

Foreign Portfolio Investment and Nigerian Bond Market Development

Ololade Babatunde M.¹, Ekperiware Moses C.^{2,*}

¹Obafemi Awolowo University (OAU), Department of Management and Accounting, Ile-Ife, Nigeria

²National Centre for Technology Management (NACETEM), Nigeria

Abstract The study examined the contribution of foreign portfolio investment (FPI) towards financing Nigeria infrastructural deficits and determined the factors that attract FPI into the Nigerian bond market. It also examined the relationship between FPI and bond yield in Nigeria. Primary data were obtained through administration of questionnaires to directors of finance, chief finance officers and investment officers of 128 firms out of 271 firms in financial and manufacturing sectors of the Nigerian economy. Stratified sampling technique was used to select 100 stock broking firms that were controlling 90% of the secondary bond market trading activities while purposive sampling technique was used to select the existing 18 primary dealers and market makers and 10 non-financial institutions that had raised fund in the domestic bond market within the study period. Secondary data on bond index, bond market capitalization, real interest rate, real exchange rate, inflation rate, gross domestic product, external debt and external reserve were obtained from publications of Central Bank of Nigeria (CBN), Securities and Exchange Commission (SEC), Debt Management Office (DMO), Nigeria Stock Exchange (NSE) and National Bureau of Statistics (NBS). Data collected were analyzed using both descriptive statistics such as line graphs, bar charts and simple percentages; and inferential statistics which was mainly multiple regression analysis. The results showed that there was no FPI in the bond market until 2003 when the federal government through the Debt Management Office issued the first FGN Bond series. In addition, between 2003 and 2011, the contribution of the FPI to long term funds in the bond market was 10% of the total bond market capitalization which was considered very low. Interest rate (85%), Gross domestic product (90%), bond market capitalization (91%), inflation rate (89%) and external reserve (95%) were found to be major factors that attracted FPI into the Nigerian bond market as stated by the respondents. Finally, the results showed that there was a significant relationship between FPI and bond yield ($r = 0.44$, $p < 0.05$). The study concluded that factors attracting foreign investors into the bond market in Nigeria are critical and if well managed by policy makers could enhance the attraction of FPI needed for financing infrastructural projects through the Nigerian bond market.

Keywords Foreign portfolio investment, Infrastructural development, Equity ownership structure and economic development

1. Background to the Study

Foreign portfolio investment (FPI) is an aspect of international capital flows comprising of transfer of financial assets: such as cash, stock or bonds across international borders in want of profit. It occurs when investors purchase non-controlling interests in foreign companies or buy foreign corporate or government bonds, short-term securities or notes. Accordingly, just as trade flows result from individuals and countries seeking to maximize their wellbeing by exploiting their own comparative advantage, so too, are capital flows as individuals and countries seeking to make themselves better off, moving accumulated assets to wherever they are likely to be most productive (1).

International Monetary Fund defined FPI as equity and debt issues including country funds depository receipts and direct purchases by foreign investors of less than 10 per cent control. FPI 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, Japan etc and developing countries like Nigeria, Ghana, Kenya etc are exploring it to develop their economies. However, the percentage of Foreign Portfolio Investment in the Nigerian Bond Market is relatively small compared to domestic investments of Pension fund, Insurance companies, Merchant banks, Commercial banks and Discount houses even though there are opportunities to strengthen the market by attracting more foreign investors.

The abrogation of the Exchange Control Act 1962, in Nigeria has allowed foreigners to participate in the Nigerian capital market both as operators and investors. The internationalization of the Nigerian Stock Exchange, which was part of the financial liberalization policy in Nigeria in

* Corresponding author:

Mosekperi2002@yahoo.com (Ekperiware Moses C.)

Published online at <http://journal.sapub.org/economics>

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the mid-2000, has also precipitated to an increase in inflows of foreign portfolio investment into the Nigeria economy through the capital market (2).

The present clamour by the generality of Nigerians and commitment of government to rebuilding Nigeria's dilapidated infrastructure as catalysts for economic development have brought to the fore the need for a functional bond market given the developmental needs of the economy. The dearth of adequate financing has been identified as one key factor inhibiting the much needed investment in critical infrastructure such as down and midstream petroleum distribution, telecommunications, electricity, agriculture and transportation. Hence, substantial long term financing would be required to rejuvenate Nigeria's ailing key industrial sector, power sector, and the provision of socio-economic development in education and healthcare sector among others.

One of the most important sources of mobilizing fund for economic development is by issuing bonds, especially recently in Nigeria. Bonds are "I owe You", generally called IOUs (debt) that are issued by federal, municipal governments and corporations to mobilize funds to manage infrastructural development and finance business projects respectively. Bonds are issued in tenors (maturities) of three, five, ten, and twenty years long. A bond is a debt instrument that must be paid back to the lender with interest at a maturity date by the issuer or borrower, when borrowers issues a bond, they must price it with coupons rate based on the prevailing interest set by the CBN's monetary policy rates. The longer the tenor of the bond the higher price (interest) the lenders of money to the borrower expect to be paid and vice versa for the shorter maturities. The borrower pays the lender periodic interest, usually every six months until the bond matures and at that time, the final interest and principal are paid back to the lender. In reality, no lender (bond investor) of money to the bond issuer (borrower) wants or expects to hold the bond he/she bought for the entire duration to maturity, regardless of how short the tenor might be; therefore bond trading becomes an important capital market activity.

The Nigerian Debt Management Office (DMO) which was established in October 2000 is responsible for managing Nigeria's external and domestic debt and fostering the development of the bond markets. In order to increase the liquidity of the domestic bond market, the DMO started to issue 3, 5 and 7-year benchmark FGN bonds in 2003, By issuing the first 10-year bond in mid-2007 the DMO further lengthened the yield curve. Besides, secondary trading in debt instruments was boosted by the establishment of a primary dealer panel in June 2006. Local commercial banks, discount houses, pension fund, insurance companies and foreign investors are key investors in the Nigerian bond market. The foreign investors are allowed to invest in debt securities of all tenors as the restriction placed on foreign investors to invest in securities with a tenor of at least 1 year was lifted by CBN.

The federal government in its bid to improve growth and

become one of the world's leading 20 economies by 2020 has developed a medium-Term Fiscal Strategy (MTFS) which is aimed to sustain rapid, broad-based Gross Domestic Product (GDP) growth; reduce poverty; build infrastructure; generate employment; ensure macroeconomic stability and provide economic diversification while efforts are being made under National Economic Empowerment and Development Strategy (NEEDS) to reform the financial system. A critical component of mobilizing long-term funds to finance these plans, among others, is a well-functioning Bond Market.

Foreign portfolio investment (bond and equity) increased dramatically over the last twenty years such that by the end of 2005 it surpassed every other type of capital flows into Nigeria (3, 4 and 5). Ozurumba (5) examined the relationship between stock market returns and Foreign Portfolio Investment and stated that there is a significant positive impact of foreign portfolio investment on stock market returns in Nigeria. Stock market returns as used in the regression analysis is estimated to be All Share Index (ASI) and this excludes bond market yields. Hence, there is need to examine the relationship between foreign portfolio investment and bond market yield so as to fill the gap in literature because foreign portfolio investment is not only investment in equities of companies.

There have been many studies on the impact of foreign portfolio Investment on economic growth and long run determinants of foreign portfolio investment in emerging economies like Nigeria. While some of the studies support positive correlation between economic growth and foreign portfolio investment. [6, 7, 8, 5] argued against it. They argued that portfolio investments run the risk of sudden reversal if the economic environment or the perception of investors change, giving rise to financial and economic crises.

However, most of the studies failed to consider the inflow of foreign portfolio investment into the bond market as emphasizes were placed on the stock market (companies' equities) by most of the studies. This has made the studies to refer to foreign portfolio investment as passive or speculative in nature. However, Investment in the bond market is usually long term and not highly speculative when compared to investment in equities of corporations. More so, investments in bonds are not as volatile as investment in equities of companies. This study is to consider the factors that influence foreign portfolio investment into the Nigerian Bond Market with a view to attracting the fund for the development of Nigeria infrastructure and business activities of business corporations in Nigeria.

2. Conceptual Framework

Capital impacts positively on the economy by providing financial resources for investment in key areas like infrastructure, agriculture, solid minerals, manufacturing, banking and other financial services and other real sector areas. The projects could be promoted by government or

private sector institutions. The concept here is that (portfolio capital) FPI can provide the needed resource to the government and corporation in Nigeria through the bond market for infrastructural and industrial productivity.

Bond markets in emerging economies such as Brazil, Chile, China, Chinese Taipei, India, Israel, Korea, Malaysia, South Africa and Thailand are at different stages of their development and it is believed that PFI from bond markets is a major source of capital development. Hence, if Nigeria must catch up with infrastructure and real sector productivity, the FPI attraction into the Nigerian bond market must be a priority. This perception was also noted by the Emergency Market Committee (EMC) report of the international organization of securities commissions in collaboration with the World Bank group [9].

The foreign portfolio investment in bond market could either be invested in government bond or corporate bond. If invested in government bonds, the proceeds would be used for financing infrastructural facilities that are so much needed in Nigeria while if invested in corporate bonds, the proceeds would be used to finance business projects that will enhance the profitability of the corporation without putting any strain on the cash flow of the corporation compared to when the projects are financed by bank loan.

The building of infrastructural facilities and business projects through the proceeds of bond will substantially lead to economic development. This would subsequently bring about increase in employment, advancement in income generation, increase in gross domestic product and increase in standard of living.

3. Methodology

The study relied on quarterly time series data from 1999 to 2011. The choice of the time frame is informed by the desire to capture both the regulation period when the bond market really went through recent progress and the democratic era we are in Nigeria which has led to increase in the issuance of

both the Federal and State government bonds in the market. The scope also covers the banking sector reform in Nigeria which began in 2004/2005 with the consolidation programme through mergers and acquisitions by financial institutions that cannot single handedly raised their capital base to N25b as directed by the Central Bank of Nigeria (CBN).

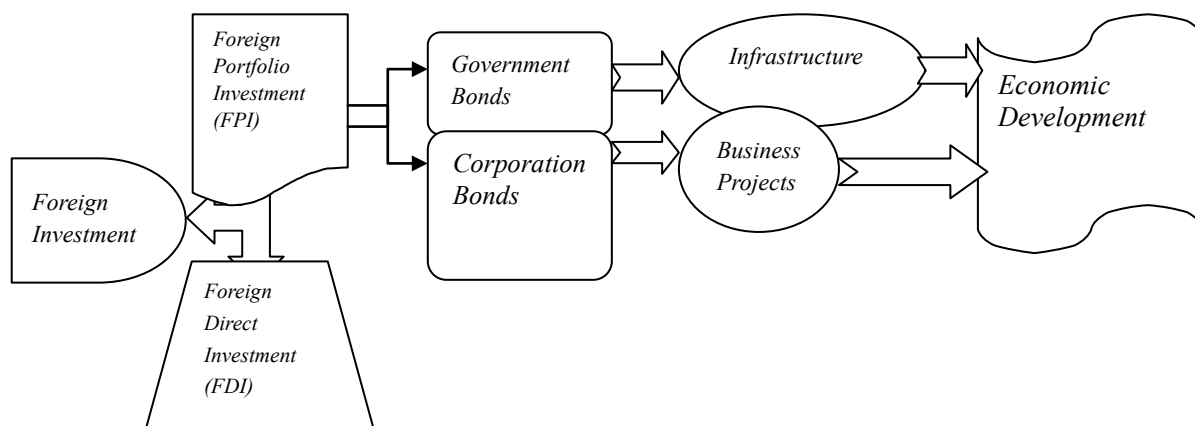
Questionnaires were administered to sample financial stakeholders selected through stratified and purposive sampling techniques while secondary data on bond index, bond market capitalization, real interest rate, real exchange rate, inflation rate, gross domestic product, external debt and external reserve were obtained from the weekly, monthly, quarterly, bi-annual and annual publications of CBN, SEC, DMO, Nigeria bureau of statistics, Budget office and NSE.

The population of this study is 271 organizations which consist of 243 stock broking firms approved by Securities and Exchange Commission (SEC) in Nigeria; all the 18 appointed Primary Dealer Market Makers (PDMMs) by the Debt Management Office in Nigeria and 10 non-financial corporations that have raised bonds in the domestic bond market. The approved stockbrokers consist of both foreign operators and non-foreign operators.

A stratified sampling technique was used to segment the stock broking firms into two (2) groups as follows: stock broking firms controlling more than 60% of the bond market secondary trading activities and others. Purposive sampling technique was used to deduce the respondents from the total population as follows:

Stock broking firms controlling more than 60% of the secondary bond trading activities are 10.

Other stock broking firms selected on the basis of the size of their share capital are 90 while all the PDMMs (18) and non-financial corporations that have raised bonds in the market (10) are purposively selected. Primary data were then obtained through questionnaires administration to directors of finance, chief finance officers and investment officers of 128 sample of the population of 271 organisations.



Source: Author's construct, 2014

Figure 2.1. The Conceptual Framework of FPI and Development

4. Model Specification

The model specification assessed the relationship of bond yield and other variables of interest with FPI in the bond market. A multiple regression model of ordinary least square (OLS) was used to determine the linear estimation of the effect of the independent variables responsible for the attraction of foreign portfolio investment into the Nigeria bond market (bond market capitalization, bond yield, real exchange rate, real interest rate, real gross domestic product, external reserve, exchange rate and external debt) The Model is specified below as follows,

$$Y + F(X) \tag{3.1}$$

Where Y is the dependent variable (FPI) and X is the independent variables (Bindex, RIR, EXR, MCAP, EXDEBT, EXRESV, INF, RGDP)

$$FPI = C + \alpha_1 Bindex + \alpha_2 RIR + \alpha_3 EXR + \alpha_4 MCAP + \alpha_5 EXDEBT + \alpha_6 EXRESV + \alpha_7 INF + \alpha_8 RGDP + \mu \tag{3.2}$$

The a priori expectations of coefficients in equation 3.2 are thus; $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_6, \alpha_7, \alpha_8 > 0, \text{ but } \alpha_5 < 0$

Also an econometric specification of the effect of past bond yield on FPI would be useful in determining if bond yield is a strong influence that attracts FPI into the bond market.

$$FPI = F(BONDYIELD(-1)) \tag{3.3}$$

In a more specific statistical specification;

$$FPI = C + \beta_1(BONDYIELD(-1)) + v \tag{3.4}$$

Where the coefficient, β_1 , is expected to be positively relating to FPI in Nigerian bond market. These are variables that are of significant interest to this study. How they are measured and their sources are presented in the table below.

Table 1. Variables Measurement and Source of Data

| S/N | VARIABLE | SYMBOL | EXPLANATION | MEASUREMENT | SOURCE |
|-----|------------------------------|----------|---|--|-------------------------|
| 1 | Real Interest Rate | RIR | Rate of interest an investor expects to receive after allowing for inflation | Real interest rate is approximately the nominal interest rate minus the inflation rate | CBN, NBS |
| 2 | Real Exchange rate | REXR | The rate one currency will be exchanged for another in real terms. | This will be measured through direct quotation between two currencies | CBN, NBS |
| 3 | Market Capitalization | Mcap | The value of all listed bond securities based on their market prices. | The bond price times the number of bond outstanding | SEC, NSE, DMO |
| 4 | External Debt | XDEBT | Part of the total debt in a country that is owed to creditors outside the country. | Outstanding amount of actual current and not contingent liabilities that require payment(s) of principal and interest by the debtor per time that are owed to non residents by residents of a country. | CBN, DMO, Budget office |
| 5 | External Reserve | FX | Assets held by central banks and monetary authorities, usually in different reserve currencies, mostly in foreign currencies. | Sum of foreign currencies held by Central Bank of Nigeria (CBN), mostly the United States dollar, euro, pound sterling, and yen etc. used to back its liabilities. | CBN |
| 6 | Inflation | INF | The general price changes of goods and services in an economy overtime. | The measure of changes in general price level of goods and services overtime in Nigeria | CBN, NBS |
| 7 | Bond Index | BM index | The returns on bond market in Nigeria | Bond market yield divided by bond market capitalization. | CBN, SEC, NSE |
| 8 | Gross Domestic Product | GDP | Totality of goods and services produced in Nigeria within a year. | This shall be measured through value added approach. | CBN, NBS |
| 9 | Foreign Portfolio investment | FPI | Less than 10% equity and debt issued by foreign investors into Nigeria | The value of Foreign Portfolio investment in the bond market. | CBN, NBS, NSE, SEC. |

Source: Author's compilation, 2014.

4.1. Presentation of Trend Contribution of Foreign Portfolio Investment to the Finance of Infrastructural Deficit in Nigeria

There have been several instruments used by the federal government of Nigeria to raise fund in the domestic bond market. These instruments are usually for short time and long term, however, for the purpose of this study emphasis are placed on the instrument used by the federal government to raise long term fund because these are fund used by the government to finance infrastructural projects.

From table 4.1, FGN bond dominated the Nigerian domestic debt market from 2006 after its inception in 2003, followed by Treasury bill, Treasury bond and developmental stock respectively. A multiple bar chart representation further showed comparative description within individual years.

The FGN bond issuance series which the Debt Management office started to issue in 2003 to finance the infrastructural deficit has been on increase as both local and foreign investors invested their assets by providing long term fund for federal government, state governments and corporate organisations to finance capital projects. However, considering the enormous fund needed to build infrastructure

in Nigeria and the fact that these fund cannot be provided fully by local investors, investigation were made into the different categories of investors in the bond market and the table below is used to present them for analysis so as to determine the contribution of foreign portfolio investors.

Bank and discount houses are the major investors in the domestic debt market while foreign investors' contribution to long term fund used in financing infrastructural projects is the lowest. However, the investment of Banks and discount houses are usually directed towards treasury bills while that of foreign investors are into the FGN bonds because the foreign portfolio investors are expected to invest in bond of at least a year maturity until 2011.

Foreign Portfolio Investment steadily increased since 2003 even during the period of financial crisis. However, the value of fund provided by the foreign investors is less that 12% of the total size of the FGN bond in issue. The implication of this is that though there is an increase in trend of foreign portfolio investors in the domestic bond market yet the value and volume of their investment is lower compared to the investment of foreign portfolio investment in equities of quoted companies in Nigeria.

Table 4.1. Analysis of domestic debt profile by instruments ₦BILLION (1999-2011)

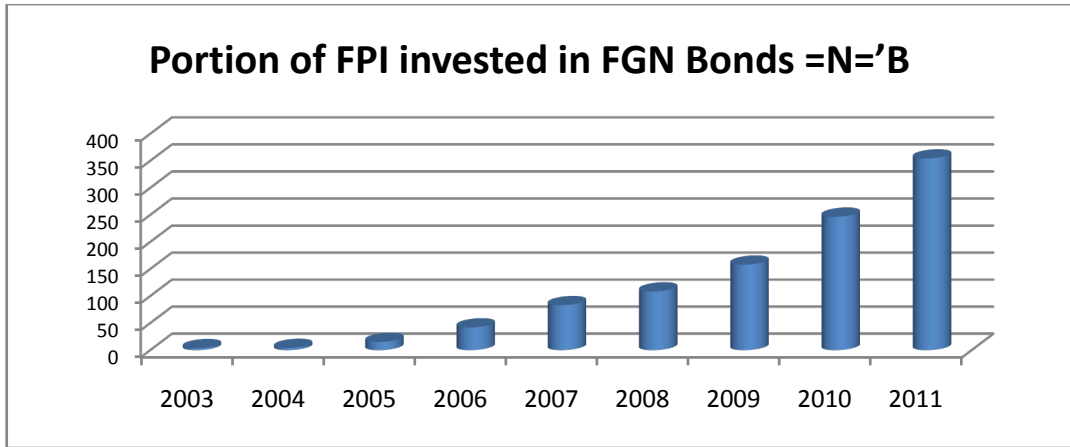
| INVESTORS | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------|--------|--------|--------|--------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| FGN BONDS | | | | | 72.56 | 72.56 | 250.83 | 643.94 | 1186.16 | 1,445.60 | 1,974.93 | 2,901.60 | 3,541.20 |
| TREASURY BILLS | 361.76 | 465.54 | 584.54 | 733.76 | 825.1 | 871.57 | 854.83 | 695 | 574.92 | 471.93 | 797.48 | 1,277.10 | 1,727.91 |
| TREASURY BONDS | 430.61 | 430.61 | 430.61 | 430.61 | 430.61 | 424.94 | 419.27 | 413.6 | 407.93 | 402.26 | 392.07 | 372.9 | 353.73 |
| DEV STOCK | 2.44 | 2.11 | 1.83 | 1.63 | 1.47 | 1.25 | 0.98 | 0.72 | 0.62 | 0.52 | 0.52 | 0.22 | 0(0) |
| TOTAL | 794.81 | 898.25 | 1017 | 1166 | 1,329.74 | 1,370.32 | 1,525.91 | 1,753.26 | 2,169.63 | 2,320.31 | 3,228.03 | 4,551.82 | 5,622.84 |

Source: Debt Management Office and CBN annual bulletin 2003 – 2012

Table 4.2. Holders/investors of domestic debt

| INVESTORS | CENTRAL BANK | BANKS AND DISCOUNT HOUSES | FPI | NON-PUBLIC HOLDER |
|-----------|--------------|---------------------------|--------|-------------------|
| YEAR | N'B | N'B | N'B | N'B |
| 2003 | 607.44 | 506.78 | 3.628 | 211.832 |
| 2004 | 403.46 | 669.07 | 4.063 | 293.737 |
| 2005 | 501.97 | 759.61 | 15.05 | 56.83 |
| 2006 | 335.53 | 882.85 | 41.86 | 324.36 |
| 2007 | 290.59 | 1,394.75 | 83.03 | 401.26 |
| 2008 | 289.4 | 1482.2 | 108.42 | 319.58 |
| 2009 | 323.18 | 1,274.58 | 158.00 | 1187.55 |
| 2010 | 343.14 | 2,605.01 | 246.64 | 1212.66 |
| 2011 | 1336.6 | 3790.9 | 354.35 | 982.25 |

Source: CBN, NSE and DMO annual reports, 2003 - 2012



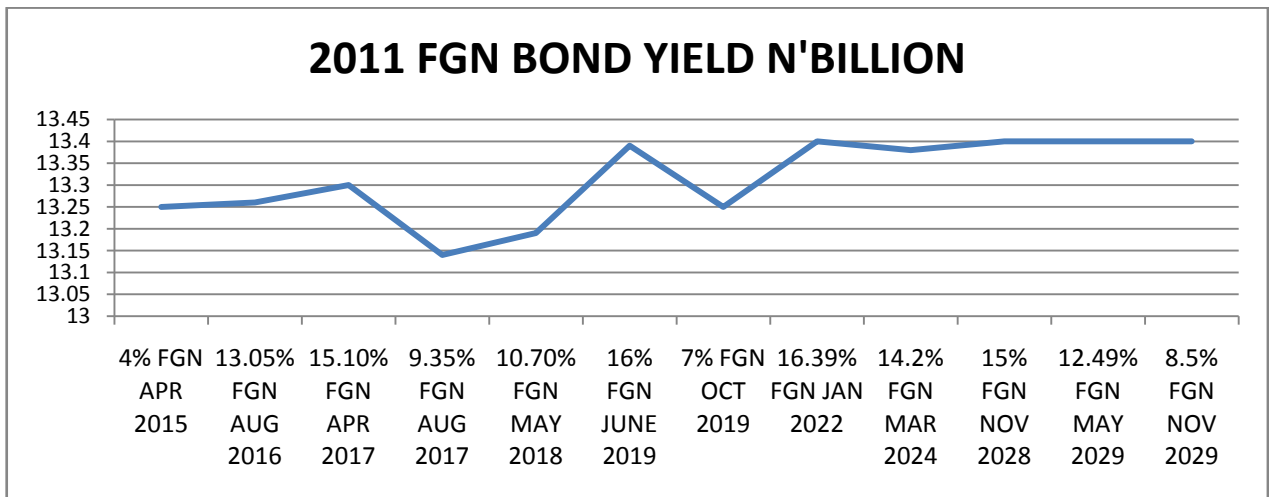
Source: CBN, NSE and DMO annual reports, 2003 – 2012

Figure 4.3. Part of FPI Invested in FGN Bonds

Table 4.3. Outstanding FGN Bonds and Bond Yield for 2011

| Nomenclature | Original tenor | coupon | Maturity | Outstanding no of years to Maturity | Yield |
|---------------------|----------------|--------|----------|-------------------------------------|-------|
| 4% FGN APR 2015 | 5 | 4 | 2015 | 1.2 | 13.25 |
| 13.05% FGN AUG 2016 | 3 | 13.05 | 2016 | 2.34 | 13.26 |
| 15.10% FGN APR 2017 | 5 | 15.10 | 2017 | 3.03 | 13.30 |
| 9.35% FGN AUG 2017 | 10 | 9.35 | 2017 | 3.38 | 13.14 |
| 10.70% FGN MAY 2018 | 10 | 10.70 | 2018 | 4.12 | 13.19 |
| 16% FGN JUNE 2019 | 7 | 16 | 2019 | 5.21 | 13.39 |
| 7% FGN OCT 2019 | 10 | 7 | 2019 | 5.52 | 13.25 |
| 16.39% FGN JAN 2022 | 10 | 16.39 | 2022 | 7.79 | 13.40 |
| 14.2% FGN MAR 2024 | 10 | 14.2 | 2024 | 9.92 | 13.38 |
| 15% FGN NOV 2028 | 20 | 15 | 2028 | 14.63 | 13.40 |
| 12.49% FGN MAY 2029 | 20 | 12.49 | 2029 | 15.11 | 13.40 |
| 8.5% FGN NOV 2029 | 20 | 8.5 | 2029 | 15.61 | 13.40 |

Source: DMO and SEC annual reports 2011



Source: DMO and SEC annual reports 2011

Figure 4.4. TREND OF 2011 FGN BOND YIELD %

Table 4.4. Value of FPI invested in Nigerian domestic bond and stock markets

| Year | FPI =N='B | Portion of FPI invested in FGN Bonds =N='B | Portion of FPI invested in companies equities =N='B |
|------|------------|--|---|
| 2003 | 23,634.10 | 3.628 | 23,631.47 |
| 2004 | 23,629.50 | 4.063 | 23,625.43 |
| 2005 | 376,573.90 | 15.05 | 376,558.85 |
| 2006 | 382,870.30 | 41.86 | 382,828.44 |
| 2007 | 294,789.90 | 83.03 | 294,706.87 |
| 2008 | 232,890.10 | 108.42 | 232,781.68 |
| 2009 | 201,310.89 | 158.00 | 201,152.89 |
| 2010 | 360,213.90 | 246.64 | 359,967.26 |
| 2011 | 398,111.30 | 354.35 | 397,756.95 |

Sources: CBN, NBS, SEC and NSE annual reports 2003-2013

From the table 4.3 and figure 4.5, the yield curve shows an increasing trend and this is in line with bond literature that bond with longer maturity attracts higher interest rate and hence higher rate of returns. The bond market has witnessed issuance of FGN Bonds with longer maturity tenors and this explains the highest bond yield that has been witnessed in the market.

Foreign portfolio investment in the equities of quoted companies in Nigeria is heavy compare to the investment of foreign investors in the bond market. The foreign portfolio investment is majorly in FGN bonds as there is no investment of foreigners in the bonds issued by state governments in Nigeria and quoted companies that have raised fund in the Nigerian domestic bond market.

4.2. Determination of Factors That Attract Foreign Portfolio Investment into the Nigeria Bond Market and Examination of Relationship between Foreign Portfolio Investment and Bond Yield in the Bond Market

The following independent variables used in model specification have been identified in accounting literature as influencing investment into the bond marketing Nigeria. FPI = (Bond index, Real Interest rate, exchange rate, bond market capitalization, external debt, external reserve, inflation rate, gross domestic product).

The unit root characteristics and regression estimates of independent variables are presented in the table below.

The Augmented Dickey Fuller (ADF) test was used to determine the order of stationarity of the time series used. The unit root test of variables showed that FPI, RIR, INF and BINDEX were stationary at levels 1(0). RGDP, MCAP and BONDYIELD were stationary at levels with trend 1(0)t while no variable was stationary at exact first difference except exchange rate (EXR) variable, but EXRESV and EXDEBT were stationary at first difference with trend as presented in table 4.6. Also the group correlation of variables is presented in table 4.7. The individual peculiarities of these

variables were useful and considered in estimating the model regression of the study.

From the regression estimate in table 4.7, the statistical requirement of the model is satisfactory as the coefficient of determination (R^2) which shows that the model explains 95% of changes that determine the dependent variable (FPI) in the regression besides the adjusted R^2 being 93%. This means that market capitalization (MCAP), interest rate (RIR), bond index (BINDEX), inflation (INF), exchange rate (EXR), external debt (EXDEBT), real GDP and external reserves (EXRESV) explains or influences 94 per cent changes in foreign portfolio investment (FPI) in the economy. Also the overall statistical significance (*f statistic* (49.07(0.00%)) of the regression revealed a less than 0.05 statistical significant. This gives credence to the entire regression result. In ordinary sense, it means that the regression results are valid, can be relied on and represent the position of foreign portfolio investment in the Nigerian bond market in general. Another useful statistic in the data analysis is the Durbin Watson statistics of (1.23) which indicates the presence of no serial autocorrelation among variables. Individual estimates' analysis is germane to reveal their individual effects and significant to FPI in the economy and the bond market.

From the regression estimate, bond index which is ratio of bond yield and market capitalization was statistically significant in negatively relating to FPI in the Nigerian bond market. Real interest rate (RIR) which captures the change in general price level in the economy was statistically significant in positively relating to FPI. This shows that the higher the rate of return, the higher the FPI in the economy.

Exchange rate which denominates the local currency with foreign currencies was found to be statistically significant and positively relating to FPI in the country. This reveal theory position as the value of exchange rate depreciates (increases) foreign investors would be more disposed to invest in the Nigerian economy which would increase the FPI in the country. Hence, the higher the exchanges rate the more FPI in the bond market.

Table 4.5. Unit root test: dickey fuller test

| Variable | Levels with C | Level with Trend | Level | First dif. | First dif. with trend | Order of integration |
|-----------|---------------|------------------|-------|------------|-----------------------|----------------------|
| RGDP | -1.9443 | -13.7678 | | -12.07 | | 1(0)t |
| MCAP | -1.6796 | -2.2741 | | -2.39 | | 1(0)t |
| RIR | -3.3433 | | | -2.63 | | 1(0) |
| FPI | 2.16414 | | | | | 1(0) |
| EXRESV | -1.7256 | -0.0211 | -0.05 | -1.69 | -2.5091 | 1(1)t |
| INF | -3.4623 | | | | | 1(0) |
| BONDYIELD | -1.1025 | -3.5691 | | | | 1(0)t |
| BINDEX | -2.8966 | | | | | 1(0) |
| EXDEBT | | | | | -2.06215 | 1(1)t |
| EXR | -1.3555 | -1.7167 | 0.519 | -2.99 | | 1(1) |

Source: computed by author using e-view econometric software package (2014).

Table 4.6. Group correlation statistics

| | FPI | BINDEX | RIR | EXR | MCAP | EXDEBT | EXRESV | INF | RGDP |
|--------|-------|--------|-------|-------|-------|--------|--------|-------|------|
| FPI | | | | | | | | | |
| BINDEX | -0.67 | | | | | | | | |
| RIR | -0.31 | 0.86 | | | | | | | |
| EXR | 0.62 | -0.14 | 0.08 | | | | | | |
| MCAP | 0.66 | -0.85 | -0.60 | -0.02 | | | | | |
| EXDEBT | -0.65 | 0.90 | 0.75 | -0.08 | -0.80 | | | | |
| EXRESV | 0.54 | -0.89 | -0.83 | -0.13 | 0.81 | -0.91 | | | |
| INF | -0.13 | 0.64 | 0.73 | 0.02 | -0.46 | 0.43 | -0.39 | | |
| RGDP | 0.82 | -0.68 | -0.44 | 0.40 | 0.60 | -0.64 | 0.57 | -0.25 | |

Source: Computed by Author using Eviews econometric software package, 2014

Table 4.7. Presentations and Analysis of Regression Result

| Dependent Variable: FPI | | | | |
|-------------------------|-------------|--------------------|-------------|----------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -148216.6 | 20533.21 | -7.218386 | 0.0000 |
| BINDEX | -59389.36 | 20081.55 | -2.957410 | 0.0073 |
| RIR | 8595.206 | 3530.975 | 2.434230 | 0.0235 |
| EXR | 768.0425 | 144.9232 | 5.299651 | 0.0000 |
| MCAP | 3.488521 | 3.503832 | 0.995630 | 0.0303 |
| EXDEBT | -0.004487 | 0.019043 | -0.235633 | 0.8159 |
| EXRESV | 0.089210 | 0.387960 | 0.229946 | 0.0203 |
| INF | 3621.910 | 1345.195 | 2.692479 | 0.0133 |
| RGDP | 0.157458 | 0.054451 | 2.891734 | 0.0085 |
| R-squared | 0.946928 | Mean dependent var | | 21288.01 |
| Adjusted R-squared | 0.927630 | S.D. dependent var | | 20757.04 |
| Log likelihood | -306.1289 | F-statistic | | 49.06680 |
| Durbin-Watson stat | 1.233155 | Prob(F-statistic) | | 0.000000 |

Source: Computed by Author using Eviews econometric software package, 2014

Market capitalization (MCAP) has a positive effect on FPI. This shows that the high bond activities in the Nigerian bond market in terms of values of all listed bond securities in the economy the higher the prospect of foreign portfolio investment in the bond market. This reinforces the fact that MCAP contributes positively to influencing the amount of FPI in the bond market. Also, from the field survey result, 93 per cent of experienced workers in the Nigerian bond market agreed that market capitalization positively influence FPI in the bond market.

External debt (EXDEBT) and external reserve (EXRESV) were not individually statistically significant in relating with FPI in the bond market. The coefficient of EXDEBT was negatively relating to FPI in the bond market. This means that the higher the nation's external debt pose negative posture to foreign investor in relating with the Nigerian bond market. This was also in line with the earlier hunch of the research position concerning external debt. However, the coefficient of EXRESV was positively relating to FPI in the country. This means that the higher the nation's external reserve, the higher foreign investors would invest and would want to do business in the Nigerian bond market and put in their money which would in turn argument savings gap for developmental project such as infrastructure. The more an economy is secured in her external reserve, the more likely foreign investors would participate in the bond market. This regression result is similar to field survey result which showed that 73.7 per cent of experienced workers in the Nigerian bond market agreed that external reserve influence FPI in Nigerian bond market.

Inflation rate was statistically significant and positively relating to FPI in the Nigerian economy. This means that the higher the rate of inflation the more would be the attraction of the foreign investors in the bond market. So a reasonable inflation rate would spur more FPI in the market.

Economic growth (RGDP) which explains the general real performance of the economy in a given year was statistically significant and positively contributing to FPI boost in the country. This means that the economic performance has been significance and it's a factor foreign investors' consider in deciding their investment destinations. This regression result was further investigated by a field survey which revealed that 96.7 per cent of experienced workers in the Nigerian bond market agreed that economic growth influence FPI in the bond market.

Table 4.8 regression shows the effect of past bond yield in

influencing foreign investors concerning FPI in the Nigerian bond market. The regression explains 88% coefficient of determination of FPI in the country and strong f statistical significant. Past bond yield was statistically significant and contributes positively in influencing FPI into the Nigerian bond market. So the higher the bond yield of the previous year, the more likely foreign investors would invest in the Nigerian bond market. However, the regression model suffered from issue of very low serial correlation between bond yield and FPI in the country.

4.3. Presentation and Analysis of Field Survey Result

Out of the 194 sampled questionnaire distributed to respondents in the bond market 188 were retrieved filled which served as the field survey data. 97 per cent retrieval of administered questionnaire is enough to represent the opinion of the stakeholders.

1. There were more male respondents (85%) than female respondents (15%) in table 4.5. Which mean male gender was more represented in the field survey.
2. From table 2, more (51%) single respondents were captured than married respondents (38%), divorced (10.5%). Meaning there are more singles in the FPI market.
3. The age brackets of the respondents are represented here. The age bracket of 25 to 35 were more (63.4%), followed by 35 to 45 bracket (27.5%).
4. An analysis of academic qualification of respondents showed that there were more masters degree holders (62%), followed by first degree (31%), PhD (3.9%) and (2.0%) respectively. This showed that the respondents are well educated and their responses could means that they are well informed about the subject matter.
5. Years of experience showed that the majority (66.7%) of the respondents have spent close to 5 years, (27%) up to 10 years, those bellow a year (4.6%) and those above 10 year (1.3%). Meaning respondents are experience in bond trading related activities.
6. The representation showed that almost all the respondents (88%) reside in Lagos. This means that the respondents are in the commercial nerve of the nation and are aware of the day to day running of financial markets in the country

Table 4.8. Regression Estimate of Bond Yield and FPI in Nigeria

| Dependent Variable: LOG(FPI2) | | | | |
|-------------------------------|-------------|--------------------|-------------|----------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -101.6122 | 7.511916 | -13.52681 | 0.0000 |
| LOG(BONDYIELD(-1)) | 90.80704 | 6.156542 | 14.74968 | 0.0000 |
| R-squared | 0.882378 | Mean dependent var | | 9.176937 |
| Adjusted R-squared | 0.878322 | S.D. dependent var | | 1.544541 |
| Log likelihood | -23.78101 | F-statistic | | 217.5531 |
| Durbin-Watson stat | 0.214575 | Prob(F-statistic) | | 0.000000 |

Source: Computed by Author using Eviews econometric software package, 2014

Table 4.8.1. Profile Analysis of the Respondents

| S/N | VARIABLE | FREQUENCY | PER CENT |
|------------------------------|----------------------|-----------|----------|
| 1. SEX | MALE | 130 | 85.0 |
| | FEMALE | 23 | 15 |
| 2. MARITAL STATUS | SINLGLE | 75 | 51 |
| | MARRIED | 59 | 38 |
| | DIVORCED | 16 | 10.5 |
| 3. AGE | UNDER 25 | 4 | 2.6 |
| | 25- UNDER 35 | 97 | 63.4 |
| | 35- UNDER 45 | 42 | 27.5 |
| | ABOVE 45 | 10 | 6.5 |
| 4. ACADEMIC QUALIFICATION | PRIMARY | 1 | 0.7 |
| | SECONDARY | 3 | 2.0 |
| | FIRST DEGREE | 48 | 31.4 |
| | MASTERS | 95 | 62.1 |
| | Ph.D | 6 | 3.9 |
| 5. EXPERIENCE IN FPI | BELOW A YEAR | 7 | 4.6 |
| | LESS THAN FIVE YEARS | 102 | 66.7 |
| | 5-10 YEARS | 42 | 27.5 |
| | ABOVE 10 YEARS | 2 | 1.3 |
| 6. EXPERIENCE IN BOND MARKET | BELOW A YEAR | 11 | 7.2 |
| | LESS THAN FIVE YEARS | 107 | 69.9 |
| | 5-10 YEARS | 33 | 21.6 |
| | ABOVE 10 YEARS | 2 | 1.3 |
| 7. LOCATION OF RESPONDENTS | LAGOS | 134 | 87.6 |
| | OTHERS | 19 | 12.4 |

Source: Field survey, 2014

Table 4.8.2. Determinants and Attraction of FPI in the Nigerian Bond Market

| S/N | VARIABLE | SA (%) | A (%) | U (%) | D (%) | SD (%) |
|-----|---|-----------|-----------|----------|--------|--------|
| 1 | Inflation rate influences FPI in the Nigeria bond market | 86(56.2) | 65(42.5) | 2(1.3) | | |
| 2 | Exchange rate influences FPI in the Nigeria bond market | 73(47.7) | 78(51.0) | 2(1.3) | | |
| 3 | Economic growth influence FPI in the Nigeria bond market | 101(66.0) | 47(30.7) | 4(2.6) | 1(0.7) | |
| 4 | Stock market capitalization influences FPI in the Nigeria bond market | 49(32.0) | 93(60.8) | 11(7.2) | | |
| 5 | Government stability attracts FPI into the Nigeria bond market | 91(59.5) | 41(26.8) | 17(11.1) | 4(2.6) | |
| 6 | Good governance attracts FPI into the Nigeria bond market | 85(55.6) | 44(28.8) | 19(12.4) | 5(3.3) | |
| 7 | Institution and policy stability influence FPI in Nigeria bond market | 26(17.0) | 102(66.7) | 20(13.1) | 5(3.3) | |
| 8 | Foreign direct investment attracts FPI into the Nigeria bond market | 18(11.8) | 111(72.5) | 18(11.8) | 1(0.7) | 5(3.3) |
| 9 | foreign debt influences FPI in the Nigeria bond market | 35(22.9) | 99(64.7) | 17(11.1) | 1(0.7) | 1(0.7) |
| 10 | Trade openness attracts FPI into the Nigeria bond market | 84(54.9) | 51(33.3) | 17(11.1) | 1(0.7) | |
| 11 | Foreign reserve influences FPI in Nigeria bond market | 33(21.6) | 95(62.1) | 23(15) | 1(0.7) | 1(0.7) |
| 12 | Market capitalization influences FPI in Nigeria bond market | 20(13.1) | 108(70.6) | 24(15.7) | 1(0.7) | |
| 13 | Bond yield influences FPI in Nigeria bond market | 34(22.2) | 99(64.7) | 18(11.8) | 2(1.3) | |

Source: Field survey, 2014

1. As expected, about 98% of the respondents agreed that inflation rate affects FPI in the bond market.
2. The higher return expected from investing in bonds is accompanied by increased risk arising from adverse currency fluctuations (exchange rate). Currency volatility can have a significant impact on bond returns. As expected, about 99% of the respondents agreed that exchange rate affects bond market pricing in the international scene. Investors should therefore be cognizant of exchange risk that comes with investment in bonds.
3. Economic trends are key drivers of the bond market's performance. About 97% of the respondents agreed that economic growth have great influence on bond market pricing.
4. Government activities have been seen to influence bond market activities. The stability of government policies and even governance has been found to influence investors into the economy. Analysis of the respondents in question 5 and 6 revealed that government performance have a lot to do in influencing foreign portfolio investment into the bond market in Nigeria.
5. Agreed that external debt influences bond market activities in the country. Only few respondents (12%) disagreed that external debt influences FPI in the Nigerian bond market.
6. Foreign reserve which shows the nation's monies in other currencies as financial security is a base to strengthen financial volatility of the country. This is believed to have influence in determining FPI in the Nigerian bond market. The field survey to get the responses of financial experts showed that majority of the respondents (84%) agreed that foreign reserve has influence on the amount of FPI in the Nigerian bond market.
7. The bond yield which is the return on bond is believed to attract investors into bond market all over the world. A field investigation from the Nigerian financial stakeholders shows that majority of the respondents (98%) agreed that bond yield

influences FPI in the bond market. An increase bond yield would attract more funds into the market as investment moves positively with high returns.

Investigation on the likely benefits of FPI in the Nigerian economy from stakeholders from the financial market reveals the following:

1. One of the likely benefits of FPI is provision of capital. A field investigation on the financial stakeholders shows that majority of the stakeholders (78%) agreed that FPI provides capital inflow which argument local savings for investment that leads to economic development of the country. This field respond is in line with the conceptual framework of this study that FPI provides investment funds that are used to engage in infrastructural and developmental projects in the country.
2. Also, a field investigation on the financial stakeholders shows that majority of the stakeholders (92%) agreed that FPI boost investment and economic activity in the domestic economy. This shows that FPI in the bond market is a good instrument for infrastructure and economic development of the country.
3. Foreign portfolio investment is believed to make the Nigeria bond market more liquid. A field investigation of the financial stakeholders showed that majority of the stakeholders (85%) agreed that FPI increases the liquidity of domestic bond market.
4. The presences of FPI help all stakeholders in the market including government to maintain standard and play their role to ensure smooth running of the system. An investigation to find out if the presence of FPI in the country support efficiency in the Nigeria capital market shows that majority of the field respondents agreed that FPI presence curtails inefficiency as government and public corporations look into their goodwill and credit worthiness credentials before coming to raise long term fund in the market.

Table 4.8.3. Benefits of Foreign Portfolio Investment in Nigeria

| S/N | VARIABLE | STRONGLY AGREE (%) | AGREE (%) | UNDECIDED (%) | DISAGREE (%) | STRONGLY DISAGREE (%) |
|-----|--|--------------------|-----------|---------------|--------------|-----------------------|
| 1 | FPI provides capital inflows apart from domestic savings | 43(28.1) | 99(64.7) | 8(5.2) | 1(0.7) | 2(1.3) |
| 2 | FPI boost investment and economic activity in the domestic economy | 47(30.7) | 98(64.1) | 7(4.6) | 1(0.7) | |
| 3 | FPI increases the liquidity of domestic bond markets, | 37(24.2) | 98(64.1) | 15(9.8) | 3(2.0) | |
| 4 | FPI help develop market efficiency | 39(25.5) | 85(55.6) | 28(18.3) | 1(0.7) | |
| 5 | FPI complement infrastructural development in Nigeria | 32(20.9) | 86(56.2) | 33(21.6) | 2(1.3) | |

Source: Field survey, 2014

5. Summary of Findings

- i. There is no foreign portfolio investment in the Nigeria domestic bond market until 2003 when the Federal government through the Debt Management Office issued the first FGN Bond series.
- ii. The Nigerian domestic bond market is substantially dominated by the local investors which are Pension Fund Administrators and Central Bank of Nigeria.
- iii. Foreign portfolio investment is positively related to rate of returns in the bond market (bond yields). The implication of this is that higher yield in the bond market will motivate the foreign investors to invest in the market.
- iv. Macro-economic variables of GDP, Interest rate and Bond market capitalization apart from bond rate of returns are the major factors attracting foreign portfolio investors into the bond market in Nigeria.

6. Conclusions

- i. There is an increase trend in the investment of FPI in the Nigeria bond market between 2003-2011. Substantial inflows of foreign investors into the bond market were recorded in 2010 and 2011. This is a positive response to the relaxation of a condition in Certificate of Capital Importation which restricts foreign investors to bonds of at least one year tenor. The contribution of the FPI in the provision of long term fund for financing infrastructural projects in Nigeria is between 8-10% of the bond market capitalization. More efforts need to be put in place by government to attract market.
- ii. Macro-economic variables of bond market capitalization, external reserve, Treasury bill rate, Real Gross Domestic Product and interest rate attract FPI into the Nigeria bond market and this is in line with the conclusion of Ekeocha (2008)
- iii. Foreign investors respond to the yield in the bond market by investing more on increase in the rate of returns. This is an indication that appropriate pricing of bond is necessary for attracting FPI in the domestic bond market.

7. Recommendations

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 the Nigeria bond market to complement domestic investors' investment so as to provide the much needed long term fund for development of infrastructural projects in Nigeria. Hence, the following policy recommendations are hereby suggested.

- (i) Based on the conclusion that there is a positive relationship between FPI and bond yield, the Central Bank of Nigeria whose core duty is to maintain price and exchange rate stability in the economy should also be saddled with the responsibility of attracting foreign investors into the bond market through the application of proper interest rate regime while ensuring price and exchange rate stability.
- (ii) Foreign investors' confidence should be more encouraged through elimination of policy restriction in entry and exist in the market. Asset allocation strategy of at least 80:20 is recommend for foreign investors in stock and bond markets respectively so as to increase the flows of foreign portfolio investment into the bond market.
- (iii) In line with the above recommendations, relevant regulatory authorities should monitor the utilization of fund raised in the market by borrowers and publish the result of their findings in their annual reports so as to strengthen confidence of investors. Likewise, the country's economic managers need to ensure that all debt contracted through the domestic bond market are used to promote economic growth and development via the build-up of infrastructure.
- (iv) Finally, the sovereign bond rating of the country is presently positive which has necessitated the inclusion of Nigerian bond into the JP Morgan bond index and Barclays emerging market bond index. The federal government of Nigeria should improve on this rating through effective management of socioeconomics variables and enhance political stability as these will contribute immensely to the attraction of foreign investors into the Nigerian bond market.

8. Contribution to Knowledge

The results of this study has brought to fore the need to deepen the Nigerian bond market with a view to attracting foreign portfolio investment to the market so as to complement domestic savings and investment in financing infrastructural projects in Nigeria. It would also assist the policy makers and bond market operators to assess the level of contribution of foreign investors in funding capital projects through the bond market. The study will also contribute to the body of accounting and investment knowledge on investment in bond market.

9. Suggestion for Further Research

Further research should incorporate foreign investors in both stock and bond markets to assess the level of contribution of foreign investors in enhancing the liquidity of these markets and determine the contribution of FPI to

economic development of Nigeria.

Appendix 1: Questionnaire

Dear Sir/ Madam,

This questionnaire is designed in order to examine **foreign portfolio investment (FPI) and Nigerian domestic bond market (1999-2011)**. Please provide accurate information only. The research is in part fulfillment of the award of master in Accounting (M.Sc.) in the department of Management and Accounting in the faculty of administration, Obafemi Awolowo University (OAU), Nigeria.

Section A: PERSONAL DETAIL

Please kindly tick (✓) the appropriate response to the statements below:

1. Sex (a) Male () (b) Female ()
2. Marital Status: (a) Married (), (b) Single (), (c) Divorced
3. Age: (a) under 25() (b) 25-35() (c) 36- 45() (d) 46-55() (e) 56 and above ()
4. Educational Qualification: (a) Primary (), (b) Secondary (), (c) First Degree () (d) Second Degree (Masters) (), (e) Ph.D. ()
5. Length of Service /experience in the foreign portfolio related activities (a) below 1 year (), (b) 1- 4years (), (c) 5-9 years (), (d) 10 years and above ()
6. Length of Service /experience in bond market related activities (a) below 1 year (), (b) 1- 4years (), (c) 5-9 years (), (d) 10 years and above ()
7. Location or residence of office

Section B: Determinants and Attraction of FPI in the Nigeria Bond Market

| S/N | STATEMENTS | SA | A | U | D | SD |
|-----|--|----|---|---|---|----|
| 1 | Inflation rate influences FPI in the Nigeria bond market | | | | | |
| 2 | Exchange rate influences FPI in the Nigeria bond market | | | | | |
| 3 | Economic growth influence FPI in the Nigeria bond market | | | | | |
| 4 | Stock market capitalization influences FPI in the Nigeria bond market | | | | | |
| 5 | Government stability attracts FPI into the Nigeria bond market | | | | | |
| 6 | Good governance attracts FPI into the Nigeria bond market | | | | | |
| 6 | Institution and policy stability influences FPI in the Nigeria bond market | | | | | |
| 7 | Foreign direct investment attracts FPI into the Nigeria bond market | | | | | |
| 8 | foreign debt influences FPI in the Nigeria bond market | | | | | |
| 9 | Trade openness attracts FPI into the Nigeria bond market | | | | | |
| 10 | Foreign reserve influences FPI in Nigeria bond market | | | | | |
| 11 | Market capitalization influences FPI in Nigeria bond market | | | | | |
| 12 | Bond yield influences FPI in Nigeria bond market | | | | | |

Section C: Why Government Issued Bonds Dominate the Nigeria Bond Market

| S/N | STATEMENTS | SA | A | U | D | SD |
|-----|---|----|---|---|---|----|
| 1 | The corporate bond issue process is more complicated | | | | | |
| 2 | Inability of corporate bonds to have high rating from credit rating agencies | | | | | |
| 3 | Corporate bonds are illiquid assets | | | | | |
| 4 | Government bonds are well secured and less risky in terms of default risk than corporate bonds. | | | | | |
| 5 | Government bonds' yield are higher | | | | | |
| 6 | Private corporations cannot meet the requirement of SEC in raising bonds in the market | | | | | |
| 7 | Equity finance is better than debt finance capital instrument and easier to raise than bond. | | | | | |
| 8 | Government is more influential than corporations | | | | | |

Section D: Benefits of Foreign Portfolio Investment in Nigeria

| S/N | STATEMENTS | SA | A | U | D | SD |
|-----|--|----|---|---|---|----|
| 1 | FPI provides capital inflows apart from domestic savings | | | | | |
| 2 | FPI boost investment and economic activity in the domestic economy | | | | | |
| 3 | FPI increases the liquidity of domestic bond markets, | | | | | |
| 4 | FPI help develop market efficiency | | | | | |
| 5 | FPI complement infrastructural development in Nigeria | | | | | |

Thanks for your co-operation

Appendix 2

| quarterly | FPI | EXDEBT | BONDYIEL | MCAP | RIR | BINDEX | RGDP | INF | EXDEBT | EXRESV | EXR |
|-----------|----------|------------|----------|---------|------|--------|-----------|------|------------|------------|--------|
| 83.46 | 762.70 | 1073661.91 | 3.30 | 277.90 | 7.35 | 1.19 | 118970.26 | 5.86 | 1073661.91 | 8226.16 | 127.16 |
| 83.46 | 878.62 | 1105666.19 | 3.30 | 317.53 | 7.65 | 1.04 | 119880.69 | 6.19 | 1105666.19 | 7673.09 | 127.83 |
| 83.46 | 964.96 | 1135584.46 | 3.30 | 359.64 | 7.70 | 0.92 | 119733.88 | 6.12 | 1135584.46 | 7170.46 | 128.58 |
| 83.46 | 1021.73 | 1163416.74 | 3.31 | 404.23 | 7.49 | 0.82 | 118948.15 | 5.65 | 1163416.74 | 7467.78 | 137.22 |
| 83.50 | 562.78 | 1285789.31 | 3.34 | 456.17 | 6.20 | 0.73 | 114617.63 | 3.20 | 1285789.31 | 9684.49 | 134.43 |
| 83.50 | 754.84 | 1270799.06 | 3.35 | 503.78 | 5.83 | 0.66 | 123702.92 | 2.57 | 1270799.06 | 11441.36 | 132.75 |
| 83.50 | 1111.78 | 1215072.27 | 3.35 | 551.93 | 5.53 | 0.61 | 142373.62 | 2.19 | 1215072.27 | 13222.90 | 132.84 |
| 83.50 | 1633.59 | 1118608.96 | 3.36 | 600.62 | 5.32 | 0.56 | 146881.88 | 2.05 | 1118608.96 | 16955.02 | 132.86 |
| 83.54 | 2114.38 | 881458.94 | 3.35 | 595.20 | 5.37 | 0.56 | 120048.92 | 2.92 | 881458.94 | 21807.98 | 132.85 |
| 83.54 | 3048.30 | 743502.65 | 3.35 | 666.82 | 5.25 | 0.50 | 128755.46 | 2.95 | 743502.65 | 24367.12 | 132.87 |
| 83.54 | 4229.46 | 604789.90 | 3.35 | 760.84 | 5.15 | 0.44 | 153933.59 | 2.90 | 604789.90 | 28638.24 | 130.81 |
| 83.54 | 5657.85 | 465320.70 | 3.36 | 877.25 | 5.05 | 0.38 | 159193.42 | 2.79 | 465320.70 | 28279.06 | 130.29 |
| 83.58 | 7390.63 | 236359.04 | 3.37 | 839.51 | 4.98 | 0.40 | 128579.79 | 2.38 | 236359.04 | 36201.54 | 128.70 |
| 83.58 | 9290.63 | 130871.33 | 3.37 | 1071.33 | 4.90 | 0.31 | 135438.63 | 2.21 | 130871.33 | 36479.00 | 128.45 |
| 83.59 | 11415.00 | 60121.57 | 3.38 | 1396.16 | 4.84 | 0.24 | 162498.77 | 2.05 | 60121.57 | 40457.86 | 128.29 |
| 83.59 | 13763.75 | 24109.76 | 3.38 | 1814.00 | 4.78 | 0.19 | 169304.43 | 1.91 | 24109.76 | 42298.11 | 128.29 |
| 83.63 | 17514.22 | 106458.80 | 3.39 | 3022.42 | 4.73 | 0.11 | 135774.74 | 1.42 | 106458.80 | 42633.86 | 128.15 |
| 83.63 | 19840.78 | 106473.72 | 3.40 | 3347.25 | 4.69 | 0.10 | 142790.46 | 1.46 | 106473.72 | 42626.20 | 127.41 |
| 83.63 | 21920.78 | 107777.42 | 3.40 | 3486.07 | 4.65 | 0.10 | 173067.48 | 1.66 | 107777.42 | 47930.22 | 125.88 |
| 83.63 | 23754.22 | 110369.91 | 3.41 | 3438.86 | 4.63 | 0.10 | 182618.59 | 2.03 | 110369.91 | 51333.15 | 118.21 |
| 83.67 | 23779.77 | 116099.69 | 3.42 | 2693.74 | 4.60 | 0.13 | 142071.40 | 3.34 | 116099.69 | 59756.51 | 117.92 |
| 83.67 | 25744.61 | 120530.35 | 3.42 | 2479.25 | 4.59 | 0.14 | 150862.20 | 3.72 | 120530.35 | 59157.15 | 117.81 |
| 83.67 | 28087.42 | 125510.38 | 3.43 | 2283.51 | 4.59 | 0.15 | 183678.82 | 3.95 | 125510.38 | 62081.86 | 117.73 |
| 83.67 | 30808.20 | 131039.80 | 3.43 | 2106.50 | 4.60 | 0.16 | 195590.14 | 4.03 | 131039.80 | 53000.36 | 126.48 |
| 83.71 | 33326.09 | 138408.34 | 3.44 | 1783.39 | 4.50 | 0.19 | 149191.47 | 3.63 | 138408.34 | 47081.96 | 147.72 |
| 83.71 | 37035.16 | 144520.63 | 3.45 | 1709.81 | 4.58 | 0.20 | 162101.16 | 3.54 | 144520.63 | 43462.74 | 148.20 |
| 83.71 | 41354.53 | 150666.42 | 3.45 | 1720.91 | 4.71 | 0.20 | 197084.33 | 3.44 | 150666.42 | 43343.33 | 152.30 |
| 83.71 | 46284.22 | 156845.69 | 3.46 | 1816.69 | 4.90 | 0.19 | 210600.38 | 3.32 | 156845.69 | 42382.49 | 149.95 |
| 83.75 | 52605.08 | 158939.71 | 3.47 | 2331.24 | 5.45 | 0.15 | 160179.07 | 3.13 | 158939.71 | 40667.03 | 149.83 |
| 83.75 | 58443.05 | 166833.46 | 3.47 | 2462.75 | 5.63 | 0.14 | 174562.63 | 3.00 | 166833.46 | 37468.44 | 150.19 |
| 83.75 | 64578.98 | 176408.20 | 3.48 | 2545.30 | 5.75 | 0.14 | 212575.85 | 2.89 | 176408.20 | 34589.01 | 151.03 |
| 83.75 | 71012.89 | 187663.92 | 3.48 | 2578.91 | 5.80 | 0.13 | 228208.15 | 2.78 | 187663.92 | 32339.25 | 150.48 |
| 83.79 | 96525.08 | 247907.23 | 3.47 | 2403.29 | 5.64 | 0.14 | 171536.01 | 2.29 | 252500.63 | 289537.40 | 154.00 |
| 83.79 | 96042.80 | 243602.28 | 3.47 | 2403.10 | 5.63 | 0.14 | 188030.90 | 2.81 | 246358.33 | 711073.73 | 155.00 |
| 83.79 | 88346.36 | 222055.68 | 3.48 | 2418.05 | 5.62 | 0.14 | 228313.51 | 2.68 | 221137.00 | 565881.34 | 153.00 |
| 83.79 | 73435.77 | 183267.42 | 3.48 | 2448.16 | 5.62 | 0.14 | 246281.41 | 2.64 | 176836.66 | 1218018.99 | 154.00 |

Source: CBN and DMO various issues, (From 2003:1-2011:4)

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