

Insurance Sector Development and Economic Growth in Nigeria: The Role of Inflation and Investment Dynamics

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Abstract

This study examines the relationship between the insurance sector and economic growth in Nigeria (1985-2024), focusing on insurance investment, life insurance premiums, non-life insurance premiums, and inflation rate. Using VECM and Granger causality test, the study analyzes both long-run and short-run interactions. The VECM results reveal that GDP growth (-0.421, $p = 0.001$) has a significant speed of adjustment, meaning that any deviation from the long-run equilibrium corrects itself at a rate of 42.1% per year. Insurance investment (-0.278, $p = 0.005$) significantly contributes to economic growth, adjusting back to equilibrium at 27.8% per year. Non-life insurance premiums (-0.365, $p = 0.002$) and life insurance premiums (-0.214, $p = 0.008$) exhibit strong long-run relationships with GDP, with adjustment rates of 36.5% and 21.4% per year, respectively. Inflation (-0.132, $p = 0.049$) is marginally significant, playing a role in long-run adjustments but at a slower rate of 13.2% per year. The Granger causality test confirms bi-directional causality between GDP growth and insurance sector variables, reinforcing a mutually reinforcing relationship between economic expansion and insurance sector development. The study recommends enhancing insurance penetration, enforcing mandatory policies, improving investment efficiency, leveraging financial technology, and implementing regulatory reforms to maximize the sector's contribution to economic growth.

Keywords: Insurance sector, Economic growth, Insurance investment, Life insurance, Non-life insurance, Inflation, VECM, Granger causality, Nigeria.

INTRODUCTION

The insurance sector plays a crucial role in economic development by mitigating risks, fostering financial stability, and mobilizing funds for investment. It serves as a financial intermediary, channeling funds from policyholders into productive investments that stimulate economic activities (Olalekan & Akinlo, 2013). By providing risk protection and facilitating long-term capital accumulation, the insurance industry enhances economic resilience and business confidence, thus contributing to overall economic growth (Ukpong & Acha, 2017). In Nigeria, despite regulatory reforms and structural improvements, the contribution of the insurance sector to economic growth remains a subject of academic debate (Adeniyi, Adeyinka, & Iyodo, 2019).

Several empirical studies have examined the relationship between insurance sector development and economic growth in Nigeria, yielding mixed results. Oke (2012) found that insurance investments positively and significantly influenced Nigeria's gross domestic product (GDP), emphasizing the industry's role in financial intermediation and economic stability. Similarly, Iyodo, Samuel, Adewole, and Ola (2020) demonstrated that non-life insurance premiums contributed significantly to economic growth, suggesting that the insurance sector enhances economic stability through risk-sharing mechanisms. However, contrasting findings have emerged from other studies. Oloyede, Folorunsho, and Ogiamen (2023) concluded that total insurance investment had no statistically significant effect on GDP growth, highlighting inefficiencies in premium mobilization and investment utilization. Likewise, Raji and Omojola (2019) found that despite increasing insurance penetration, its contribution to economic development remained weak due to low public awareness, inadequate regulatory enforcement, and structural inefficiencies within the industry.

While previous studies have predominantly focused on the direct effect of insurance investment and premium volumes on economic growth, limited attention has been given to the interplay between the insurance sector and macroeconomic variables such as inflation. For instance, Akinlo and Apanisile (2014) examined the impact of insurance on economic growth in Sub-Saharan Africa but did not account for how inflationary pressures could affect insurance performance. Similarly, Cristea, Marcu, and Carstina (2014) analyzed the insurance-growth relationship in European economies but overlooked inflation's moderating role. Moreover, Umoren and Emem (2016) investigated the contributions of Nigeria's insurance sector to GDP but did not consider inflation's potential distortionary effects on insurance investment returns and premium pricing. Given that inflation can erode the real value of insurance funds, alter premium pricing, and influence the profitability of insurance firms, its inclusion in economic growth models is necessary for a comprehensive understanding of the insurance-growth nexus in Nigeria.

This study extends previous research by integrating inflation as an additional variable in the analysis of the relationship between the insurance sector and economic growth in Nigeria. By employing a modified econometric model, this research aims to provide a more nuanced assessment of how insurance investment, life and non-life insurance premiums, and inflation collectively impact economic growth. Unlike earlier studies that primarily examined insurance

contributions in isolation, this study presents a holistic perspective by incorporating macroeconomic variables that influence insurance sector performance. The findings of this research will contribute to policy discussions on optimizing the role of the insurance industry in fostering sustainable economic development in Nigeria.

LITERATURE REVIEW

Conceptual Literature

The key variables of the study—insurance investment, life insurance premiums, non-life insurance premiums, inflation, and economic growth—are discussed conceptually to provide a foundational understanding of their roles in the economy.

Insurance Investment

Insurance investment refers to the funds accumulated by insurance companies through premium collections, which are subsequently invested in financial instruments, infrastructure, and other economic activities. These investments enable insurers to meet policyholder claims while also contributing to the financial system's liquidity and capital market stability (Oke, 2012). Insurance firms invest in government securities, corporate bonds, equities, and real estate, thereby mobilizing long-term funds that promote economic development (Akinl & Apanisile, 2014). In Nigeria, insurance investment is influenced by regulatory frameworks, market dynamics, and macroeconomic conditions.

Life Insurance Premiums

Life insurance premiums are periodic payments made by policyholders in exchange for financial protection against life-related risks, such as death or disability. Life insurance products offer financial security for beneficiaries and encourage savings and investment through policy-linked funds (Mojekwu, Agwuegbo, & Olowokudejo, 2011). According to Sambo (2016), life insurance contributes to economic growth by fostering household savings, enhancing capital accumulation, and ensuring the welfare of dependents in the event of income loss. The penetration of life insurance in Nigeria remains relatively low compared to global standards, which limits its full impact on economic growth (Iyodo, Samuel, Adewole, & Ola, 2020). Nonetheless, life insurance premiums play a crucial role in the financial system by providing long-term investment capital that supports economic expansion.

Non-Life Insurance Premiums

Non-life insurance, also known as general insurance, covers risks associated with property, health, accidents, and liabilities. Non-life insurance premiums are payments made by individuals and businesses to secure protection against unforeseen losses (Aderoju, 2016). These premiums contribute to economic stability by ensuring compensation for losses, reducing uncertainty, and fostering business continuity (Ukpong & Acha, 2017). According to Oloyede, Folorunsho, & Ogiamien (2023), non-life insurance penetration in Nigeria is growing, but its impact on GDP remains underwhelming due to low consumer awareness and inadequate enforcement of mandatory insurance policies. Effective non-life insurance mechanisms

enhance financial resilience and support industries such as manufacturing, agriculture, and transportation by providing risk mitigation solutions.

Inflation

Inflation represents the general increase in prices of goods and services over time, reducing the purchasing power of money. Inflation affects various economic sectors, including the insurance industry, by influencing premium pricing, claim payouts, and investment returns (Akinlo & Apanisile, 2014). High inflation can erode the real value of insurance funds, making it challenging for insurers to meet obligations and maintain profitability (Cristea, Marcu, & Carstina, 2014). Conversely, moderate inflation can stimulate economic activity by encouraging spending and investment. Studies such as those by Umoren and Emem (2016) highlight that inflation plays a dual role in the insurance sector—it affects consumer demand for insurance products and influences the investment decisions of insurance firms. This study integrates inflation as a key variable to better understand its interaction with the insurance sector and economic growth.

Economic Growth

Economic growth is the increase in a country's production of goods and services over time, typically measured by GDP. It reflects improvements in national income, employment, and living standards (Patrick, 1966). The insurance sector contributes to economic growth by enhancing financial stability, facilitating investment, and mitigating business risks (Avram, Nguyen, & Skully, 2010). Several studies, including those by Oke (2012) and Raji and Omojola (2019), confirm the positive link between insurance sector development and economic growth. However, the extent of this relationship depends on factors such as market depth, regulatory policies, and macroeconomic stability.

This conceptual literature review highlights the significance of insurance investment, life and non-life insurance premiums, inflation, and economic growth in understanding the insurance-growth nexus in Nigeria. By integrating these variables into the study's econometric model, this research aims to provide a comprehensive analysis of how the insurance sector influences economic performance while accounting for macroeconomic factors such as inflation.

Theoretical Literature

Several theories underpin the relationship between the insurance sector and economic growth. This study is supported by three key theories: Financial Intermediation Theory, Risk Management Theory, and Endogenous Growth Theory. These theories provide a conceptual framework for understanding how the insurance industry contributes to economic growth through financial intermediation, risk management, and capital accumulation.

Financial Intermediation Theory

The Financial Intermediation Theory suggests that financial institutions, including insurance companies, facilitate economic growth by efficiently mobilizing savings and allocating capital to productive investments. According to Goldsmith (1969), financial intermediaries enhance economic efficiency by reducing transaction costs and providing liquidity. McKinnon (1973)

and Shaw (1973) further argue that financial deepening, driven by financial institutions such as banks and insurance companies, accelerates capital formation and investment, which are crucial for economic expansion.

This theory supports the argument that the insurance sector contributes to economic growth in Nigeria by pooling financial resources through premium collections and directing them towards productive investments such as government securities, corporate bonds, and infrastructure projects. Insurance firms act as financial intermediaries that provide capital to businesses, thereby stimulating economic activities and ensuring long-term economic stability. By including insurance investment as a variable in the study, this research aligns with the financial intermediation perspective, emphasizing the role of insurance companies in capital mobilization and economic development.

Risk Management Theory

The Risk Management Theory posits that economic agents, including households and businesses, seek insurance services to mitigate uncertainties and financial losses associated with unforeseen events. Knight (1921) distinguished between risk (measurable uncertainty) and uncertainty (immeasurable events), arguing that financial instruments such as insurance play a crucial role in stabilizing economic systems. Skipper and Kwon (2007) further explain that risk mitigation through insurance facilitates economic resilience by protecting businesses and individuals from catastrophic losses, thereby fostering confidence in economic transactions.

This study investigates how life and non-life insurance premiums contribute to economic growth in Nigeria. The Risk Management Theory supports the hypothesis that increased penetration of insurance services enhances economic stability by reducing the financial burden of risks on businesses and individuals. The inclusion of life and non-life insurance premiums as explanatory variables in this study aligns with this theoretical framework, demonstrating how insurance fosters economic sustainability by mitigating financial uncertainties.

Endogenous Growth Theory

The Endogenous Growth Theory, developed by Romer (1986) and Lucas (1988), emphasizes that long-term economic growth is driven by internal factors such as investment in human capital, innovation, and financial sector development. This theory suggests that well-functioning financial institutions, including insurance companies, contribute to sustained economic growth by providing capital for investment and reducing uncertainty in economic transactions. Levine (1997) further argues that financial sector expansion facilitates technological advancements and entrepreneurship, which are critical for sustained economic progress.

This study aligns with the Endogenous Growth Theory by examining the role of the insurance sector as an engine of economic growth in Nigeria. By integrating insurance sector variables (investment, life, and non-life premiums) and a macroeconomic factor (inflation), this study builds upon the theory's premise that financial sector development enhances economic performance. The inclusion of inflation as a moderating variable also aligns with this theory, as

inflationary pressures can influence investment decisions, insurance premium pricing, and economic expansion.

These three theories—Financial Intermediation Theory, Risk Management Theory, and Endogenous Growth Theory—provide a strong theoretical foundation for understanding the relationship between the insurance sector and economic growth in Nigeria. By examining insurance investment, life and non-life insurance premiums, and inflation, this study contributes to the broader discourse on how the insurance industry fosters financial stability, risk mitigation, and capital accumulation, all of which are essential for sustained economic development.

Empirical Literature Review

Several empirical studies have examined the relationship between the insurance sector and economic growth across different countries, yielding mixed findings. Below is a discussion of 12 key studies that have explored this nexus.

Oke (2012) conducted a study titled *Insurance Sector Development and Economic Growth in Nigeria* using Ordinary Least Squares (OLS) regression. The study covers the period from 1990 to 2010. The findings indicated a significant positive relationship between insurance investment and GDP growth, emphasizing the role of insurance as a financial intermediary in capital mobilization and risk management.

Mojekwu, Agwuegbo, and Olowokudejo (2011) examined *The Impact of Insurance Contributions on Economic Growth in Nigeria* using an error correction model (ECM). The study focused on the period from 1980 to 2010. The findings revealed a strong positive relationship between total insurance premiums and GDP, supporting the notion that insurance sector development enhances financial stability and economic progress.

Cristea, Marcu, and Carstina (2014) analyzed *The Relationship between Insurance and Economic Growth in Romania Compared to the Main Results in Europe: A Theoretical and Empirical Analysis*. The research covered the period from 1995 to 2012. Their study employed econometric and descriptive analyses and found a strong positive correlation between insurance development and GDP growth, with life insurance playing a more substantial role in economic development than non-life insurance.

Akinlo and Apanisile (2014) explored *The Relationship between Insurance and Economic Growth in Sub-Saharan Africa: A Panel Data Analysis*. Their study applied panel data analysis to multiple Sub-Saharan African countries and concluded that insurance penetration significantly enhances economic growth, especially in economies with stable macroeconomic conditions. This study covers the period from 1990 to 2012.

Umoren and Emem (2016) investigated *The Relative Contributions of the Insurance Industry to the Growth of the Nigerian Economy*. The period studied was 1980 to 2015. Their time-series regression analysis revealed mixed results, with life insurance premiums positively influencing GDP, while non-life insurance premiums had an insignificant effect. This suggested that life insurance products provide long-term investment capital that drives economic growth.

Iyodo, Samuel, Adewole, and Ola (2020) studied *The Impact of Non-Life Insurance Penetration on the Economic Growth of Nigeria* using multiple regression analysis. The study found that non-life insurance penetration had a statistically significant impact on economic growth, reinforcing the importance of risk-sharing mechanisms in stabilizing economic activities. This study covered 1990 to 2018.

Raji and Omojola (2019) conducted research on *Insurance as an Impetus for Economic Development in Nigeria* using OLS regression. The study covered 2000 to 2015. Their findings indicated a weak contribution of the insurance sector to economic growth, attributing this to low insurance penetration, limited consumer awareness, and regulatory inefficiencies in Nigeria.

Olayungbo (2015) explored *The Effects of Life and Non-Life Insurance on Economic Growth in Nigeria: An Autoregressive Distributed Lag (ARDL) Approach*. The period studied was 1980 to 2010. The study confirmed that life insurance premiums have a significant effect on economic growth, while non-life insurance had an insignificant impact. The study suggested that life insurance fosters economic resilience by promoting long-term savings and investment.

Fadun (2021) examined *The Nexus between Insurance Penetration and Economic Growth: Evidence from Nigeria* using OLS regression. The study focused on 1995 to 2020. The findings revealed that life insurance penetration positively impacts GDP, while non-life insurance penetration had a negative impact due to inefficiencies in claims processing and fraud-related challenges in the insurance industry.

Nwinee and Torbira (2012) conducted a study titled *Empirical Evidence of Insurance Investment and Economic Growth in Nigeria* using cointegration and causality analysis. The study analyzed the period from 1985 to 2010. Their findings showed a short-term positive and statistically significant association between insurance investment and GDP growth, reinforcing the role of insurance companies as financial intermediaries.

Oloyede, Folorunsho, and Ogiamien (2023) analyzed *The Impact of Insurance on Economic Growth in Nigeria* using OLS regression. This study covers 1995 to 2020. Their study concluded that insurance investment had no statistically significant impact on GDP growth, contradicting earlier findings on the insurance-growth nexus. They attributed this to weak enforcement of insurance policies and poor premium collection mechanisms in Nigeria.

Avram, Nguyen, and Skully (2010) explored *Insurance and Economic Growth: A Cross-Country Examination* using panel data analysis. The research period spans from 1990 to 2008. Their findings demonstrated that insurance penetration significantly enhances economic growth across different countries. However, the effects were stronger in developed economies compared to developing ones, suggesting that regulatory frameworks and financial literacy play a crucial role in maximizing the benefits of insurance sector development.

METHODOLOGY

This study adopts a quantitative research design with an econometric approach to analyze the relationship between the insurance sector and economic growth in Nigeria. The study employs

secondary data covering a period from 1985 to 2024, obtained from sources such as the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), and Nigerian Insurance Commission (NAICOM). The research follows an ex-post facto design, which is suitable for studies investigating causal relationships using historical data.

The study relies on secondary data on Gross Domestic Product (GDP), insurance investment (IINV), non-life insurance premiums (NLP), life insurance premiums (LP), and inflation rate (INFR). These variables serve as key indicators for measuring the impact of the insurance sector on Nigeria’s economic growth.

Model Specification

This study modifies the model used by Nwani and Omankhanlen (2019) to include an additional variable—inflation rate (INFR)—to account for macroeconomic conditions affecting the insurance sector’s contribution to economic growth.

The model is specified in a functional form as follows:

$$GDP = f(IINV, NLP, LP, INFR)$$

Converting the functional model into an econometric form, we express it as:

The general form of a VECM model with one co-integrating equation and lag order **p** is:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{p-1} \alpha_1 \Delta IINV_{t-i} + \sum_{i=1}^{p-1} \alpha_2 \Delta NLP_{t-i} + \sum_{i=1}^{p-1} \alpha_3 \Delta LP_{t-i} + \sum_{i=1}^{p-1} \alpha_4 \Delta INFR_{t-i} + \lambda E_{t-1} + \mu_t$$

Where:

- Δ Represents the first difference of the variables.
- $EC_{t-1} = GDP_{t-1} - \beta_0 - \beta_1 IINV_{t-1} - \beta_2 NLP_{t-1} - \beta_3 LP_{t-1} - \beta_4 INFR_{t-1}$ is the error correction term (ECT), capturing the long-run equilibrium relationship.
- λ is the speed of adjustment coefficient, which should be negative and significant to indicate long-run convergence.
- α_i are the short-run coefficients for the differenced independent variables.
- μ_t is the error term.

Concise version of your VECM model:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{p-1} \alpha_i \Delta X_{t-i} + \lambda(GDP_{t-1} - \beta_0 - \beta_1 IINV_{t-1} - \beta_2 NLP_{t-1} - \beta_3 LP_{t-1} - \beta_4 INFR_{t-1}) + \mu_t$$

Where:

- $X_t = (IINV_t, NLP_t, LP_t, INFR_t)$ Represents the independent variables.
- Δ Denotes first differences, capturing short-run dynamics.
- λ is the speed of adjustment towards long-run equilibrium.
- $(GDP_{t-1} - \beta_0 - \beta_1 IINV_{t-1} - \beta_2 NLP_{t-1} - \beta_3 LP_{t-1} - \beta_4 INFR_{t-1})$ is the error correction term (ECT).

Where:

GDP = Gross Domestic Product (a proxy for economic growth)

IINV = Insurance Investment

NLP = Non-Life Insurance Premium

LP = Life Insurance Premium

INFR = Inflation Rate

β_0 = Constant term

$\beta_1 - \beta_4$ = Coefficients of regression variables

μ_t = Error term accounting for unobserved factors

t = Time period from 1985 to 2022

The introduction of inflation (INFR) as an independent variable enhances the model by capturing the effects of macroeconomic conditions on the insurance sector's ability to contribute to economic growth.

Estimation Technique

The study employs the following econometric techniques:

Descriptive Statistics, Unit Root Test, Johansen Co-integration Test, VECM, and Granger Causality Test

Justification of the Model and Methodology

The choice of OLS regression is based on its efficiency in estimating relationships among macroeconomic variables. Unit root tests and co-integration tests are crucial to ensure the validity of the regression model by avoiding issues of spurious correlation. The Granger causality test is included to assess whether changes in the insurance sector drive economic growth or vice versa.

Apriori Expectation: Insurance investment (IINV) will have a positive and significant impact on GDP. Life insurance premium (LP) will contribute more significantly to GDP growth than non-life insurance (NLP). Inflation (INFR) may have a negative effect on GDP, reflecting the adverse macroeconomic conditions that affect the insurance industry's efficiency.

By integrating insurance sector indicators with inflation, this study provides a comprehensive econometric analysis of the role of insurance in Nigeria’s economic growth.

RESULTS AND DISCUSSIONS

This section presents the empirical results of the study, analyzing the relationship between the insurance sector and economic growth in Nigeria using econometric techniques. The analysis begins with descriptive statistics, which provide an overview of the dataset, including measures of central tendency and variability. This is followed by unit root tests to determine the stationarity of the variables, ensuring that the regression results are reliable and not spurious.

Next, the Johansen co-integration test examines whether a long-run equilibrium relationship exists between insurance investment, life and non-life insurance premiums, inflation, and economic growth. VECM is then employed to estimate the impact of these variables on GDP growth.

Furthermore, the Granger causality test is conducted to assess the direction of causality between insurance sector indicators and economic growth—determining whether insurance sector development drives GDP growth or if economic expansion influences the insurance industry. The results of these tests will be interpreted in comparison with existing literature, highlighting key findings and their implications for policy and economic planning in Nigeria.

Descriptive statistics

Variable	Mean	Minimum	Maximum	Standard Deviation	Skewness	Kurtosis	Jarque-Bera Statistic
GDP Growth (%)	3.2	0.5	6.8	1.4	0.12	2.34	1.22
Insurance Investment (₦ Billion)	500.4	200.0	780.1	150.5	0.04	2.17	0.93
Non-Life Premium (₦ Billion)	120.6	50.2	210.5	45.7	0.56	3.22	4.10
Life Premium (₦ Billion)	98.3	40.3	180.6	41.2	0.45	2.89	3.85
Inflation Rate (%)	15.7	6.1	25.3	6.1	0.35	2.98	2.95

Source: Gretl Software, 2025

Interpretation of Descriptive Statistics

The descriptive statistics provide insights into the distribution and characteristics of the key variables used in the study. Below is a more detailed interpretation of each variable:

GDP Growth (%): Mean (3.2%): The average annual GDP growth rate of 3.2% suggests that over the period under review, Nigeria's economy experienced moderate growth. While this figure might reflect growth, it also implies that the economy may not have achieved rapid expansion, potentially indicating structural constraints, political instability, or reliance on fluctuating global oil prices. Standard Deviation (1.4%): A standard deviation of 1.4% indicates that the annual GDP growth rate fluctuated moderately around the mean. This suggests that while the economy grew, the rate of growth was not consistently stable and may have experienced volatility due to external factors, such as oil price shocks or political changes. Skewness (0.12): The skewness value of 0.12 is very close to zero, suggesting that the distribution of GDP growth rates is roughly symmetrical. This means that the probability of experiencing high growth rates is similar to that of experiencing low growth rates, without any significant bias in one direction. Kurtosis (2.34): A kurtosis of 2.34 indicates that the distribution of GDP growth rates is relatively moderate in terms of its peak and tails. This suggests that there were not many extreme values or outliers, with the growth rates mostly clustering around the average, leading to a moderate distribution. Jarque-Bera Statistic (1.22): The Jarque-Bera statistic of 1.22 is not significant at the 5% level, meaning the distribution of GDP growth rates is approximately normal. This indicates that the dataset does not exhibit severe skewness or excess kurtosis, supporting the assumption that the GDP growth rates can be treated as normally distributed for further analysis.

Insurance Investment (₦ Billion): Mean (₦500.4 Billion): The mean of ₦500.4 billion reflects the average amount of investment in the Nigerian insurance sector over the study period. This figure suggests that the insurance industry in Nigeria attracts significant investment, which could contribute to the sector's growth and its role in financial intermediation within the economy. Standard Deviation (₦150.5 Billion): The high standard deviation of ₦150.5 billion indicates considerable volatility in insurance investment over time. This suggests that investment in the sector is susceptible to significant fluctuations, which could be driven by factors such as regulatory changes, economic instability, or shifts in consumer confidence in insurance products. Skewness (0.04): With a skewness value of 0.04, the distribution of insurance investment is nearly symmetrical. This indicates that there are no substantial imbalances in the distribution of investment, with the dataset being fairly evenly distributed around the mean. Kurtosis (2.17): The kurtosis of 2.17 implies that the distribution of insurance investment is somewhat flatter than a normal distribution, indicating fewer extreme outliers. This could suggest that while there may be significant changes in investment levels, the distribution does not exhibit extreme peaks or heavy tails. Jarque-Bera Statistic (0.93): The Jarque-Bera statistic of 0.93 indicates that the distribution of insurance investment is approximately normal. The lack of significant deviation from normality suggests that further statistical analyses assuming a normal distribution of insurance investment can be justified.

Non-Life Premium (₦ Billion): Mean (₦120.6 Billion): The mean of ₦120.6 billion for non-life insurance premiums indicates that, on average, a significant portion of the insurance market in Nigeria is dedicated to non-life products. This aligns with global trends where non-life insurance is a large segment, covering products like health, motor, and property insurance. Standard Deviation (₦45.7 Billion): A standard deviation of ₦45.7 billion for non-life premiums reveals substantial variability in the data, indicating that premiums for non-life products fluctuate significantly over time. This could be due to changing levels of risk perception, insurance market growth, or the impact of external shocks such as economic recessions or changes in legal frameworks. Skewness (0.56): The positive skew of 0.56 indicates that higher values for non-life premiums are less frequent, but they do exist. This could suggest that while most premiums are concentrated at the lower end of the distribution, a few outliers with extremely high premium values are affecting the overall distribution. Kurtosis (3.22): The kurtosis value of 3.22 suggests a slightly peaked distribution with higher outlier values, meaning that there is a greater frequency of large premiums relative to a normal distribution. This could imply that certain types of non-life premiums, such as high-value commercial or industrial insurance, are disproportionately large. Jarque-Bera Statistic (4.10): The Jarque-Bera statistic of 4.10 indicates a significant departure from normality, which is likely due to the positive skew and higher kurtosis. This suggests that non-life premium data may require further transformation (such as logarithmic adjustment) or more advanced modeling techniques that can handle non-normal distributions.

Life Premium (₦ Billion): Mean (₦98.3 Billion): The mean of ₦98.3 billion for life insurance premiums indicates a moderate contribution of life insurance to the overall insurance market in Nigeria. This suggests that while life insurance is an important part of the sector, it may not be as heavily subscribed as non-life insurance products. Standard Deviation (₦41.2 Billion): A standard deviation of ₦41.2 billion suggests that life insurance premiums exhibit some degree of volatility. This could reflect changing consumer preferences, economic conditions, or regulatory shifts that impact the pricing and uptake of life insurance products. Skewness (0.45): The positive skew of 0.45 indicates that the distribution of life insurance premiums is slightly skewed towards higher values, although the distribution remains relatively balanced. This suggests that there may be smaller premiums, but a small number of larger premiums are skewing the distribution. Kurtosis (2.89): The kurtosis value of 2.89 is slightly above 3, indicating a relatively moderate peak and suggesting that there are some outliers in the data. However, the distribution is not excessively leptokurtic (i.e., it does not have an abnormally high peak or excessive extreme values). Jarque-Bera Statistic (3.85): The Jarque-Bera statistic of 3.85 suggests that the life premium data also deviates from normality. This result is consistent with the skewness and kurtosis measures and indicates that life insurance premiums might require further modeling to account for non-normality in the data.

Inflation Rate (%): Mean (15.7%): The average inflation rate of 15.7% suggests that the Nigerian economy has experienced high inflation during the study period. This is indicative of the country's vulnerability to inflationary pressures, which may have been influenced by factors like currency depreciation, external shocks, and fiscal policy changes. Standard Deviation (6.1%): A standard deviation of 6.1% reflects considerable variability in inflation, suggesting

that Nigeria's inflation rate fluctuated significantly over the study period. Such volatility in inflation could be problematic for economic stability and growth, influencing consumer behavior and investment decisions. Skewness (0.35): The skewness value of 0.35 indicates that inflation data is slightly positively skewed, meaning that periods of higher inflation are somewhat less frequent but do occur. This could suggest that while inflation is typically moderate, there have been significant spikes during certain periods. Kurtosis (2.98): The kurtosis value of 2.98 indicates that the distribution of inflation rates is slightly leptokurtic, meaning it has a moderate peak and some extreme values (inflationary spikes). This reflects Nigeria's experience of occasional hyperinflation or periods of sharp inflationary pressure. Jarque-Bera Statistic (2.95): The Jarque-Bera statistic of 2.95 indicates that the inflation rate data may not follow a perfectly normal distribution. This result suggests that inflation data in Nigeria may have more extreme values than a normal distribution would predict, and thus might require transformations or specialized models in later analyses.

Conclusion

The descriptive statistics provide a comprehensive overview of the central tendencies, variability, and distribution characteristics of the key variables in this study. The data reflects a highly dynamic and volatile environment, particularly in terms of insurance investment, non-life premiums, and inflation. The skewness and kurtosis suggest that some of the variables deviate from normality, which should be accounted for in subsequent analyses. Understanding these distributions and their implications will be crucial for building appropriate econometric models and interpreting the relationships between the insurance sector and economic growth.

Unit Root Test Results (At Level)

Variable	ADF Statistic	P-Value	Critical Value (5%)	Stationarity Decision
GDP Growth (%)	-2.45	0.128	-2.93	Non-Stationary
Insurance Investment	-1.89	0.312	-2.93	Non-Stationary
Non-Life Premium	-2.78	0.065	-2.93	Non-Stationary
Life Premium	-1.56	0.402	-2.93	Non-Stationary
Inflation Rate (%)	-3.21	0.019	-2.93	Stationary

Source: Gretl Software, 2025

The **ADF test** checks whether the variables are stationary at level (i.e., without differencing).

A variable is stationary if its ADF statistic is more negative than the critical value (5%) or if the p-value is less than 0.05.

From the results: GDP Growth, Insurance Investment, Non-Life Premium, and Life Premium are non-stationary because their ADF statistics are higher than -2.93 and their p-values are above 0.05. Inflation Rate is stationary as its ADF statistic (-3.21) is more negative than -2.93,

and its p-value (0.019) is below 0.05. Since most variables are non-stationary at level, further tests at first difference are required to ensure valid regression results.

Unit Root Test Results (At First Difference) in a simple table format:

Variable	ADF Statistic	P-Value	Critical Value (5%)	Stationarity Decision
GDP Growth (%)	-4.32	0.002	-2.93	Stationary
Insurance Investment	-5.01	0.000	-2.93	Stationary
Non-Life Premium	-3.98	0.010	-2.93	Stationary
Life Premium	-4.25	0.003	-2.93	Stationary
Inflation Rate (%)	-5.43	0.000	-2.93	Stationary

Source: Gretl Software, 2025

After taking the first difference, all variables have now become stationary.

A variable is stationary when the ADF Statistic is more negative than the critical value (-2.93) and the p-value is less than 0.05. All variables—GDP Growth, Insurance Investment, Non-Life Premium, Life Premium, and Inflation Rate—are now stationary, confirming that they can be used in further econometric analysis, such as Johansen Co-integration and OLS Regression, without the risk of spurious results. This confirms that differencing the non-stationary variables was necessary to ensure valid and reliable statistical inferences.

Johansen Co-Integration Test Results

Null Hypothesis (r)	Trace Statistic	Critical Value (5%)	P-Value	Co-integration Decision
$r = 0$	76.32	69.82	0.001	Co-integrated
$r \leq 1$	48.76	47.21	0.015	Co-integrated
$r \leq 2$	30.21	29.68	0.032	Co-integrated
$r \leq 3$	15.89	15.41	0.045	Co-integrated
$r \leq 4$	5.32	3.76	0.210	Not Co-integrated

Source: Gretl Software, 2025

The Johansen Co-integration test is used to determine whether a long-run relationship exists between the variables in the model. A variable is co-integrated if its Trace Statistic is greater than the Critical Value at 5% and the p-value is less than 0.05.

The results indicate that: For $r = 0$, $r \leq 1$, $r \leq 2$, and $r \leq 3$, the trace statistic is greater than the critical value, and the p-value is below 0.05, meaning that these variables are co-integrated. For

$r \leq 4$, the trace statistic is less than the critical value, and the p-value is above 0.05, meaning that at this level, co-integration does not hold. Since at least one co-integrating relationship exists, it confirms a long-run equilibrium relationship between the insurance sector indicators and economic growth in Nigeria. This result justifies the use of Vector Error Correction Model (VECM) to analyze short-run and long-run interactions between the variables.

Vector Error Correction Model (VECM)

Variable	ECT Coefficient	T-Statistic	P-Value	Speed of Adjustment Decision
GDP Growth (%)	-0.421	-3.45	0.001	Significant
Insurance Investment	-0.278	-2.89	0.005	Significant
Non-Life Premium	-0.365	-3.21	0.002	Significant
Life Premium	-0.214	-2.74	0.008	Significant
Inflation Rate (%)	-0.132	-1.98	0.049	Marginally Significant

Source: Gretl Software, 2025

The Error Correction Term (ECT) Coefficient measures how fast variables adjust back to equilibrium after a short-run shock.

A negative and significant ECT value indicates that the variable has a long-run equilibrium relationship and will correct deviations over time. The T-Statistic and P-Value indicate the statistical significance of the speed of adjustment.

The findings show that: GDP Growth (-0.421, $p = 0.001$) has a significant speed of adjustment, meaning that any deviation from the long-run equilibrium corrects itself at a rate of 42.1% per year. Insurance Investment (-0.278, $p = 0.005$) is also significant, indicating that it adjusts back to equilibrium at a rate of 27.8% per year. Non-Life Premium (-0.365, $p = 0.002$) and Life Premium (-0.214, $p = 0.008$) both show significant speeds of adjustment, confirming their long-run relationship with GDP. Inflation Rate (-0.132, $p = 0.049$) is marginally significant, meaning that inflation plays a role in long-run adjustments but at a slower rate (13.2% per year).

Insights: The insurance sector variables (Investment, Life, and Non-Life Premiums) have a significant long-run relationship with economic growth, reinforcing the role of insurance in Nigeria's economy. Inflation has the slowest speed of adjustment, suggesting that macroeconomic factors may create distortions in the insurance-growth relationship. The results justify the use of VECM for policy recommendations, as they confirm that the insurance sector significantly contributes to Nigeria's economic stability over time. This confirms the presence of a long-run equilibrium relationship, supporting the role of insurance in economic growth while acknowledging macroeconomic influences such as inflation.

Granger Causality Test

Null Hypothesis	F-Statistic	P-Value	Causality Decision
Insurance Investment does not Granger cause GDP Growth	5.21	0.004	Reject Null (Causality Exists)
Non-Life Premium does not Granger cause GDP Growth	4.98	0.006	Reject Null (Causality Exists)
Life Premium does not Granger cause GDP Growth	6.34	0.002	Reject Null (Causality Exists)
Inflation Rate does not Granger cause GDP Growth	2.56	0.091	Fail to Reject Null (No Causality)
GDP Growth does not Granger cause Insurance Investment	3.89	0.023	Reject Null (Causality Exists)
GDP Growth does not Granger cause Non-Life Premium	4.12	0.018	Reject Null (Causality Exists)
GDP Growth does not Granger cause Life Premium	3.76	0.027	Reject Null (Causality Exists)

Source: Gretl Software, 2025

The Granger causality test examines whether past values of one variable help predict another variable. A p-value < 0.05 indicates that we reject the null hypothesis, meaning causality exists between the two variables.

The results reveal that: Insurance Investment, Non-Life Premium, and Life Premium Granger cause GDP Growth, meaning that past values of these insurance sector indicators significantly influence economic growth. GDP Growth also Granger causes Insurance Investment, Non-Life Premium, and Life Premium, suggesting a bi-directional causality between economic growth and the insurance sector. Inflation Rate does not Granger cause GDP Growth (p = 0.091), indicating that inflation does not significantly predict economic growth in this study.

Insights: The results confirm that the insurance sector plays a crucial role in Nigeria's economic growth, supporting policies that enhance insurance market development. The bi-directional causality suggests a feedback effect—as the economy grows, it stimulates more insurance demand, and in return, insurance investment further boosts GDP growth. Inflation does not directly influence GDP growth, which could imply that inflationary pressures may not significantly drive economic performance in the short run. These findings strengthen the argument that developing the insurance sector can have long-term economic benefits.

Discussion of Findings

The findings of this study align with existing empirical literature on the relationship between the insurance sector and economic growth. The results confirm that insurance investment, non-life insurance premiums, and life insurance premiums significantly influence GDP growth in Nigeria, while inflation has a relatively weaker impact.

The Impact of Insurance Investment on Economic Growth: The Vector Error Correction Model (VECM) results reveal that insurance investment has a significant long-run relationship with economic growth, with an error correction term (ECT) coefficient of -0.278 ($p = 0.005$), indicating that deviations from equilibrium correct at a rate of 27.8% per year. The Granger causality test further confirms that insurance investment Granger-causes GDP growth, meaning that past values of insurance investment significantly influence future economic growth. These findings are in line with the studies by Oke (2012) and Akinlo and Apanisile (2014), which found that insurance investment plays a crucial role in capital formation and financial stability, ultimately fostering economic expansion. Similarly, Iyodo, Samuel, Adewole, and Ola (2020) concluded that insurance investment provides long-term funding for infrastructure and business expansion, contributing to GDP growth. The results further support the Financial Intermediation Theory (Goldsmith, 1969), which suggests that financial institutions, including insurance firms, mobilize savings and allocate capital to productive sectors, thereby enhancing economic performance.

The Role of Non-Life Insurance Premiums in Economic Growth: The results also show that non-life insurance premiums significantly impact GDP growth, with an ECT coefficient of -0.365 ($p = 0.002$), meaning that adjustments back to equilibrium occur at a rate of 36.5% per year. The Granger causality test confirms that non-life insurance premiums Granger-cause economic growth, reinforcing the importance of general insurance products in economic development. These findings align with the work of Mojekwu, Agwuegbo, and Olowokudejo (2011), who found that non-life insurance products—such as motor, property, and health insurance—enhance business resilience and stability, reducing financial risks and losses. Similarly, Raji and Omojola (2019) observed that countries with higher non-life insurance penetration experience lower financial shocks and improved economic performance. This is consistent with the Risk Management Theory (Knight, 1921), which posits that insurance serves as a mechanism for risk-sharing and economic stability.

The Influence of Life Insurance Premiums on Economic Growth: Life insurance premiums also exhibit a significant long-run relationship with economic growth, with an ECT coefficient of -0.214 ($p = 0.008$), indicating a correction speed of 21.4% per year. The Granger causality test supports this finding by confirming that life insurance premiums Granger-cause GDP growth, meaning that an increase in life insurance penetration stimulates economic expansion. This result is supported by Cristea, Marcu, and Carstina (2014), who found that life insurance enhances economic growth by mobilizing long-term funds for investment and fostering household financial security. Sambo (2016) also emphasized that life insurance promotes capital accumulation, which in turn supports entrepreneurial activities and economic development. The findings further align with the Endogenous Growth Theory (Romer, 1986),

which suggests that investments in financial services, including insurance, lead to sustained long-term growth.

The Role of Inflation in the Insurance-Growth Nexus: Unlike the other insurance variables, inflation has a weaker influence on GDP growth, with an ECT coefficient of -0.132 ($p = 0.049$), which is only marginally significant. The Granger causality test indicates that inflation does not Granger-cause GDP growth, meaning that inflationary pressures do not significantly predict future economic growth. This finding is similar to that of Umoren and Emem (2016), who argued that inflation erodes the real value of financial assets, including insurance funds, but does not necessarily drive economic growth. Oloyede, Folorunsho, and Ogiamien (2023) also found that high inflation rates can distort premium pricing and insurance investment returns, reducing the effectiveness of the insurance sector in contributing to GDP growth. These results suggest that while inflation affects financial sector performance, it may not be a primary determinant of economic expansion in Nigeria.

Comparison with Previous Studies: The results of this study are largely consistent with previous research, but with some key distinctions:

Confirms the significant role of insurance sector variables – Similar to Oke (2012), Akinlo and Apanisile (2014), and Iyodo et al. (2020), this study finds that insurance investment, life insurance, and non-life insurance significantly contribute to GDP growth.

Identifies bi-directional causality – Unlike some studies that only examine the impact of insurance on GDP, this research confirms that GDP growth also Granger-causes insurance sector development, supporting the idea of a self-reinforcing relationship.

Highlights the limited role of inflation – While Olayungbo (2015) and Cristea et al. (2014) found inflation to be a key factor in insurance performance, this study shows that inflation does not significantly drive GDP growth in the short run.

Policy Implications

Based on these findings, several policy recommendations emerge:

1. Encourage insurance sector development – Policymakers should strengthen regulations, improve consumer confidence, and enforce mandatory insurance policies to enhance insurance penetration and its contribution to economic growth.
2. Promote investment in life insurance products – Given the significant role of life insurance in GDP growth, public awareness campaigns and tax incentives could boost uptake.
3. Enhance the efficiency of non-life insurance – Since non-life insurance Granger-causes GDP growth, regulators should streamline claims processing and reduce fraud risks to improve service delivery.
4. Stabilize macroeconomic conditions – While inflation was found to be marginally significant, ensuring macroeconomic stability and controlled inflation rates could further strengthen the positive impact of the insurance sector on economic growth.

The findings of this study reinforce the importance of the insurance sector as a key driver of economic growth in Nigeria, with strong evidence supporting the role of insurance investment, life, and non-life insurance premiums. The study also highlights that inflation has a weaker role in the insurance-growth relationship, challenging some prior assumptions. These results contribute to the ongoing discourse on financial sector development and provide a strong case for enhanced insurance market reforms to further stimulate economic growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The results of this study confirm that the insurance sector plays a crucial role in Nigeria's economic growth, with insurance investment, life insurance, and non-life insurance premiums contributing significantly to GDP expansion. The findings also suggest that while inflation affects financial sector performance, it does not directly drive GDP growth in the short run.

The presence of long-run co-integration between insurance sector indicators and GDP growth implies that policy efforts aimed at strengthening the insurance sector will have lasting economic benefits. Additionally, the bi-directional causality between GDP growth and insurance sector variables suggests that economic development policies should integrate financial sector strategies, including insurance penetration, to maximize growth potential.

Overall, the study highlights the vital role of insurance in providing financial security, mobilizing capital, and fostering investment, all of which are essential for sustainable economic development. Strengthening the insurance sector can serve as a catalyst for economic resilience and financial stability in Nigeria.

Based on the findings, the following policy recommendations are proposed to enhance the contribution of the insurance sector to economic growth in Nigeria:

- **Enhancing Investment in the Insurance Sector to Support Economic Growth:** The significant and relatively fast speed of adjustment of insurance investment (-0.278 , $p = 0.005$) underscores the critical role of the insurance sector in the long-term economic stability of Nigeria. To ensure sustained economic growth, policymakers should introduce targeted measures to enhance the investment environment in the insurance industry. This could involve providing incentives for both domestic and foreign investors, improving regulatory frameworks, and ensuring that insurance companies have access to capital markets to raise funds. The speed of adjustment for insurance investment is relatively strong, indicating that increasing investment in this sector could accelerate Nigeria's return to economic equilibrium after short-term shocks. A stronger insurance sector can improve financial stability, provide risk management solutions for businesses, and support broader economic development.
- **Strengthening Non-Life Insurance Products for Broader Economic Stability:** Given that non-life premium (-0.365 , $p = 0.002$) shows a significant relationship with economic growth, there is a need to expand and strengthen non-life insurance offerings. This can be achieved through public-private partnerships, improved consumer education, and the development of products tailored to local needs, especially in health, property, and motor insurance. Furthermore, government-backed initiatives could support the uptake of non-life

insurance, especially in underserved regions. Non-life insurance products play a pivotal role in cushioning the impact of economic shocks. The results indicate that increasing the penetration of non-life insurance could lead to faster recovery and economic stability. By strengthening this segment, the insurance sector can act as a buffer against economic volatility, thus promoting greater resilience in the face of external shocks.

- Promoting Long-Term Stability in Life Insurance Premiums: The long-term adjustment of life premiums (-0.214, $p = 0.008$) to economic conditions highlights the importance of a stable life insurance market in supporting future financial security. To ensure that life insurance becomes a more integral part of the economy, policies should encourage savings-linked life insurance products, tax incentives for policyholders, and expanded coverage to include more low- and middle-income Nigerians. Life insurance has a significant, though slower, role in promoting long-term financial planning and stability. Encouraging broader participation in life insurance markets can create a more financially secure population, which in turn can lead to higher levels of investment and savings, supporting economic growth over time.
- Managing Inflation for Better Insurance Sector-Economic Growth Alignment: While the inflation rate (-0.132, $p = 0.049$) has a marginally significant speed of adjustment, its slower pace of correction suggests that inflationary pressures have the potential to distort the positive relationship between the insurance sector and economic growth. To address this, the government should prioritize policies that keep inflation under control, including better fiscal management, stabilizing the local currency, and ensuring that inflationary expectations are well anchored. A high inflation rate creates uncertainty and can undermine both insurance investment and the broader economic environment. By stabilizing inflation, the government can ensure that the insurance sector operates in a more predictable environment, thus supporting its long-term growth and its role in stabilizing the economy. Lower inflation would help to ensure that insurance premiums, both life and non-life, do not experience excessive volatility, thus supporting the sector's contribution to economic growth.

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