypothesis of the variable having a unit root. Therefore, the decision for the rejection of null hypothesis for a variable (series has unit root) is based at 5% level of significance. Asterisk (*) indicates that the null hypothesis of the series having unit root is rejected at 5% level of significance. From the results of unit root without structural breaks, RGDP, MCAP, OPNSS, EXC and INT were not stationary at level but became integrated at the first difference, that is I(1) except FPI. Thus, all the variables were integrated at first difference except foreign portfolio investment where the series were integrated at second difference. This is because the probability value of real Gross Domestic Product, market capitalization, trade openness, exchange rate and interest rate are less than 0.05 critical values at first difference and foreign portfolio investment at second difference. This also shows that some variables do not have mean
reverting ability at first difference and hence no need for co-integration test which in this case, the Toda Yamamoto VAR is appropriate given that the variables have mixed order of integration.

4.1 Toda Yamamoto Non-Causality Test

This study used the result of Toda Yamamoto non-causality test to examine the causal relationship between foreign portfolio investment and economic growth in Nigeria. The results of Toda Yamamoto non-causality test are presented in Table 2.

Table 2. Result of Causality Test

<table>
<thead>
<tr>
<th>Variables (Dependent)</th>
<th>Excluded Variables</th>
<th>Probability At 5%</th>
<th>Chi-Square Value</th>
<th>Decision at 5% Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNRGDP</td>
<td>(LNFI)</td>
<td>0.0402***</td>
<td>4.202943</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>(LNOPNSS)</td>
<td>0.0057***</td>
<td>7.653328</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>(LNEXC)</td>
<td>0.0081***</td>
<td>7.006223</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.0022***</td>
<td>18.66706</td>
<td>Significant</td>
</tr>
<tr>
<td>LNFPI</td>
<td>(LNRGDP)</td>
<td>0.0283</td>
<td>4.814771</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>(EXC)</td>
<td>0.0156**</td>
<td>5.847127</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.0028***</td>
<td>18.14576</td>
<td>Significant</td>
</tr>
<tr>
<td>MCAP</td>
<td>(NONE)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.6526</td>
<td>3.308193</td>
<td>Not Significant</td>
</tr>
<tr>
<td>OPNSS</td>
<td>(LNRGDP)</td>
<td>0.0054***</td>
<td>7.744504</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>(LNMCAP)</td>
<td>0.0160**</td>
<td>5.797428</td>
<td>Significant</td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.0181**</td>
<td>13.64180</td>
<td>Significant</td>
</tr>
<tr>
<td>EXC</td>
<td>(INT)</td>
<td>0.0771*</td>
<td>3.124721</td>
<td>Not Significant</td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.2034</td>
<td>7.240378</td>
<td>Not Significant</td>
</tr>
<tr>
<td>INT</td>
<td>(None)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Joint (All)</td>
<td>0.5008</td>
<td>4.345868</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Source: Culled from E-views 9.5 output

We reject the null hypothesis of the variables not having causal relationship. The asterisk (*, **, ****) denotes rejection of the null causality relationship hypothesis at 10%, 5% and 1% critical levels. However, this study considers 5% level of significance as the basis for decision on the significance of a causal relationship.

The decision on the statistical significance of the causality test results is based on 5% level of significance. The results from Table 4.8 show a bidirectional relationship between foreign portfolio investment and economic growth and between trade openness and economic growth at 5% level of significance. This implies that there is a granger causal relationship between foreign portfolio investment and economic growth and between trade openness and economic growth with feedback effect. The result of Toda Yamamoto non-causality test also revealed a unidirectional relationship running from exchange rate to economic growth in Nigeria at 5% level of significance. The study also found that all the variables significantly have joint granger causality on economic growth in Nigeria at 5% level of significance. This implies that foreign portfolio investment, trade openness and exchange rate granger causes economic growth in Nigeria. This result is consistent with the findings of Ibrahim, Razaq and Akinbobola (2017) and Okafor, Ugwuegbe, Ugochukwu, and Ezeaku (2016) who found a bi-directional relationship between foreign portfolio investment and economic growth in Nigeria.

The result also revealed a unidirectional relationship running from exchange rate to foreign portfolio investment in Nigeria at 5% level of significance. This implies that exchange granger causes foreign portfolio investment in Nigeria. The study also found that all the variables jointly granger causes foreign portfolio investment in Nigeria at 5% level of significance. The result further shows that no variable granger caused market capitalization in Nigeria at 5% level of significance. More so, the results revealed a unidirectional relationship running from market capitalization to trade openness in Nigeria at 5% level of significance. Similarly, the study also revealed that all the variables jointly granger caused trade openness in Nigeria at 5% level of significance. This indicates that joint changes in real gross domestic product, foreign portfolio investment, market capitalization, trade openness, exchange rate and interest rate affect the level of openness in the country. The results from Table 4.8 also revealed a unidirectional relationship running from interest rate to exchange rate in Nigeria at 10% level of significance. The result of the Toda Yamamoto non-causality test which revealed a feedback mechanism between foreign portfolio investment and economic growth justifies the application of VAR framework.
4.2 Impulse Response and Accumulated Forecast Error Variance

The result of the impulse response of economic growth to shocks in foreign portfolio investment is presented in Figure 1.

![Response of LNRGDP to LNFPI](image1)

**Fig 1.** Results of Economic Growth to Shocks in Foreign Portfolio Investment in Nigeria

Figure 1 shows the response of economic growth to a one standard deviation shock in foreign portfolio investment. The result reveals that a shock in foreign portfolio investment will cause economic growth to respond negatively in the first and second year of the forecast. A continuous shock in foreign portfolio investment will exert a positive and permanent response in economic growth from the third year of the forecast. However, the response would decline slightly from the 7th year to the 13th year of the forecast. This implies that innovations in foreign portfolio investment will cause economic growth to be negative in the short-run but will revert from the second year of the forecast and cause economic growth to be positive throughout the forecast period.

The result of the impulse response of foreign portfolio investment to shocks in gross domestic product is presented in Figure 2.

![Response of LNFPi to LNGDP](image2)

**Fig 2.** Results of Impulse Response of Foreign Portfolio Investment to Shocks in real Gross Domestic Product in Nigeria

Figure 2 shows the response of foreign portfolio investment to a one standard deviation shock in economic growth. The 13th year forecast shows that foreign portfolio investment was positive in the short-run but became negative in the long-run. The implication is that initial response of foreign portfolio investment to innovations in economic growth is positive but the response would reverse depicting negative response throughout the remaining forecast. This explains the Lucas paradox that argued that foreign capital does not constantly flow from richer nations to poorer nations. Government policies in relation to tax, sovereign risk, debt overhang and insecurity will lead to abrupt reversal of foreign portfolio investment. This could probably explain why the correlation between growth and foreign portfolio inflows is strongly positive for developed nations but fluctuates in less developed countries.

The result of impulse response shows that economic growth would respond positively and permanently to shocks in foreign portfolio investment in Nigeria during the long run. The initial response of economic growth to innovations in
foreign portfolio investment would be negative. The implication is that at the initial stage, foreign portfolio investment is not yet vibrant and huge to spur economic growth. But due to the increased liquidity emerging from the internationalization of the financial system, foreign portfolio inflow would cause economic growth to improve from the second year of the forecast. This explains that relevance of foreign portfolio investment to developing economies like Nigeria where there is gross lack of investment. This also conforms to the argument of Ogujuba and Emeka (2012), Baghebo and Apere (2014), Elekwa, Aniebo and Ogu (2016) that foreign portfolio investment is one factor that contributes to economic growth.

The study also revealed that foreign portfolio investment responds positively to one standard deviation shock or impulse of innovation in real Gross Domestic Product in the short-run. This implies that shocks in real Gross Domestic Product would exert initial positive influence on foreign portfolio investment in the short-run but would decline to negative in the long-run. This further implies that profit from foreign portfolio investment is repatriated in the short-run and confirmed the assertion by Baghwati (1998) that foreign portfolio investment is a short-term investment.

4.3 Conclusion and Recommendation

The study concludes that there is a bi-directional relationship between foreign portfolio investment and economic growth in Nigeria. The result of impulse response shows that economic growth would respond positively and permanently to shocks in foreign portfolio investment in Nigeria after the second forecast period. Considering the empirical findings of this research work vis-à-vis the objectives of the exercise, it becomes obvious that there is need to attract FPI into Nigeria to complement domestic investors’ investment so as to provide the much needed capital for economic growth in the Nigeria. Hence, the following policy recommendations are hereby suggested.

1. In-line with the findings of the study, government and policy makers should create appropriate enabling environment to attract more foreign portfolio investment in Nigeria. This entails that efforts should be made to curtail the problems of insecurity, external debt overhang, and poor corporate governance. These factors have the tendency to inhibit the inflow of foreign portfolio investment in Nigeria.

2. From the findings, the impulse forecast shows that the positive response of foreign portfolio investment to innovations in economic growth is temporal; this short-run positive effect buttress the role of capital flight as profits are repatriated in the short-run. Therefore, efforts should be made by the government and policy makers to reduce capital flight.

3. This study further establishes that exchange rate and interest rate are very essential to inflow of foreign portfolio investment in Nigeria as the variances of foreign portfolio investment to innovations in exchange rate and interest rate increase over the forecast period. Therefore, the inflow of foreign portfolio investment requires stable exchange rate and high interest rate, this demand concerted monetary and fiscal policy mix by appropriate authorities

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