CORRELATION ANALYSIS OF 10-YEAR GOVERNMENT BOND YIELDS IN NIGERIA AND SELECTED AFRICAN COUNTRIES

NAJEEM OLATUNJI, BASHIR
Department of Economics, College of Arts, Social & Management Sciences,
Crescent University, PMB 2104, Sapon Abeokuta, Ogun State, Nigeria.
Tel. +234(0) 7069322942 |Email: tunjibash@cuab.edu.ng

IBRAHIM ABOLORE, POPOOLA
Department of Economics, College of Arts, Social & Management Sciences,
Crescent University, PMB 2104, Sapon Abeokuta, Ogun State, Nigeria.
Tel. +234(0)703 763 6154 |Email: popoolaibrahim@gmail.com

MUIDEEN ADEJARE, ISIAKA
Abeokuta Business School, Crescent University,
PMB 2104, Sapon Abeokuta, Ogun State, Nigeria.
Tel. +234(0)703 070 8367 |Email: dr.isiaka@gmail.com

GRACE AMARACHI, ANYIM
Department of Economics, College of Arts, Social & Management Sciences,
Crescent University, PMB 2104, Sapon Abeokuta, Ogun State, Nigeria.
Tel. +234(0)904 987 5050 |Email: ganyim9@gmail.com

ABSTRACT

This study examines the relationship between yields of 10-year government bond in Nigeria with selected countries in Africa. The research employed the use of Pearson correlation method to examine relationship between bond yield in Nigeria and Kenya, Morocco, Namibia, and Uganda, by analysing data set on bond yield from January, 2017 to December, 2021. The study discovered that there is a positive correlation between government bond yield in Nigeria and other African countries. This therefore, limits bond spread between Nigeria and the chosen countries under study. The study also found that there is no sign of spread in government bond yields between Kenyan and Ugandan. However, Moroccan and Namibian bond yields relate negatively with each other, hence there is a danger of bond spread. The study recommends that in addition to adequate funding, low inflation rate, balanced exchange rate and stable interest rate should be ensured by the government so as to bring about increased aggregate bond market that will be attractive to investors.

Keywords: Government bond, Bond yield, Africa bond market, Bond correlation

JEL Code: G2, G3

1. INTRODUCTION

Bonds form part of the capital market where long term securities trade. Its establishment in Nigeria dated back to 1961, with the primary objective of mobilizing investment funds to imbue development, (Ikeobi, 2020). While Morocco had established its Stock Exchange since the 1920s ahead of Nigeria and other countries in the continent, in West Africa the Nigeria Stock Exchange is the oldest existing security market. The capital market bring together funds that are readily available in the form of savings and executable projects in the form of investments, through the

aid of intermediaries such as banks, (Okekwu, Njoku, Ajeniweni, Aliyu, Onyibo & Adejoh, 2022). This opens a growth and development path to both the private and public entities. Just like every other nations of the world, Nigeria and other African countries also leverage on this investment window as provided by their respective financial markets, (Okekwu, *et., al*, 2022). When compared with stock markets in the developed countries, African stock markets, especially the sub-Saharan African countries, are still trailing behind because of their capitalization that is relatively lower, (Iortyer & Maji, 2022). However, the Johannesburg stock exchange in South Africa has been recognized for its better performance

Bond yield, which is the return on investment for bond investors, is often discounted at a rate that links up cash flow from bond to its recent price, (Jacob & Shiller, 2010). A rise or improved yield which translates to an increase in returns, signifies that investors are entitled to a higher amount of benefit or interest rate as their dividends. As a debt instrument, bonds and its other derivative tools respond to the reigning interest rate, which is in turn, employed in pricing of every debt instruments given the importance of time discounting, (Ogungnele & Ogungbenle, 2019). Bond yields usually, are indirectly correlated to bond prices such that, as the prices of bond move up, the bond yields decreases proportionately, (Ikeobi, 2020; Chen & Bartle, 2017). This is because bond market coupon rate is always fixed, therefore causing the price in secondary market to fluctuate so as to correlate with the prevailing market rates. Sequel to the fact that bond yield are being used to analyze the risks that are involved in investment, it can also be used to investigate or determine whether the bond is a good investment. The world over, it is generally known that governments usually make use of bonds because it is seen as a fundamental tool for raising funds that can be used to imbue funding. Furthermore, government bonds are equally used to facilitate fiscal and monetary policy. The funds being realised from government bonds, therefore, are often channeled and invested into public expenditure so as to endorse and enhance economic growth and development, (Chen & Bartle, 2017).

Given the various usage of the funds capable of being raised from the security market, key macroeconomic variables are being impacted by these government bonds and the yields associated with them. In Nigeria for instance, bond market is becoming more significant than other sources of raising fund for capital expenditure as a result of its growth and transformational impact on a country's economy, (Adelegan & Radzewicz-Bak, 2009). Apart from being a long term financial debts instruments, bond is a tradable loan security which is often use to raise fund to cater for capital expenditure (SEC, 2010). In Nigeria, corporate and government bonds represents the two major composition of Nigeria bond and security market. These are the big players in economy growth and development. For example, during economic crisis of Asia in 1997, the market helped most countries to come out of the economic meltdown. Mu, Phelps & Stotsky, (2013), submitted that markets for bond are instrumental in achieving continuous stability in the economy by intermediating between capital savers and users.

Apparently, many arguments and discussion had emerged from diverse spheres of financial analysis and thought on the dominance of government owned bonds in Nigeria capital market over its corporate counterpart. This imply that corporate bonds trading is lowly relating to its government bonds counterpart, (Adelegan & Radzewicz-Bak, 2009). Previous studies have showed that in Nigeria, both the federal and the state government have a tendency to constrain the issuance of debentures, (Oke & Dada, 2021; Ogungnele & Ogungbenle, 2019; Ogunsakin & Olalere, 2017). This resulted to the fact that the bonds issued by the government is usually targeted at infrastructural development and it is often higher than corporate bond. More so, the constitution

allowed the government to issue bond at the various arms of government. The constitution equally permit the Federal Capital Territory (FCT) and communities at large, to issue municipal bonds and special purpose bonds respectively, (Okekwu, *et al,* 2022).

The high rate of budget deficit in Nigeria has being the motivation of the government to raise funds through the bonds market. For instance, the budget deficit stood at ₦N6.26 trillion in year 2022 which represent 3.39% of the GDP, (Oke & Dada, 2021). Given that budget deficit is a consequence of excess government expenditures over tax revenue, this could mean that bond yield of the country may fall as the budget deficit of the economy is rising because the economy's interest rate would be declining, (Oke & Dada, 2021). Hence, investors on government or corporate bond would be discouraged and the economy would be worse-off. It has been observed that Nigeria relatively preferred budget deficit when compared with other Africa countries. For instance, in the year 2018, the budget deficit of South Africa stood at 3.6% while in Nigeria the budget deficit was 1.74%. In the year 2022, South Africa budget deficit was 5.2% while that of Nigeria stood at 3.39%, (Ogunsakin & Olalere, 2017). Theoretically, this is an evidence to show that the yield on bond investment in Nigeria has the tendency to be higher than the yield on bond investment in any other African countries. This is especially so when economic variables that determines bond yield in the country, continuously improve, (Adelegan & Redzewick-Bak, 2009).

Over the years, numerous studies have examined bond market dynamics. Scholarly studies that examined yield spreads through the evaluation of impact of interest rates on both short-term and long-term yield spreads, abound, (Duffee, 1998; Neal, Douglas & Charles, 2000; Jacoby & Janger, 2014). Other studies concentrated on effects of interest rates, bond ratings, firm size, and debt-to-equity ratios, on bond yields, (Neal, Douglas & Charles, 2000). This research examines the relationship between the yields of bond in Nigeria with other selected countries in Africa. The succeeding section reviews both the theoretical and empirical literature of the study, while section 3 discusses the research methodology. Analysis result is presented and discussed in the following section, while the last section concludes and presents policy recommendation, based on the study findings.

2. LITERATURE REVIEW

2.1 Theoretical Review

The theory of Uncovered Interest Parity (UIP) posits that in addition to whatever risk premium that is attached to the uncertainty of the exchange rate forecast between currencies of two countries, the difference between yields on their assets, as denominated in their respective nation's currencies, is expected to be equal to the existing exchange rate between them, overtime. This theory, is however a major spur to research into financial market linkages hinges on the exhibited interdependencies between the world's stock markets. This is evidenced in the resultant rise in the London, New York and Tokyo market after the 1987 crash, and the ripple effect of the NYSE meltdown in 2008 on most world capital market, (Andrew & Ilias, 2000) . Increase in relationship among capital markets across countries, as the presence of international investors' increase, is apparent.

The Capital Market Theory which relies on the Modern Portfolio Theory, was developed in the 1960s, (Sharpe, 1964). The theory introduced the recognition of assets that are free from the capital market risks. The theory further explained and forecast how capital markets can evolve with time. The objective of the Capital Market Theory therefore goes to ensure that assets such as shares and

bonds, are priced in terms of the inherent opportunity cost where investors would have to consider both the desired benefits and the risks that comes with their choice of investment, (Sharpe, 1964). The discussion of the CMT is relevant given the fact that it concerns itself with the significance of the capital and offerings of capital instruments.

The windows through which bonds are traded are forms of markets that serve as debt investment platforms. These debt management platforms are both adaptable and easily accessible, serving as a practical financial instrument over time. Bonds as securities, are typically sold either by the government or private organizations (Mu, Phelps & Stotsky, 2013; Mansi, Qi & Wald, 2021). They are considered essential and secure financial tools for governments, enabling them to raise funds to finance various expenditures, including capital projects, (El-saman, 2022). Additionally, bonds are a unique form of investment compared to other mechanisms because issuers repay investors the principal amount along with a predetermined and fixed interest rate over a specified period (Baker, Bloom & Davis, 2016). The growth and direction of Nigeria's bond market are significantly influenced by key players such as the government, financial institutions, and businesses, as they determine the financing modes for capital projects (Pradhan, Zaki, Maradana, Dash, Jayakumar & Chatterjee, 2015). Moreover, a country's financial system plays a critical role in transforming financing modes, acting as a vital channel linking governments, banks, and businesses (Abina, & Leelee, 2024). However, businesses often overlook the bond market for financing major projects due to the evolving dynamics between banks and governments. This has led many organizations to prefer alternative financing options, such as the stock market, which offers better risk diversification compared to bonds.

Debt investments, such as bonds, are accompanied with significant risks but play a crucial role in a diversified portfolio (Garko, Dosumu & Musa, 2022). Udofa, Itang, & Acha, (2024), indicated that risks related to credits are closely associated with the bond market. Mu, Phelps & Stotsky (2013), observed that bond markets in developing countries, including those in Africa, lag behind their counterparts in developed regions such as Europe, South America, and Asia in terms of market development. They argue that advancing bond markets is crucial for stimulating financial markets and requires key factors such as a robust investor base, a stable macroeconomic environment, and well-structured debt markets, (SARB, 2018).

Foundations and regulations upon which the market is based plays the critical role of refining the economic sector that assist in the growth and development security market, where bond is traded, (Abu & Aguda, 2015). While liquidity and pricing are the primary tools used in bond trading, bonds are generally assessed based on their yields, (Eke, Adetiloye, & Adegbite, 2020). Price remains critical in the determination of buying and selling value of bonds, yet yields are indispensable when comparing bond performance. This is as a result of the fact that it is not only the price of bond that is a reliable indicator of its performance, they are as well, influenced by factors such as maturity periods and issuers. Consequently, yield is considered the most significant measure for evaluating the performance of government or organizational bonds, as it incorporates varying levels of risk, which are often represented through the yield curve created from similar bond categories, (Oke & Dada, 2021).

In furtherance to the explanation of Oke & Dada, (2021), bond yields have been said to differ across countries, serving as a basis for comparing the value of government and corporate bonds. Yields are also used to acknowledge forward rates, evaluate associated risks, and regulate monetary policy tightness. The variation in bond prices within the market is largely attributed to factors such as fluctuating supply and demand under the same economic situation, (Von-

Gaudecker & Wogrolly, 2022; Ogunsakin & Olalere, 2017). High borrowing costs, which result from elevated credit risks or weak fiscal policies, often feature as benchmarks within the bond market (Abuka, Ronnie, Minoiu, José-Luis, & Presbitero, 2019). In addition, while internal factors such as shifts in shareholder demand and bond ratings influence bond prices, exchange rate, interest rates and inflation are external factors that also significantly impact bond pricing dynamics.

The prices of bond are inversely related to changes in interest rates such that when the rate of interest reduces, bond prices move up, and when it soars, bond prices decline. Another crucial factor in assessing bond yield is the duration of the bond. Bonds that mature at longer time tends to experience significant price fluctuations, (Mega & Widayat, 2019). Government bonds, which typically have fixed coupon rates over long periods, are particularly vulnerable to interest rate risks. Although Keynes did not critically explore the association that exist between bond prices and its yield, it has been observed that declining bond prices often lead to rising interest rates, which can offset bond yields to a considerable extent, (Wu, 2022). Factors such as interest rates, coupon rates, the bond's face value, and its maturity period play an important role in the determination of its market value, (Wu, 2022). Bond prices are also heavily influenced by prevailing market interest rates, which are critical in shaping their returns, in general, (Chen, 2022).

By the reasoning that the Uncovered Interest Parity theory recognizes that yields of bond across countries exhibit relational features, in spite of their currency differentials and exchange rate uncertainties, this study adopts it as its theoretical framework. It is therefore the inducement of this research into the possible existing linkage among the stock markets in selected African countries

2.2 Empirical Review

In the empirical space, Olowe, (2022), examined how capital formation and foreign direct investment relates with each other in Nigeria between 1981 and 2020. Employing time series data that were analysed using the ADF and ARDL approaches, interest rate and inflation rate were discovered to be ordered at level while foreign direct investment and other variables were of order (1). While the research showed that FDI has positive and significant impact on capital formation, it confirmed the existence of long-run association between FDI and capital formation. With the exception of interest rate and inflation rate, other factors positively influenced capital formation.

Eke, Adetiloye & Adegbite, (2020), sought to add to the body of literature by examining the possibility of existence of functional tie between real sector output and the secondary bond markets across 14 countries in Africa. Adopted variables for use include per capita RGDP, corporate bond issues and turnover, industrial output, and electric power consumption. The study however, discovered that bond turnover never had a causal effect on output growth. Also, it does impact on bond issue.

Houcem, Martin & Akintoye, (2017) empirically investigated the impact of macroeconomic determinants of bond market development across 22 Global South nations. The research, which covered a timeframe spanning 1990 through 2013, employed the use of Generalized Method of Moment in its analysis. Presented results indicated that institutional, structural and financial variables jointly exerts a neutral influence on bond markets. While interest rate volatility and fiscal balance are negatively associated with bond markets transformation, other factors tends to positively relate to its development.

Abu & Aguda, (2015), examined ow the Nigerian capital market, through bond, can catalyze the country's sustainable development. The research analyzed securities including stocks and

company shares, loan stocks, debentures and government bonds and stocks. The study finding established that major source of appropriate long-term funds, the capital market is obviously crucial to any nation's economic development. Specifically, the capital market facilitates economic growth by, among other things, mobilizing savings from numerous economic units such as governments, individuals and institutional investors

Jacob & Shiller, (2010), worked on corporate bond pricing while Duffee, (2002), examined the existing association between treasury yield spread and that of its corporate counterpart. Both studies utilized advanced statistical techniques, to address the challenges associated with non-stationary time series, opting to difference variables instead of analyzing them in their original levels. Jacob & Shiller, (2010), found a negative relationship between yields spread of both callable and non-callable bonds and treasury yields, with the effect being more pronounced for callable bonds. Duffee, (2002), on the other hand discovered that high-priced corporate bond exhibit a stronger negative correlation compared to its treasury yield counterpart. Lower rate of payment for treasury bonds in comparison with corporate bonds also lead to longer durations for treasury bonds.

Ibrahim & Hwei, (2010), applied regression analysis to assess impact of bond market variables such as ratings, interest rates, size of firm and the ratio of debt-to-equity, on bond yields across 22 firms from 2004 to 2006. The research findings indicated that DER and rate of interest had positive impact on bond yields, while ratings and other variables exhibited a negative correlation.

Adelegan, & Radzewicz-Bak, (2009), empirically studied factors that aid the development of bond market using a cross section of 23 sub-Saharan African countries between 1990 and 2008, taking into account the stages and sizes of bond market transformation. It was discovered that shortage of savings causes bond market development and deepening of the financial market to slowdown. It was also revealed that the development of domestic bond markets in SSA depends on several factors, ranging from banking size in the country, investment structure and profile and nature of the economy.

Longstaff & Schwartz (1995). The study adopted the use of Moody corporate data to develop a simple valuing method to analyze risky fixed and floating corporate debt where interest risk is taken into consideration. The study found that there exist significant correlation between default risk and interest rate, and this relationship in turn has effect on the spread of credit. Credit spread itself was discovered to be negatively related to interest rate.

Lastly, the effectiveness with which the Kenya's bond market operates is scrutinized within the framework of the country's capital market development strategy, which remains a core focus of its financial development policies. Recent reforms have underscored the necessity and relevance of the bond market development and capital formation financing as critical elements influencing the potential for sustained long-term growth, (Adetiloye & Adegbite, 2020). In Kenya, the local security market, of which bond is key, has a significant position not only in financing the national budget deficit but also as a credit risk-free investment avenue. It serves as a yardstick for developing the domestic market for corporate bond and provides an alternative to equity financing and bank loans. These factors have driven policymakers to implement strategies aimed at improving bond market conditions, (Mu, Phelps & Stotsky, 2013).

To enhance efficiency in the domestic debt market, the Central Bank of Kenya collaborated with the security markets authority and its Stock Exchange to improve liquidity and operational efficiency of Kenya's government securities market. Beginning in September 2007, Kenyan

authorities launched a targeted issuance strategy focused on building liquid and sizable benchmark bonds, (Abuka, *et, al*, 2019). This approach involved larger issuances of new government bonds and the reopening of existing ones, thereby increasing the volume of bonds available for trading in the secondary market.

In addition, the Kenyan government has maintained a commitment to macroeconomic stability, characterized by controlled inflation, steady growth, and manageable fiscal deficits. A quarterly assessment of the primary Treasury bonds market for Q2 2022 shows that seven Treasury bonds were issued, (Abuka, *et, al*, 2019). The government aimed to raise KShs.240.00 billion and received bids totaling KShs.222.71 billion, ultimately accepting offers amounting to KShs.202.86 billion, reflecting an acceptance rate of 84.52%. By March 2022, corporate bonds outstanding reached KShs.29.51 billion, a 2.43% increase from KShs.28.81 billion at the close of 2021. In the secondary bond market, turnover rose by 2.47% in Q2 2022, with bonds worth KShs.195.67 billion traded, compared to KShs.190.95 billion in Q1 2022. However, year-on-year data revealed a 27.86% decline, as turnover decreased from KShs.271.24 billion in Q2 2021 to KShs.195.67 billion in Q2 2022.

South Africa, the largest economy in Africa, boasts a more advanced bond market compared to other nations on the continent. Despite being an emerging market, its security market has been known to be highly developed compared with other developing economies of the world. In 2008, bonds worth over R19 trillion were traded in the country's security market. Government-issued bonds were reported to dominate, with the South African-owned Exchange, overseeing its regulation and monitoring, (SERB, 2018). By 2011, South Africa's secondary bond market was ranked third globally in turnover, accounting for 9% of the total turnover of bonds, globally. In the country, the bond market is unique for its significant liquidity, as evidenced by the turnover Velocity of Exchange, which rose, in early 2022, to 23.4 from 17.7 times per year, (Jefferis, 2009). Furthermore, the private credit-to-GDP ratio provided by deposit money banks stood at 142% in 2011, surpassing other emerging economies such as China (121%), Brazil (63%), and India (47%). Despite its sophisticated financial markets, South Africa's economic growth has been comparatively sluggish. Between 1991 and 2011, GDP per capita growth was just 5%, trailing behind Brazil (8%), India (7%), and China (15%), though slightly ahead of Russia, (Campbell & Taksler, 2003).

3. METHODOLOGY

Method

Time series data used in the research were sourced from ***https://www.investing.com*** from January, 2017 to December, 2021. The study employed the use of both descriptive and correlation analysis. Specifically, the study employed Pearson correlation analysis to examine the relationship among each pair of two countries bond yield. Graphs were equally employed in describing the pairwise trends exhibited by the variables.

Model Specification

The study adopted correlation analysis following the work of Akpu & Ohaka, (2017), where use was made of the correlation analysis method to examine relationship between quantitative accounting information and market yield of bond between 2003 and 2012 correlation coefficient. The estimated Pearson correlation model adapted from Gujarati, (2004), is shown below

$$r = \frac{n\sum X_i Y_j - (\sum X_i)(\sum Y_j)}{\sqrt{\left[n\sum X_i^2 - (\sum X_i)^2\right]\left[n\sum Y_j^2 - (\sum Y_j)^2\right]}} \quad \text{eqn.1}$$

Where;
r = correlation coefficient
X & Y = Bond yields of two countries between which relationship is tested
n = Number observation used in the study
i and j = Two different countries whose bond yield correlation is being tested

4. RESULTS & DISCUSSION

The correlation analysis result is presented in Table 1 below:

Table 1: Correlation Analysis

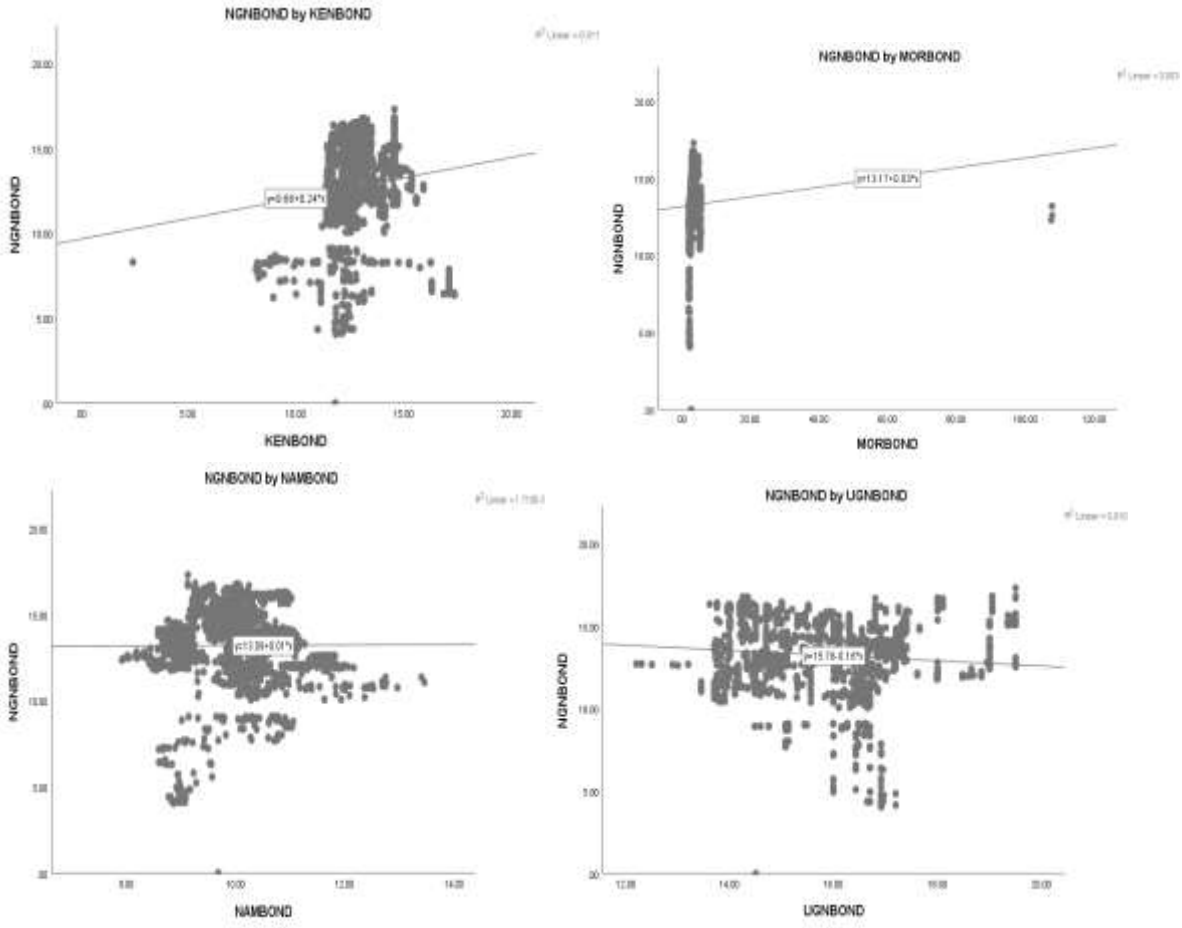
		Nigeria	Kenya	Morocco	Namibia	Uganda
Nigeria	Pearson Correlation	1	.107**	.053**	.004	-.099**
	Sig. (2-tailed)		.000	.009	.854	.000
	N	2835	2835	2431	1987	2508
Kenya	Pearson Correlation	.107**	1	-.037	-.248**	.623**
	Sig. (2-tailed)	.000		.065	.000	.000
	N	2835	2904	2431	1987	2508
Morocco	Pearson Correlation	.053**	-.037	1	.005	-.110**
	Sig. (2-tailed)	.009	.065		.825	.000
	N	2431	2431	2431	1987	2431
Namibia	Pearson Correlation	.004	-.248**	.005	1	-.301**
	Sig. (2-tailed)	.854	.000	.825		.000
	N	1987	1987	1987	1987	1987
Uganda	Pearson Correlation	-.099**	.623**	-.110**	-.301**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	2508	2508	2431	1987	2508
**. Correlation is significant at the 0.01 level (2-tailed).						

Source: Authors' Computation

The correlation result as displayed above, establishes the existence of significant relationship between government bond yield in Nigeria, Kenya, Morocco and Uganda. However, correlation

of bond yield in Nigeria with that of Namibia has a very weak coefficient of 0.004 and is also insignificant. While this is an encouragement for other countries to invest in Nigerian bond market, it conforms to the findings of Nkwede, (2020). The study result shows that there is a negative weak correlation of -0.037 (-3.7%) between government bond yield in Kenya and its Moroccan counterpart. It also has a negative relationship with Namibian government bond yield. However, while the correlation with government bond in Morocco is not significant, the negative relationship with the Namibian government bond is significant at 1%. This is a discouragement to investment and causes fund to flow out of the concerned country's bond market, (Ezeoha, Ogamba & Onyike, 2009). A correlation coefficient of 0.623 between Kenyan and Ugandan government bond yields indicates that there is a strong positive correlation of about 62% between the two yields, and this is significant at 1%. While government bond yields in Morocco and Namibia do not seem to have any significant relationship existing between them, there exist a negative (-0.110 or 11%) and significant correlation between bond yield in Morocco and Uganda. Government bond yield in Namibia and Morocco do not exhibit any significant relationship, but the result confirms the existence of a negative (-0.301 or 30.1%), and significant relationship between bond yields in the two countries.

Figure 1: Correlation Charts



Source: Authors' Compilation.

Overall, the analysis established that bond yield in Nigeria has positive correlation with all its counterparts. Although its correlation with Namibian government bond yield is not significant, it

is never negative. This exhibited relationship by Nigeria bond yield with other countries may be adduced, in part, to the stronger fiscal mechanism that the country has compared with its counterparts. In fact poorly managed fiscal policy may lead to a worse return in government budget which could in turn lead to spread of bond yield, (Ozekhome, 2016). Thus the unlikely bond spread, as shown by the correlation relativity between the African countries government bond yield, in relation to Nigeria can be largely attributed to their fiscal relationships.

5. CONCLUSION AND RECOMMENDATION

This research examined correlation between the yield of bond in Nigeria and selected countries in Africa over a period of 10 years. The study conclude that there is a positive relationship between government bond yield in Nigeria and other African countries. This limits bond spread between Nigeria and other countries, and make the country's bond market attractive to foreign investors. This established relationship confirms the strength and influence of the Nigerian bond market among its African contemporaries. Given the significantly strong relationship that was established between Kenyan and Ugandan government bond yields, the study also conclude that there is no sign of spread between the two countries. Moroccan and Namibian bond yields relates negatively with each other, hence there is a danger of bond spread which could affect their respective national currencies.

Given that the higher the bond yield of a country appreciates, the more attractive it becomes because the country's currency appreciates more than that of other countries with lower bond yield, it is recommended that in addition to adequate funding to the bond market, low inflation rate, balanced exchange rate and stable interest rate should be ensured by the government so as to bring about increased aggregate bond market that will be attractive to investors

REFERENCES

Abina, A.P & Dr. Leelee, N.D. (2024). Institutional Banks' Financing and Economic Growth in Nigeria. *International Journal of Business & Law Research*. 12 (1), 236-253

Abu, I.N. & Aguda, N.A. (2015). Nigerian Capital Market: A Catalyst for Sustainable Economic Development. *Research Journal of Finance and Accounting* www.iiste.org. 6 (3), 60-66

Abuka, C., Ronnie K.A., Minoiu, C., José-Luis, P. & Presbitero, A.F. (2019). Monetary Policy and Bank Lending in Developing Countries: Loan applications, rates, and real effects. *Journal of Development Economics*. 139, 185-202.

Adelegan, O. J., & Radzewicz-Bak, B. (2009). 'What Determines Bond Market Development in sub-Saharan Africa?' *IMF Working Papers*, 2009. 1-33.

Akpu, U.G & Ohaka, J. (2017). Quantitative Accounting Information and Bond Market Yield: Evidence from Nigeria Capital Market, (2003-2012). *International Journal of Economics, Commerce and Management*. 5 (4), 56-70

Andrew C. & Ilias L. (2000). '*An Analysis of the Relationship between International Bond Markets*. Bank of England, Thread needle Street, London, EC2R 8AH. ISSN 1368-5562

Baker, S.R., Bloom, N., Davis, S.J., (2016). Measuring Economic Policy Uncertainty. *Quarterly Journal of Economics*. 131 (4), 1593–1636.

Campbell, J. Y., & Taksler, G. B. (2003). 'Equity Volatility and Corporate Bond Yields'. *The Journal of Finance*. 58 (6), 2321-2350

Chen, J. (2022). An Overview of Bond Pricing Models and Duration of Bonds. *Advances in Economics, Business and Management Research.* 648, 2316 – 2320

Duffee, G.R., (2002). The Relation between Treasury Yields and Corporate Bond Yield Spreads. *The Journal of Finance.* 53 (6), 2225-2241

Eke, P. O., Adetiloye, K. A., & Adegbite, E. O. (2020). An Analysis of Bond Market Liquidity and Real Sector Output in Selected African Economies. *E&M Economics and Management*. 23 (4), 166–182. https://doi.org/10.15240/tul/001/2020-4-011

El-saman, A.A.M.A. (2022). Modern Financial Tools' Impact on Public Financial Management: The Case of Egypt. *Journal of Finance Theory and Practice*. 26 (6). 175-191

Ezeoha, A. Ogamba, E. & Onyike, N.O. (2009). Stock Market Development and Private Investment Growth in Nigeria. *Journal of Sustainable Development in Africa*.11 (2), 20-35.

Garko, J.S., Dosumu, F. & Musa, M.G. (2022). Effect of Loan Portfolio Diversification on Risks and Returns: A Study of Selected Banks in Nigeria. *NDIC Quarterly Report.* 37, (3). 4.

Gujarati, Damodar.N. (2004) Basic Econometrics. *4th Edition*. The McGraw-Hill Companies.

Houcem, S., Martin, G & Akintoye A. (2017). The Determinants of Bond Market Development: Further Evidence from Emerging and Developed Countries. *Emerging Markets Review, Elsevier*. 32. 148-167.

Ibrahim, Y., & Hwei, K. L. (2010). Firm Characteristics and the Choice between Straight Debt and Convertible Debt among Malaysian Listed Companies. *International Journal of Business and Management*, *5*(11), 74-83.

Ikeobi, N.R. (2020). Impact of the Nigerian Capital Market on the Output of Quoted Manufacturing Firms. *Journal of Economics and Allied Research*. 4 (1), 107-120

Iortyer, D.A. & Maji, A. (2022). Impact of selected Macroeconomic Drivers on the Behaviour of the Nigerian Stock Market. *Journal of Economics and Allied Research*. Vol.7, (1), 126-140

Jacob G., & Shiller, I. (2010). Corporate Bond Pricing and the Effects of Endogenous Default and Call Options. *The Journal of Fixed Income.* 20.(2), 80-100

Jacoby, M.B. & Janger, E.J.(2014). Ice Cube Bonds: Allocating the Price of Process in Chapter 11 Bankruptcy. Brooklyn Law School, Legal Studies Paper No. 340, UNC Legal Studies Research Paper No. 2268662. SSRN: https://ssrn.com/abstract=2268662

Jefferis, K. (2009). 'SADC-COMESA Bond Market Mapping Study'. USAID Southern Africa, Gaborone

Longstaff, F. & Schwartz (1995). A Simple Approach to Valuing Risky Fixed and Floating Rate Debt. *Journal of Finance*. 50, 789-819. https://doi.org/10.1111/j.1540-6261.1995.tb04037.

Mansi, S.A., Qi, Y. & Wald, J.K., (2021). "Bond Oovenants, Bankruptcy Risk, and the Cost of Debt," *Journal of Corporate Finance.* 66, 101799.

Mega, A. & Widayat, W. (2019). Effects of Bond's Interest Rate, Rating and Maturity Time toward Bond's Yields. *Manajemen Bisnis*. 9 (1).

Mu, Y., Phelps, P. & Stotsky, J.G. (2013). 'Bond Markets in Africa'. *Review of Development Finance*. 3 (3). 121-135.

Neal, R.R, Douglas S.D & Charles, B.M, (2000). Interest Rates and Credit Spread Dynamics (December 2000). AFA 2001 New Orleans, https://doi.org/10.3905/jod.2015.23.1.025. SSRN: https://ssrn.com/abstract=249983

Nkwede, F.E. (2020). Macroeconomic Determinants of Bond Market Development: Evidence from Nigerian. *International Journal of Development and Management Review*. 15.(1), 178-194.

Ogungbenle, G.M & Ogungbenle, S.K. (2019). Mathematical Survey of the Term Structure of Interest Rate: Evidence from Nigerian Eurobond. *Journal of Economics and Allied Research*. 3 (2). 40-53

Ogunsakin, S & Olalere, S.S, (2017). Nexus between Inflation and Budget Deficit: A Comparative Study between Nigeria and South Africa. *International Journal of Economics, Commerce and Management.* 5 (8), 98-112

Oke, M.O. & Dada, O., (2021). Impact of Bond Market Development on the Growth of the Nigerian Economy. *Folia Oeconomica Stetinensia*. Vol. 21. (1). 60-75

Okekwu A.M., Njoku, U.O., Ajeniweni, P.O., Aliyu, M., Onyibo, O.E. & Adejoh M.O. (2022). The Capital Market and Economic Growth in Nigeria. *Journal of Economics and Allied Research.* 7 (4), 124-149

Olowe, O. O. (2022). Foreign Direct Investment and capital formation: Policy implications towards achieving pro-poor growth in Nigeria. *Journal of Economics and Allied Research*, 7(1), 48-60

Ozekhome, H.O. (2016). Fiscal Management and Macroeconomic Stabilization: Evidence from Nigeria. *West African Financial and Economic Review*. 15 (2). 181-210

Pradhan, R.P., Zaki, D.B, Maradana, R.P., Dash, S., Jayakumar, M. & Chatterjee,D. (2015). Bond Market development and economic growth: The G-20 Experience. *Science Direct, Elsevier*. 13 (1) .51-65

SEC, (2010). "Annual Report and Account, 2010". *https://www.sec.gov/about/reports-publications/aboutsecpar2010shtml*. Retrieved 20th January, 2025

Sharpe, W.F. (1964). Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk. *Journal of Finance*. 19 (3), 425-442.

South African Reserve Bank, (SERB) (2018). "Annual Report for 2018/2019 Fiscal Year". *http://resbank.onlinereport.co.za/2019/*. Retrieved, January, 18th 2025.

Udofa, G.T., Itang, A.E. & Acha, I.A. (2024). Investment Portfolio and Performance of Mutual Funds in Nigeria. *Research Journal of Finance and Accounting* www.iiste.org**.** 15 (9), 27-44

Von-Gaudecker, H.-M., Wogrolly, A., (2022). Heterogeneity in households' Stock Market Beliefs: Levels, Dynamics, and Epistemic Uncertainty. *Journal of Econometrics*. 231 (1), 232–247.

Wu, Y. (2022). Are Green Bonds Priced Lower than their Conventional Peers? *Emerging Markets Review, Elsevier*. 52. 100909.