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Insurance Economic Growth Nexus: Evidence from a Small Open Economy

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Abstract: This study investigated the relationship between insurance and economic growth in Nigeria for the period 1998-2020. This study employed autoregressive distributed lag model (ARDL) estimation techniques in analyzing the data. Real Gross domestic product (RGDP) was used as proxy for economic growth while gross insurance premium (GIP), life insurance premium (LIP), non-life insurance premium (NLIP), human capital (HCAP), physical capital (PCAP), total insurance investment (TINV) and trade openness (OPEN) were used as proxies for insurance sector predictive variables. The result of the ARDL estimate revealed that the first lag of real gross domestic product (RGDP), non-life insurance premium (NLIP) and human capital (HCAP) were positively and statistically significant in explaining the variation in economic growth in Nigeria both in the shortrun and longrun. It is therefore recommended that Nigeria as a nation in seeking the welfare of its citizens must as a matter of priority, need to strengthen, build and develop a stable and vibrant insurance industry to foster all round economic growth and development. More, policies and programmes aimed at improving the quality of human capital such education, health entrepreneurial and skill acquisition should be pursued vigorously in Nigeria.

Keywords: Insurance; Economic Growth; Insurance Premium; life Insurance; Non-Life Insurance

JEL Classification: F41; F43

1. Introduction

Small open, growing, and transitional economies like Nigeria must have reliable insurance in order to expand, develop, and give risk coverage to its industrious citizens. With a certain amount of tempered risk of volatility and/or failure, insurance enables both large and small enterprises to operate, promoting stability. In contrast to other kinds of financial intermediaries, it performs a number of important

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economic roles. These tasks include, but are not limited to, the building up of financial resources and the contribution to the expansion of the national economy through preserving the continuity of the production process. As a result, interest in research and public policy related to the role of the insurance sector in the process of economic growth has increased recently. A rising corpus of research in the literature on growth has highlighted the fact that the shift to greater and sustained economic growth is typically preceded by the creation of a contemporary and well-developed financial system, also known as financial diffusion. (Andersson et al., 2010; Billio et al., 2012; Pradhan et al., 2016, Uddin et al., 2015; Durusu- Ciftci et al., 2017; Guruand Yadav, 2019 and Sulemana & Dramani, 2020) All of these factors are essential for fostering economic development.

In addition to the stock market and banks, the United Nations Conference on Trade and Development noted in 1964 that the insurance sub-sector also contributes significantly to the encouragement of economic growth (Tong, 2008; Forcarelli, 2017; Zou, 2017; Hou & Cheng, 2017).By facilitating more effective risk management of various risks and by facilitating the mobilization of domestic funds, the insurance sector supports economic growth both as a financial intermediary and as a provider of risk transfer and indemnification (Srijana & Fatta, 2017; Ward & Zubruegg, 2000). While indemnification principles primarily focus on compensating the insured for the actual damage, insurance acts as a risk mitigation tool to safeguard against unforeseen losses. Additionally, in its capacity as financial intermediaries, it accumulates funds and directs savings toward societal advancement, which eventually promotes economic growth. According to Srijana and Fatta (2017), this demonstrates how insurance may be a source of capital formation for a nation's development and progress.

By reducing losses and facilitating the assessment and management of non-diversifiable risk, the indemnification and risk pooling properties of insurance facilitate business transactions and the provision of credit (Asongu & Odhiambo, 2019). Insurance provisions typically offer for small, periodic payments in exchange for protection against hazy but potentially catastrophic damages. This effect of income smoothing, among other things, aids in preventing excessive and expensive bankruptcies and facilitates lending to firms. Fundamentally, the availability of insurance allows risk-averse people and business owners to engage in higher risk, higher reward activities than they would otherwise (Akinlo & Apanisile 2014). As a result, productivity and growth are increased.

As was previously said, the task of insurance in an economy includes raising domestic capital, controlling risk, reducing losses, and other activities that promote growth in the economy. The amount of investment will undoubtedly increase in an economy if these tasks are successfully carried out. More importantly, insurance generates funds by collecting premiums. Stocks and government securities are

purchased with these funds. Each country's economy develops rapidly as a result of this process. By enabling different risks to be managed more effectively, encouraging the accumulation of new capital, and assembling domestic savings into profitable investments, the insurance market, both as a financial intermediary and as a beneficiary of risk transfer and indemnification, may inspire economic growth (Olayungbo & Akinlo, 2016).

Given the significance of the insurance sector in facilitating a wide range of economic transactions, it is surprising that rigorous and in-depth research of this kind is not more prevalent among research topics. The majority of empirical works on the financial sector have concentrated more on the banking sector or stock market, and little research has been done to understand the relationship between insurance and economic growth (Ahmed & Bashir, 2016; Bayar & Gavriletea, 2018). Researchers' attention has been redirected toward a better understanding of the insurance-economic growth nexus as a result of the growing importance of the insurance industry to the overall global financial sector in both developed and developing nations. Against this background, this study aims to contribute to the growing empirical literature on the insurance-economic growth nexus in Nigeria.

2. Literature Review

In light of the liberalization of financial systems and the globalization of financial markets, the insurance sector has become more significant economically on a worldwide scale (Outreville, 2014). A remarkable rise in insurance business has had a demonstrably positive impact on the economic development of different countries worldwide (Outreville, 2011, 2013). Total global insurance premiums increased from $467 billion to $3,426 billion and $3,732 billion in 1980, 2005, and 2006, respectively. This corresponds to about 58% and 42% life and non-life insurance, according to Avram, Nguyen, and Skully (2010) and SwissRe (2016). Additionally, in 2009, the capacity for insurance premiums increased to $4.06 trillion, which is equivalent to 7% of the world's gross domestic product. The amount then rose to $4.3 trillion and $4.57 trillion in 2010 and 2011 and $4.61 trillion $4.64 trillion and $4.78 trillion in 2012, 2013 and 2014 respectively (Swiss Re, 2016). In the years that followed, the volume of global insurance premiums accelerated and reached $5.19 trillion in 2018. Sector premiums increased to $6.3 trillion in 2019 (a 2.9% rise). Non-life premium increased by 3.5% in 2019, which was significantly more than the growth rate from 2009 to 2018. Aside from that, life insurance premiums increased by 2.2% in 2019 rather than 1.5% from 2009 to 2018 (Swiss Re, 2020).

The insurance market in Nigeria expanded at a rate of nearly 19.2 in 2019, a five-point increase from the previous year. More than N508 billion was generated in 2019 compared to N426 billion in 2018. The non-life sector made up 55.4% of the total

gross premium income made during the period, though at a slower rate of 14.6% than in the previous period (57.6%), while the life sector made up about 44.6% of the total, with a record-breaking growth rate of 25.5%. Individual life insurance and the expanding appeal of annuity business are two factors driving the expansion of the life sector. The growth of the Life sector from a share of 31.4% in 2015 to its present share status in 2019 shows that the sector's relative importance in the market is still increasing. The claims section typically declines by 11% in contrast to rising premium revenue, with N225.2 billion reported as opposed to N252.2 billion in the prior period, in a clear reflection of the market's expanding underwriting expertise. This is a positive course that could lead to the critically required surplus buildup for industrial expansion and investor attractiveness.

The Non-Life insurance business, which provides a part of 45.1% compared to its share of 47.77% in 2018, led the reduction in claims reported (-16%) while the Life insurance business, which contributes a portion of 54.9%, experienced a fall of 6% compared to its prior position. During the year, a similar pattern was seen in net claims paid, where the life sector led the way with a 56.7% contribution to net claims paid compared to a 43.3% share for the non-life business. This is a reflection of how the market functions in industrialized countries, where the life segment propels the expansion of the insurance industry. Additionally, it benefits Nigeria's economy, which urgently needs the long-term investable capital given by the life insurance industry. The sector's asset size maintained a positive trend in the direction of expansion as it stood at N1.5 trillion, representing a gain of 14.7% compared to its previous position of N1.3 trillion, year over year. The ongoing recapitalization initiative of the Commission, among other things, is anticipated to produce a significant increase in both capital and essential available assets that can adequately support the security, expansion, and development of the continent's largest economy as well as guarantee the insurance sector's rightful place in the Nigerian economy (NAICOM, 2020).

Numerous researchers have looked into and explored the relationship between insurance and economic growth, including Avram et al. (2010), Mojekwu et al. (2015), Cristea et al. (2014), Alhassan and Fiador (2014), Olayungbo and Akinlo (2016), Din et al. (2017), and Peleckien et al. (2019), who came to the same conclusion. However, some research focused primarily on either the short run or the long run causal relationships, while others looked at both long and short run causality. By fostering investment and innovation in an environment with considerable certainty, insurance promotes financial soundness, mobilizes savings, makes it easier for businesses to access capital, and encourages prudent risk management, all of which contribute to sustainable and responsible development (CEA; Insurers of Europe, 2006). An effective financial system is essential for long-term sustainable economic growth and an open, vibrant economy. Any nation's financial system is crucial to the growth and development of its economy. The

effectiveness with which the financial sector can raise funds from the surplus sector to fill the deficit sector of the economy is what determines its level of development (Aderibigbe, 2004). This facilitates business transactions and economic growth. As they invest in corporate securities and other collective investment schemes and generate enough income to meet their obligations in the form of promised insurance benefits, insurance companies are regarded as an important component of institutional investments in any nation (Srijana & Fatta, 2017).

3. Theoretical Framework and Research Methods

In order to investigate the insurance economic growth nexus in Nigeria, this study adopted the endogenous growth model with a modified Cobb-Douglass production function which assumes a constant return to scale. This approach has been adopted by several authors including Eller et al. (2005), Fink et al. (2005) and Webb et al. (2002). This study used secondary time series data sourced from Central Bank of Nigeria (CBN), Statistical Bulletin (2016 and 2022), National Insurance Commission (NAICOM) Market Statistics (2021), and World Development Indicators (2022) covering a period of 23 years (1998-2020), which is considered long enough for the researcher to draw meaningful conclusions.

3.1. Model Specification and Estimation

To begin with, we specify the transformed and modified Cobb-Douglass production function with the incorporation of insurance by differentiating and taking natural logarithm expressed as shown below:

$$\Delta lnY^{*} = \Delta \ln(A^{*}) + \alpha_1 \Delta \ln(\text{GIP}) + \alpha_2 \Delta \ln(\text{NLIP}) + \alpha_3 \Delta \ln\left(PCAP_f^{*}\right) + \alpha_4 \Delta \ln(HCAP^{*}) + \alpha_5 \Delta(LIP) + \alpha_6 \Delta \ln(TINV) + \alpha_7 \Delta \ln(OPEN) + \varepsilon \quad (3.1)$$

Where A represents technology, Y^{*} represents economic growth GIP represents Gross insurance premium, LIP represents life insurance premium, NLIP represents non-life insurance premium, $PCAP_f^{*}$ represents physical capital accumulation which is proxy by gross fixed capital formation, $HCAP^{*}$ represents human capital which is measured by government expenditure on education, OPEN is trade openness, TINV represents total insurance investment and $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6 \; and \; \alpha_7$ are coefficients of premium, physical capital accumulation, human capital, total insurance investment and openness respectively while ε is the disturbance term.

The insurance-growth nexus was examined using the Autoregressive Distributed Lag (ARDL) Model in this study. The Wald or F-statistic in a generalized Dickey-Fuller type regression, which is used to verify the significance of the variables under consideration in a conditional unconstrained equilibrium correction model (UECM),

is the fundamental statistic underlying the technique. The ARDL strategy has a number of benefits over more conventional methods like the ones stated above. Bounds test approach basically consists of two parts. The first stage is to look into if there is a long-term relationship between the variables that are included. The ARDL framework for this study is formulated as follows:

$$\Delta \ln RGDP = \alpha_0 + \sum_{t=1}^{a} \sigma_i \; lnRGDP_{t-1} + \sum_{t=0}^{b} \alpha_i \; lnGIP_{t-1} + \sum_{t=0}^{c} \emptyset_i \; lnLIP_{t-1} + \sum_{t=0}^{d} \partial_i \; lnNLIP_{t-1} + \sum_{t=0}^{e} \lambda_i \; lnHCAP_{t-1} + \sum_{t=0}^{f} \pi_i \; lnPCAP_{t-1} + \sum_{t=0}^{g} \beta_i \; lnTINV_{t-1} + \sum_{t=0}^{h} \omega_i \; lnOPEN_{t-1}$$

$$+ \pi_1 RDGP_{2t-1} + \pi_2 GIP_{t-1} + \pi_3 LIP_{t-1} + \pi_4 NLIP_{t-1} + \pi_5 HCAP_{t-1} + \pi_6 PCAP_{t-1} + \pi_7 TINV_{t-1} + \pi_8 OPEN_{t-1} \; \varepsilon_t \quad (3.2)$$

Where α is the drift component, and ε is the white noise. Here the π_i denotes the long-run multipliers while the terms with summation sings are used to model the short-run dynamic structure. On the basis of the Akaike Information Criterion (AIC), the appropriate lag length is chosen. The F-test or Wald statistics serve as the foundation for the test process. This is accomplished, as demonstrated by Narayan & Smyth (2004), by excluding the lagged level variables from the aforementioned equation. The test for the null hypothesis is therefore necessary to determine whether there is no level relationship between the economic growth measured by RGDP and insurance. (H_0: $\pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = \pi_6 = \pi_7 = \pi_8 = 0$) against the alternative (H_1: $\pi_1 \neq \pi_2 \neq \pi_3 \neq \pi_4 \neq \pi_5 \neq \pi_6 \neq \pi_7 \neq \pi_8 \neq 0$). The test which normalizes on *RGDP* is denoted by F_C *(RGDP / GIP, LIP, NLIP, HCAP, PCAP, TINV, OPEN).*

Following that, the calculated F-statistic is contrasted with two sets of critical values offered by Pesaran et al. (2001). Both sets make the assumption that all variables are either I(0) or I(1). The null hypothesis that there is no cointegration will be rejected if the calculated F-statistic is greater than the upper critical value. The null hypothesis of no cointegration cannot be ruled out if it is below the lower bound. The test, meanwhile, is inconclusive because it falls within the boundaries.

The second stage comprises the estimation of the conditional ARDL (*a, b, c, d, e, f, g, h*) long-run model after cointegration has been established.

$$\Delta \ln RGDP = \alpha_0 + \sum_{t=1}^{a} \sigma_i \; lnRGDP_{t-1} + \sum_{t=0}^{b} \alpha_i \; lnGIP_{t-1} + \sum_{t=0}^{c} \emptyset_i \; lnLIP_{t-1} + \sum_{t=0}^{d} \partial_i \; lnNLIP_{t-1} + \sum_{t=0}^{e} \lambda_i \; lnHCAP_{t-1} + \sum_{t=0}^{f} \pi_i \; lnPCAP_{t-1} + \sum_{t=0}^{g} \beta_i \; lnTINV_{t-1} + \sum_{t=0}^{h} \omega_i \; lnOPEN_{t-1} + \varepsilon_t \quad (3.3)$$

Where all variables are defined as previously, choosing the best lag orders for the ARDL (a, b, c, d, e, f, g, h) is required for the estimation of equations (3.3). The following error correction model can be estimated to provide the short-run dynamic parameters of the model associated with the long-run estimates:

$$\Delta lnRGDP_t = \alpha_0 + \sum_{j=1}^{j} \alpha_1 \Delta lnLIP_{t-j} + \sum_{j=1}^{j} \alpha_2 \Delta lnNLIP_{t-j} + \sum_{j=1}^{j} \alpha_3 \Delta lnPCAP_{t-j} + \sum_{j=1}^{j} \alpha_4 \Delta lnHCAP_{t-j} + \sum_{j}^{j} \alpha_5 \Delta lnGIP_{t-j} + \sum_{j=1}^{j} \alpha_6 \Delta lnTINV_{t-j} + \sum_{j=1}^{j} \alpha_7 \Delta lnOPEN_{t-j} + \emptyset_1 ECT_{t-1} + \varepsilon_{4it} \quad (3.4)$$

Where Δ is the first difference operator, *ect* is the error correction term (representing the residual of the co-integrating equation) and η represents its coefficient. The error correction

3.2. Nature Source and Description of Data

Table 3.1. Variable Description

S/N	Variable	Measurement
I	Real Gross Domestic Product	RGDP is calculated by dividing nominal GDP over a GDP deflator
ii	Gross insurance premium	GIP is measured by total sum of premium income from life and non-life insurance business.
iii	Life insurance premium	LIP is measured by total sum of premium income from life insurance business.
iv	Non-life insurance premium	NLIP is measured by total sum of premium income from non-life insurance business.
v	Total insurance investment	Insurance investment is the total amount of money invested by the insurance company in various assets. The amount invested is usually derived from the proportion of the total premium.
vi	Physical Capital Accumulation	PCAP is measured by gross capital formation (Constant 2015 US$).
vii	Human Capital	HCAP will be measured by government expenditure on education.
viii.	Trade openness	An empirical measure of trade openness is defined as the ratio of total trade (exports plus imports) to GDP

4. Presentation and Discussion of Results

The results of the Autoregressive Distributed-Lag (ARDL) estimations and other test statistics are examined in this section. The regression generally runs over the period of 1998-2020.

4.1. Unit Root Result:

The bounds test is based on the assumption that the variables are either *I*(0) or *I*(I). However, the implementation of unit root tests in the ARDL procedure is still necessary to ensure that none of the variables is *I*(2) or beyond. In view of this, we employed the conventional Augmented Dickey Fuller (ADF) test (Dickey and Fuller, 1974) and Phillips Perron (PP) test. The statistics displayed in Table 4.3 indicate that the variables Real Gross Domestic Product (RGDP), Life Insurance Premium (LIP), Total Insurance Investment (TINV) and Trade Openness were stationary at levels that is, they are integrated of order one I*(0)*, while the variables Gross Insurance Premium (GIP), Non-Life Insurance Premium (NLIP), Human Capital (HCAP) and Physical Capital (PCAP) became stationary at first difference. This implies that the null hypothesis of non-stationarity for RGDP, LIP, TINR and Openness is thus rejected while the null hypothesis of non-stationarity for GIP, NLIP, HCAP and PCAP cannot be rejected. Most importantly, the results show that we can confidently apply the ARDL methodology to our model.

Table 4.1. Summary of Unit Root Test Results

Variables	ADF t-statistics	PP t-statistics	Conclusion
DP	-3.419415**	-1.944198	*I(0)*
GIP	-3.069043**	-3.069043**	*I(1)*
LIP	4.117217***	4.750605***	*I(0)*
NLIP	3.952440***	4.223990***	*I(1)*
HCAP	-4.165871***	4.165871***	*I(1)*
PCAP	8.274365***	-11.20490***	*I(1)*
TINV	6.631848***	6.141326***	*I(0)*
OPEN	2.743693*	-2.791716*	*I(0)*

****, **, * indicates statistical significance at 1%, 5% and 10% respectively.*
Source: Author's computation (using Eviews)

4.2. Bounds Cointegration Test Result

Table 4.1 provides the results of the ARDL test for the existence of long-run relationships in our model. Since the data used in this investigation are annual, we adhere to Narayan & Smyth's (2005) practice and set the maximum lags in the ARDL models to 2 ($_{imax}$ = 2). On the basis of minimizing the Akaike Information Criterion, the estimated models shown in Table 4.1 were generated. The results of the boundaries F-test for cointegration test show that there is a long-term relationship

between the economic, insurance, and other included variables. The calculated F statistic, *(FC)* = 7.645, above the upper bound of the 5% critical values, which leads to the rejection of the null hypothesis that there is no long-run association between the variables under study. Furthermore, since the coefficient of *ECM (-1)* is statistically significant at the 1% significance level and has the right sign, it can be deduced that there exists a strong cointegration relationship among variables in the model, in line with Kremers et al. (1992), who claimed that the significant lagged error-correction term is a more effective way of establishing cointegration. This evidence rules out the possibility of estimated relationship being spurious.

Table 4.2. Bounds Test Results for Cointegration Relationship

Critical bounds value of the *F-statistics*						
	1% level		*5% level*		*10% level*	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
7^{PS}	2.96	4.26	2.32	3.5	2.03	3.13
Calculated F-statistics						
F_C(C/RGDP, GIP, LIP, NLIP, HCAP, PCAP, TINV, OPEN) = 7.645170						

Note: The lag structure was selected based on the Schwartz Criterion. K is the number of regressors. PS Pesaran, et al (2001:300), Table CI(iii), Case III: Unrestricted intercept and no trend.; Source: Author's computation (using Eviews)

4.3. ARDL Regression Result

4.3.1. Estimated Long-run Result

Table 4.5 displays the estimated long-run relationship between economic growth, insurance and other determinants of economic growth. From the result, the long-run coefficient of the first lag of real gross domestic product (RGDP), non-life insurance premium (NLIP), human capital (HCAP) and total insurance investment (TINV) are statistically significant in explaining the variation in real gross domestic product (RGDP) at their individual level. The long-run elasticity of RGDP with respect to past level of RGDP is 0.69% and significant at 1% level of significance. This implies that in the long run, 0.69% increase in per capita real gross domestic product is associated with 1% increase in the previous level of real gross domestic product. Non-life insurance premium (NLIP) with elasticity of 0.16% was found to be positively related to economic growth in accordance to theoretical expectation and also significant at 1% level of significance. The finding of this result is in line with the findings of Srijana and Fatta (2017); Fashagba 2018; Ying, Linsen and Wenjie (2017) and Kjosevski (2011) who found a positive relationship between non-life insurance premium and economic growth. Human capital (HCAP) was also significant at 10% level and was positively signed in accordance to theoretical expectation. This is consistent with the findings of Akinlo, and Apanisile (2104) who found a positive significant relationship between human capital and economic

development in Sub-Saharan Africa. With an elasticity of 0.03%, a 1% increase in government expenditure on education (human capital) will lead to an increase in economic growth by 0.03%. This is probably due to the role of human capital in improving the quality of life and ensuring social and economic progress and also helping the developing country to absorb modern technology and to develop the capacity for self-sustaining growth and development. The correlation matrix also shows that there is a positive relationship between non-life insurance and human capital, with RGDP. This finding is in line with the findings of Akinlo and Apanisile (2014) who found a positive significant relationship between insurance and human capital with economic growth in Sub-Saharan Africa. Srijana and Bahador (2017) also found positive significant relation between economic growth and non-insurance premium in Nepal.

Total insurance investment (TINV) significantly influences economic growth at 1% level but was however negatively related to economic growth contrary to theoretical expectation and also contrary to the findings of Lyndon (2019), Omoke (2012) who found a positive significant relationship between Total insurance investment and economic growth. The coefficient of gross insurance premium was not statistically significant at level in explaining economic growth but was only significant at 10% level of significance in its first lag. This finding is in agreement with the works of Lyndon (2019) who found a positive significant relationship between total insurance premium and economic growth. Trade openness, life insurance (LIP) and physical capital (PCAP) were not statistically significant in explaining economic growth in the longrun within the study period. The life insurance variable was rightly signed according to theoretical expectation. However, the insignificant relationship between life insurance and economic growth in this study might not be unconnected to the fact that life insurance has not been well developed in the country and according Fashagba (2018), Din, Abu-Bakar and Regupathi (2017), life insurance significantly affects economic growth for high income countries.

The coefficient of determination (*R*-square) of 0.9984% shows that the model provides a good fit as 99.84% variations in economic growth in Nigeria within the study period is attributed to the included variables. The result also has an *F*-statistics of 953.4428 was statistically significant at 1% and further indicates that the explanatory variables are jointly significant in explaining economic growth in Nigeria. The Durbin-Watson statistic of 2.29 shows the absence of autocorrelation.

Table 4.3. Estimated long-run Coefficients for the ARDL Model

Autoregressive Distributed Lag Estimates
ARDL (1,1,0,0,0,0,0,0) selected based on Akaike Information Criterion (AIC)

Dependent variable is RGDP
Sample (adjusted): estimation from 1998 to 2020
23 observations after adjustments estimation from 1998 to 2020

Variable	Coefficient	Standard. Error	t-Statistic	Prob.*
C	0.267190	1.280549	0.028653	0.838
LNRGDP (-1)	0.690586	0.094587	7.301058	0.0000
LNGIP	0.004713	0.004145	1.136844	0.2761
LNGIP(-1)	-0.007556	0.004256	-1.775237	0.0993
LNLIP	0.009801	0.015530	0.631071	0.5389
LNNLIP	0.164563	0.026761	6.149303	0.0000
LNHCAP	0.033456	0.017688	1.891384	0.0811
LNPCAP	0.017011	0.052639	0.323163	0.7517
LNTINV	-0.060462	0.020210	-2.991684	0.0104
LNOPEN	-0.040791	0.027332	-1.492396	0.1595
R-squared	0.998487	Adjusted R-squared		0.99487
F-statistics	953.443	Durbin-Watson Stat		2.292483
Prob(F-statistic)	0.000000			

Source: Author's computation (using Eviews)

4.3.2. Error Correction Model

The short-run results are presented in Table 4.6. The coefficient of the loading factor (error correction term) is correctly signed and highly statistically significant at 1% level of significance. It implies that an error correction mechanism exists so that the deviation from long-run equilibrium has a significant effect on economic growth in Nigeria. The value of -1.46 implies that about 146% of the disequilibria in economic growth (RGDP) of the previous year's shock adjust back to the long-run equilibrium in the current period. Furthermore, following Kremers et al. (1992) who argued that the significant lagged error-correction term is a more efficient way of establishing cointegration, it can be concluded that there exist a strong cointegration relationship among variables in the model because of the coefficient of *ECM (-1).*

The overall result in the short-run is consistent with our findings in the long-run. The short-run coefficients of the first lag of real gross domestic product (RGDP) has more predictive power in the shortrun as 1% increase in the past level RGDP will lead to 0.8% increase in economic growth. Non-life insurance premium (NLIP), and human capital (HCAP) are also statistically significant in explaining the variation in real gross domestic product (RGDP) at their individual level. A 1% increase in NLIP and HCAP will increase economic growth by 0.13% and 0.03% respectively. Life

insurance premium, physical capital and total insurance investment were not statistically significant in explaining economic growth in the shortrun. The coefficient of Gross insurance premium and trade openness is negative and statistically significant at 1% level of significance. It shows that 1% increase in trade openness will lead to -0.007% and -0.04% reduction in economic growth (RGDP). This may be due to the fact that Nigeria, despite having been involved in international trade for a long time has not been able to translate the gains from trade into meaningful development.

The short-run model also passes through a series of standard diagnostic tests. The Durbin-Watson statistic of 1.97 shows a fair absence of autocorrelation in model. The coefficient of determination (*R*-square) of 0.9318% shows that the model provides a good fit as 93.18% variations in economic growth is explained by the included variables in the short-run. The *F*-statistics of 15.04 is statistically significant at 1% and further indicates that the explanatory variables are jointly significant in explaining RGDP in Nigeria.

Table 4.4. Error Correction Representative for the Selected ARDL Model

Autoregressive Distributed Lag Estimates
ARDL (1,1,0,0,0,0,0,0) selected based on Akaike Information Criterion (AIC)

Dependent variable is ΔRGDP
Sample (adjusted): estimation from 2000 to 2020
23 observations after adjustments estimation from 1998 to 2020

Variable	Coefficient	Standard. Error	t-Statistic	Prob.*
C	-0.00968	0.007541	-1.283518	0.2257
ΔLNRGDP (-1)	0.801256	0.096407	8.311182	0.0000
ΔLNGIP	0.004583	0.002402	1.908217	0.0828
ΔLNGIP(-1)	-0.000818	0.002175	-0.376376	0.7138
ΔLNLIP	0.00052	0.007234	0.071920	0.9440
ΔLNNLIP	0.139646	0.020455	6.827054	0.0000
ΔLNHCAP	0.03121	0.010195	3.061230	0.0108
ΔLNPCAP	0.042818	0.027983	1.530156	0.1542
ΔLNTINV	-0.030973	0.019450	-1.592479	0.1396
ΔLNOPEN	-0.071676	0.016500	-4.344126	0.0012
ECM(-1)	-1.464598	0.234030	-6.258171	0.0001
R-squared	0.931867	Adjusted R-squared		0.869927
F-statistics	15.04482	Durbin-Watson Stat		1.974738
Prob(F-statistic)	0.000050			

Source: Author's computation (using Eviews)

5. Conclusion and Recommendations

This study investigated the insurance-economic growth nexus sector in Nigeria using data from 1998-2020. The study adopted gross domestic product (RGDP) as proxy for economic growth and the response variable, while total insurance investment (TINV), gross insurance premium (GIP), life insurance premium (LIP), non-life insurance premium (NLIP), human capital (HCAP), physical capital (PCAP) and trade openness were used as proxies for insurance sector predictive variables.

The result of the ARDL estimate revealed that the first lag of real gross domestic product (RGDP), non-life insurance premium (NLIP) and human capital (HCAP) were positively and statistically significant in explaining the variation in economic growth in Nigeria both in the shortrun and longrun. This implies that an increase in these variables will in the longrun lead to proportionate increase in economic growth in Nigeria. Total insurance investment (TINV) and gross insurance premium (GIP) variables were significant in explaining economic growth in Nigeria only in the longrun. More so, trade openness had only shortrun significant impact on economic growth at 1% level while life insurance and physical capital were not statistically significant in explaining economic growth both in the shortrun and in the longrun within the study period. The result also showed that the coefficient of the error correction term is correctly signed and highly statistically significant at 1% level of significance. It implies that an error correction mechanism exists so that the deviation from long-run equilibrium has a significant effect on economic growth in Nigeria. This study therefore established that the insurance sector contributes meaningfully to economic growth in Nigeria.

This study therefore recommends that Nigeria as a nation in seeking the welfare of its citizens must as a matter of priority, need to strengthen, build and develop a stable and vibrant insurance industry to foster all-round economic growth and development. Moreso, regulatory authorities should put in place policies to ensure transparent and efficient management of funds by insurers; while the insurance companies should diversify their portfolio of investment to boost returns and ability in claims payment. In consideration of the role of human capital in improving the quality of life and ensuring social and economic progress and also helping the developing country to absorb modern technology and to develop the capacity for self-sustaining growth and development. This study therefore recommends that policies and programmes aimed at improving the quality of human capital such education, health, development of entrepreneurial skill and skill acquisition should be pursued vigorously in Nigeria. Further studies could be extended with development of an appropriate model that provides empirical evidence to examine the insurance-growth nexus and identify the channels of transmission of the insurance effect on economic growth, this can add another striking tally to this empirical research.

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