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Full Length Research Paper

Analysis of insurance practices and economic growth in Nigeria: using co-integration test and error correction model

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The study examines the impact of insurance practice on the growth of Nigerian economy. Insurance premium income, total insurance investment and income of insurance development was used as determinants of insurance practice. We employ unit root tests, Johansen co-integration test and error correction model in data analysis and to determine the short and long run effect of the model. The study observed that the insurance premium capital has significantly impacted on economic growth in Nigeria; that the level of total insurance investment has significantly effected on economic growth in Nigeria; and that there is causal relationship between insurance sector development and economic growth in Nigeria. The implication of these findings is that insurance industry would contribute meaningful to the growth of Nigeria economy in long run. The study concludes that there is a significant positive effect of insurance practice on the growth of Nigerian economy. We therefore recommend that having seen that there is long-run relationship between insurance industry practice and economic growth in Nigeria. There is need that more efforts should be made to increase transparency and efficiency in insurance industry through adequate legislation and policy formulation targeted at providing institutional improvement, especially in risk management and product innovations in insurance industry.

Keyword: Insurance, Premium, Economic Growth, Practices, ECM.

INTRODUCTION

Over the years, attention has been focused on financial institutions and the growth of various countries economy with little emphasis on non-financial institutions such as insurance industries. Recent literature have documented that financial intermediation promotes economic growth (Shittu, 2012; Oke, 2012; and Mojekwu, Agwuegbo and Olowokudejo, 2011). Other empirical studies opined that financial development does not affect economic growth

(Wadlamanti, 2008 and Hao, 2006). Financial intermediaries contributes to the growth of any economy through a functional approach which affects marginal productivity of capital efficiency of channeling savings to investment, savings rate and technological innovations. Agbakoba (2010) stated that insurance practice has come a long way since the time when Lloyd's sent runners to the water front to pick up news of ship movements and later would send policy around London for subscription by anyone with sufficient means. Adebisi (2006) states that insurance is a complicated issue which involve economic and social device for the

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handling of risks to life and property. It is social in nature because it represents the cooperation of various individuals for mutual benefits by combining together to reduce the consequence of similar risks. As every new area of risks, and since with every passing day, a new insurance package is amounted to take care of more and more areas of risks, the insurance booms. Nwite (2005) classified insurance as a contract made by a company or society, or by the state, to provide a guarantee of compensation for loss, damage, illness, death etc in return for regular payment. He went further to defined insurance as a legal contract. Insurance as a legal contract is an agreement between two or more parties who are legally bound to fulfil a promise or a number of promises contained in the contract deed. Agbaje (2005) defined insurance as the business of pooling resources together to pay compensation to the insured or assured (i.e. the policy holder) on the happening of a specified event in return for a periodic consideration known as premium. Note that, an insurance contract is usually evidenced by a document called the insurance policy which is usually signed at the foot by the insurer or assurer or his agent. Gollier (2003) argued that insurance involved the transfer of risk from one individual to another, sharing losses on an equitable basis by all members of the group. The group, known as insurance company, must increase its hold on the premium and widen its profit margin to cope with the demand of their customer. Dickson (1960) in Oke (2012) opined that insurance is designed to protect the financial wellbeing of an individual, company or other entity in case of unexpected loss. According to him, some forms of insurance are required by law; while others are optional agreeing to the terms of an insurance policy creates a contract the insurer and the insured. Ajayi (2002) posited that insurance as a promise of reimbursement in the case of loss, paid to people or company so concerned about hazards they have prepayments to an insurance company. Badejo (1998) argued the concept of insurance in its modern form was introduced into Nigeria by the British in the closing years of the 19th century with the establishment of trading posts in what is now known as Nigeria agents towards the end of the 19th century by European trading companies mostly British. These companies started affecting their insurance with established insurers in the London insurance market. As time went on, some British insurers appointed Nigerian agents to represents their interest in the country. These agents later metamorphosed into full branch offices of their parent companies in Britain. Between 1958 when the first indigenous insurance company, the African insurance company limited was established up to 2005, there were a total of one hundred and four (104) insurance companies and four (4) reinsurance companies. The major development of Nigerian insurance system includes the promulgation of Nigerian Insurance Decree, 1976 and establishment of National

Insurance Commission (NAICOM) in 1997. Section 86 of the insurance Act of 2003 provides that NAICOM shall be responsible for the administration and enforcement of the insurance Act. Osunkunle (2002) opined that the first branch office in Nigeria was the Royal exchange assurance in 1921, later followed by other British companies. Indigenous Nigerian insurers and re-insurers later followed such as National Insurance Corporation of Nigeria (NICON) established in 1969 and Nigeria reinsurance companies operating in Nigeria today. Recapitalization was introduced by Section 9(4) of Insurance Act 2003 for the various categories of insurance (Life, General, composite and Reinsurance). In 2003, capital base requirements were as follows: Life Insurance is N15m, General Insurance is N200m, Composite Insurance and Reinsurance is N350m respectively. In 2005, after recapitalization exercise, capital base was raised as follow: Life insurance (N2Billion), Non-life insurance (N3Billion) and Reinsurance (N10Billion). The recapitalization was done through the use of merger and acquisition which result to the reduction of insurance companies from 104 to 49 and 4 reinsurance companies to 2 reinsurance companies (Fatula, 2007). The practice of insurance sector in Nigeria has played a crucial role in the development of the economy and in managing the risks of households and firms through the issuance of insurance policies and mobilizing and transferring funds to the deficit unit for financing real sector investment. Oke (2012) and Shittu (2012) opined that insurance companies affect economic growth by providing protection for the insured through the channels of marginal productivity of capital, technological innovation and savings rate. Through this process, insurance industry contributes to the growth of Nigerian economy and we explore the gap in the literature by determining the impact of insurance practice on the growth of Nigerian economy. This paper is organized as follows; section one is the introduction while section two reviews the empirical and theoretical literature on insurance practice and its impact on economic growth; section three discusses the models and methodology while section four provides data and empirical evidence and the final section which is section five provides the summary, conclusion and recommendations of the study.

LITERATURE REVIEW

There has been a lot of theories and empirical research determining the impact of insurance practice on the economic growth both in the context of developed and developing countries which Nigeria is among. Merton and Bodie (1995) developed a theory called modern theory of financial intermediation which comprises traditional theory and the changes in financial environment. The modern theory of financial

intermediation emphasizes six core functions of insurance to include: provision of means for clearing and settling payments to facilitate exchange of goods and services; provision of mechanism for pooling resources; resources allocation; risk management; provision of price information to help in coordinating decentralized decision making in various sectors of the economy and provision of means to tackle the problem of moral hazard, physical hazard and information asymmetry.

For the purpose of this study, the enumerated functions by Merton and Bodie (1995) could be expressed as resources accumulation, resource allocation, managing various risks and facilitation of exchange. It is by realizing these functions that the insurance sector contributes to economic growth. The channels to growth model tries to link the financial intermediation function of insurance companies to economic growth. The growth theory states that well developed financial intermediation can promote economic growth through marginal productivity of capital, efficiency of channeling savings to investment, savings rate and technological innovations.

Oke (2012) used fixed effect model and co-integration analysis to determine the short-run and long-run relationship between economic growth and insurance sector growth and development in Nigeria. The study span from the period of 1986 to 2009. The result reveals that insurance sector growth and development positively and significantly affects economic growth. The result of the granger causality test indicates that the extend of influence the insurance sector growth had on economic growth was limited and not direct because of some cultural, attitudinal traits and values in the economy. Shittu (2012) carried out a study on financial intermediation and economic growth in Nigeria for the period of 1970 to 2010 using unit root test, cointegration test, Error correction Model (ECM) and Engle-Granger causality test. The result observed that the financial intermediaries have significant impact on the growth of Nigerian economy.

Odhiambo (2011) in a study "dynamic causal relationship between financial development, economic growth and poverty reduction in South Africa for the period of 1960 to 2006" using a trivariate causality model and error correction model (ECM) in data analysis. The study reveals that the hypothesis of finance-led growth do not hold in South Africa. The result shows that finance has nothing to do with the growth of South African economy. That whether finance or not, the economy continue to grow. Mojekwu, Agwuegbo and Olowokwdejo (2011) used a dynamic factor model to estimate the impact of insurance contributions on the growth of Nigerian economy within the period of 1981 to 2008. The result indicates that the functional relationship between the volume of insurance contribution and economic growth in Nigeria is a first order autoregressive model. This model observed that economic growth is positively correlated with insurance

contributions. This implies that if insurance contribution increases, economic growth will as well increase.

Anthony and Luke (2011) in a study "the effect of insurance business on economic development in Nigeria" using descriptive survey and random sampling techniques. The findings revealed that insurance companies provide financial services to some substantial number of people in the economy and that insurance helps in capital accumulation than payment of reparation of loses.

Peter and Kjell (2006) worked on the relationship of insurance and economic growth, a theoretical and empirical analysis. They applied a cross country panel data analysis using annual insurance premium data from 29 European countries over the 1992 to 2004 period. They observed a weak evidence for a growth-supporting role of life insurance and explain this with similarities to recent bank and stock sector findings. Arena (2008) worked on the empirical study and causal relationship between insurance market activity and economic growth which include 56 countries (both developed and developing ones) in the period from 1976 to 2004. Insurance premiums are used as proxies of total life and non-life insurance activities separately. As an estimation method, he used the generalized method of moment for dynamic models of panel data. The result shows a positive and significant effect of total, life and non-life insurance market activity on economic growth.

Haiss and Sűmegi (2008) applied a cross country panel data analysis from 29 European countries in the period from 1992 to 2005 to study the relationship between insurance companies and economic growth in Europe. Ordinary least squares (OLS) estimate and time-fixed effects were used in data analysis. They observed that there is a positive impact of life insurance on GDP growth in the 15 European countries; while non-life insurance has a larger impact in Central and Eastern Europe. Wadlamannati (2008) examined the effects of insurance growth and reforms along with other relevant control variables on economic development in India in the period from 1980 to 2006. Growth of insurance was penetration (life, non-life and total insurance). Using Ordinary Least Square (OLS), co-integration analysis and error correction models (ECM), the study finds that reforms in insurance sector do not affect economic activities; but their growth has positive impact on economic growth. Marijuana, Sandra and Lime (2009) empirically examined the relationship between insurance sector development and economic growth in 10 transition European Union member countries in the period from 1992 to 2007. Their findings show that, insurance sector development positively and significantly affects economic growth. The results are confirmed in terms of life and non-life insurance, as well as total insurance.

Hao (2006) studied the relationship between financial intermediation and economic growth using specific data from China over the period of 1985 to 1999. The study

employed a linear model and one-step parameter estimates for the Generalized Method of Moments (GMM). The study finds that banks as indicators of financial development is significant and negatively related to growth. It further revealed that financial intermediation has a causal effect and positive impact on the growth through channels of house-hold's savings mobilization and substitution of loans for state budget appropriation. This was attributed to inefficiency in loan distribution and self-financing ability of the provincial government.

The impact of insurance practice on economic growth

Insurance companies practice would affect economic growth through the channels of marginal productivity of capital, protection, technological innovations and savings rate. Insurance companies indemnify the ones who suffer a loss and stabilize the financial position of individuals and firms with possibility of transfer of different kinds of risks to insurance companies. Again, firms exposed to various risks of their liability, property, illness and disability of their employees and life of key employees, have the possibility of managing those risks by transfer to insurance companies. This allow firms to concentrate their attention and resources on their core business which can lead to willingness and ability to take real investment which will help to generate higher level of economic growth (Oke, 2012). This means that without pooling and transferring of risk which insurance companies provide, part of the economic activities would not take place and positive effects on social welfare would fail. In other words, by creating an environment of greater security, insurance fosters investment and innovation or economic growth. Insurance increases marginal productivity of capital also in a way that it makes no need for high liquid contingency funds of firms which results in more funds available for financing high-return projects. Without insurance coverage, large contingency funds would be needed to protect firms against risk. Increasing availability of funds could result from kind of insurance products by which insurance companies provide protection from credit risk to other financial intermediation. In that way, financial intermediaries are more willing to lend funds for financing real investments which encourage economic growth.

General or non-Life Business

This is a contract between an insurer (i.e. the insurance company) and the insured where by the insurer undertakes to indemnify the assured against losses, which may result from the occurrence of specified events within specified periods. General insurance business can

be sub-divided into: fire, accident, oil and gas, contractors' all risks and engineering risks; marine and Credit insurance, bond and surety ship etc. This is a contract between the assurer (the company) and the assured (i.e. the policy holder) whereby the assurer undertakes to pay benefits to the policy holder on the attainment of a specified event. They type of insurance is long term in nature.

Life Assurance Business

This comprises individual life business, group life insurance and pension business, health insurance business and annuities.

METHODOLOGY

The aim of this study is to estimates and analyses the impact of insurance practice on the growth of Nigerian economy using unit root test, co-integration estimation technique and error correction models (ECM) with data spanning from 1980-2011. The model of the work of Marijuana et al. (2009) as used by Oke (2012) is adopted and modified to suit the topic under study.

To capture the impact of insurance practice on the growth of Nigerian economy, insurance practice is proxied as insurance premium capital (IPC), total insurance investment (TII) and insurance sector development (ISD) which as well serve as the independent variables. The GDP at 1990 constant price was used as a proxy for Economic Growth.

Model Specification

Considering the functional notation, the models are specified as followed;

GDP = f (IPC)3.1

However, the linear function of the above notation is stated as

GDP = b₀ + b₁IPC + U_t3.2

While the log function of the above model is written as

Log(GDP) = b₀ + b₁ Log(IPC) + U_t3.3

To capture the second hypothesis, the model is expressed as;

GDP = f (TII)3.4

The linear function of the above notation is stated as

GDP = b₀ + b₁TII + U_t3.5

While the log function of the above model is written as

Log(GDP) = b₀ + b₁ Log(TII) + U_t3.6

In recognition of the third hypothesis, the functional notation of the model is specified as followed;

GDP = f (ISD)3.7

However, the linear function of the above notation is stated as

GDP = b₀ + b₁ISD + U_t3.8

GDP = f (IPC) Model 1
Table 1: Regression of log(GDP) on log(IPC)

Variable	Coefficient	St.Error	t-Statistic	Prob.
C	9.786329	0.344190	28.43296	0.0000
LOG(IPC)	0.309638	0.039166	7.905767	0.0000

$R^2 = 0.661380$
Source: E-views 7.0

GDP = f (TII) Model 2
Table 2. Regression of log (GDP) on log(TII)

Variable	Coefficient	St.Error	t-Statistic	Prob.
C	9.665268	0.438439	22.04472	0.0000
LOG(TII)	0.300519	0.046635	6.444121	0.0000

$R^2 = 0.661380$
Source: E-views 7.0

GDP = f (ISD) Model 3
Table 3. Regression of log(GDP) on log(ISD)

Variable	Coefficient	St.Error	t-Statistic	Prob.
C	10.31602	0.305896	33.72390	0.0000
LOG(ISD)	0.260550	0.036120	7.213500	0.0000

$R^2 = 0.619204$
Source: E-views 4.1

While the log function of the above model is written as
 $\text{Log(GDP)} = b_0 + b_1 \text{Log(ISD)} + U_t \dots \dots \dots 3.9$

Regression Result on the impact of insurance practice on the Gross Domestic Product (GDP)

The general aim of this study is to identify the impact of insurance practice on the growth of Nigerian economy proxied as Gross Domestic Product (GDP). Therefore the empirical data associated with this regression results are as stated below;

Estimation Technique

Unit Root Test

The Augmented Dickey-Fuller (ADF) and Philip Perron (PP) formulae were employed to test for stationarity or the existence of unit roots in the data. The test results are as presented in the tables.

Analysis of the Results

First Model

The equation in the first model regressed LOG(GDP) on LOG(IPC). The coefficient of the constant term is 9.786. The sign borne by the regression coefficient of constant is positive implying at zero performance of the

independent variable, the GDP increases. The regression coefficient of LOG(IPC) carries positive sign and its t-value (7.906) is statistically significant at 5% level. This implies that Insurance Premium Capital (IPC) affects the GDP significantly. The t-value for the regression coefficient of LOG(IPC) is significant as confirmed by the t-probability (0.0000). It is estimated from the result that 1% increase in LOG(IPC), on the average, will lead to 0.31% increase in LOG(GDP). The computed value of $R^2 = 0.661380$ shows that 66.14% of the total variation in the Gross Domestic Product (GDP) is accounted for by the explanatory variable (IPC) while 33.86% of the total variation in GDP is attributable to influence of other variables which are not included in the regression model.

Second Model

The equation in the second model regressed LOG(GDP) on LOG(TII). The coefficient of the constant term is 9.665. The sign borne by the regression coefficient of constant is positive. This implies that holding the independent variable, the GDP increases. The regression coefficient of LOG(TII) carries positive sign and its t-value (6.444) is statistically significant at 5% level. This implies that TEDU affects the GDP significantly. The t-value for the regression coefficient of LOG(TII) is significant as confirmed by the t-probability (0.0000). It is estimated from the result that 1% increase in LOG(TII), on the average, will lead to 0.30% increase in LOG(GDP). The computed value of $R^2 = 0.564784$

Table 4. Augmented Dickey Fuller Unit Root Test (Trend and Intercept)

Series	ADF Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	-4.947656	-3.5562	-3.2109	1(1)	Stationary
IPC	-6.949005	-3.5562	-3.2109	1(1)	Stationary
TII	-7.934412	-3.5562	-3.2109	1(1)	Stationary
ISD	-5.314308	-3.5562	-3.2109	1(1)	Stationary

Table 5. Phillips-Perron Unit Root Test (Trend and Intercept)

Series	PP Test Statistic	5% critical values	10% critical values	Order	Remarks
GDP	-4.917323	-3.5562	-3.2109	1(1)	Stationary
IPC	-7.310640	-3.5562	-3.2109	1(1)	Stationary
TII	-8.932543	-3.5562	-3.2109	1(1)	Stationary
ISD	-5.316052	-3.5562	-3.2109	1(1)	Stationary

GDP = f (IPC, TII, ISD).....Model 6

6.1 Johansen co-integration test for the series; RGDP, IPC, TII, and ISD

Eigenvalue	Likelihood Ratio	5 percent critical value	1 percent critical value	Hypothesized No. of CE(s)
0.998219	530.6525	156.00	168.36	None **
0.983563	340.7385	124.24	133.57	At most 1 **
0.900964	217.4928	94.15	103.18	At most 2 **
0.824041	148.1247	68.52	76.07	At most 3 **

*(**) denotes rejection of the hypothesis at 5% significance Level

L.R test indicates 8 cointegrating equation(s) at 5% significance.

Normalized Cointegrating Coefficients: 1 cointegrating Equation(s)

6.2 Error correction model

Variable	Coefficient	St.Error	t-Statistic	Prob.
C	13798.89	7247.333	1.903995	0.0690
D(IPC)	0.165843	0.230603	0.719173	0.4790
D(TII)	0.781708	0.500087	1.563143	0.1311
D(ISD)	0.748776	0.852365	0.878468	0.3884
ECM(-1)	-0.365701	0.131028	2.791024	0.0101

$R^2 = 0.355686$

shows that 56.48% of the total variation in the Gross Domestic Product (GDP) is accounted for by the explanatory variable Total Insurance Investment (TII) while 43.52% of the total variation in GDP is attributable to influence of other variables which are not included in the regression model.

Third Model

The equation in the third model regressed LOG(GDP) on LOG(ISD). The regression coefficient of LOG(ISD) carries positive sign and its t-value (7.214) is statistically significant at 5% level. This implies that Insurance Sector Development (ISD) affects the GDP significantly. The t-value for the regression coefficient of LOG(ISD) is significant as confirmed by the t-probability (0.0000). It is estimated from the result that 1% increase in LOG(ISD), on the average, will lead to 0.26% increase in LOG(GDP). The computed value of $R^2 = 0.619204$

shows that 61.92% of the total variation in the Gross Domestic Product (GDP) is accounted for by the explanatory variable Insurance Sector Development (ISD) while 38.08% of the total variation in GDP is attributable to influence of other variables which are not included in the regression model.

In this study, we have adopted both the statistical significant criteria as well as the theoretical expectation for accepting or rejecting the null hypotheses. The following hypotheses are restated and tested below.

First Model for the first hypothesis

Hypothesis Testing

The hypothesis that there is no significant effect of insurance premium capital on the growth of Nigerian economy is tested using the regression coefficient of LOG(IPC) which is 7.906 and its P-value is 0.0000.

Since the P-value (0.0000) < 0.05 (5% level of significance), we reject the null hypothesis and conclude that the insurance premium capital has significantly impacted on economic growth in Nigeria.

Second Model for the second hypothesis

Hypothesis Testing

The hypothesis that there is no significant effect of total insurance investment on the growth of Nigerian economy is tested using the regression coefficient of LOG(TII) which is 6.444 and its P-value is 0.0000. Since the P-value (0.0000) < 0.05 (5% level of significance), we reject the null hypothesis and conclude that the level of total insurance investment has significantly effected on economic growth in Nigeria.

Third Model for the third hypothesis

Hypothesis Testing

The hypothesis that there is no causal relationship between insurance sector development and economic growth in Nigeria using the regression coefficient of LOG(ISD) is 7.214 and its P-value is 0.0000. Since the P-value (0.0000) < 0.05 (5% level of significance), we reject the null hypothesis and conclude that there is causal relationship between insurance sector development and economic growth in Nigeria.

FINDINGS

The equation in the first, second and third model regressed LOG(GDP) on LOG(IPC, TII, ISD). Based on the objectives of the study and the analysis above, three empirical results emerged. The results from hypotheses testing confirms that the insurance premium capital has significantly impacted on economic growth in Nigeria; that the level of total insurance investment has significantly effected on economic growth in Nigeria; and that there is causal relationship between insurance sector development and economic growth in Nigeria. The implication of these findings is that insurance industry would contribute meaningful to the growth of Nigeria economy in long run. This is because of the causal relationship that exists between insurance practice and economic growth in Nigeria.

CONCLUSION

This study focused on the impact of insurance industry practice on the growth of Nigerian economy. There has been observable increase in insurance premium capital

and total insurance investment over the years. From the study, it does appear that finance growth has not been established in Nigeria. The insurance industry practice has direct impact on the growth of Nigerian economy. This is manifest through the risk transfer and risk management which is the function of insurance industry through various channels of marginal productivity of capital and innovations.

The study indicates that insurance practice is based on functional approach to financial intermediation and modern growth theory. The study concludes that there is a significant positive effect of insurance practice on the growth of Nigerian economy.

RECOMMENDATIONS

Based on the foregoing research findings and their respective implications, the following are recommended:

- Having seen that there is long-run relationship between insurance industry practice and economic growth in Nigeria. There is need that more efforts should be made to increase transparency and efficiency in insurance industry through adequate legislation and policy formulation targeted at providing institutional improvement, especially in risk management and product innovations in insurance industry.
- Through effective risk transfer mechanism and financial intermediation, insurance industry should contributes to the growth of Nigerian economy and at the same time, the insured will concentrate their attention and resources on core insurance business that can lead to real investment and high economic growth.
- The regulatory authorities should look into the activities of insurance company and come up with well-defined and clear statement that will increase the level of economic growth in Nigeria.

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