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Original Research Article

Interest Rate Volatility and the Management of Insurance Industry Growth in Nigeria (2003-2023)

Boniface Christopher Ekanem[1]*, Prof. Etim Osim Etim[2], Samuel Victor Akpan, PhD[3]
[1]Department of Insurance and Risk Management, Faculty of Management Sciences, University of Uyo, Uyo
[2]Department of Accounting, Faculty of Management Sciences, University of Uyo, Uyo.
[3]Department of Business Management, Faculty of Management Sciences, University of Uyo, Uyo

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***Corresponding author:** Boniface Christopher Ekanem
Department of Insurance and Risk Management, Faculty of Management Sciences, University of Uyo, Uyo

Abstract

Interest rate is an important economic factor that can determine the level of investment in any economy, hence, the need for any organization or economy that wishes to grow to pay attention to it dynamism. This study was conducted to examine the effect of interest rate on the growth of insurance industry in Nigeria. Total insurance investment, and gross premium income which represents the insurance industry growth constitute the dependent variables while interest rate was the independent variable. The researcher employed a pooled ordinary least square (OLS) regression using secondary data drawn from audited annual financial statements of insurance industry in Nigeria from 2003-2023, a period of twenty-one years. The results show that interest rate (INTR) has significant effect on Total Insurance Investment (TII), while it has no significant effect on Gross Premium Income (GPI). It was concluded that there is a statistically significant of interest rate on total insurance investment, indicating that interest rate is very important in determining the growth of insurance companies in Nigeria. The second hypothesis shows insignificant effect of interest rate on the gross premium income of insurance, this could be attributed to low patronage of the insurance business, or by factors that enhanced premium collection such as compulsory insurances, among others. Therefore, it was recommended that premium income generated should be put into viable investment as it is not significantly influence by interest rate, this will help in increasing total insurance investment. Also, the government through the insurance regulatory authority should implement the compulsory insurance mechanism, to enables more patronage, while also mandating the insurance companies to follow the doctrine of interest rate set by the Central Bank of Nigeria (CBN) when pricing their products so as to avoid unfair, deceptive and abusive practices of overpriced policies which consequently affect the industry growth.

Keywords: Interest Rate, Total Insurance Investment, Gross Premium Income, Lending Rate, Inflation Rate.

1.0 INTRODUCTION

World over, the insurance industry is a vital and indispensable part of the entire financial and non-financial system. In an advanced economy, the insurance industry is at the fore of the highest institutional investors, with huge volume of investible funds. Harken to that, the insurance companies provide individuals and businesses with a broad spectrum of financial security products and contribute to financial intermediation, thus enhancing a nation's financial and economic development (Akpan, Charlie and Ekanem, 2021). As such, their success or failure has a strong correlation either positive or negative to the development of the economy no matter how significant or insignificant it might be. Again, insurance industry is a higher institutional mobilizer, mobilizing a greater volume of investible funds. Ultimately, the huge funds are not left idle in the vault of these companies but channelled to the deficit unit of the economy for investment purposes. Thus, the industry's operation within the economy, especially their investment, involves risk arising from various factors, such as economic policies, microeconomic factors- including inflation, and fluctuations in interest rate. In a growing economy like Nigeria, the demand for credit is high due to the nature of business cycle, thus interest rates are vital. Therefore, it can be deduced that the rationale behind this was to enhance and improve efficiency in service delivery,

capture greater awareness on risks that insurance companies are exposed to like interest rates, and assess capital needs, to buffer any risk incurred. Obviously, the investment and premium income of the insurance companies are influenced by both internal and external factors. Whereas Opeyemi, Popoola and Yahaya, (2020) sees the internal factors as those factors that focuses on an insurer's specific characteristics, the external factors to also include industry features and macroeconomic variables such as inflation, interest rate, lending rate, monetary policy rate, and political instability among others; which affect the growth of the industry in Nigeria.

Inference from the above, profit is the essential pre-requisite for the survival, growth and competitiveness of insurance firms. Profit does not only improve insurers' solvency state but it also plays an essential role in persuading policyholders and shareholders to supply funds to insurance firms. Meaning that one of the objectives of insurance companies is to attain profit, which majorly comes from investment income and underwriting profit, and definitely translate to growth so as to meet up with their financial obligation to policyholders who suffer losses. This financial obligation may be affected positively or negatively by interest rate. Interest rate is the amount of interest due per period, as a proportion of the amount lent, deposited, or borrowed out to the deficit unit (which could be individuals or corporate entities doing businesses). Interest rates are one of the economy's single strongest influences, as it has a profound effect on everything from individual investment decisions to monetary policy of corporate organizations, insurance companies inclusive. Uruakpa, Kama, Odionye, and Uzoma (2023) explains that insurance factors or practices such as underwriting practices (premium income, administrative costs among others), investment, and supply of insurance policies, all appear to be affected by interest rates. Studies such as Nyamu (2016), Okparaka and Makew (2019) all agreed that interest rate changes are systematic and affect the entire insurance sector across all lines simultaneously. Insurance companies invest a portion of their premiums in interest-bearing investments, such as bonds, real estate and mortgage investment, loans to other related companies, savings accounts, and certificates of deposit, enabling a strong effect of interest rates on insurance markets as acknowledged by many economists (Raimo, 2022). Therefore, when interest rates rise, insurance companies can earn more interest on their investments, which can increase their profits. However, lower interest rates can also make the insurance company's products less attractive, resulting in lower sales and, thus, lower income in the form of premiums that the insurance company has available to invest. Inference from the above, the persistent low-interest rate environment is a major source of risk for insurance companies while a rise in interest rate could accelerate positive changes in the structure of the industry growth.

From the above discussions, literatures reveal that interest rate is an important economic factor which is known to determine the level of investment in any economy (Ehiogu and Nnamocha, 2018). It therefore becomes expedient for any organization and or economy that wishes to grow to pay proper attention to changes and fluctuation of the interest rate. However, researchers have conducted numerous studies on the performance, and the contribution of the insurance industry to economic growth as well as macroeconomic effects on the performance of insurance companies. Also, reviewed literature on interest rate indicates that most studies on interest rate gave more importance to other financial institutions or sectors neglecting insurance industry. For instance, Hajilee, and Al Nasser (2017) carried out a study on the interest rate uncertainty and stock market development of 12 emerging economies from 1980 to 2011.

Therefore, since the insurance industry do not operate in a vacuum, their overall behaviour may generally be influenced by the macroeconomic factors such as interest rate, inflations, lending rates, unemployment among others. This research specifically deals on the effects of interest rate fluctuation on the growth of insurance industry in Nigeria. The gap in literature as well as the empirical and analytical aspect triggers the necessity of this research. Thus, examining the effect of interest rate fluctuation on insurance industry growth variables (such as total investment, gross premium income) is an attempt to bridge the existing research gap, while also contributing to knowledge. Specifically, this paper seeks to:

i. examine the effect of interest rate on the total investment of insurance companies in Nigeria.
ii. determine the influence of interest rate on gross premium income of insurance companies in Nigeria.

To achieve the above objectives, the following sets of hypotheses were formulated in the null form:

H_1: interest rate has no significant effect on the total investment of insurance companies in Nigeria.

H_2: interest rate has no significant effect on the gross premium income of insurance companies in Nigeria.

The findings of this study would not only influence policy and practice in the insurance industry with regards to the evidence on the effect of interest rate on the growth of insurance companies in Nigeria but will also benefits other researchers in the insurance field as well as other related fields. The remainder of this paper includes review of related literature, the methodology presentation, discussion of findings as well as the conclusion.

2.0 LITERATURE REVIEW

2.1 The Concept of Insurance Business

Principally, insurance is a mechanism for risk transfer, thereby aiding risk transfer from policyholders to underwriters. Bassey, Ankoh and Ekanem (2024), viewed insurance as a bond between holders of policies and underwriters, where the underwriters undertake to compensate the holders of policies in the occasion of a loss enclosed in exchange for premium payment, based on the terms and conditions of the contract. Therefore, the importance of insurance be it to individuals, corporate entities or the governments can never be neglected as Akpan, Nnamseh, Etuk, Edema and Ekanem (2020) sees insurance as a business function that has to do with pooling of resources together to pay compensation to the insured or assured in the case of eventualities insured against in return for premium paid to enforce the insurance contract. Meaning that the relevance or essence of insurance business is to ensure individuals are covered financially and otherwise, while also accommodating or giving the policyholders the ease of doing businesses for the growth and stability of their businesses and the economy at large.

Among the functions of insurance firms discussed above is the polling of resources by many for the benefit of the few (Akpan, Acha and Akpan, 2021). This means that, in the business of insurance many takes the policy cover known as policyholders at the beginning of the contract but only few suffers the loss at the end of the end. This cover or policy taken by policyholders is not for free as they pay a consideration fee known as premium. Raimo (2020) posits that this income from insurance business (premium) is usually not sufficient to cover the company's costs, hence, the premiums received are being invested to ensure claims payment and profitability (Bassey *et al.,*2024). Therefore, the ultimate goal in insurance companies is to ensure that individuals who suffer losses are indemnified on time to avoid litigation and bad reputation of the insurer. Inference from the above, all the strategies designed and activities performed (both premium income and investment income) are geared towards realizing this grand objective known as indemnification.

2.1.1 Understanding of Interest Rate

Interest rate was first used as an instrument of Monetary Policy in Nigeria in 1962 following the introduction of money market instruments (CBN, 2015). The interest rate then was made competitive to ensure repatriation of funds kept aboard. During the period of high government borrowing for example interest rate was reduced to minimize cost of servicing public debt, as was the case in the 1960's (Eregha, 2010). Interest rate in Nigeria over the years has therefore played a pivotal and dominant role as one of the instruments used by the Federal Government in managing Monetary Policy.

Generally, interest rates are referred to as prices. Ogoke and Chizuru (2024) explained interest rate to be the amount the borrower must pay to the lender over and above the total borrowed expressed as the percentage of the total amount of the funds borrowed. Ehiogu and Nnamocha (2018) defined interest rates to be the prices paid for the use of money for a period of time and are expressed as a percentage of the total outstanding balance that is either fixed or variable. It can also be seen as the rate of return on investment, when low interest rate is charged on loan to encourage investors and high on savings; and it becomes cost of capital, when low interest is charged on savings and cost of borrowing by investors is high. The author further posits that this definition can be viewed in two major ways viz a viz from the point of the borrower as well as the lender. From the borrower point, interest rate can be viewed as the cost of borrowing money (borrowing rate), and from a lender's point of view, a fee charged for lending money, that is lending rate. Meaning that from the borrowers point, interest is seen as being the cost of borrowing money, while for lenders, the rate of interest is the size of that cost. Therefore, the higher the rate, the more it costs. Udoka and Anyingang (2012) observe that in Nigeria, interest rate is determined by the following factors such as the investment demand, the level of savings or level of income, the demand for money or liquidity preference, and the quantity of money or money supply.

2.1.2 Insurance Gross Premium Income

The insurance premium or gross premium income is the amount of money charged by the insurer or paid by the insured to secure the services of the insurance (Vaughan & Vaughan, 2018). For underwriters to arrive at a sound rate for an insured to pay as premium, the professional adopts a method known as risk assessment. When an insurance applicant submits the policy form to the insurance company, the job of the underwriter is to access the information contained therein and make recommendations to the company, if to accept the risk or not (Berger, 1988). Garba and Abdulsalam (2018) postulated that premium is the rate that is charged to the insured, according to his or her expectations of loss or risk. Osariemen and Orobator (2023) stated that in return for the insurer's guarantee to pay the sum insured (or its equivalent) in the case of a loss or damage within the parameters of the insurance contract, the insured must pay the insurer a premium. Meaning that premium symbolizes or refers to the amount that the insured paid for the financial assurance that the insurer accepted. Premium can be grossed or net according to its usage in the financial statement of companies. Gross or net premium income can be used to characterize the insurance premium. Therefore, when the total amount collected from the insured is mentioned, it is referred to as gross premium income; however, when the commissions owed to the intermediaries have been subtracted from the gross premium income, the remaining amount is referred to as net premium income (Osariemen and Orobator, 2023).

2.1.3 Insurance Total Investment Income

The term investment from the point of view of an insurance manager, is the conversion of money, the insurance funds and reserves into some species of property from which an income or profit is expected to derived either immediately or at some future date in the normal course of business. According to Delong (2019), investment is an asset or property right acquired or held for the purpose of conserving capital or earning an income. Oloke, Durodola and Emeghe (2015) describes this investment to be investment either in real estate and mortgaged, equity, bonds, among others. Also, Nubi (2005) states that insurance companies engage in investment such as extension of loans for real estate development based on capital value of the policies, investment in mortgage and debentures or direct investment in real property by acquiring or developing landed properties.

Investment in insurance business is concerned with the application of insurance funds which are meant or immediately required for expenditure, or for payment of insurance claims and other benefits (Nanda, Wu, and Zhou, 2019). The insurance business generates funds which must be invested either on a short term or a long-term basis depending on the circumstances of the company concerned and the classes of the business transacted. The funds are exposed to risk such as interest rate, inflation, diminution on value, illegality or even loss, hence the need for vigilant and protection against those hazards arises. According to Garg and Garg (2020), investment is the commitment of money or capital to purchase financial instruments or other assets in order to gain profitable returns in the form of interest, income, or appreciation of value of the instrument. Investments are related to savings or deferring consumption. According to Raimo (2022), the needs for Investment in insurance business is to accumulate more funds for the purpose of claims payment which is the first and most important obligation of the insurer. Therefore, to avoid financial deficit, and difficulty in meeting its financial obligations, the insurer must invest the funds accumulated from the premiums collection, it could be in form of real estate mortgage investment, loans to related banks, buying of shares, bonds and other portfolio of securities (Akpan *et al.,*2021). Hence, the total income accumulated from investments of the above listed portfolios from all the insurance operating in the country is what is referred to as the total investment income of the insurance industry

2.1.4 Interest Rate and Insurance Industry Growth

Interest rates play an important role in investment decision making and economic growth. Therefore, economic policy makers in some developing countries have traditionally emphasized on the necessity of checkmating interest rates fluctuation in order to encourage private sector to invest (Ogeke and Chizuru, 2024). Following this approach, the interest rates have been kept at low levels and therefore real interest rates have been negative for long periods. According to Adofu and Audu (2010), 1970's era ushered in some economists' philosophy of supporting financial liberalization as a medium of promoting saving, investment, and growth. This was based on the argument by other scholars, that real interest rates are frequently negative in developing countries because of administrative controls on the nominal interest rates and heavy regulation in the financial market (Sufian, 2011).

Insurance business growth is the justification of its performance. For instance, according to Ogoke and Chizuru (2024), the profits of an organization are the end result of operations and an indication of its good performance. Khrawish (2011) defined business growth as an organization's ability to generate income and it must be reflected not only in income statement of the organization but also on how the income generated is invested. Business growth used in the context of this work refers to the profitability of the insurance firm. According to Kottler (1970), in the economics point of view, business growth refers to excess of income over expenditure which can be expressed in terms of net profit margin and return on equity (total investment income, and insurance gross premium income in the context of this paper). Meaning that the principal motivating force in any business is profitability, though of course it's not the only motive in all business (insurance business as the case maybe), it is always the most important (Musumeno, 2001; Lucky, 2017). Therefore, there should always be an adequate return on capital invested if any business is to be successful and the argument for this is that the success of any business basically depends on the profitability that it enjoys. In the case of an insurance company, the essence of profitability is to ensure that policyholders are indemnified in the event of the insured against event happening (Akpan *et al.,*2020).

By nature, insurance business begins with selecting who, and what should be insured by the insurer after assessing the risk that will be involved and at what rate should the risk be insured or accepted (Rejda, 2008). Rating is the process of fixing or attaching a monetary value to the risk to be insured, this rate in insurance parlance is known as premium. This premium once collected are being invested to ensure the indemnification obligation is achieved (Akpan *et al.,*2020). These premiums collected could be affected positively or negatively depending on the fluctuation of interest rate. A significant consideration regarding the impact of interest rates fluctuations relates to the contribution of investment income to overall growth of the insurance industry (Mwangi, 2013). That is, when the portfolio allocation to bonds is high and profitability is driven by interest income, lower interest income is likely to mean reduced performance. Therefore, increased performance would then depend (to a larger extent than before) on underwriting, premium income, claims experience, and lapse rates. In other words, insurance companies will have to place a sharper focus on their core business activities. Studies have found that

countries with high interest rates have a lower density and penetration of life insurance markets.

In spite of the above arguments, schorlars such as Ehiogu (2017), Nyandema and Lagat (2016), Kemuna (2015) opined that interest rate significantly affects the profitability of firms, while Deyganto and Alemu (2019) discovered that interest rate does not affect the profitability of firms and Uruakpa, *et al.,*(2023) in his study reveals that an increase in interest rate significantly decrease the rate of insurance penetration in both short run and long run. According to Ehiogu (2017), interest rates have a significant impact on the insurance sector and insurance policies, including insurance profitability. The author further states that because insurance companies often hold long-term bonds, so when interest rates rise, the opportunity cost of holding bonds at a lower rate increase. Meaning that, the insurance sector becomes more profitable when interest rates rise and more policies are sold.

2.2 Theoretical Framework

Three theories were used as it relates to these works, the following theories discussed includes; the classical theory of interest rate, the arbitrage pricing theory and the balance theory.

2.2.1 The Classical Theory of Interest Rate

The classical theory was put forward by Keynes (1936). The theory holds the proposition based on the general equilibrium theory that the rate of interest is determined by the intersection of the demand for and supply of capital. It is fairly clear, however, that this tradition has regarded the rate of interest as the factor which brings the demand for investment and the willingness to save into equilibrium with one another. Investment represents the demand for investable resources and saving represents the supply, whilst the rate of interest is the "price" of investable resources at which the two are equated. Just as the price of a commodity is necessarily fixed at that point where the demand for it is equal to the supply, so the rate of interest necessarily comes to rest under the play of market forces at the point where the amount of investment at that rate of interest is equal to the amount of saving at that rate. An equilibrium rate of interest is determined at a point at which the demand for capital equals its supply (Caplan, 2000).

It follows that savings and investment are the two real factors determining the rate of interest (Fredman, 1991). If the level of income is assumed to be given, we can infer that the current rate of interest must lie at the point where the demand curve for capital corresponding to different rates of interest cuts the curve of the amounts saved out of the given income corresponding to different rates of interest, but this is the point at which definite error creeps into the classical theory. If the classical school merely inferred that, given the demand curve for capital and the influence of changes in the rate of interest on the readiness to save out of given incomes, the level of income and the rate of interest must be uniquely correlated, there would be nothing to disagree with.

2.2.2 Arbitrage Pricing Theory

Ross (1976) developed the Arbitrage Pricing Theory that assumes that assets return is dependent on various macroeconomic, market and security specific factors. It states that the expected return of an investment or a financial asset can be modelled as a linear relationship of various macroeconomic variables or where degree of correlation to changes in each variable is represented by a beta coefficient. The asset value should equal the expected end of period asset value or future cash flows discounted at the rate implied by the model. If the asset value changes, arbitrage should bring it back to the line. Charging a price at least as high as the competitive price (reservation price) increases the market value of the company. Charging a lower price would reduce the company's market value. Thus, financial models and financial prices are among the key items of information that insurers should have at their disposal when making financial decisions about tariff schedules, reinsurance contract terms, among others. Though many different specific forces can influence the return of any individual stock, the internal and external factors tend to cancel out in large and well diversified portfolio. Insurance companies are corporations and insurance policies can be interpreted as specific types of financial instrument or contingent claim thus it is natural to apply financial models to insurance pricing, (Cummins, 2007).

The utilization of this theory by an insurer would help the insurance companies to understudy whether a security is undervalued or overvalued, thus, avoid making losses. It is also very useful for building portfolios because it allows managers to test whether their portfolios are exposed to certain internal or external factors that would affect the financial performance of institutions.

2.2.3 Balance Theory

The underpinning theory for this research work is the balanced theory. This is because balance theory talks about the sensitivity of organizations to their environment as well as the sentiment attached to it (Miles, 2012; Heider, 1958). The theory states that organizations are aware of their surroundings as well as the events that take place in their environment through a process of perception. The theory asserts that environment affect organizations and the organizations also cause changes in the environment. The environment is divided into two; macroeconomic environment and microeconomic environment. The variables in either of the environment can determine the success or failure of the organization(s). Inference from the above this theory is related to this work in that the independent variable which is the interest rates is categorised under the

macroeconomic environment, while the total investment as well as the gross premium income of insurance (dependent variables) represents the microeconomic or internal factors of the insurance industry and the insurance company represents the organization which the environment affects or causes change.

2.3 Empirical Review

Some literatures were reviewed for the purpose of this study. Among these literatures are:

Uruakpa, *et al.,* (2023) investigated the effect of interest rate on insurance penetration in Nigeria. The study used Auto Regressive Distributed Lag (ARDL) bounds test approach. Data was sourced from the central bank of Nigerian statistical bulletin for the period of 1985 to 2019. The result indicated that an increase in interest rate significantly decrease the rate of insurance penetration in both short run and long run. Other control variables used are exchange rate and inflation rate, and the result for these variables indicates that exchange rate has a significant relationship whereas inflati-on rate has an insignificant relationship with insurance penetration. The result of the co- integrating equation indicates that every movement into disequilibrium is corrected for within one period at a significant rate. The study therefore suggested that prior to any adjustment in the monetary policies or other economic policy, a detailed investigation should be carried out to ensure a favorable compliance of the short run and long run effect of adjusting such on the macroeconomic indices and insurance penetration.

Gonji, *et al.,*(2020) researched on the effect of macroeconomic variables on the growth of insurance companies quoted on Nigeria Stock Exchange from 1990-2019. Data for the study was obtained from the statistical review of Central Bank of Nigeria and the annual reports of the nine (9) insurance companies used for the research work. Gross domestic product (GDP), exchange rate, inflation rate interest rate and unemployment rate were employed as the independent variables, while return on asset was used as the proxy for the independent variables. The results of the study show that among the five macroeconomic variables used for the study, only GDP, inflation rate and exchange rate significantly affect the growth of insurance companies in Nigeria for the period under consideration. The study recommends that Nigerian Government should make and implement policies that can boost the economy so that the profitability of insurance companies can be enhanced. Also, they should introduce programs that will reduce the inflation rate and unemployment rate in Nigeria in order to encourage the growth of businesses like insurance firms. Insurance companies in Nigeria should watch out for macroeconomic variables that can threaten their growth.

Deyganto, and Alemu, (2019), examined factors affecting financial performance of insurance companies operating in Hawassa city administration, Ethiopia. The target population of the study was 17 General insurance companies operating in Ethiopia. Ordinary least square model was employed by the researchers to analysis the data through SPSS version 20. The result of the study showed that out of eight (8) explanatory variables incorporated in the model, five (5) variables such as underwriting, premium growth, solvency ratio, growth rate of GDP, and inflation rate have significant effect on financial performance of the insurance companies operating in Hawassa city Administration. Whereas, there insurance, company size and interest rate have no significant effect on financial performance of the insurance companies of Hawassa city Administration.

Ehiogu and Nnamocha (2018) investigated the effect of interest rate on profit of insurance companies in Nigeria insurance industry. Ex-post facto research design was used in the study. A hypothesis was formulated and tested. The data was subjected to a Unit root test. Afterwards Ordinary Least Square Regression analysis technique was used to test the hypothesis. The analysis of the study was at 5% level of significance. It was found interest rate had a positive and insignificant individual effect on total profit of the Nigerian insurance industry. The following respective implication of the finding shows that Interest rate can reduce the returns of its investment. The study based on the aforementioned finding we conclude that the insurance business profit margin is not significantly but positively influenced by interest rate. The researcher recommends that insurers have to build and hold reserves over a long-time horizon, which makes investment, returns an important part of overall earnings.

Ehiogu (2017) investigated growth on the empirical relationship between components of insurance investment activities and economic growth indicator (asset and income) of the Nigerian insurance economy as well as the direction of causality between them. The impulse response functions of the insurance total investment variables to boast in the economic system of insurance companies. Ordinary Least Square Regression technique was used to analyze 18 years data period (1996-2014). The study found a positive and no significant effect between insurance investment activities and output of total asset of insurance companies. In the short run, insurance investment positively and significantly correlates with its total asset. The poor model fit reflects the low capacity the independent variable brings into its equation with Total Assets of the industry. It was recommended that insurance awareness, proper fund management, efficient and effective insurance fund allocation (investment) should be encouraged while. The violation of investment guidelines (whether minor or severe) should be penalized.

2.4 Gap in the literature

A close look at the above studies revealed that most of the studies on interest rate are conducted on banking sector, and or the economic development of the country understudied, while insurance industry received less attention. Few studies conducted under insurance growth, profitability and interest rate such as Ehiogu and Nnamocha (2018), Uruakpa *et al.,* (2023) did not used the same macroeconomic variables as independent and controlled variables used in this work to determine the growth or profitability of insurance industry. This study therefore, used macroeconomic variables such as interest rate, (lending rate and inflation rate, as controlled variables) to measure or determine the growth of insurance industry in Nigeria for a period of twenty-one (21) years.

3.0 METHODOLOGY

This study determines the impact of interest rate on the growth of the insurance industry in Nigeria. The study made use of secondary data. Since these data already existed in form of annual data and could not be manipulated, an *ex-po facto* research design was employed. The data for this study was obtained mainly from Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports, Nigeria Deposit Insurance Corporation (NDIC) Annual report as well as other online data banks. All the data used are Nigerian aggregate level annual data. The data cover a period of twenty-one (21) years, ranging from 2003 to 2023. Both descriptive and econometric analyses was carried out on this study.

The descriptive approach is to study the trend movement of interest rates, insurance investment, and gross premium income. The econometric method here involves the use of the Ordinary Least Square (OLS) regression technique to test the hypotheses of study. Furthermore, the t-statistic was used to establish the statistical significance of the independent variables at 5% level of significance, and also in the testing of the research hypothesis. Coefficient of Determination (R^2) was used to establish the predictive power of the independent variable in explaining the changes or variations in the dependent variable. The decision rules are given as that an independent variable is statistically significant if the absolute value of the computed t-statistic is greater than the critical value of the t-statistic (2.286) at 5% level of significance and degrees of freedom n-k; where n is the number of years covered in the study and k is the number of variables. In this case, the null hypothesis will be rejected.

Since interest rate alone cannot influence insurance business activities, other components of macroeconomic factors are used as moderating variable (such as the lending rate, and inflation rate) as shown in the models below:

$$TII = \alpha_0 + \beta_1 INT + \beta_2 LR + \beta_3 IFR + \mu t \ldots\ldots eqn\ I$$
$$GPI = \alpha_0 + \beta_1 INT + \beta_2 LR + \beta_3 IFR + \mu t \ldots\ldots eqn\ II$$

Where:

TII = Total Investment Income
GPI = Gross Premium Income
INT = Real Interest Rate
LR = Lending Rate (Prime)
IFR = Inflation Rate
α_0 = Regression Constant
β_1- β_3 = Coefficient of the independent variables
μt = error term

4.0 DATA ANALYSIS

4.1 Test of Relationship between Total Insurance Investment and Interest Rate (INTR)

Table 4.1:

Dependent Variable: TII				
Method: Least Squares				
Date: 02/14/25 Time: 21:33				
Sample: 2003 2023				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11945067	8230196.	-1.451371	0.1649
IFR	675211.8	220478.4	3.062484	0.0070
INTR	181725.9	279668.5	0.649790	0.5245
LR	26384.97	118031.4	0.223542	0.8258
R-squared	0.434269	Mean dependent var		1927986.
Adjusted R-squared	0.334434	S.D. dependent var		4893662.
S.E. of regression	3992360.	Akaike info criterion		33.40731
Sum squared resid	2.71E+14	Schwarz criterion		33.60626
Log likelihood	-346.7767	Hannan-Quinn criter.		33.45049
F-statistic	4.349865	Durbin-Watson stat		1.423257
Prob(F-statistic)	0.019010			

Source: Computer output using Eviews 10

Table 4.1 shows the dependent variable Total Insurance Investment (TII) will remain positive at an average of -11845067 units if the independent variable, Interest Rate (INTR) is held constant, that is INTR = 0. Similarly, a unit increase in Interest Rate (INTR) by will lead to an increase in Total Insurance Investment (TII) by 181725.9 units. This implies a direct relationship between Total Insurance Investment (TII) and Interest Rate (INTR). However, it must be stated that this direct relationship is not statistically significant at 95% confidence level with a computed t-statistic value of 0.649790, and a probability value of 0.0070. This is because at 95% confidence level, the computed t-statistic value of 0.649790 is less than the critical or tabulated t-statistic value of 2.086 and the probability value of 0.0070 is within the 5% acceptable region.

Furthermore, the correlation coefficient, R was obtained as 0.434, which indicates the existence of a positive correlation between Total Insurance Investment (TII) and Interest Rate (INTR). Similarly, the coefficient of determination, R^2 value of 0.33.4, indicates that only 33.4% of the variations in Total Insurance Investment (TII) have been explained by Interest Rate (INTR). This indicates a low predictive power of Interest Rate (INTR) to explain the changes or variations in Gross Premium Income (GPI) generated. The remaining 66.6% of the variations in the dependent variable could be due to other variables such as Inflation Rate (IFR) and Lending Rate (LR) and captured in the model for this hypothesis. This is given by the error term. The Durbin-Watson (DW) statistic value 1.423257 indicates the presence of auto correlation, given that the value less than 2.

Finally, given that the computed F-statistic value of 4.349865 was obtained for the model, the model was found to be statistically significant with a probability value of 0.0070. Based on this, the null hypothesis which states that Interest Rate (INTR) has no significant effect on Total Insurance Investment (TII) was rejected.

4.2 Test of Relationship between Gross Premium Income (GPI) and Interest Rate (INTR)

Table 4.2:

Dependent Variable: GPI				
Method: Least Squares				
Date: 02/14/25 Time: 21:26				
Sample: 2003 2023				
Included observations: 21				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-181252.6	170586.6	-1.062525	0.3029
INTR	16220.06	5796.667	2.798171	0.0124
IFR	-5456.558	4569.839	-1.194037	0.2489
LR	2129.079	2446.426	0.870281	0.3963
R-squared	0.326700	Mean dependent var		187709.6
Adjusted R-squared	0.207882	S.D. dependent var		92975.72
S.E. of regression	82749.32	Akaike info criterion		25.65466
Sum squared resid	1.16E+11	Schwarz criterion		25.85362
Log likelihood	-265.3740	Hannan-Quinn criter.		25.69784
F-statistic	2.749590	Durbin-Watson stat		0.783896
Prob(F-statistic)	0.04784			

Source: Computer output using Eviews 10

Table 4.2 shows the dependent variable Gross Premium Income (GPI) will remain positive at an average of -181252.6 units if the independent variable, Interest Rate (INTR) is held constant, that is INTR = 0. Similarly, a unit increase in Interest Rate (INTR) by will lead to an increase in Gross Premium Income (GPI) by 16220.06 units. This implies a direct relationship between Gross Premium Income (GPI) and Interest Rate (INTR). However, it must be stated that this direct relationship is statistically significant at 95% confidence level with a computed t-statistic value of 2.798, and a probability value of 0.012. This is because at 95% confidence level, the computed t-statistic value of 2.798 is greater than the critical or tabulated t-statistic value of 2.086 and the probability value of 0.012 is within the 5% acceptable region.

Furthermore, the correlation coefficient, R was obtained as 0.327, which indicates the existence of a positive correlation between Gross Premium Income (GPI) and Interest Rate (INTR). Similarly, the coefficient of determination, R^2 value of 0.327, indicates that only 32.7% of the variations in Gross Premium Income (GPI) have been explained by Interest Rate (INTR). This indicates a low predictive power of Interest Rate (INTR) to explain the changes or variations in Gross Premium Income (GPI) generated. The remaining 67.3% of the variations in the dependent variable could be due to other variables such as Inflation Rate (IFR) and Lending Rate (LR) and captured in the model for this hypothesis. This is given by the error term. The Durbin-Watson (DW) statistic value 0.783896 indicates the

presence of auto correlation, given that the value less than 2.

Finally, given that the computed F-statistic value of 2.749590 was obtained for the model, the model was found to be statistically significant with a probability value of 0.0124. Based on this, the null hypothesis will fail to hold, and is rejected. The alternative which states that Interest Rate (INTR) has no significant effect on life Gross Premium Income (GPI) generated was accepted.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study examined the effect of interest rate fluctuations and the growth of the insurance industry in Nigeria (2003-2023). The objectives of the study included to examine the effect of interest rate on the total investment of insurance companies in Nigeria and to determine the influence of interest rate on gross premium income of insurance companies in Nigeria.

An ex-post facto research design was employed. The data for this study was obtained mainly from Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports, Nigeria Deposit Insurance Corporation (NDIC) Annual report as well as other online data banks. All the data used are Nigerian aggregate level annual data. The data cover a period of twenty-one (21) years, ranging from 2003 to 2023. The data collected were organized and analysed using descriptive, correlation, and regression statistics.

5.2 Conclusion

From the findings of the study, it was revealed that interest rate is significantly related to the total insurance investment. On the other hand, there is no significant relationship between interest rate and gross premium income. It can therefore be concluded that:

i. There is a positive and statistically significant effect of interest rate on the total insurance investment of insurance companies in Nigeria. This implies that interest rate is important in determining the growth of insurance companies in Nigeria.
ii. There is no significant effect of interest rate on the gross premium income of insurance in Nigeria. This insignificance, could be as a result of other factors that enhance premium collection such as compulsory insurances, foreign exchange rate in terms of international insurance business, among others.

5.3 Recommendations

In line with the findings in this study, the following recommendations are made:

i. Premium income generated should be put into viable investment as it is not significantly influence by interest rate. This will help in increasing total insurance investment.
ii. Insurance companies should reengineer insurance products and services to reduce the burden of premium payment for the policyholders. This will enhance insurance consumption thereby increase gross premium income.
iii. For peace of mind amidst security and economic challenges in Nigeria, more individuals should be encouraged to consume insurance products. This will go a long way to increase patronage of insurance services thereby increases gross premium income.
iv. There is need to offer to policyholders' an insurance product that adequately provides financial security to the insured and beneficiaries. Anything short of this, may affect the level of insurance consumption and its prospects to offer attractive benefits to the consumers.
v. The government through the insurance regulatory authority should implement the compulsory insurance mechanism, to enables more patronage. Also, the insurance companies should follow the doctrine of interest rate set by the Central Bank of Nigeria (CBN) when pricing their products so as to avoid unfair, deceptive and abusive practices of overpriced policies which consequently affect the industry growth.

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