POLAC MANAGEMENT REVIEW (PMR)
DEPARTMENT OF ECONOMICS AND MANAGEMENT SCIENCE
NIGERIA POLICE ACADEMY, KANO

DOES INSURANCE PENETRATION PROMOTE ECONOMIC GROWTH? EVIDENCE FROM NIGERIA

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Abstract

Quest to find out whether insurance penetration rate promotes economic growth in Nigeria is the rationale behind this research. This study examines the short-run and long-run effect of insurance penetration rate on economic growth in Nigeria for the period 1980-2020. Descriptive statistics, correlation analysis, unit root tests, cointegration, error correction model, ordinary least squares and granger causality test were used in the analysis and the data were estimated with the aid of E-views 9.0 econometric statistical package. The findings revealed that insurance penetration rate exerts significant positive impact on economic growth in Nigeria in both short-run and long-run. Also, no causal link was found between insurance penetration rate and economic growth. The study therefore recommends that the ongoing reforms in the insurance sector should be deepened in order to improve the development of the insurance sector and by that increase their role in promoting economic growth. Also the regulation and supervision of the insurance sector should be strengthened as it plays a great role in determining both its stability and the extent of the services provided.

Keywords: Insurance Sector, Insurance Penetration Rate, Insurance Premium, Error Correction Model, Granger Causality Test

1. Introduction

The increasing share of the insurance sector in the entire financial sector in almost all the emerging and advanced economy has shifted attention to insurance-growth nexus. The insurance companies as financial intermediaries play a crucial role as they are the main risk management tools for individuals and organizations. Insurance is critical to the ability of emerging and transition economies like Nigeria to grow, develop and provide a reliable cover for risk to the citizens. Levine (1997) posits that financial development (through financial intermediaries like insurance companies) promote economic growth. Activities of insurance companies have been observed as one of the major factor propelling economic growth and development in both developed and developing countries (Ward & Zurbruegg, 2000).

Over the years insurance sector has witnessed significant growth globally and Nigeria is no exception to this phenomenon. The insurance market in Nigeria has witnessed a remarkable growth in the last decade. There are 57 insurance companies operating in Nigerian market, the total gross written premium was USD1.2billion (N426 billion) in 2018 and this represents a growth of 14.5% over the previous year. In the five years between 2014 and 2018, the compound annual growth rate of total gross written premium grew on average by 8.6% per annum (Henley, 2000).

In Nigeria, the insurance sector is not unaffected by the general growth potentials worldwide. Although the future of the insurance industry in Nigeria appears bright, a number of unresolved problems still exist; of particular interest is the insurance marketing system, which has affected the penetration of insurance products. In Nigeria, this problem seems to be even more pronounced because of the level of literacy of the Nigerian populace. Insurance has remained one of the least purchased items within the financial market. Records reveal that about only 10 per cent of the Nigerian population has insurance of any sort (Aghoghobvia, 2016; Olayungbo & Akinlo, 2016)).

Thus, the increased importance of insurance as a provider of financial services and of investment funds in the capital market is especially pronounced in developed economies whereas insurance consumption in many developing countries such as Nigeria is still very low.

The insurance penetration rate (IPR) is defined as a country's total gross premium income as a percentage of its gross domestic product (GDP). It is a measure of the level of development of the insurance sector in the country and thus, it indicates how much the insurance sector contributes to the national economy. It does not indicate how many people actually have insurance coverage nor does it signify the quality of coverage and whether it provides value to the clients. The higher the penetration rate, the more developed the insurance market. Nigeria being the largest economy in Africa (with about 200 million people) has a low IPR below 1%, much lower than the African average of 3.3%, while South Africa has the largest IPR of 16% in Africa. The abysmally low insurance penetration rate in Nigeria is mainly due to lack of consumer trust and confidence in insurance companies, limited knowledge of insurance amongst the insuring public leading to negative perceptions; complaints over the poor claims settlement; cultural constraints; low per capital income; ineffective enforcement on the compulsory insurances by law enforcement agencies; limited collaboration between insurance operators and regulators; inadequate capital base and corporate image of the insurance providers; lack of Government support (e.g. implementation of insurance compliance certificate on building constructions) etc.

Conceptually, the insurance penetration can be achieved if the Nigerian insurance industry is well equipped with appropriate and/or adequate capital resources, human capital development and regulatory policy guidelines. The current low insurance penetration rate (IPR) in Nigeria and its huge population and imminent economic growth are expected drive demand for insurance products which would create huge business opportunity for the insurers. The recapitalization exercise would no doubt help the insurance industry to achieve the feat of transformational levels of insurance penetration rate (IPR) if NAICOM continues to upgrade its policy implementation strategies.

Many studies related to the relationship between economic growth and insurance sector development has been investigated in many ways by many researchers around the world. Every researcher found some empirical result in different ways based on what the country or the parameters of insurance they investigated. The parameter of insurance investigated in this study is insurance penetration. A number of empirical studies have investigated the impact of insurance penetration rate on economic growth. However, no consensus has emerged on the impact of insurance penetration rate and economic growth. For example, studies such as Wadlamannati (2008), Han, Lie, Moshiran and Tian, (2010), Pei-Fen,Chin-Chiang, Chun-Ping and Lee, (2011), Safitiri (2019) and Iyodo, Samuel, Adewole, and Ola, (2020) found that insurance penetrationrate had positive impact on economic growth. However, study by Okonkwo and Eche (2019) showed that insurance penetration had no significant positive effect on economic growth.

Also, the number of empirical studies that have investigated insurance penetration-growth nexus in Nigeria is relatively small. Indeed, most existing studies on insurance penetration-growth nexus are focused on the developed countries. In developing countries like Nigeria, not many studies have focused on the insurance sector probably due to the small size of the sector before the reforms in the early 80s. Indeed, only few studies to the best of our knowledge have been published on the insurance penetration-growth nexus in Nigeria. Despite the fact that the potential contribution of the insurance on economic growth has been recognized, the assessment of a potential causal relationship between insurance penetration and economic growth has not been as extensively studied as that of banks. This study attempts to fill these gaps in the literature by adding to the few studies that have examined the impact of insurance penetration on economic growth in Nigeria. It is imperative to investigate not only how the insurance penetration rate

has impacted economic growth but also the causal link between insurance penetration and economic growth.

The other sections of the paper are arranged in the following manner: Section two covers the review of previous empirical literature; while the third section covers the methodology adopted for the study. The results of the analysis of data and discussion of findings are presented in section four, and the conclusion and recommendations of the study are covered in section five.

2. Literature Review

Iyodo, et al., (2020) explores the impact of non-life insurance industry performance on economic growth in Nigeria. Insurance penetration is measured through five diverse proxies such as non-life insurance, savings, expenditures, investment and profits of the insurance industry with their time-series statistics covering the period 1988 and 2012. The outcomes of the ordinary least square regression estimates showed that non-life insurance penetration had a substantially positive effect on the economic growth in Nigeria during the period. Profit and investments are found to have a positive effect on the economy but statistically insignificant while Savings and government expenditure has an adverse effect on the economy.

Okonkwo and Eche (2019) examined the nexus between insurance penetration rate and economic growth in Nigeria for the period 1981 – 2017. The result of the regression analysis reveals that there was no significant relationship between insurance penetration rate and economic growth in Nigeria. Safitiri (2019) investigates the contribution of the insurance sector measured by three parameters; namely insurance penetration, insurance density and premium volume. The research was conducted to investigate the factors which are related to the insurance industry and could affect the economic growth of 6 countries; namely Singapore, Malaysia, Philippine, Thailand, Vietnam and Indonesia, in ASEAN area over the period 2005-2015 using a fixed effect model. The result revealed that premium volume of life insurance and non-life insurance, respectively, maintained positive and significant effects on the economic growth. Life insurance penetration and density also give significant effects on economic growth while non-life insurance penetration and density are not statistically significant for the economic growth

Dash, Pradhan, Maradana, Gaurav, Zaki and Jayakumar (2018) examines the causal relationship between insurance market penetration and per capita economic growth in 19 Eurozone countries for the period 1980–2014. We use three different indicators of insurance market penetration (IMP), namely life insurance penetration, non-life insurance penetration, and total (both life and non-life) insurance penetration. We particularly emphasize on whether Granger causality exists between these variables both ways, one way, or not at all. Our empirical results perceive both unidirectional and bidirectional causality between IMP and per capita economic growth. However, these results are mostly non-uniform across the Eurozone countries during this selected period.

Pradhan, MakArvin, Morman, Nair and Hall, (2016) studied the links between insurance penetration, market capitalization, broad money and economic growth in South East Asian nations using data from 1988 to 2012. The study uses the Granger causality approach; the study found that insurance penetration and economic growth are cointegrated. Olayungbo and Akinlo (2016) studied the link between insurance penetration and economic growth in eight African countries for the period of 1970 - 2013. A Bayesian Time Varying Parameter Vector Auto regression (TVP-VAR) model with stochastic volatility was used to analyze the short run and the long run among the variables of interest. Results reveal a positive relationship for Egypt, while short-run negative and long-run positive effects are found for Kenya, Mauritius, and South Africa. On the contrary, negative effects are found for Algeria, Nigeria, Tunisia, and Zimbabwe.

Zouhaier (2014) examined the relationship between the insurance business and the economic growth of 23 OECD countries over the period 1990 –2011. Using a static panel data model, the results revealed that non-

life insurance, as measured by the penetration rate had a positive and significant impact on economic growth; and a negative effect was exerted by the total insurance and non-life insurance, as measured by the insurance density on economic growth. Alhassan and Fiador (2014) examined the long-run causal relationship between insurance penetration and economic growth for Ghana during the period of 1990–2010. The authors used autoregressive distributed lag (ARDL) bounds approach. A unidirectional causality was found from aggregate insurance penetration to growth on one hand and life and non-life insurance penetration to growth on the other hand.

Yinusa and Akinlo (2013) analyzed both the long- and short-run relationships between insurance development and economic growth in Nigeria over the period 1986–2010. Using error correction model (ECM), the study finds that insurance development is cointegrated with economic growth in Nigeria. There is a long-run relationship between insurance development and economic growth in Nigeria. The results also show that physical capital and interest rate both at contemporary and one lagged value have significant positive effect on economic growth in Nigeria, while physical capital and inflation have negative long run relationships with economic growth. The results generally indicate statistically significant contribution of insurance to economic growth in Nigeria.

Kjosevski (2011) examined the impact of insurance on economic growth using the insurance penetration, and total insurance penetration. The results showed that the development of total insurance sector positively and significantly affected economic growth; this result was confirmed in non-life insurance, while the results showed that life insurance negatively and significantly affected economic growth. Pei-Fen, et al., (2011) studied the effect of life insurance (using penetration and density measures) on economic growth; and what conditions affected the insurance-growth nexuses such as economic, financial, demographic, income level, and regional conditions. Two-step system GMM of the dynamic model was applied for 60 countries and the outcome of the study affirmed that the development of the life insurance market had a positive and significant effect on economic growth. Mojekwu, Agwuegbo and Olowokudje. (2011) examined the impact of insurance contributions on economic growth in Nigeria over a 27-year period, between 1981 and 2008 using a dynamic factor model. The result obtained shows a positive relationship between insurance contribution, measured the volume of premium and economic growth in Nigeria.

Han, et al., (2010) investigated the relationship between insurance development and economic growth on a dynamic panel data-set of 77 economies for the period 1994–2005. Using the GMM method, insurance density was used to measure the development of insurance; and the results concluded that insurance development was positively correlated with economic growth. The outcome show the overall insurance premium development (life and non-life insurance development) played a much more important role for developing countries which is positive and significant than they did for the developed countries.

Theoretical Framework

The study is underpinned by the model of growth that is endogenous as postulated by Pagano (1993).Since the proponents of endogenous theory posit that capital accumulation can increase the long run trend of economic growth and this accumulation is reliant on increasing the savings rate. Effective financial systems engender economic growth by spurring investments and technological innovations through savings. The endogenous theory provides a framework where outcome equals the product of labour and capital and growth is argued to originate from endogenous factors within the economy.

The AK model will be used to illustrate the potential efficacy of insurance penetration rate on growth emanating in the economy and as specified output that is accumulated is a function of capital that is accumulated in a function that is linear.

$Y_t = AK_t$ ……. (3.1)

Where Y_t is the output in total measured at time (t), A is the production factor and K_t is the capitalization in total measured at time (t).

There is an assumption that population is stationary, there is single product in the economy and it can only be utilized for investing or consuming. If used for investing, we consider the rate of impairment δ in illustrating investments in gross terms;

$K_{t-1} = (1-\delta)K_t$…….(3.2)

Where I_1 is the period t investment, K_{t-1} and K_t is the capitalization in period $t+1$ is well as t in their respective manner and δ is impairment rate.

Where we have zero interventions by government and an economy that is closed and two sector, market intersections requires that savings equal investments. Pagano (1993) assumes that a proportion of the resources $I-\theta$ are absorbed during the financial intermediation process and thus the proportion θ of total savings is accorded to investments. The savings-investments relationship can therefore be illustrated as;

$= I_t$…….(3.3)

We can now use equation (3.1) to introduce rate at which economy grows at period $t+1$ which is

$I_{t+1} = {}^{Y_{t+1}}/_{Y_{t-1}} = {}^{K_{t+1}}/_{K_{t-1}}$……. (3.4)

Making use of equation number (3.2) ad expunging the index of periods, the rate of growth in a state that is steady growth rate of output can now be illustrated as;

$= A\,{}^{I}/_{Y} - \delta = A\theta S - \delta$…… (3.5)

From equation (3.5) economic growth is dependent on productivity factor in total A, intermediation of financial systems efficiency index θ and the savings rate S. According to Liu (2011), financial institutions (in this case insurance firms) can enhance expansion of economy by raising the weight in savings converting to investments. Improving the efficiency of the financial system lowers $I-\theta$ and enhances g. Following Bakang (2015) in assuming that depreciation is constant and substituting variables, economic growth is dependent on insurance penetration rate and Y_1 can be expressed as;

$Y_1 = \beta_0 + \beta_1 {}^{S_t}/_{Y_{it}} + \varepsilon$…… (3.6)

Where Y_t is Nigerian GDP and ${}^{S_t}/_{Y_{it}}$ total insurance premiums as a percentage of its gross domestic product (GDP)that proxies insurance penetration rate$\left({}^{S_t}/_{Y_{it}} = IPR\right)$, β_0 is the intercept, β_1 is the coefficient that gives the impacts of insurance penetration rate on economic growth, while ε is error term that is constant. The generic model is equated as below;

$g_t = \beta_0 + \beta_1 INP_t + \beta_2 B_t + \varepsilon_t$……. (3.7)

Where B are the model's control variables.

In the above equation (3.7) insurance penetration rate will be estimated as total insurance premiums as a percentage of gross domestic product (GDP).

3. Methodology

The causal research designs were utilized in this study. All the insurance firms licensed by the CBN since 1980 till date constitutes the population of this study. However, due to different policy formulation like the 2010 recapitalization exercise by the regulatory bodies and dynamic macroeconomic environment has led to the closure and establishment of many insurance firms in Nigeria. Thus, this study takes a census sample of the population from 1980 to 2020; where population equal sample. The period is informed because it captures all the policy reform that took place in the insurance industry before and after the global financial crisis. This study used secondary annual time series data; sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin 2020. The variables considered include; Gross Domestic Product, Insurance Penetration Rate, total insurance premium, and Inflation rate for 40 years period (1980 to 2020). The use of secondary data was necessitated by the fact that such data are readily and

easily accessible from the website of the Central Bank of Nigeria (CBN).

3.1 Model Specification

In this study, the model of Okonkwo and Eche, (2019) was adopted with slight modification in terms of the control variable included in our model. The functional form of these models is given as:

$$GDP = f(INP, TPRI, INFR) \ldots\ldots\ldots\ldots\ldots (4.1)$$

The estimated version of the models with standard assumption is given as:

$$GDP = \alpha_1 + \gamma_1 INP_t + \gamma_2 TPRI_t + \gamma_3 INFR_t + \varepsilon_{it} \ldots\ldots (4.2)$$

Where:

GDP = Gross Domestic Product at Current Basic Prices

INP = Insurance Penetration Rate

TPRI = Total Premium Income

INF = Inflation

ε_{it} = Error term

α_0 = Intercept

γ_1 to γ_5 and $\beta_1 and\ \beta_5$= Parameter to be estimated

The *a priori* expectations of the study are of the form: γ_1>0,γ_2>0, γ_3<0.

From theory, it is expected that insurance penetration rate and total premium income positively influence economic growth while inflation rate is anticipated to be inversely linked with economic growth.

3.2Measurement of Variables

The variables adopted are defined in Table 3.1 below

Table 3.1: Operational Definitions of the Variables

S/N	Variable	Type of Variable	Measurement
1	Economic Growth	Dependent Variable	Gross Domestic Product at current price
2	Insurance Penetration Rate	Dependent Variable	Measure as total insurance premiums as a percentage of its gross domestic product (GDP)
3	Total Premium	Dependent Variable	The total amount of premium charged for an insurance cover
4	Inflation Rate	Independent Variable	Percentage change in consumer price index

Source: Authors Computation, (2021)

3.3 Methods of Data Analysis

In this paper, descriptive and inferential statistical techniques are used to perform the data estimation. The descriptive statistics include descriptive and correlation analysis. In terms of the inferential statistic, we employed the error correction model, multivariate regression technique and granger causality test/.

4. Presentation and Analysis of Results

4.1 Descriptive Statistics

The descriptive statistics are reported in Table 4. For the dependent variable, Average GDP during the period is 33020.06 billion. The median value is 7515.810 billion - an indication that GDP in some Nigeria far exceeded the minimum average. The maximum and minimum values are 140404.0 and 144.8300 billion respectively. This shows close disparity of GDP for the period of study. Thus, GDP has not moved rather diametrically in Nigeria over the period of the study.

The standard deviation value of 7.53E+10 however shows that instability in growth patterns in Nigeria during the period of study has not been severe. The skewness value is low, suggesting that growth series were centered on the mean value, while the kurtosis value is 3.02 - an indication of the absence of extreme values which may generate heteroskedastic patterns in the data. The kurtosis value of 3 shows evidence of platykurtosis. The J-B value is also low and passes the significance test at the 5 percent level, indicating that the density function of the series is not normally distributed.

The independent variables have similar characteristics with average values for insurance penetration rate, total premium and inflation rate are 112.9, 0.003 and 29.6. In terms of the standard deviation, insurance penetration rate, total premium and inflation rate with standard deviation values of 158.8, 0.001 and 12.5 have been generally unstable - an indication of pronounced variation over the years. The mean value of inflation of 29.6 - double digit inflation shows an environment of macroeconomic instability in Nigeria over the years. This is further buttressed by its standard deviation of 12.5 - which is an indication of inflation variability in the Nigeria during the period of study. Thus, Nigeria has not only been characterized by high but variable inflation over the years. The descriptive statistics however show that the explanatory variables exhibit high variability, leptokurtic and significant J-B values, as two of the exogenous variables (insurance penetration rate and total premium) variables are not normally distributed while one (inflation rate) is normally distributed.

Table 4.1: Descriptive Statistics Results

	GDP	INP	TPRI	INF
Mean	33020.06	112.9799	0.003170	29.63850
Median	7515.810	20.18900	0.003300	30.96500
Maximum	140404.0	501.4809	0.008300	58.92000
Minimum	144.8300	0.205100	0.000300	7.360000
Std. Dev.	43938.77	158.8168	0.001418	12.51935
Skewness	1.185824	1.279715	0.760668	0.072590
Kurtosis	3.029396	3.198642	5.613182	2.339543
Jarque-Bera	9.375965	10.98357	15.23864	0.762135
Probability	0.009205	0.004120	0.000491	0.683132
Sum	1320803.	4519.194	0.126800	1185.540
Sum Sq. Dev.	7.53E+10	983687.7	7.84E-05	6112.632
Observations	40	40	40	40

Source: Author's computations, (2021) using Eviews 9.0.

4.2 Correlation Analysis

Table 4.2 reports the initial patterns of association between pairs of variables in the model using the correlation analysis. In particular, we seek to establish the strength and direction of the relationships among the explanatory variables in the specified models.In the correlation results, a positive relationship is observed between GDP and all the explanatory variables (except inflation). This implies that apart from inflation, increases in insurance penetration rate and total premium tend to stimulate economic growth in Nigeria. An overall consideration of the result of the correlation coefficients indicates that multi-collinearity is not a considered problem in the empirical estimates since none of the correlation value exceeded 0.90 percent or had perfect correlation.

Table 4.2: Correlation Matrix Results

	GDP	INP	TPRI	INF
GDP	1.000000			
INP	0.696913	1.000000		

TPRI	0.383602	0.383191	1.000000	
INF	-0.134710	-0.165394	0.273664	1.000000

Source: Author's computations, (2021) using Eviews 9.0.

4.3 Unit Root Analysis

The first stage in analyzing time series data is to test the characteristics of the time series in the data, beginning with the test of stationarity to confirm the features of the time series of the data. The Augmented Dickey-Fuller Unit Root test is utilized in this study. Both tests' outcomes are shown in Table 4.3. Indeed, if the data possess mean and time-dependent variances then the series is said to be non-stationary and would not likely generate estimates that are efficient or consistent. Both the levels and differenced results of the tests are presented in Table 4.3. It can be seen that the coefficients of the test for one of the variable (TPRI) at levels is stationary. To ensure the stationarity of all the variables, there was the need to take the first difference of the variables. However, only two of the variables (TPRI and INF) were stationary at first difference. To ensure the stationarity of all the variables, there was the need to take the second difference of the variables. It can be seen that the coefficient of the test for all the variables in seond difference indicate that all the variables are stationary (given that the critical test values are higher than the test statistic). Thus, all the variables are all integrated of the same order two (that is, I[2]), therefore a co-integrated analysis can be performed for the variables. The ADF unit root results strongly show that the stationarity status of the variables are equal with each of the variables being I[2].

Table 4.3: ADF Unit Root Test Results

Variables	At levels	At First Difference	At Second Difference	Order of integration
GDP	0.3561	-2.6767	-8.3014*	I[2]
INP	-2.5073	-2.1434	-8.4530*	I[2]
TPRI	-4.3852*	-8.2188*	-10.4496*	I[2]
INF	-2.2070	-8.3832*	-3.8392**	I[2]

Note: *and ** denotes significance at 1% and 5% level respectively
Source: Author's computations, (2021) using E-views 9.0.

4.4 Panel Cointegration Test

Since we have confirmed that the time series in the analysis are characterized by unit-roots, and are integrated of order I(2), there is a need to investigate if they are cointegrated. The result from the Engel and Granger two stage cointegration tests is displayed in Table 4.4. Table 4.4 reveals that the residual is stationary given that the absolute ADF test statistics with a value of -3.65 is greater than the absolute critical ADF value of -3.56 at 5 per cent level of significance; therefore the stationarity of the residual is validated. Thus, there is strong evidence of co-integration according to of Engle - Granger two co-integration test result. Hence, we can conclude that the dependent (GDP) and the independent variables (INP, TPRI and INF) are co-integrated or that the variables are cointegrating at the 5% test levels. Thus, the cointegration tests results show that there is a strong long-run relationship among the variables in the study. The Ordinary Least Square (OLS) estimation can therefore be employed in the empirical analysis.

Table 4.4: Engle - Granger Co-integration Test Results

Lag	ADF Statistic	95% critical ADF value	Remark
8	-3.6572	-3.5628	Stationary

Source: Author's computations, (2021) using E-views 9.0.

4.5 Analysis of the Regression Estimates

The results of the estimated model that was specified in the previous section are presented and analyzed in this section. The goal is to demonstrate the appropriate aspects of the results estimated in terms of its overall importance and the relevance of the individual coefficients. The estimated equations are based on the error correction model and ordinary least squares estimations.

4.5.1 Short-Run Dynamic Model

The short-run dynamic adjustment of the dependent variable with respect to temporary changes in the independent variables can be analysed within the context of an error correction model (ECM). The error correction model is the avenue through which the short-run dynamic model is linked with the long-run counterpart. Specifically, the error correction term shows the speed of adjustment of short-run disequilibrium to long-run equilibrium. The result of the short run dynamic model as reflected by the parsimonious error correction model is presented in Table 4.5.

In Table 4.5, the results of the short-run dynamic estimates of the relationships with respect to economic growth (GDP) and the independent variables (INP, TPRI and INF) are reported. The Parsimonious short-run error correction for equation one is presented in table 4.5. The result showed that the parsimonious short-run model has a good fit and a highexplanatory power. This is shown by the high value of the R-Squared of 0.7398 (73 percent) and the Adjusted R-Squared of 0.6979 (69 percent). This means that about 69 percent of variations in economic growth (GDP) havebeen explained by changes in insurance penetration, total insurance premium and inflation rate. The F-statistic, which is a test of explanatory power of the model is 17.63 with a corresponding probability value of 0.0000, is statistically significant at 1% level. In other words, it showed that the independent variables have joint effect on the dependent variable. Therefore, this implies that the three explanatory variables (INP, TPRI and INF) have joint significant effect on economic growth in Nigeria. Result of the test further revealed that the Durbin Watson showed 1.735 which is within the acceptable region of no auto regression. Thefactor of the error correction model was correctly signed (negative) and statistically significant as expected theoretically. The coefficient of the error correction factor showed that about 13 percent of the short –run disequilibrium has been corrected each year. This is rather a slow adjusted speed level.

Analysis of the short-run estimates further showed that changes in previous period value (lagged two - DGDP(-2)) of economic growth has a positive impact on the current period economic growth in Nigeria by 0.36 units ceteris paribus, this conform with a priori expectation. This means that a unit increase in (lagged two) economic growth increases current economic growthin Nigeria by 0.36 units.The result also showed that changes in insurance penetration rate have positive significant effect on economic growth in Nigeria in the short-run. This means that a unit increases in insurance penetration rate in Nigeria will increase economic growth by 146.4 units. Finally, contrary to a priori expectation, the result showed that the inflation rate have a positive but insignificant effect on economic growth in Nigeria in the short-run by 46.91 units.

Table 4.5: Parsimonious Error Correction Model (ECM) result
Dependent Variable: DGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	531.6264	519.5534	1.023237	0.3141
DGDP(-2)	0.367553	0.140521	2.615649	0.0136
DINP	146.4414	38.80267	3.774003	0.0007
DTPRI	-111698.8	278432.7	-0.401170	0.6910
DINF	46.91309	43.93914	1.067684	0.2939

ECM(-1)	-0.134676	0.131590	-2.023449	0.0140

R-squared	0.739886	Mean dependent var	3790.298
Adjusted R-squared	0.697932	S.D. dependent var	3972.197
S.E. of regression	2183.149	Akaike info criterion	18.36232
Sum squared resid	1.48E+08	Schwarz criterion	18.62355
Log likelihood	-333.7029	Hannan-Quinn criter.	18.45441
F-statistic	17.63567	Durbin-Watson stat	1.735777
Prob(F-statistic)	0.000000		

Note: * denotes significance at 1% level respectively
Source: Author's computations, (2021) using E-views 9.0.

4.5.2 Long Run Analysis

The long run relationship between the dependent and independent variables is estimated using Ordinary Least square (OLS) technique. The result is presented in Tables 4.6.Table 4.6 reports the results of the long-run estimates of the relationships with respect to economic growth (GDP) and the independent variables (INP, TPRI and INF).Table 4.6 contained the result of equation 1. In Table4.5, the OLS result shows that the serial correlation in the OLS result was corrected using the Concrane-Ocult Autoregressive (AR) (1). Convergence was achieved after 11 iterations with 39 observation included after adjustment. The R^2 of 0.9972 indicates that about 99% of total variation in the dependent variable (GDP) is accounted for by the explanatory variables (i.e., INP, TPRI and INF). This result remains robust even after adjusting for the degrees of freedom (df) as indicated by the value of adjusted R^2, which is 0.9968 (i.e. $\approx$ 99%). Thus, the regression has a good fit.The F-statistic, which is a test of explanatory power of the model is 3031.13 with the corresponding probability value of 0.0000, is statistically significant at 1% level. Therefore, this implies that the three explanatory variables (i.e., INP, TPRI and INF) have joint significant effect on the economic growth in Nigeria using Gross Domestic Productas a proxy.Result of the test further revealed that the Durbin Watson showed 1.835 which is within the acceptable region of no autocorrelation.

The coefficient of insurance penetration (INP) is found to be positive and statistically significant at 1% with t-statistic of 35.80613 and its corresponding probability value of 0.0000. Total premium (TPRI) shares a negative and none statistically significant relationship with economic growth (GDP) as the coefficient is negative (-118594.5) and the p-value is greater than 5% (0.7348). Inflation rate (INF) share a positive but not statistically significant relationship with economic growth (GDP) as the coefficient is positive (78.35) and the p-value is greater than 5% (0.1291).

Table 4.6: Ordinary Least square (OLS) Long-Run Results
Dependent Variable: GDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	450.7526	2803.204	0.160799	0.8732
INP	273.1119	7.627517	35.80613	0.0000
TPRI	-118594.5	347198.2	-0.341576	0.7348
INF	78.35582	50.37366	1.555492	0.1291
AR(1)	0.706863	0.129185	5.471688	0.0000

R-squared	0.997204	Mean dependent var	33863.02
Adjusted R-squared	0.996875	S.D. dependent var	44184.27
S.E. of regression	2470.124	Akaike info criterion	18.58113
Sum squared resid	2.07E+08	Schwarz criterion	18.79441
Log likelihood	-357.3321	Hannan-Quinn criter.	18.65766
F-statistic	3031.136	Durbin-Watson stat	1.835609
Prob(F-statistic)	0.000000		

Inverted AR Roots	.71

Note: ** denotes significance at 1% level respectively*
Source: Author's computations, (2021) using E-views 9.0.

4.5.3 Granger Causality Test

In order to determine the direction of causality which prevails between insurance penetration and economic growth, we conducted a Granger Causality analysis to enable us detect whether the independent variable(s) granger causes economic growth and vice versa. The result from the Granger causality analysis is presented in the table 4.7.The Granger causality results are presented in table 4.7. Here, the p-value is used to decide the level of significant. For granger causality to have been established between the pairs of variables, p-value must be less than the choosing level of significant. Using 5% as the level of significance, we can infer that none of the variables have a bi-directional relationship in the model but there is a unidirectional causality from inflation rate to total premium (TPRI) when value traded (VLT).

Table 4.7: Result of the Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
INP does not Granger Cause GDP	38	1.19684	0.3149
GDP does not Granger Cause INP		16.1131	1.E-05
TPRI does not Granger Cause GDP	38	0.52091	0.5988
GDP does not Granger Cause TPRI		1.14983	0.3291
INF does not Granger Cause GDP	38	0.66687	0.5201
GDP does not Granger Cause INF		0.84416	0.4390
TPRI does not Granger Cause INP	38	0.31693	0.7306
INP does not Granger Cause TPRI		0.97400	0.3882
INF does not Granger Cause INP	38	1.10226	0.3440
INP does not Granger Cause INF		0.79412	0.4604
INF does not Granger Cause TPRI	38	8.28338	0.0012
TPRI does not Granger Cause INF		2.53970	0.0942

Source: Author's computations, (2021) using E-views 9.0.

4.6 Discussion of Findings

The empirical results provide evidence that insurance penetration is critical to economic growth in Nigeria. The implication of this is that there has been an upward movement and advancement of insurance penetration rate in Nigeria. This finding is in consonance with Yinusa, Ilo and Zouhair, (2014), Prehan et al., (2016), Safitiri (2019) and Okonkwo and Eche (2019) who reported a positive and significant relationship between insurance premium and economic growth in Nigeria. Also, insurance penetration rate was found not to granger cause economic growth and vice versa. Apparently, the upward movements in insurance penetration have not significantly help to improve economic growth. This finding is not in consonance with Alhassan & Fiador (2014) and Dash et al., (2018) who established causality between insurance penetration rate and economic growth.

5. Conclusion and Recommendations

The critical importance of insurance sector in economic growth of any nation cannot be over-emphasized.Hence,this study examines the short-run and long-run effects of insurance penetration rate on economic growth in Nigeria. The analysis period was for the years 1980 to 2020. It is argued in the study that insurance penetration promotes economic growth in Nigeria. Furthermore, the study also tests if there is any causal link between insurance penetration rate and economic growth. Descriptive statistics, correlation analysis, unit root tests, cointegration, error correction model, ordinary least squares and granger causality testwere employed in the analysis. The results obtained in the empirical analysis reveal that insurance penetration rate promote economic growth in Nigeria in both the short-run and the long-run. However, no causal link was found between insurance penetration rate and economic growth in Nigeria.

In line with the empirical findings of this paper, the following recommendation is advanced for policy action:

(i) The current reforms in the insurance sector should be intensified so as to boost the development of these segments of the financial system and by that increase their role in promoting economic growth.

(ii) The regulation and supervision of the insurance sector should be strengthened as it plays a great role in determining both its stability and the extent of the services provided.

(iii) Policies should be geared towards improving the low-insurance culture in Nigeria and this can be achieved through the creation of awareness and education on the benefits of insurance policy.

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