CORPORATE BOND MARKET DEVELOPMENT IN NIGERIA: DOES MACROECONOMIC FACTORS MATTER?

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Abstract
This paper studies the macroeconomic determinants of corporate bond market development with respect to the Nigerian bond market. Corporate bond market capitalization was used as the endogenous variable while macroeconomic variables form the exogenous variables of the study. The time series data generated over a period of 33 years (1980-2013) were analyzed using descriptive statistics, while the ordinary least square regression techniques involving multiple regression was applied to test the level of significance of the variables. Overall, the result reveals that fundamental macroeconomic factors such as exchange rate, savings, inflation rate, banking sector development, interest rate, fiscal balance, bond yield and foreign direct investment are main drivers of corporate bond market development in Nigeria. The results further revealed that the macroeconomic factors have no common stimulating pattern in driving the corporate bond market for development. Savings and exchange tends to be more significant than other macroeconomic factors within the period under review. Thus, macroeconomic factors matter a lot in the development of corporate bond in Nigeria.

Keyword: Corporate bond, Nigeria, macroeconomics, bond market development.

Introduction
In Nigeria, bond market has increasingly become important in the development of the Nigerian emerging economy. A bond is a long term financial debt instrument; a generic name for a tradable loan security usually issued to raise capital (Sec, 2010). The bond market is an integral aspect of the capital market. Interestingly, the Nigerian bond market is composed of both corporate bonds and government bond. Globally, the bond market, no doubt forms the mechanism through which the savings surplus unit of the economy is transformed into medium and long-term investment in the economy. As, such, bond markets have been acclaimed by many researchers as a ‘big’ player in economic growth and development. For instance, citing the significant role of bond market in Asian economic crisis of 1997, Mu, Phelps and Stotsky (2013) argue that bond market aids sustainable economic stability through intermediating between capital savers and capital user. It is unarguable that bond market aids channeling of more funds into domestic investment.

Apparently, there are controversies as to whether government bonds are crowding out corporate bonds existence in Nigerian bond market; or why is corporate bond allegedly low in volume compared to the volume of government bonds being traded in the Nigerian bonds market. For
example, The types of bonds that are currently being traded in Nigeria bond market are the federal government bonds with current outstanding volume of N4,591.19 billion, agency bonds with current outstanding volume of N1,301.62 billion, sub-national bonds (state government bonds) with current outstanding volume of N483.24 billion, FGN Eurobonds with outstanding volume of 1.500.00 billion, corporate bonds with an outstanding volume of 141.62 billion, corporate Eurobonds with outstanding volume of N4,760.00 billion, (Egene and Abiodeen, 2014).

Prior studies suggest perhaps that government bonds have the tendency to constrain corporate bonds issuance in Nigeria. Instances, abound first, the rate at which government issues bonds for the purpose of infrastructural development in Nigeria is higher than corporate bonds. Second, Governments are allowed to issue bonds at various levels including federal government, state government, local government and some time at community level (ie, municipal bonds). A noticeable example is the issuance of N75 billion federal government special purpose bonds of 2014 which was issued to settle pension amount outstanding and between 2003 and 2014. More so, Federal Capital Territory (FCT alone) has funded N4.612 trillion of the total deficits of N7.986 trillion arising from the fiscal operations through bond issuance in the Nigerian domestic bond market (Nwankwo, 2014). Various state governments also issue state government bonds at different interval, in as much as they meet the Central Bank of Nigeria requirement for issuance of such bonds in the country.

Third, the rising rate of budget deficit in Nigeria has left the country with the only option of raising funds from the bond market as the available alternative. According to Nwankwo (2014: 24):

*In 2003, the Nigerian fiscal deficit stood at N202.72 billion, representing 2.04% of the nation’s GDP; dropping in 2004, to N172.6 billion or 1.51 % of GDP. By 2005, national deficit level fell again to N161.86 billion or 1.11% of GDP; before beginning soaring to N341.86 or 2.35% of GDP and representing a 111.79% jump. The deficit level jumped again to N580.19 billion or 3.64%; and then N537.95 billion in 2008. In 2009, deficit was N836.6 billion, 3.02% GDP. The figure more than doubled once more as government’s revenue obviously stagnated as needs mounted federal government’s fiscal operations resulted in a 2010 deficit of N1.993 trillion, the highest within the 10 years period. It dropped to N1.136 trillion or 2.96% in the following year; and N1.135 trillion or 2.85% in 2012. The 2013 deficit was forecast to reduce bellow the trillion Naira mark at N887.06.*

Again, there are existing research controversy on the determinants of bond market development in general and corporate bonds in particular. To say the least, there are conflicting views on what actually stimulate bond markets (and corporate bond in particular) in Nigeria. While some scholar’s argue that bond market development is stimulated by fundamental institutional factors, others argued on the contrary that corporate bond market development is perhaps stimulated by fundamental macroeconomic factors such as inflation rate, exchange rate, banking sector development, trade openness, fiscal balances, foreign direct investment, savings among other (see for instance Becker and Ivashina, 2012; Hakansson, 1999; Adelegen and Radzewicz-Back, 2009; Xiong and Yan, 2010).

Essentially, those who argue in the macroeconomic perspective perhaps maintain that macroeconomic variables are indispensable elements in corporate bond market development. For example, every corporate bond market is characterized by macroeconomic factors and basic economic challenges. In the Nigerian case, the corporate bond market is characterized by exchange rate volatility, high interest rate, high inflation rate, poor serving culture and bank-dominated economy.

These challenges have created undue reliance on bank dominated finances over market based sources such as bonds, equity and debenture capital. Along this line of argument, Eichengreen and Luengnamamifehai (2006) strongly argue that where bank has the weakness of providing sources of
finance, the bond market has opposite strength because banks are ideally placed to provide “patience finance” while access to bond market sources of finance is long term basis. The implication of these challenges is not only the underdevelopment of the Nigerian corporate bond markets but also the predisposition of Nigeria to greater risk on the global market. Therefore, due to the important of corporate bonds as earlier mentioned, and the apparent drought of corporate bonds in the Nigerian stock market, it makes a research sense to find out what spurs corporate bonds market development in Nigeria with special attention to the roles of macroeconomic factors.

**Literature Review**

In this section, both the conceptual, theoretical and related empirical literature are reviewed.  

*(a)Conceptual Review*

A bond is generic name given to a tradable loan security issued by either corporate bond (companies) or governments for the purpose of raising capital (funds) (SEC, 2010). According to SEC, bond is an interest bearing security. It guarantees the holder the financial obligation of repayment of capital at future specific date and a fixed rate of interest. This fixed rate of interest is often called coupon.

Again, bond can generally be conceptualized as a financial debt instrument (Ogilo, 2014). By this definition, it means that a borrower issues bond as an issuer, with the financial obligation to pay-back to the lender both the amount borrowed plus interest within a defined time frame. In this case, the lender is regarded as the investor. Suffice it to say therefore, that in a general simple market language, the bond issuer is the seller while the lender is the buyer. Further, SEC (2010:2) specifically opines that a bond is:

*a generic name for a tradable loan security issued by governments and companies as a means of raising capital. The bond is an interest bearing security. It guarantees its holder both repayment of capital at a future specified date (Maturity date) and a fixed rate of interest also known as the coupon.*

Therefore, simply put, when a firm or corporation or government needs to raise funds from public on long term arrangement, it often achieves such financial needs by selling or issuing securities. These instruments/securities can be described as bond. Numerous corporations worldwide, including developed and developing economies consistently issue bonds as a reliable alternative source of finance. Aringui (2012) also argues that a bond is not only a “debt instrument” but also a tradable financial instrument that serves the purpose of raising capital which will take the maturity period of more than one year. To him, a bond must have an attribute of negotiability, which makes it tradable in the markets. Moreso, according to Mishkin and Eakins (2000) bonds are securities that represent a debt owned by the issuer to the investor. They maintain that bonds bring about financial obligations to the issuer; such that the obligation requires timely repayment of interest. A bond contains a face value usually called the “par value”. The interest rate payable on the maturity date of the bond is also usually contained on the face of the bond. In financial terminology, the interest rate is technically called “coupon rate” and it is customarily fixed for the gestation of the bond. Bond coupon rate does not fluctuate with the general market interest rate. However, should the situation arise where the bond issuer could not meet up with the repayment obligation, the holder of bond is legally permitted to lay claims on the property (assets) of the issuer. In collaboration, Onaolapo and Adebayo (2010: 2) add that a bond can be defined as a ‘contract which gives the holder a financial claim on the issuer’, such that the claim duly protect the holder of the bond in a situation where the issuer cannot pay the agreed amount as at when due. While citing Oni (2006) they add that in bond arrangement, the entity
borrowing money is called the ‘issuer’, whereas the person lending money is known as the investor and the buyer. A bond being a contract is justifiable from the fact that the issuer of bond pledges to pay the buyer an interest sum called ‘coupon’ because of the concession of utilizing the borrower’s money in the course his business. Outside the payment of interest, the buyer also pays back the principal sum borrowed including the interest of the bond in a periodic interval within the maturity periods of the bond. The periodic interest payment and the principal payment on the bond brought about the term- ‘fixed income security associated with bonds issue’ (Onaolapo and Adebayo, 2010:5).

Bonds with fixed coupons rate usually divide the stated coupon into parts as may be stipulated by the payment arrangement (e.g. annual and semi-annual). Apart from the bonds with fixed coupon rate, bonds can also go with floating coupon rates. Such bonds often have combined calculation schedules where the floating rate is arranged shortly before the next payment schedules (Afolabi, 2014). Outside the fixed coupon bond and the floating bonds, zero-coupon bonds also exist. A zero-coupon bond implies that they do not require payment of interest but they are issued based on deep discount which indirectly could be an implied interest. Trading of all these bonds are immensely dependent on the investor’s ability and partly on three other factors such as interest rate, issuer factor and economic conditions. Essentially, all these factors can probably make a bond investor to make profit and on the contrary, count loses (Afolabi, 2014).

Tax does not favour bond interest compared to dividend income that enjoys favourable taxation rates. This means that bond interest is duly taxable as ‘ordinary income’. Although in many countries, government bonds or municipal bonds are exempted from taxes depending on the countries regulations. Essentially, bonds are generally classified into government bonds and corporate bonds. Government bonds are bond issued by government (federal, state, local and communities). Though in this study, our interest is not on the government bonds, but the corporate bonds. Therefore, corporate bonds are bonds issued by corporation or companies to raise fund or capital. According to Hakansson (1999), the term corporate bond is interpreted broadly to include bonds ranging from very same bonds to the junk variety as well as mortgage-backed and other asset-backed securities. According to him, a developed corporate bond market usually goes with meaningful degree of disintermediation and functional market infrastructures where interest and currency can be lodged. In the same way, Rinqui (2012) maintains that:

*a corporate bond is a bond issued by a corporation (i.e company). The term corporate bond usually refers to long-term debt instruments, generally with a maturity date of at least one year after the date of issue, and short-term instruments are sometimes referred to as commercial papers and sometimes, the term- corporate bonds are used to include all bonds except those issued of government in their own currencies.*

Like the bonds earlier discussed, most corporate bonds go with the usual face value and interest. Further, in financial literature, corporate bonds are frequently called debentures. More often, debentures are “usually referred to borrowings without specified collateral” (Onaolapo and Adebayo 2010). Such borrowings from the investors are basically anchored on the general understanding of the borrower and the lender (investor). Some corporate bonds are deemed as callable bond. Callable bond simply means that the issuer can as a matter of agreement “redeem the bond after a specified” period of time as the case may be. The repayment of corporate bonds can be annually or semi annually.

In corporate bond arrangement, the collateral usually provided to back up the bondholders is specifically described in the bond indenture. The bond indenture means the contracts in which the two parties (the lender and the borrowers) endorse that aptly provides the two parties’ rights and
privileges. Unlike most government bonds, corporate bonds go with a lot of risks. The nature and the degree of risk involved in corporate bonds not only largely varies among issuers but also largely dependent on the healthy management of the corporation or firm. Again the interest rate payable on corporate bonds depends on the risk nature of the bonds (Mishkin and Eakins, 2012).

Corporate bonds are rated according to the risk associated with the bond. It is rated AAA, AA, BBB, BBA + A-, Aa, Bbb, BB+ among others. AAA is the highest corporate bond rating and it symbolizes corporate bonds with low risk. BBB rating shows more risky corporate bonds. More risky corporate bonds often go with low interest rate (Mishkin and Eakins, 2012).

**Classification of Corporate Bonds**

In the general view point, there are basically three conventional types of corporate bonds. The classification is based on the type of collateral that is used to back the bonds and also the method in which the bond can be paid off, should the case of default arise. The classification of bonds is also necessitated by the need to have variety in the bond the bond market. According to (Mishkin and Eakins, 2012) these three types of corporate bonds include:

(a). Secured corporate bonds: Secured corporate bonds as the name implies is simply collaterally secured. These secured bonds come in the form of “mortgage bonds or “equipment trust certificates. In a secured mortgage bond, the building with which the bond funds is built and is often used as the collateral to back up the bonds. The mortgage arrangement gives the bond holders some legitimate rights to liquidate the building so as to be paid. Although most secured bonds that have physical property tied on them are less risky and perhaps go with lower interest rate (all things being equal).

On the other hand, the certificates are used as tangible- but ‘non-real estate property’ to secure bonds. Examples of such certificates that can be used are heavy machine/equipment certificates or airplanes. The only advantages of this type of secured bonds over the mortgage bonds is the fact that it is easier to market in the bond market, but they both have the same characteristic of low risk and low interest rate.

(b). unsecured corporate bonds: This is directly an opposite of the secured corporate bonds. This type of bond is not secured because there is no specified collateral tied to the bond repayment. However, the bond is backed strictly by the creditworthy nature of the issuing company (firm). An interesting question of what happens when the company fails on their pledge to pay back is actually answered by the court. Therefore, in the case of default by the company, the holder of the bond has the right to seek court actions on how to recover his money. In this case, the bondholder or the investor can lay claims on the company’s assets via the court. Most of the unsecured bonds are long-term in nature and in financial and accounting terminology it is usually called “debenture” while its contract is called “indenture”. Unsecured bonds are of two kinds namely; the “subordinated debentures” and the “variable- rate bond”. While the former only gets its claims after the non subordinated bondholders have gotten, the later is a new financial development where the bond interest rate is completely ‘tied on another market interest rate’. Example of such market interest rate where the variable- rate bonds are tied is the Treasury bond interest rates. One good feature of the variable- rate bond is that the interest rate change consistently with the changes of the market interest rates. It is worthy to note that variable- rate bonds are new innovation in the world financial markets.

(c). Junk Bonds: This kind of unsecured bond is globally associated with Michael Milken and Drexel Burnham, because they developed a market for trading of junk bonds. The name junk bond is derived from the rating arrangement of bonds of moody. It means an unsecured bond with
poorest and most substandard grade. These poor grades bonds are usually called “speculative grade bonds”. The holders of junk bonds are regarded as holders of most downgraded bonds. The most challenging feature of junk bonds is that, it is hard sale bonds in any market irrespective of how such secondary market is developed. Junk bonds are common in emerging bonds markets where there is high rate of firm defunct. More so, junk bonds as a kind of corporate bond are adjudged to be highly risky.

Characteristics of Corporate Bonds

Bonds generally have their broad features whether corporate bonds or government bonds. But corporate bonds have unique features that are not common with government bonds. Those unique features are as follows:

**Restrictive covenants features:** This implies an agreement that not only covers the interest of the bondholders but also strongly protect their interest in the corporation. This becomes necessary because the managers of the corporation can easily be fired or dismissed by the board of directors of the corporation; as such the managers firmly protect the interest of the directors as the stakeholders of the corporation even at the detriment of the bond holders. Therefore some rules are designed by bondholders to shield their investment interest should the corporation faces any challenge that could lead to default. Thus, these rules are regarded as restrictive covenants of corporate bonds. These covenants are usually contained in the policy of the company and as well included in the bond indenture. The rules are usually strong to the extent of restricting the company’s involvement in programme like merger, acquisition, and takeover, among others. Meanwhile, the more the restrictions in the covenant, the lower the interest rate of the bond, because the investors consider those restrictions as protector.

**Call provision:** The call provision as a feature of corporate bonds means that the bond issuer has the legitimate right to compel the bondholder to sell the bond back. There are several reasons that warrant call provision in corporate bonds. Such reasons are: firstly, it enables the bond issuer to buy back their bonds after issuance, in accordance with the condition of “sinking fund”. The sinking fund conditionality makes the bonds lucrative to the bondholder as uncertainty associated with the default of the bonds. Secondly, the call provision affords the firms, the opportunity to “retire a bond issue if the covenant of the issue restricts the firm from some activities that it feels is in the best interest of the stockholders”. Thirdly, call provision favour firms when the need to alter the company capital structure arises. For example “a maturing firm with excess cash flow may wish to reduce its debt load if few attractive investment opportunities are available” (Mishkin and Eakins, 2012). Therefore, in summary, the call provision feature of corporate bonds practically provides callable bonds and offers firms the provision of some level of flexibility.

**Conversion Feature:** This feature of corporate bond is often aimed at converting the existing bond of the company into a stock at future date. This characteristic of corporate bonds arise when the managers of the firm are convince of a future substantial rise in the price of stock but could not want the company to issue stock at a time it will be undervalued in stock market. As a matter of fact, the company issues a bond with the managers interest of converting the bond to stock for the benefit of the shareholders of the company. However, most bondholders do prefer the conversion feature because; it offers them the opportunity of not only purchasing a bond but also the chance of receiving both a bond and a stock option.

**Empirical Review**

Rinqui (2010) conducted a survey on the factors determining the development of corporate bonds market in Kenya. In his study, the case of how political environment, macroeconomic factor, effective
regulatory environment, market infrastructure and diversified intermediaries affect corporate bond market development was highlighted. The study was anchored on capital structure theory which emphasizes that firms capital structure is made important for real investment decisions when other sources of corporate finance and debt securities are “imperfect substitutes”. The study adopted descriptive research design for the purpose of achieving the objectives of the study. It covered 60 companies listed in the Nairobi Securities Exchange within the period of 2000 to 2012. While employing correlation analysis to establish the relationship between most of his variables in the study, he discovered that a confluence of factors play a role in the development of corporate bonds market in Kenya. According to the result, these factors are political environment of the country, investor base, regulatory framework, the banking sector size, the cumbersome nature of issuance process and various macroeconomic factors. In the financial analysis, the concludes that a robust legal system, tax and regulatory environment, stable political environment and effective market infrastructure that characterized with improved intermediaries are sin-qua-non to the development and functioning of corporate markets in Kenya.

Similarly, Nktug, Vasconcellos and Bae (2012) who worked on “the dynamics of sovereign credit default swap and bond markets” argue that bond markets play a significant role in the price discovery process which is in contrast with other corporate studies”. Their study covered 30 emerging market between the period of 2001 to 2007. The study adopted VECM method with a straightforward three step procedure on the relationship between credit default swap (CDS) and bond market. Result from the study according to the interpretation their result shows that bond market generally leads CDS markets, which is in contrast with the results of other studies. They also discovered that sovereign CDS and bond markets have become more important in the price discovery process.

Consequently, Castro (2012) studied the pricing of emerging market corporate bonds using the CDS-bond basis spread. In their study, he noted that corporate bonds markets of the merging countries have expanded. In this argument, he maintains that “corporate bonds have become increasingly advantageous investment for investors seeking higher yields than what more mature bond markets have been able to provide”. Though the study is primarily focused on corporate bonds, the quantitative analysis was specially done “through the lens of credit analysis”. The study was anchored on credit risk default theory. In his methodology various time series were constructed. However, his mathematical model was built on the original model earlier used by Black and Scholes (1973) and Levy (2009). He assumed a risk neutral world with three basic assets namely: a CDS, a corporate bond and a risk-free bond as the dependent variables (Hull and White, 2000). The daily quotes spanning from the periods of Jan. 1, 2008 to Jan. 1, 2012 were utilized as an interpolated data, for the purpose of matching the maturity of the five-year CDS, in calculating the spreads. The independent variables constitute aggregate data from firms for fixed income instruments from daily date of corporate bonds in their universe especially those with characteristics of bid, mid and ask quotes. All these data were reportedly duly filtered.

Additionally, Nwado and Deekor (2013) demonstrated that domestic corporate bonds are huge source of liquidity in the Nigerian bond market and every other corporate bonds market. Their empirical study which centered on domestic bond market and the development of Nigerian capital market posits that a combination of both domestic and foreign participants in a bond market not increases the chances of corporate bond market development but also covers the national yield curve. The data used in the study were collected from the Central Bank of Nigeria. Ordinary regression techniques were used in their study. In their financial analysis, they discovered that insignificant relationship between domestic market participation (DMTP) in domestic bond market and liquidity in the same
domestic bond market. They conclude in their study that foreign participation in the domestic bond market contributes very little to the liquidity in the Nigerian domestic bond market and does not affect national field curve.

In Newserland, Dicke and Fan (2005) investigated the factors that are associated with the development of corporate debt market while working on the topic “Banks and corporate debt market development”. In their study, they made use of panel data covering 30 countries from 1989-2002. The major crux of their study was to found out the relationship between banking sector structure and corporate bond market development. They classified corporate bond market development along other possible determinants of bond market development to include: Market players (-such as global corporation, government commitments, public debt market and institutional investors); institutions (such as legal system, and credit rights), Economic interrelationships and incentives (such as mergers and acquisition, per capita income, defined contribution schemes, corporate tax rate among others). Upon this premise they hypothesized that “the more concentrated the banking sector. The more power that banks can exercise and the less likely it will be that corporate debt market will grow or better put: ‘a highly concentrated banking sector could more effectively protect itself from disintermediation caused by bond market development’ (Dicke and Fan 2005). Using multiple regression analysis in their methodology, they discovered that bank concentration is significantly negatively correlated with bond market development, adding that ‘the power of banks to resist disintermediation is related to their market power’ (Dicke and Fan 2005). This means that the more concentrated the banking sector, the more negative association it has with bond market development. Dickie and Fan (2005) finds that outstanding corporate debt securities as ratio of GDP have a close relationship with a number of opportunistic elements, and other variables such as the volume of merger and acquisition as a percentage of GDP had positive signs as expected in their apriori institutional variables such of accounting standards, creditor right and judicial efficiency as used in their regression were also found to be a contributory factor to the weak corporate governance discovered in the countries of studies. Remarkably, they concluded that corporate debt market can only develop in an environment where the natural resistance of bank can be overcomed. They recommended prospective economic policies to aid pressures to develop debt market in order to reduce capital cost and its associated risk.

Similarly, in United Kingdom, Choudhry (2009) studied the United Kingdom Bond market on the topic tilted- ‘the value of introducing structural reform to improve bond market liquidity: experience from the UK gilt market’. The study covered the time of 1993 to 2002, so as to capture the period in which United Kingdom Monetary Authorities introduced various structural reforms on the gilt market, purposely for improving the UK government bond liquidity. The crux of the study was to empirically ascertain the impact the reforms by examining the liquidity levels within the post-reform period of the market. Multiple regression technique was adopted in his methodology to estimate the values of observed price error (OPE) as the dependent variable. The study was motivated on getting the determinants of the proxy measure of market liquidity (such as bonds age, the bid-offer spread and the amount of bonds outstanding) and largest contributor of the various explanatory variables in influencing liquidity levels of the gilt market. As such, issue size, bond maturity, overall market confidence, bond minimum on discount and swap spread were used as independent variables of the study. In all these variables, a cross sectional time series data were utilized. These data grouped into three periods (comprising period 1 to period 3) for the purpose of connivance in testing the variables under study. In his analysis, it was found that bond size of the UK gilt market has negative significant relationship with the observed price error. This means that a large issue size of bond in the gilt market suggest greater liquidity but with smaller spread. As a matter of fact, issue size in the bond market
does not greatly influence bond liquidity. Then for terms of maturity, it was discovered that it is positively significant at 5% level; which means that higher term maternity bonds tends to increase interest rate risk with wider spread. On the other hands, market confidence was observed to be negatively significant statistically with bond market liquidity. It is reported that market confidence is not practically significant because it has very unnoticeable impact on the observed price error. Though this practical implication appears strange but it is believed that the transparency and efficiency in a developed bond market like UK gilt market should have a market yields that reflect true fair value instead of market sentiments. The premium and discount price variables were reported to have no certain sign from the result. This finding is in tedium with that of Daiz and Skinner (2001) as cited in Choudhry (2009). Then swap variable was found with the expected sign (positively significant). The Chow test was conducted because of the common nature of structural changes in financial market proved valid. In the final analysis according to the interpretation of his statistical values, it was concluded that an increase in market liquidity would not all the time bring about reduction in observed price error, especially in an illiquid trading economic conditions. He also further concluded that market liquidity can be maintained via the application of most trading conditions such as market volatility, bench mark bond issuance, swap spread among other factors. Therefore, introducing structural reforms as a helping hand to increase and sustain liquidity in bank market were recommended to foreign debt agencies. Other scholar such as Adler and Song (2007), Singh and Andritzky, (2005), Levy (2009), Akdogan and Chadnish (2011), Hull & White (2000), Duffie (1999), Black and Shdes (1973), Haworth, Schwarz and Porter (2009) among other have all made their views empirically about corporate bond in both developed and developing countries or bond markets.

Theoretical Framework
The paper adopts eclectic theoretical approach by anchoring the study on two theories. The first is the Efficient Market theory. Efficient Market Theory is a finance theory propounded by Louis Ba Chelier (a French Mathematician) in 1900, in his dissertation paper titled, ‘The Theory of Speculation’. Although, according to Guerrien and Gu(2011), the history of Efficient Market Hypothesis (EMH) traces its origin to 1555. Eugene Fama (Professor of Finance) elaborated the efficient market theory through his most cited study -”Efficient Capital Market: a Review of theory and empirical work” in 1970 and as a result, most scholars often refer him as the founder of EMH (Horowitz, 1962). The tenet of efficient market theory, in summary, states that “prices of stock, bonds and other securities must fully reflect all available information at any point in time”. Efficient market theory proposes an efficient capital market where “investment capital must be allocated to its most productive use” in one hand and on the other hands, a “market where investors cannot beat the market or find securities that are mispriced” such that their stock constantly outperform the market (Fama, 1970, cited in Han, 2010). Based on the terminology of Harry Robert, Fama identified three levels of market efficiency to include: Weak form efficient market, Semi strong Efficient market and Strong form efficient market (Han, 2010).

Importantly, Fama (1970) summarizes the assumptions of EMH as follows: New information regarding securities comes to the market in a random fashion; The competing investors attempt to adjust security price rapidly to reflect the new information; A large number of competing profit-maximizing participants analyze and value securities, each independently from the other;

The substance of efficient market theory that makes it very relevant to this study is the idea of ‘economy’s capital stock’ where resources allocation process is completely the outcome of
productive investment decision and efficient market conceived with the mindset that the stock price “fully reflect” all available information.

The second theory upon which this study is anchored is the Information Asymmetry theory. Theoretical evidences have shown that information asymmetry usually associates with agency theory and pecking order theory. Meanwhile, the theory of information asymmetry was propounded by George Akerlof, Micheal Spence and Joseph Stiglitz in 1970; and in 2001, three of them were awarded a noble price in Economics for their concerted research analysis of market with information asymmetry. Basically, the gamut of information asymmetry postulates a situation where one party in business transaction has more and superior information than another (David and Braruch, 2000). The theory presents two groups in an ideal market – the informed group (which comprises the managers of the firms who have full knowledge about the firms’ prospects) and the uninformed group (the investors in the firm who do not have superior information about the firm). Like the problem with agency theory (the problem of conflicting interest between management and investors); information asymmetry also breeds the problem of moral hazard, adverse selection, information monopoly discriminatory action and reserve prices (Black, 1998). It is a known fact that when the distribution of information is asymmetric, one or more parties will definitely bear the risk and in the extreme case, the imbalance created in power of transaction may lead the transaction to a market failure (Prig & Cheng, 2001; Akerlof, 1970 cited in David and Baruch, 2000).

Thus, the idea behind adopting information asymmetry as part of the theoretical foundation for this study is on the premise that substantial proportion of the transactions in stock market and investment decision making are based on transmission of firms accounting and financial information from those who have it to those who need it. And these accounting and financial information are structured on information asymmetry. Again, information asymmetry is widely used in financial economics in studying stock brokers/ analyst, insiders and investors who are differentially informed stock market participants. Therefore, these two theories (efficient market theory and the information asymmetry theory) form the two strong pillars upon which the study stands.

**Methodology**

**Research Design**

In this study, quantitative research design anchored on ordinary least square regression technique was adopted. This research design was adopted based on the nature of the variables of the study. The variables are of the study are characterized by observation of events or influences on a phenomenon that have already taken place. For instance, the macroeconomic variables used in this study have taken place over a long period of time. The research variables include interest rate (INT, specifically minimum rediscount rate/ monetary policy rate, MMR/MPR), banking sector development (BKS), inflation rate (INFR), foreign direct investment (FDI), exchange rate(EXGR), aggregate savings(SAVS), fiscal balance(FBLA) and bond yield(BYID). These macroeconomic variables basically formed the independent variables of the study, while the corporate bond market capitalization formed the dependent variable of the study. The conventional operational definitions of these variables were employed in its measurements. All the data used in the study were time series annual data, variously sourced from audited annual reports. The data covered 33 year observations between 1980-2013.
Sources of Data
The nature of data used in this study is time series data. Some set of data such as aggregate savings, 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 volume 24, and CBN annual report and statement of account. The annual report and statement of account of Securities and Exchange Commission (SEC) also constitute reasonable source of data such as the interest rate (minimum rediscount rate/ monetary policy rate), bond yield in percentage of GDP, 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 information 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. This source indicates financial statistics of IMF including series of total net foreign direct investment in the reporting economy from foreign sources less net foreign direct investment by the reporting economy to the rest of the world (IMF, 2014). Again data set on corporate bond and capital market were also sourced from ICE data of stock market development of World Bank.

Description of Research Variables
The variables of the study were generally grouped into two, namely: the dependent and the independent variables. In one hand, the dependent variable of the study constitutes the left hand component of the regression model and on the other hand; the independent variables of the study constitute the right hand components. The sub-sections bellow provides further detailed description of the relevant variables of the study.

The dependent variable of the study is corporate bond market development. Corporate bond market development in this study is measured by corporate market capitalization as a ratio of GDP. The bond market capitalization is defined as the value of fixed income securities (corporate) traded or listed in the stock market (Colobage, 2009). Whereas the corporate bonds constitutes all the bonds issued by corporate firms in Nigeria including banks that is fully captured by Nigerian Stock Exchange and Securities and Exchange Commission (SEC).

On the other hand, the independent variables of the study include the following as operationally defined:

**Interest Rate:** Interest rate is critical factor for investor’s consideration in Nigeria, because investors have various degrees of risk-aversion. For instance if interest rate is variable, there is possibility that investors will not desire for “long-term fixed rate note”. As a matter of fact, a deflected interest rate (ie interest rate less inflation rate) is used as a measure of interest rate in this study. Other researchers like Kapingura and Makhethakosi, (2014) have strong support for this measurement.

**Banking Sector Development:** Banking sector development is operationally 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 rate 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 (i.e channeling savings to investors). As noted earlier in the literature, banks serve as the dealer and maker of the bond market and it can assist in the development of the market via making the bond market to be potentially liquid. As a matter of fact, the researcher expects the banking sector to have a positive sign.
- **Bonds yield:** this is defined in this study as the rate of return on an investment on bond issue divide by GDP (i.e the ratio of rate of return on bond issue over GDP).

**Exchange Rate Variability:** In this study, Exchange Rate Variability according to Adelegan and Radzewicezbak (2009) is proxied by the logarithm of fixed exchange rate. Unarguably, flexible exchange rate is very important in encouraging both local and domestic bond market for rapid development while literature suggest that pegged exchange rate makes foreign investors to underestimate the risk of lending in which the outcome brings about undue competition that could make the development of the local intermediation to be sluggish. From literature, the researcher expects negative sign.

**Savings:** Total savings in Nigeria as a percentage of GDP is used as the operational measure savings in this study. The researcher is neutral on expected sign regarding savings but relies on the outcome of the result.

**Foreign Direct Investment (FDI):** Private capital flows as a ratio of GDP is used to measure foreign direct investment, because foreign capital investment indicates foreign participation in the market, and FDI encourages “domestic capital accumulation”(Garcia and Liu, 1999). Other researchers like Aduda, Masila and Onsongo (2012) share the same viewpoint about FDI and bond market development.

**Inflation rate:** Inflation rate as a macroeconomic variable is also included in model; Literature and theory suggest a negative sign.

**Fiscal Balance:** Past year’s budget balances as a percentage of GDP is used as the measure of fiscal balance in this study. Other measure of this variable is public debt as ratio of GDP. Scholars like Mu et al (2013) have used this measure in their bond market study.

**Model Specification**

Since the focus of this study is to investigate what drive corporate bond market development in Nigeria by examining the contribution of each of the macroeconomic variables, the regression equation base line model is thus specified as:

\[
\text{CoBdca/GDP} = \beta_0 + \beta_1 \text{Int}_t + \beta_2 Bks_t + \beta_3 \text{fdi}_t + \beta_4 \text{Fbla}_t + \beta_5 \text{Exgr}_t + \beta_6 \text{Infr}_t + \\
\beta_7 \text{Savs}_t + \beta_8 \text{Byid}_t + \epsilon 
\]

\[
\text{CoBdca/GDP} = \text{Bond Market capitalization, Int = interest rate variability, Bks = Banking sector development, Fdi= Foreign direct investments, Fbla = Fiscal balances, Exgr= Exchange rate, Savs = Savings, Infr = Inflation rate, Byid = Bond yield,GDP = Gross Domestit Product,} \ \beta_0 \ldots \beta_8 = \text{Coefficients,} \ \epsilon = \text{Error term.}
\]

Importantly, the above model is transformed into exponential model by applying logarithm in the model. The natural logarithm of the corporate bond market capitalization (LogBdcap) is also applied for the purpose of normalizing the distribution as against using absolute values of the bond market capitalization across years. This natural logarithm is applied to the variables in the regression equation is to avoid spurious results and to keep away from the problem of internal validity. The exponential model is specified as thus:

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

Where: log represents natural logarithm. All other variables remain as explained in equation 1.
Empirical results
For the purpose of validating the empirical result our study, the following diagnostic tests were conducted in line with the basic assumptions of OLS.

(i) Unit root test: The reason for this diagnostic test is to check the stationary position of the variables of the study. The rule of the unit root test implies that the stationarity of the variables is determined at a level where ADF-statistic values are greater than the critical value at all levels. Using the ADF-test statistics, the first unit root test results show that all the variables were not stationary at level with zero lag. We proceeded to check the next level; the variables were established be stationary at first difference level with zero lag in the trend; since the ADF values of the variables indicate BKS-5.271320, EXGR (-5.125455), INFR(-5.344660), SAVS (-5.845018), BYD (-4.56293), FBLA (-4.564293), among others.

(ii) Normality test: Although there are various methods of testing for normality assumption is OLS, such as histogram of residuals, normal probability plot, Jarque-Bera etc. In this study, we adopted Tarque-Bera techniques with a single graph because it is an asymptotic test dedicated to OLS. It also computes both Skewness and Kurtosis. The JB follows the chi-square distribution with 2degree of freedom. See the figure bellow.

FBLA

Normality test result of the residual shows that the residual is not well distributed with the values. The JB is relatively high. However, we did not worry much about this problem because Tabachick Fidell (1989) suggests that the problem of Skewness & Kurtosis do not significantly change regression results.

(c) Autocorrelation result: 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. Our results indicate that d value is 1.966508. The d value is actually within the acceptable range of near 2. Therefore, the autocorrelation assumption is accomplished.

(d) Multicollinearity result: The multicollinearity was checked to confirm that the problem of multicollinearity does not largely arise to affect the results. To achieve this purpose, the variance inflation factor (VIF) test was performed. VIF test is one of the most conventional tests that are reliable in measuring the level of multicollinearity or collinearity. Conventional approach to VIF is that the value of VIF should not exceed ten, as suggested by Gujarati (2003) and Hair and Goodman
(2008). Our result of VIF showed values less than ten in our model. Since the results are below the benchmark, we conclude acceptability and confirm that there is no presence of multicollinearity in the regression. We also observed the coefficient of the independent variables in this respect and also confirmed no presence of multicollinearity.

(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) maintains that OLS is a best linear unbiased estimator (BLUE) if the estimate possesses the expected characteristics of unbiasedness, efficiency, and consistency. According to him, unbiasedness means that the expected values of the coefficients are equal to their true values, while efficiency and consistency imply minimum variance and asymptotic certainty respectively. In other words, heteroscedasticity means non-homogeneity of variance (Iyoha, 1996). Meanwhile, the decision rule of heteroscedasticity implies to Reject $H_0$ if $X_{cal}^2 > X_{tab}^2$ at $\alpha = 5\%$, if otherwise accept $H_0$. Hence, from the heteroscedasticity Test, the results indicate that the cal.obs R square is 10.08192 and the value of $X_{tab}^2$ is 16.919 at 5% level of significance. With these results, the researcher concludes that the error terms have a constant variance.

Regression Result

In order to justify the specification of our model, a model specification test was conducted using Ramsey Reset test, purposely to check the level of omitted variables in the model specification. The result shows a p-value close to zero, indicating that the model is well-specified. Therefore, we did not border to another variable in the model because we are also mindful of the degree of freedom since the model already contains eight independent variables. The regression was done with the help of E-view statistics. While estimating the equation, we removed logarithm in some variables that are already in percentage; reason being that logarithm further devaluated the figures. We also introduced partial differentiation (D) in some of the exogenous variables to differentiate the values of the figures where they appeared similar to each. The result is presented in the table below.

<table>
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<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
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<tr>
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<td>-2.894281</td>
<td>1.061161</td>
<td>-2.727468</td>
<td>0.0143</td>
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R-Squared = 0.644492, Adjusted R-Squared = 0.477194, F-statistic =3.852362, Prob(F-statistic) = 0.009292, DW stat = 1.966508, S. E of regression =0.612258.

Source: Result from EViews
From the result, the value of R-squared is 0.64492; indicating that about 65% of the fluctuations in the Nigerian corporate bond market development is explained in our regression model. The adjusted $R^2$ in the result is reported as the multiple coefficient of the determination basically adjusted to account for the degree of freedom associated with the sum squares in the regression. The Durbin Walton (DW) statistics is 1.966508; the figure is close to 2, which satisfy OLS statistical criterion. Essentially, the empirical result indicates that savings and exchange rate are statistically significant at 1% level with the p-value of 0.0042 and 0.0076 respectively. The t-statistic value savings (SAVS) is 3.304835 while that of the exchange rate is -3.028384; meaning that savings have significant and positive impact on the development of corporate bond market in Nigeria. On the other hands, exchange rate has significant and negative influence on corporate bond market development in Nigeria. In concrete terms, it implies that a unit or 1% change or increase in savings within Nigerian economy brings about 17% change or increase on average in the development of corporate bonds in Nigerian. In the same vein, a unit change in the exchange rate within Nigerian economy brings about corresponding decrease in the corporate bond market development in Nigeria. The signs are in line with apriori expectation and the theoretical positions in the literature.

Further, banking sector development (BKS) with p-value of 0.0482, inflation rate (INFR) with p-value of 0.1556 and bond yield (BYID) with p-value of 0.5723 are statistically significant at 5% level and have negative impact on corporate bond market development in Nigeria. It is also interpreted in this paper that a unit changes in banking sector development, inflation rate and bond yield within Nigerian economy brings about development of the Nigerian corporate bond market. Other macroeconomic variables such as interest rate, fiscal balance and foreign direct investment (FDI) were found to be significant at 10% level with negative signs respectively. The negative sign in interest rate is according to expectation of the researchers while that of FDI, FBLA are out of expectation of the researchers. Overall, it is discovered that savings and exchange rate are strong macroeconomic determinants of corporate bond market development in Nigeria. Again, other microeconomic factors such as banking sector development, inflation rate and bond yield proved also to be among the key determinants of bond market development in Nigerian. In the same way, macroeconomic factors such as foreign direct investment, fiscal balance and interest rate stimulate Nigerian corporate bond market development but not as strong as other macroeconomic variables earlier mentioned above.

**Conclusion**

The primary objective of this study initially has being to empirically examine the macroeconomic determinants of corporate bond market development with respect to Nigerian bond market. For the purpose of addressing the research question of whether corporate bond is more driving by fundamental institutional factor or macroeconomic factors. According to ordinary least square regression model developed, the results from the regression analysis revealed that savings in Nigeria and the exchange rate are strong driver of corporate bond market as macroeconomic factor. These two macroeconomic factors can be regarded as the primary stimulator of corporate bond market development in Nigeria. Again, other macroeconomic factor that also influence the development of corporate bond market in Nigeria are Banking sector development, inflation rate and bond yield. These factors according to the level of their influence can be regarded as the secondary stimulator of the Nigerian bond market development. The third classes are FDI, interest rate and fiscal balance. These last three macroeconomic show negative significant influence at 10%.

Overall, it is established in this study that fundamental macroeconomic factors such as savings, exchange rate, Banking sector development, bond field, inflation rate, interest rate among others are
the determinants of bond market development in Nigeria and such, they matter a lot in the development of Nigerian bond market. Meanwhile, further research should be explored to ascertain position of fundamental institutional factor vis-a-vis corporate bond market development.

References


### Appendix A

#### Summary Data on the dependent and the independent variable

<table>
<thead>
<tr>
<th>Yr</th>
<th>Corp. Bond cap</th>
<th>Ech Rate %</th>
<th>Int R. MRR/MRR</th>
<th>Bond yield (%)</th>
<th>FDI</th>
<th>Infr</th>
<th>Savin</th>
<th>Bks dev.</th>
<th>Fb cal</th>
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Source: CBN Statistical Bulletin, various years and Annual Statement of Account, various years, IMF data bank.