

# MACROECONOMIC DETERMINANTS OF BOND MARKET DEVELOPMENT: EVIDENCE FROM NIGERIAN

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## **Abstract**

This paper examined the macroeconomic determinants of bond market development in Nigeria to address the persistent research question of whether bond market development is driven by macroeconomic factors or institutional factors in emerging markets. Time series data generated over the period of 32 years were analyzed using ordinary least square regression techniques involving multiple regression. The aggregate bond market capitalization comprising both government bonds and corporate bonds were exploited. The major findings of the study revealed that exchange rate, interest rate, inflation rate and banking sector development have negative and significant influence on the Nigerian bond market capitalization and as such, they demonstrated strong evidence as robust macroeconomic determinants and drivers of bond market development in Nigeria.

**Keywords:** Bond market, Macroeconomics, Development, Financial market, Capital market

## **1. Introduction**

In economics and finance literature, few concepts have been given prime research attention as much as the capital market. The stock market and the bond market are indispensable components of the capital market. Whereas the bond market is an integral aspect of the capital market, it has not received foremost research attention like the stock market counterpart. The reason for the dominant research focus on the stock market is not far-fetched; first, the concept and variables of the stock market is well understood. Second, the seminal research works of Mackinnon (1973) and the “ground breaking” research works of Guley and Shaw (1995) greatly opened academic debate on the growing linkage between stock market development and economic growth. Third, the outcome of the empirical studies on the nexus between stock market and economic growth and the direction of their relationship have remained controversial and inconclusive. For instance, there is apparently no consensus as much as can be established on whether stock development is driving economic growth or economic growth is driving stock market development or there is reciprocal relationship between the two (Gacia and Liu, 1999; Ezeoha et al, 2009, Yarty and Ajasi, 2007; Yarty, 2008; Thornton, 1995; Luincel & Khan, 1999; Filer et al, 2000; Rousseau & Wachtel, 2000). No doubt, the debate is attributable to the paradox of “the egg and the hen, which one is older?”

Interestingly, the importance of the bond market (as the mechanism through which the savings surplus unit of the economy are transformed into medium and long term investment)

in both developed and the developing economies cannot be over emphasized. Additionally, the role of bond market in sustainable economic growth has been globally acknowledged to be highly significant. For instance, citing the role of bond market in the case of the Asian economic crisis of 1997, Mu, Phelps, Stotsky (2013) argue that bond market does not only aid sustainable economic stability through intermediation between capital savers and capital users; but also provides an avenue for alternative sources of finances for growth oriented companies to raise capital outside banks and stock market.

Although the capital market has been extensively and widely studied, the subject matter of the bond market aspect needs to be explored further to close the apparent gaps in the extant literature. A major concern that has rarely been attended to in literature is what spurs bond market development especially in the emerging markets. There are two trends that call for research consideration. First, there is controversy on what drives bond market development vis-a-vis the emerging markets. Some studies (Adelegan and Redzewicz-Beck, 2009; Mu et al, 2003) argue that bond market development is spurred by fundamental institutional factors such as political stability (political risk), regulatory framework, democratic accountability, corruption, bureaucratic quality among others. On the contrary, it is alleged that bond market development perhaps is more driven by fundamental macroeconomic factors such as inflation, interest rate, banking sector development, exchange rate, trade openness, fiscal balances, foreign direct investment, economic size among others (Kahn, 2005; Wwuicto and Deckor, 2013; Ogilo, 2014; Soek, 2012; Dicke and Fem, 2005).

Second, consistent with empirical literature, prior studies on bond market mostly focused on developed and advanced markets, with less research focus to developing and emerging economies/markets (see for instance Fink et al (2003) who studied the bond market of 13 most developed countries namely: USA, England, Switzerland, Germany, Austria, Britain, Netherland, Spain, Italy, Japan, Norway among other European countries (Dicke and Fem, 2005; Choudhry, 2009; Gieseck et al, 2011; Rahman *et al*, 2009).

Again, in some cases where bond market is focused on emerging markets, it is usually on regional basis rather than country specific (eg. see Adelegan and Radzewiczak, 2009; Christensen, 2004; Mu et al, 2003; Kapingura and Makhetha-kosi, 2014; African Development Bank, 2011). As such, until a study on bond market development that is country specific and variable specific is conducted, it is perhaps near impossible to answer the question of what spurs bond market development in emerging markets either from the macroeconomic or institutional point of view. It is against this background that this present study is motivated to investigate the macroeconomic determinant of bond market development with specific attention to the Nigerian bond market. Perhaps, the outcome of this study will clear the doubt and provide an answer in the macroeconomic dimension while further research shall address the institutional factor dimensions.

## **2.0 Review of Theoretical and Empirical Literature**

### **2.1 Theoretical Debate on Macroeconomic Dynamics and Bond Market Development**

Every bond market (whether developed or emerging market) is characterized with macroeconomic factors, no doubt. These macroeconomic factors directly (indirectly) impose challenges on the bond market. The influence and challenges of these macroeconomic factors

have generated phenomenal academic debate in apparent literature. For instance, Mu et al (2013) argue exchange rate variability has countervailing effect on bond market development. A pegged or relatively fixed exchange rate promotes bond market development because it can motivate foreign investors to demand for more bonds. No doubt, it could lead to higher participation in the bond market (Mu et al, 2013). On the contrary, Goldstein (1998) disputes that pegged (relatively fixed) exchange rate to a large extent distort the development of bond market because it leads some investors to underestimate “the risk of lending to banks and corporation. He further affirms that the outcome of foreign competition could slow the development of domestic intermediation. Theoretically, it is admitted that exchange rate varies from one country to another, and over a period of time in the exchange process. Exchange rate is also determined by the forces of the market such that flexible exchange rate arises from the market forces like all normal demand curve. Whereas, generally when exchange rate is pegged or fixed, the country controls the rate through her central banking system in the foreign exchange market. The intervention of the central bank duly defrays the changes that could arise from the interaction of the demand and supply. Onwukwe (2011), admitted that pegged exchange rate may lead to increase in foreign investment; while World Bank (2003) submits that:

*Greater exchange rate flexibility would encourage the development of domestic bond market of course, to the extent that foreign participation is valuable for the growth and development of domestic market, discouraging the participation of international investors of introducing additional risk into the market may not produce the desired result ... countries with fixed exchange rate do not appear to have bigger bond market.*

Furthermore, another debate in respect of macroeconomic factors and bond market is whether banking sector and bond market substitute each other or both complement each other in the development process. Thus, those who support (see for instance Hawkins, 2002) that bond market substitute for bank lending argue that bond market takes up the lending role of banks when banks balance sheet is not strong enough to offer credit to as many customers who demand it. The argument was supported by the case of United States of America challenges in the 1990s, where the bond market turned to be the last destination for project funding in the country.

Inversely, banks take up the lending function and provision of funds when bond market is weak and dry. For example: the Russian Bond market of 1998 (Hawkins, 2002). He further argued that it is possible for bond market to take away the deposit from banks stating that:

*as bond market develops, banks may lose the deposit of wealthy customers who seek to earn higher returns on at least a portion of their portfolio. The main type of bank deposit with which corporate bonds may compete is the negotiable certificate of deposit... However, some of the funds put in domestic bonds may have previously been invested in foreign bonds rather than in domestic bonds (Hawkins, 2002:9).*

Along this line, empirical evidence provided by Davis and Ioannidis (2002) cited in Ringui (2012) also supports the views that debt securities substitute bank loans. On the other

side of the coin, Holinstom and Tisole (1997) argue that bond market and banks complement each other rather than substitution. Their argument is supported with the fact that bond market largely plays supplementary role in terms of funding private investment in an emerging economies. However, Benstan (1994), Rajan and Zingales (2003), and Schinasi and Smith (1998) all argue that in a country where there is high rate of banking concentration, banks can as a matter of fact suppress development of bond market in terms of fund provisions through strategic loan arrangement, which can absolutely bring apathy of public placement by firms. Essentially, Yoshitomi and Shirai (2001) and Shirai (2001) rather place themselves on the fence regarding the argument as they believed that both bond market and banks tend to grow large together in relation to the GDP of the country. Being that as the economy grew healthy, both the banks and the bond markets in the economy grow also in a healthy condition. Therefore, a healthy banking system requires a healthy bond market because a healthy bond market may altogether aid improved banking system. The possibility of each of these conditions greatly depends on the economic structure of a country. For example, according to Yoshitomi and Shiria (2001), if a country is still an emerging country, greater percentage of individuals in the country may prefer liquid short term bank deposit since institutional investors are yet to develop or almost non existence and few companies may have gained reputation for bond insurance, whereas market instrument may not be available.

Further, another interesting macroeconomic factor is the inflation rate. Theoretically and empirically, there is a high correlation between inflation and interest rate (Christensen, 2004). The argument about inflation and bond market presents itself in two folds: first is the nexus between inflation and domestic bond market. Second, is how international bonds react to inflation in both fixed income, short-term and long-term scenario. There is no doubt to the claim that low inflation serves as an incentive to investors and as well encourages fixed income securities in the market. Again, it is theoretically justifiable that low inflation associates with government bond longer maturity.

On the contrary, Milaljek, Scatigna and Villar (2002) maintain (in theory) that high inflation rate and large fiscal deficits discourage both short-term and long-term speculative investment and the overall effect result to bond market under development. The authors further add that high inflation rate induces unnecessary reliance on the domestic bond issuance, whereas 'low inflation leads to smaller international bond issuance'. A noticeable example of the nexus between inflation rate and debt market development is the case of weak debt market of Korea and Malaysia during 1995 to 2000 as a result of high inflation. This appears to be the case in the Nigeria bond market. For instance, the Nigerian economy is perhaps characterized with high inflation rate and other emerging bond market characteristics such as inadequate infrastructure, low market discipline, government dominated bond among others. Therefore, in theory high rate of inflation seems to have a depressing impact on bond market development because it is capable of eroding confident in the market.

On the part of interest rate, both Keynesian theory and the classical theory have a common standpoint; that market interest rate is established by the interplay of forces of demand and supply for money (Jingan, 2003). According to Keynes (1936, cited in Jhingan, 2003) rate of interest is the second determinant of investment. Essentially, Keynesian theoretically postulates that interest rate has a negative relation with financial markets. Apart

from the theoretical point of view, empirical researches have shown that high interest rate accounts for thin market by reducing the profitability of holding bonds of risk-averse investors. For instance, Eichengreen and Luengnamemitchai (2004) maintain that any market characterized with high interest and interest rate volatility is usually associated with smaller bond market, because high interest rate scares investors of “long-term fixed rate notes”. Additionally, they argue that it would be difficult for any investing firm to service debt when interest rate is high coupled with the depressing impact it will create on bond issuance. Along this line of argument, Mu et al (2003) remarked that interest rate (either variable or fixed) can generally reduce the attraction of potential investors in the bond market. Other scholars such as Havey (1991), Gonzalo and Tee (1998), Anrens (2002) align with the above position.

Another interest macroeconomic factor that plays a significant role in bond market development is savings. Accordingly, Keynesian theory argues that there is a positive influence between consumption and income because any income not consumed is saved and savings are channeled into investment in the financial sector or other sectors. Cesaratto (1999) in the neoclassical theory confirmed that economic growth of any nation depends largely on savings; such that the conventional wisdom about growth and development in any economy is anchored on savings and financial decisions of the country. Modigliani, Albert, Ando and Richard Brumberg theory of life-cycle and Micton Friedman’s theory of permanent-income hypothesis both specifically emphasized that savings are useful macroeconomic tool that is used to transfer purchasing power (Parker, 2010).

However, critics (Akam, 2003; Sala-i-Marthins 1995; Uzawa, 1965; Rebelo, 1991; and Ferguson, 1979) argue on the contrary that though savings theoretically has a positive relationship with economic growth and investment in the financial market (bond market inclusive). It is not attainable in a consuming nation characterized with financial indiscipline and poor savings culture.

## **2.2 Empirical Review**

Eichengreen and Luengnamemitchai (2004) investigated the factors responsible for the underdevelopment of bond markets in Asia, when they asked unequivocally “Why Does’nt Asia Have Bigger Bond Markets?” They centered their empirical investigation on the ghastly financial crises experience of Asian countries in 1997 - 1998. Along this line of motivation, the authors maintain that Asian bond market ought to have developed more than the level it were then, when compared to other continents like Latin America, Emerging Central Europe, America among others. They add that, it appears that Asian countries concentrate more on other sources of finances in issues related to external finances than the bond markets in Asia. The authors anchored their investigations on five essential hypotheses for the purpose of explaining the under developmental challenges of Asian bond markets. According to them, hypothesis one is centered on Asian regional economic history such as Asian banking history, financial market and financial institution’s history. The second hypothesis is on the “structural characteristics of the Asian regional economies. It covered topical issues like geographical endowment structure, traditions and legal characteristics among others. The third hypothesis deals on the developmental stages of Asian regional economies. The fourth hypothesis captured the “structure and management of the Asian financial system, which according to the authors focuses on the “intensity of competition among financial institutions,

the quality of prudential supervision and regulations, the existence of a well - defined yield curve, the absence of institutional investors and rating agencies including quality of trading, settlement and clearing”. The fifth hypothesis captured the macroeconomic factor in the region. Multivariate regression analysis was adopted in their study. In all, the summary of their findings revealed thus: a) The slow development of local bond markets is a phenomenon with multiple dimensions (attributing corruption, bureaucracy, market size, poor accounting standard among others as the contributory factors); b) The role of macroeconomic policy in Asia is dualistic in form (supporting the development of the bond markets and at the same time twisting the development of the markets).

c) Legacy of capital controls were also identified as a big obstacle in Asian countries supposedly accelerated process of developing their bond markets. This obstacle was attributed to prudential capital account liberalization.

In African case, Mu et al (2013) who studied the nature of bond market in Africa firmly maintain that even though African bond market has steady growth rate, the market is still underdeveloped. While using an econometric model in analysis of their data, they discovered that “government securities market capitalization are directly related to better institutions and interest rate volatility, but inversely related to the fiscal balance, higher interest rate spread, exchange rate volatility and capital account openness”. They particularly point to the fact that the under developmental challenges of bond markets in African countries including Nigeria are stigma to local currency bond markets, corporate bonds and government debt. For instance, the proportion of government securities capitalization in relation to gross domestic product (GDP) in Sub-Saharan Africa was 14.8% as at 2010; indicating much lower rate when compared to other developed countries such as Asia, Europe and America. Also, the proportion of corporate bonds capitalization on average in Sub-Sahara Africa, in relation to GDP was 1.8%, showing lesser rate when compared to advanced countries. In conclusion, they made the following expression:

*That it is useful to look separately at government securities and corporate bonds markets in Sub-Saharan Africa countries. We find that, using GMM specifications, a combination of structure, policy, and institutional variables appear to exert a statistically significant effect on government securities market (Mu et al, 2013: 23).*

Again, Adelegan and Radzewiczbak (2009) investigated what determines bond market development in sub-Saharan African with a sample of 23 sub-Saharan African (SSA) countries including Botswana, Benin, Burkina Faso, Central Africa Republic, Cote D’Ivoire, Ethiopia, Gambia, Guinea-Bissau, Ghana, Kenya, Mali, Malawi, Mauritius, Namibia, Niger, Senegal, Seychelles, South Africa, Tanzania, Togo, Uganda and Zambia. Their data set covered from 1990 – 2008 with an annual frequency of 394 years observations. According to their multivariate analysis, the effect of structural characteristics of countries on bond market development were reported as follows: ‘country size is positively related to bond market development, which implies that the lower the level of natural openness, the lower the level of access to external funding leading to greater development of the local bond market’. The overall result of the study reveals that savings constraint is a major setback of domestic bond market development and financial market deepening in sub-Saharan Africa. Adelegan and Radzewiczbak (2009) also argue that these constraints have brought about ‘low level of

financial intermediation by banks and that development of the domestic bond as a sub segment of the entire financial market adds positively to the growth of a country's financial system.

Further, Christensen (2004) studied domestic debt market in sub-Saharan Africa with the purpose of reviewing the depth of African bond markets. Findings from the study revealed that "domestic debt markets in African countries are generally small, highly short-term in nature and often have a narrow investor base". Again, the study supports the argument that domestic government debt is effectively crowding out private sector lending.

Onaolapo and Adebayo (2011) studied the role of effective bond market in Nigerian economy. Their study centered on the Nigerian over dependence on government projections for business activities; citing an instance where business activities on the part of the Nigerian economy are completely "predicated on public expenditure projections of government". They argue that the bond market is only remembered when there is short fall by government financial projections as against the traditional role of alternative financing provision in which the bond market could play in the Nigerian economy.

### **3.0 Methodology**

#### **3.1 Research Design and Data**

Based on the nature of the variables of the study, quantitative research approach anchored on Ordinary Least Square regression techniques was adopted. The data used in this study were time series data (secondary data). Some set of data such as aggregate savings, aggregate bond market capitalization, banking sector development data, federal government annual expenditure data, and exchange rate data were basically sourced from Central Bank of Nigeria (CBN) statistical bulletin and CBN annual report and statement of account. The annual report and statement of account of Securities and Exchange Commission (SEC) also constitute a reasonable source of data such as the interest rate (minimum rediscount rate/monetary policy rate), bond yield in percentage of GDP form, inflation rate among others. The Nigerian Stock Exchange Fact Book of various years, and its annual report and statement of account were used to source data about corporate bonds on comparative basis. The foreign direct investment data were sourced from International Monetary Fund balance of payments statistics year book and data files, Banks and International Financial Statistics of IMF. Other data set such as Federal Republic of Nigeria annual approved budget figure outlay were sourced from the Federal Ministry of Finance, Nigeria Bureau of Statistics, Office of Federal Accountant General and Nigeria Budget Office. Again data set on corporate bond and capital market were also sourced from ICE data of stock market development of World Bank.

#### **3.2 Empirical Model and Delineation of Research Variables**

The empirical model specification of this study is based on the theoretical implications of the research variables. Hence the preference of these macroeconomic variables is to investigate whether the development of the Nigerian bond market is dependent on the dynamics of macroeconomic factors. The dependent variable of the study is bond market development. Bond market development in this study is defined as the ratio of aggregate bond market capitalization to GDP (i.e.  $Bdca/GDP$ ). The bond market capitalization is in turn defined as the value of fixed income securities traded or listed in the stock market (Colobage, 2009).

The aggregate bond market capitalization generally includes government bond securities (including development bonds/stocks) and corporate bond securities. The consideration for using aggregate bond market capitalization (ie both government bonds and corporate bonds) as a measure of bond market development is because it captures the overall market size and depth of the Nigerian bond market (Levine and Zervos, 1998). The independent variables of the study on the other hand include macroeconomic variables. The estimation equation is thus specified as:

$$Bdca/GDP = \beta_0 + \beta_1 Int_t + \beta_2 Bks_t + \beta_3 fdi_t + \beta_4 Fbla_t + \beta_5 Exgr_t + \beta_6 Infr_t + \beta_7 Savs_t + \beta_8 Byid_t + \epsilon \dots\dots\dots [1]$$

Where:

*Bdca/GDP* is ratio of Bond Market capitalization to GDP,

*Int* is interest rate (a deflected interest rate is used as a measure of interest rate in this study) (e.g. see Kapingura and Makhethakosi, (2014) who have strong support for this measurement).

*Bks* is banking sector development (Banking sector development is defined in this study as the total value of domestic credit provided by the banking sector to the private sector divided by GDP. The reason for adopting this definition instead of the ratio of broad money supply M2 to GDP is captured in the words of Adenuga (2010) that “private credit is the most comprehensive indicator of the activities” of deposit money banks (DMBs). It captures the amount of external resources channeled through the banking sector to private firms and it measures the activities of the banking sector in one of its main function).

*Fdi* is foreign direct investments (Fdi is defined in this study as the ratio of private capital flows to GDP).

*Fbla* is fiscal balances (Past year’s budget balances as a percentage of GDP is used as the measure of fiscal balance in this study, Mu el al (2013).

*exgr* is exchange rate ( proxied by the logarithm of fixed exchange rate).

*Savs* is savings (defined as the total savings in Nigeria as a percentage of GDP).

*Byid* is bond yield,

*Infr* is inflation rate,

*GDP* is Gross Domestic Product,

$\beta_0 - \beta_8$  is Coefficients,

$\epsilon$  is error term and *t* time series.

### 3.3 Model Transformation

The above model is transformed into exponential model by the application of natural logarithm. The natural logarithm is applied for the purpose of normalizing the distribution as against using absolute values of the bond market capitalization and other variables across years. The justification is to avoid spurious results and to keep away from the problem of internal validity.

Again, the purpose of transforming the baseline model into an exponential (non-linear) regression model is to avoid additive simple linear regression model. Because, naturally, one would theoretically estimate a simple linear relationship using simple linear regression model; but some natural phenomena often assume linearity (Abara, 2015). This is

similar to the relationships in this study. Thus, the relationship between the respective dependent variable may not be linear; then exponential (non-linear) regression equation becomes a better model that would capture or predict a closer realistic relationship. The model is transformed thus:

$$\text{LogBdca/GDP} = \beta_0 + \beta_1 \log \text{Int}_t + \beta_2 \log \text{Bks}_t + \beta_3 \log \text{fdi}_t + \beta_4 \log \text{Fbla}_t + \beta_5 \log \text{Exgr}_t + \beta_6 \log \text{Infr}_t + \beta_7 \log \text{Savs}_t + \beta_8 \log \text{Byid}_t + \epsilon \dots \dots \dots [2]$$

Where: log represents logarithm. All other variables remain as explained in equation [1]

#### 4. Results and Analysis

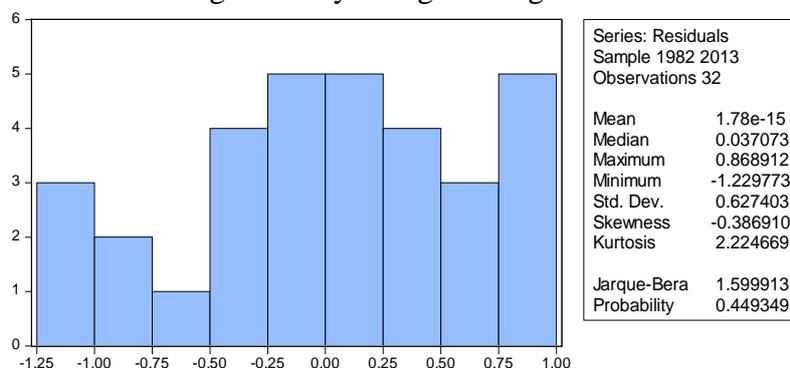
##### 4.1 Diagnostic Results

The results of diagnostic tests conducted to validate empirical results and the data employed in the study and for the purpose of accomplishing the basic assumptions of OLS are summarized below:

(a) *Unit Root Test*: The unit root test was conducted using ADF statistics on both the independent and the dependent variables. The result shows that all the variables were stationary at first difference with zero lag.

(b) *Result on Autocorrelation test*: The autocorrelation assumption test was performed using Durbin Walton test. The purpose is to confirm the likelihood of autocorrelation in the model and to accomplish the assumption of independent error which arises if the disturbance term grows to influence the dependent variables. The conventional rule is that the closer the value of *d* to 2 the less likelihood of the problem of autocorrelation. Results indicate that *d* value is 1.5. The values are actually within the acceptable range of near 2. Therefore, the autocorrelation assumption is accomplished.

(c) *Result on Normality Test*: Among other techniques of checking for normality assumptions, Jarque-Bera technique was adopted. The reason is because it is for asymptotic test dedicated to OLS and it captures both skewness and kurtosis. Consistent with the instructive rule of JB statistics, the results of the normality test shows that the residual is not normally distributed regarding the values of skewness or kurtosis. But we did not worry much about this problem because Tabachick and Fidell(1989) suggest that the problem of the skewness or kurtosis does not significantly change the regression results. See fig. 1 bellow.



**Fig. 1: Normality Test Result**

(d) *Result on Multicollinearity Test:* To accomplish Multicollinearity assumption, the variance inflation factor (VIF) test was conducted. VIF test is one of the most conventional tests that are reliable in measuring the level of multicollinearity. Conventional approach to VIF is that the value of VIF should not exceed ten, as suggested by Gujarati (2003), Hair and Goodman (2008). Our result of VIF showed value less than ten.

(e) *Result on Heteroscedasticity Test:* Again, Heteroscedasticity occurrence was checked in the model estimation. This was done using Breusch-Pagan-Godfrey method. The essence of testing for Heteroscedasticity is to detect if there is an association between the independent variables and residuals value in the model and to ensure no violation of the constant variance assumption that perhaps leads to the predicament of Heteroscedasticity. Generally, this OLS assumption is accomplished when the OLS coefficient estimates are best linear unbiased (i.e BLUE OLS)(Iyoha, 1996). From the Heteroscedasticity Test, the results indicate that the *cal.obs R square* is 9.034732; indicating that the error terms has a constant variance.

#### 4.2 Structural Break Effect Results

The structural break effect was checked. The test was done by introducing a dummy variable 0 and 1 for the two periods. Meanwhile, 0 was assigned to the period without structural economic break (1980-1986) and 1 was assigned to the period with structural economic break (1987-2013). Structural break hypothesis was formulated thus: if the P-value of the dummy variable is greater than 5% (>5%), accept the null hypothesis that there is no structural break effect and reject the alternate hypothesis that there is structural break effect if otherwise. Hence, the result from our test shows that the p-value of the dummy variable (DUM) is 0.7656. Since the p-value is greater than 5%, we therefore accept the null hypothesis that there is no structural break effect in our result and reject the alternate hypothesis that there is a structural break effect.

#### 4.3 Empirical Results

Table 1: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.339318	1.141375	-7.306380	0.0000
D(FDI)	0.082648	0.067549	1.223528	0.2335
FBLA	2.829209	1.205473	2.346969	0.0279
LOG(SAVS)	1.846621	0.608361	3.035402	0.0059
BYID	0.111099	0.045076	2.464721	0.0216
INFR	0.000351	0.009222	-0.038028	0.0029
BKS	-0.040658	0.044570	-3.912229	0.0275
EXGR	0.006295	0.004622	-2.361784	0.0018
INT	-0.167108	0.038732	-4.314532	0.0003

R-Squared = 0.833567, Adjusted R-Squared = 0.775677, F-statistic =4.39920, Prob(F-statistic) = 0.000000, DW stat = 1.961744, S. E of regression =0.728389.

Source: E Views Stat.

The empirical results as presented in table 1 aptly show interest rate, exchange rate, banking sector development and inflation rate have significant influence on bond market development in Nigeria. The results indicate that the relationship between interest rate, exchange rate, banking sector development and inflation rate as macroeconomic factors are negative and very significant-meaning that these macroeconomic factors are major determinants of bond market development in Nigeria. It also suggests that an increased inflation, exchange rate, interest rate and the amount of credit provided by the banking sector, within the Nigerian economy, brings about decrease in the aggregate bond market capitalization in the Nigerian bond market if all other factors are held constant. From the results, it is interpreted that high inflation rate and the unstable interest rate inherent in Nigeria economy can scare potential investors in the Nigerian bond market-as this is in agreement with the Keynesian theoretical standpoint that high inflation rate and interest rate negatively affect investment. In concrete terms, no doubt, high inflation and interest rate discourages investment in bond securities because both individual investors and firms found it extremely unattractive to invest in a business environment characterized with such circumstances. As a matter of fact, it will also be difficult for bond market to develop. This current finding is in line with the finding of Mu-et al (2013).

Again, for banking sector development and bond market development, it is discovered that banking sector development has no positive significant impact on bond market development in Nigeria. The implication of this finding is that a unit increase in the amount of total credit provided by the Nigeria banks to private sector brings about reduction in the level of bond market capitalization in Nigeria. The result is also consistent with the theoretical position about banking sector development or banking system size and bond market development. For example, it is debated in the theoretical literature that where bond market is not living up to the expectation of the potential funds users, bank plays both role of banking institutions and the role of bond market in terms of funds provisions to the needy investors. Again, it is argued in the literature that bond markets suffer a lot in any economy that is bank dominated instead of market dominated. As much as can be established, Nigerian economy is bank dominated, and as such, Nigerian banks, have allegedly taken up the role of bond market in terms of funds provision. No wonder, Greenspan (2000) maintains that Nigerian bond market act like a spare tyre in the provision of corporate funds. The Nigerian banks recapitalization of 2005 and the banks consolidation policy of 2010 no doubt repositioned Nigerian banks to be more concentrated. The concentration makes the banks to arrange strategic loan packages which attract the public not to seek for funds from the bond market (Benstan, 1994; Rejan and zingales, 2003; Sehinasi and Smith, 1998). On the other hand, the result is also consistent with the empirical findings of Eichengreen and Luengnamemtchai (2006), Adelegan and Radzewiz- Back (2009), Choudhry (2009), Fink et al., (2003), Dicke and Fan (2005) among others.

Further, other macroeconomic factors such as foreign direct investment and savings proved to have positive significant impact on bond market development in Nigeria. Thus, an increase in foreign direct investment and increase in general awareness about savings in Nigeria will lead to increase in investment in the bond market. Any increase in the bond market investment would increase the volume of bond market capitalization as more bonds will be issued; as such, the market would expand (leading to greater development). Therefore

FDI and savings are strong determinants of bond market development in Nigeria. It is definite that improvements in savings culture have the propensity of building strong funds and confidants for investment. It confirms the theoretical position in the extant literature that savings encourages more investment (Cesaratto, 1999). This present findings are also intandem with the findings of other scholars such as Akam(2013), Youngsoon (2012) and Dzilagy, Baattan and Fetherston (2013).

Although it is against researcher's expectation, fiscal balance and bond yield show a positive but insignificant relationship. Therefore the study does not find fiscal balance and bond yield as determinants of bond market development in Nigeria. It should be re-emphasized here that fiscal balance and bond yield were added in the research variables as controlled variables not as direct macroeconomic variables. Reason not farfetched; budget balance (either deficit or surplus) play a vital role in determining the level of government debt. Bond yield on the other hand plays the same role on bond securities investment. Thus it was expected that their behaviours could have influence on bond market development. Essentially, other indicators in the estimation such as  $R^2$  adjusted value, show 77% (i.e above 70%) - meaning that 77% fluctuations in Nigerian bond market is explained by the regression model. The Durbin-Waston statistics is also close to 2, therefore the overall result is not by chance.

## 5.0 Conclusion

This study primarily addressed the research question of what drives bond market development in Nigeria from the macroeconomic point of view, by examining the influence and contributions of major macroeconomic variables on Nigerian bond market. Overall, the empirical result reveals that exchange rate, interest rate, inflation rate and banking sector development, have negative and significant influence on the Nigerian bond market capitalization. As such they are strong macroeconomic determinants of bond market development in Nigeria. Other macroeconomic factor that drives the development of bond market in Nigeria is savings though it exhibits positive relationship. The study did not find fiscal balance, bond yield and foreign direct investment as strong determinants of bond market development in Nigeria. Therefore, it is concluded in this present study that interest rate, exchange rate, inflation rate, banking sector development and savings are among the macroeconomic factors that spur bond market development in Nigeria. The policy implication of these findings is that macroeconomic factors in Nigeria act as catalyst for Nigerian bond market development. The study recommends further research on the institutional determinants of bond market development with attention to country's specific characteristics.

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