Insurance Market Activity and Economic Growth: Evidence from Nigeria

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Abstract: The focus of this study is to empirically assess insurance market activities in Nigeria with the view to determining its impact on economic growth. The period of study was 1970- 2008, the study made use of insurance density measures (premium per capita) as a measure for insurance market activity and real GDP for economic growth. It also employed control variables such as inflation and savings rate as other determinants of growth. The Johansen cointegration and vector error correction approach was used to estimate the relationship between the variables. All the variables used were stationary at first difference and the result showed a long term relationship existing among the variables. The hallmark finding of this study is that the insurance sector did not reveal any positively and significant affect on economic growth in Nigeria within the period of study. The result shows a low insurance market activity in Nigeria and that Nigerians have not fully embrace the insurance industry despite its importance to the growth of the

economy.

Keywords: Insurance; Financial Intermediation; Economic growth; Cointegration; Vector error correction approach

JEL Classification: C22; C32; E44; O11; O16

1. Introduction

Insurance is one of the cornerstones of modern-day financial services sector. In addition to its traditional role of managing risk, insurance market activity, both as intermediary and as provider of risk transfer and indemnification, may promote growth by allowing different risks to be managed more efficiently, promoting long term savings and encouraging the accumulation of capital, serving as a conduit pipe to channel funds from policy holders to investment opportunities, thereby mobilizing domestic savings into productive investment (Skipper, 1997 and Arena, 1998). According to Vayanos and Hammound (2006) a thriving insurance sector is

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not only evidence of an efficient financial service sector, but it is also a key barometer for measuring a healthy economy.

During the last decades, there have been faster growth in insurance market activity in both developing and transition economies given the process of financial liberalization and financial integration (Brainard, 2008), which raises questions about its impact on economic growth. As noted by Wachtel (2001), Favara (2003) and Levine (2004), research efforts so far have not examined the impact of other financial markets or instruments on economic growth in similar depth. Compared to the vast literature focusing on bank, stock and bond markets and their respective environment, the insurance sector has hardly been investigated in its role vis-à-vis economic growth.

The few research efforts on the insurance-growth nexus, while emphasizing the importance of the topic, concentrated on a few countries over fairly short or distant time horizons (e.g. Catalan et al, 2000; Ward and Zurbruegg, 2000), dealt with specific subsectors (Beenstock et al, 1988; Browne and Kim, 2000) only, are concerned with contagion and other possible negative effects the insurance sector can transmit onto the economy (e.g. Das et al, 2003) or treats the insurance growth-link rather as a side issue (e.g. Holsboer, 1999). Given the growing importance of the insurance sector and the increasing number of interlinks to other financial sectors, the evolving role of insurance companies vis-à-vis economic growth and stability should be of growing relevance for policy makers and supervisors.

The objective of this paper therefore, is to investigate empirically the relationship between insurance activity and economic growth in Nigeria by employing the Johansen multivariate and vector error correction framework using time series data for the period 1970 to 2008.

2. Literature Review

Insurance is often defined as the act of pooling funds from many insured entities (known as exposures) in order to pay for relatively uncommon but severely devastating losses which can occur to these entities. The insured entities are therefore protected from risk for a fee, with the fee being dependent upon the frequency and severity of the event occurring (Encarta dictionary, 2009). Thus, it is a commercial enterprise and a major part of the financial services industry. Theoretical studies and empirical evidence have shown that countries with better-developed financial systems enjoy faster and more stable long-run growth. Well-developed financial markets have a significant positive impact on productivity, which translates into higher long-run growth. Merton (1995) citing Solow's (1956) noted that in the absence of a financial system that can provide the means for transforming technical innovation into broad implementation, technological

progress will not have significant and substantial impact on the economic development and growth" . This study seeks to investigate the link between the insurance sector and economic growth and hence contribute to the current insurance-growth nexus literature. The importance of the insurance-growth nexus is growing due to the increasing share of the insurance sector in the aggregate financial sector in almost every developing and developed country. Theoretical conceptions explain that financial systems influence savings and investment decisions and hence long-run growth rates through the following functions (i) lowering the costs of researching potential investments, (ii) exerting corporate governance, (iii) trading, diversification, and management of risk, (iv) mobilization and pooling of savings, (v) conducting exchanges of goods and services, and (vi) mitigating the negative consequences that random shocks can have on capital investment (Levine, 2004). Financial intermediaries support development through the improvement of these functions (i.e., the amelioration of market frictions such as the costs of acquiring information, making transactions, and enforcing contracts and allowing economies to more efficiently allocate resources (savings) across investments). However, the positive effects of financial development are tailored by the macro policies, laws, regulations, financial infrastructures and enforcement norms applied across countries and time. In support of this proposition, Arena (2006) posited that insurance market activity, both as financial intermediary and as provider of risk transfer and indemnification, may promote economic growth by allowing different risks to be managed more efficiently encouraging the accumulation of new capital, and by mobilizing domestic savings into productive investments.

It is also believed that insurance market activity may not only contribute to economic growth by itself but also through complementarities with the banking sector and the stock market. In the first case, the joint effect with the banking sector, the development of insurance activity could encourage bank borrowing by reducing companies' market cost of capital, which influences economic growth by increasing the demand for financial services (see Grace and Rebello, 1993).

Further to this, property insurance may facilitate bank intermediation activity by for example partially collateralizing credit, which would reduce bank's credit risk exposures thus, promoting higher levels of lending (see Zou and Adams, 2006). At the same time, the development of the banking sector may facilitate the development of the insurance activity through a much more effective payment system allowing an improved financial intermediation of services (Webb, Grace, and Skipper, 2002). Regarding the conjoint effect with the stock market, the development of the insurance activity, in particular life insurance companies, could promote stock market development by investing funds (savings) raised through contractual saving products in stocks and equities (Impavido, et al. 2003; USAID, 2006).

In analogy to other financial sectors (Blum et al 2002), the link between the insurance and the real sector can be classified in terms of causality with respect to five possible hypotheses: (1) no causal relation; (2) demand following, e.g. economic growth leads to a rise in demand for insurance; (3) supply-leading, e.g. growth in insurance smoothes short-term economic volatility and thus induces economic growth in the long run, plus growth in investment by insurance companies induces economic growth; (4) negative causal link from insurance to growth (e.g. growing insurance causes more reckless behaviour ("moral hazard"), resulting in a less efficient and more volatile economy; (5) interdependence. In the following, we discuss the various functions performed by the insurance sector and its possible link to economic growth.

On the empirical studies, earlier work conducted by Beenstock, Dickinson and Khajuria (1988) applied pooled time series and cross-section analysis on 1970-1981 data, covering mainly 12 countries. They regress premiums for property liability insurance (PLI) onto gross national product (GNP), income and interest rate development. They find that premiums are correlated to interest rate and GNP; marginal propensity to insure (short and long-run) rises with income per capita and is always higher in the long run. Beenstock et al (1988) argue that insurance consumption is not affected by economic cycles or cyclical income variations. Other studies that employed cross-sectional analysis include (Outreville (1990), Browne, Chung and Frees (2000), Beck and Webb (2002) and Park, Borde & Choi (2002). In the study of Beck and Webb (2002) they applied cross-country and time-series analysis for the relation between life insurance penetration, density, and percentage of private savings to GDP, real interest rate, inflation volatility and others as the explanatory variables. Strong evidence was found for GDP, old dependency ratio, inflation and banking sector development. From the group of additional explanatory variables anticipated inflation, real interest rate, secondary enrolment and the private savings rate were found to be significant. Park, Borde & Choi (2002) concentrated their research work on the linkage between insurance penetration and GNP and some socio-economic factors adopted from Hofstede (1983). The results of analysis of the cross-sectional data from 38 countries in 1997 show significance for GNP, masculinity, socio-political instability and economic freedom.

Ward and Zurbruegg (2000) employed Granger causality to test between total real insurance premiums and real GDP for nine OECD countries over the 1961 to 1996 period. For two countries (Canada, Japan) the authors found the insurance market leading GDP and for Italy they found a bidirectional relationship. The results for the other countries showed no connection. In line with the above method, Kugler and Ofoghi (2005) added cointegration analysis to the causality test to examine the long-run relationship between insurance market size and economic growth in United Kingdom for the period from 1966 to 2003 for long-term insurance, and for

the period from 1971 to 2003 for general insurance (from 1991 to 1997 for marine-aviation transport insurance and reinsurance). In comparison to Ward and Zurbruegg, who used aggregate variable in their estimation (total written premiums) because of possibility of cointegration, this study used disaggregated data for the measure of market size. The authors found a long-run relationship between development in insurance market size and economic growth for all components of insurance markets. Causality tests show that there is a long-run causality from growth in insurance market size to economic growth for eight out of nine insurance markets (the exception is pecuniary loss insurance). Causality in short-run exists from life, liability and pecuniary loss insurance to economic growth and there is an evidence of bidirectional causal relationship in the long-run between economic growth and insurance market size for the three insurance categories. From the foregoing, it could be observed that though there are strong theoretical explanations for positive impact of insurance sector to economic growth, the results of empirical researches carried out up to date are mixed. However, the number of empirical studies is relatively small, especially in relation to those on banking contribution to economic growth. Moreover, the insurance-growth nexus in transition countries is examined separately only as a part of one study (Haiss and Sümegi, 2008) and one major cause is availability of data on insurance activity. In order to contribute to filling the gap, the study is focused on examining the insurance-growth nexus using Nigerian data.

3. Methodology

This study applies the endogenous growth model as modified by Pegano (1993) to examine how Insurance Market Activity influences growth in Nigeria. To capture the potential effects of financial development on growth, consider the simplest endogenous growth model - the 'AK' model, where aggregate output is a linear function of the aggregate capital stock:

$$Y = AK_t \qquad (1)$$

This production function can be seen as a 'reduced form' resulting from one of two underlying frameworks. One is a competitive economy with external economies as in Romer (1989), where each firm faces a technology with constant returns to scale but productivity is an increasing function of the aggregate capital stock *K*,. For instance, consider an economy with N identical firms, each producing output $y_t = Bk_t^{\alpha}$. with its capital stock k, Suppose that B is regarded as a parameter by individual firms but actually responds to the average capital stock according to $B = Ak^{1-\alpha}$. Then aggregate output, Y, = Ny_t is given by (1). Alternatively, the AK model can be derived assuming that *Kt* is a composite of physical and human capital as in Lucas (1988), the two types of capital being reproducible with identical technologies.

For simplicity, assume that the population is stationary and that the economy produces a single good that can be invested or consumed - and, if invested, depreciates at the rate 6 percent per period. Gross investment then equals

$$I_t=K_{t+1}-(1-\delta)K_t \quad (2)$$

In a closed economy with no government, capital market equilibrium requires that gross saving S, equals gross investment I*t*. For reasons that will be made clear below, it is convenient to assume that a proportion **1 -** ϕ of the flow of savings is 'lost' in the process of financial intermediation:

$$\emptyset S_t = I_t \quad (3)$$

From equation (1), the growth rate at time t+l is $g_{t+1} = Y_{t+1}/Y_{t-1} = K_{t+1}/K_{t-1}$. Using eq. (2) and dropping the time indices, the steady-state growth rate can be written as

$$g = A + \frac{1}{Y} - \delta = A\emptyset S - \delta \quad (4)$$

in the second step, Pegano (1993) used the capital market equilibrium condition (3) and denoted the gross saving rate S/Y by s. Eq. (4) reveals succinctly how financial development (in this case insurance market activity) can affect growth: it can raise ∅, the proportion of saving funneled to investment; it may increase ***A,*** the social marginal productivity of capital; and it can influence s private saving rate.

3.2 Model Specification:

In line with the analytical framework, the model specified will be as follows:

$$Y_t= \beta_0+ \beta_1 ID_t+ \beta_2 Inf_t+ \beta_3 SR_t +\varepsilon_t \quad (5)$$

Where:

Y_t is the dependent variable which represents real GDP.

ID_t is the insurance variables which represent insurance density and is defined as premium per capita. This variable will be used as the insurance variable to capture the level of insurance market activity.

Inf_t is inflation rate which serves as a control variable

SR_t is Savings rate which also serves as a control variable

ε_t is the stochastic error term

3.3 Data Description and Sources

This study used annual data from 1970-2008. The data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, 2008. The real Gross Domestic Product (RGDP) is used to proxy for national income. It is preferable to nominal GDP because it is adjusted for inflation:

Insurance density (ID) is measured as the total premium divided by population (defined as premium per capita). The premium income directly depicts the interest of the economy in insurance coverage; thus it was used to capture the level of insurance market activity in Nigeria. Inflation rate (INF) is defined as the percentage change in price level overtime. It is often used as an indicator of the cost of doing business in an economy. Savings rate (SR) is a means by which financial institutions can pool resources for investment purposes from the general public. It is measured as the ratio of household savings deposited in financial intermediaries relative to GDP and serves as a proxy for financial intermediary development.

Insurance market activity (i.e. ID) is expected to be positively related to economic growth, this implies that the higher people demand for insurance premiums, the higher the economic growth in the country. Inflation rate regarded as a control variable is expected to be negatively correlated with growth. High inflation has the tendency of distorting economic activity; thus an increase in the rate of inflation will reduce the level of economic growth. Beck and Webb (2003) mention that if the private savings rate were to rise, people might or might not be willing to increase their savings in life insurance policies. In other words, the relationship between life insurance and the private savings rate is ambiguous. The empirical evidence denotes that the share of life insurance in savings will decrease with a higher savings rate, but will increase with further life insurance penetration. There is a long-term relationship between economic growth and the growth rate of savings; hence should be positive.

4. Empirical Analysis

The empirical analysis starts with testing for unit roots in the data. We use both the Augmented Dickey Fuller (ADF) and Phillips – Perron (PP) tests to find the existence of unit root in each of the time series. The results of both the ADF and PP tests are reported in Table 4.1 and 4.2.

Table 4.1. ADF and PP Stationarity test at levels

Variables	ADF (Intercept)	ADF (Intercept & Trend)	PP (Intercept)	PP (Intercept & Trend)
LRGDP	-2.279(-3.615)*	-1.980(-4.219)*	-5.373(-3.615)*	-1.754(-4.219)*
LID	-0.618(-3.621)*	-2.605(-4.226)*	-0.732(-3.615)*	-1.992(-4.219)*
INF	-3.105(-2.941)**	-3.049(-3.198)***	-2.930(-2.609)***	-2.864(-4.219)*
SR	-2.084(-3.615)*	-2.298(-4.219)*	-1.872(-3.615)*	-2.167(-4.219)*

Note: * and * denotes** Significance at 1% & 10% level, respectively. Figures within parenthesis indicate critical values. Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

Source: Author's Estimation using Eviews 6.0.

The result in table 4.1 shows that all the variables (except Inflation rate) appear non stationary at levels. This can be seen by comparing the observed values (in absolute terms) of the ADF test statistics with the critical values (also in absolute terms) of the test statistics at the 1%, 5% and 10% level of significance. As a result of the non stationarity of the other variables, we differenced them once and both the ADF and PP test were conducted on them. The result is shown in table 4.

Table 4.2. ADF and PP Stationarity test at first difference

Variables	ADF (Intercept)	ADF (Intercept & Trend)	PP (Intercept)	PP (Intercept & Trend)
LRGDP	-5.678(-3.621)*	-5.980(-4.226)*	-5.696(-3.621)*	-7.143(-4.226)*
LID	-3.895(-3.621)*	-3.841(-3.536)**	-3.700(-3.621)*	-3.640(-3.536)**
INF	-6.229(-3.626)*	-6.204(-4.234)*	-11.119(-3.621)*	-11.995(-4.226)*
SR	-6.665(-3.626)*	-6.915(-4.234)*	-8.206(-3.621)*	-8.307(-4.226)*

Note: * and * denotes** Significance at 1% & 10% level, respectively. Figures within parenthesis indicate critical values. Mackinnon (1991) critical value for rejection of hypothesis of unit root applied.

Source: Author's Estimation using Eviews 6.0.

It could be observed from the above table that all the variables achieved stationarity at first difference. Thus, all the variables achieved stationarity and on the basis of this, the null hypothesis of non-stationarity is rejected and it is safe to conclude that the variables are stationary.

4.2 Cointegration Test Result

With the confirmation of the stationarity of the variables, we proceeded to examine the presence or non-presence of cointegration among the variables. When a cointegration relationship is present, it means that the real GDP, Insurance activity (ID). Inflation and Interest rate share a common trend and long-run equilibrium (as suggested theoretically) in the growth model. We started the cointegration analysis by employing the Johansen and Juselius multivariate cointegration test. The cointegration test result is presented in Table 4.3 and 4.4.

Table 4.3. Unrestricted Cointegration Rank Test (Trace)

Hypotheized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None*	0.578183	52.98214	47.85613	0.0153
At most 1	0.281092	21.04439	29.79707	0.3549
At most 2	0.176447	8.833572	15.49471	0.3810
At most 3*	0.043638	1.650882	3.841466	0.1988

Trace Test indicates 1 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 4.4. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypotheized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob**
None*	0.578183	31.93775	27.58434	0.0129
At most 1	0.281092	12.21081	21.13162	0.5270
At most 2	0.176447	7.182690	14.26460	0.4677
At most 3*	0.043638	1.650882	3.841466	0.1988

Max-eigen value test indicates 1 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The result of the cointegration test conducted on the growth model shown in table 4.3 and 4.4 reveals one cointegrating vector at 5 percent level of significance for Trace and Max-Eigen Statistic. It suggests that there is a long-run relationship between the variables tested. Since there is at least one cointegrating vector, an economic interpretation of the relationship between insurance market activity and economic growth can be obtained by normalizing the estimates of the unconstrained cointegrating vector which yields the following:

$$LX = 1.000 - \underset{(0.41471)}{1.337}LID - \underset{(0.04090)}{0.251}INF + \underset{(0.20545)}{0.477}SR$$

It can be readily observed from the normalized estimates that the Gross Domestic Product is negatively related to Insurance market activity contrary to theoretical predictions; it has a coefficient of -1.333 and the t-statistics is insignificant – an indication of low insurance market activity in Nigeria. Due to the problem of unavailabity of data, insurance market activity could not be divided between life and general insurance to see their individual impact on the GDP. However, beside corporate bodies that provide insurance cover for ther staff, Nigerians are yet to fully embrace insurance cover (both life and general insurance). This has over the years made the operations of the insurance company in Nigeria not having much penetration to the GDP comparable to other institutions like banks and the stock market.

Inflation, one of the control variables came out with a negative sign though insignificant. It predicts that with the period of study, 1% increase in inflation leads to 0.25% reduction in the gross domestic product. Inflation has been described as depicting a high cost of doing business in a country does not always augur well with growth. On its own part, the savings rate as theoretically predicted is positively related to gross domestic product. 1% increase in savings rate leads to about 0.477% increase in the gross domestic product. The essence of including savings rate in the study is that it can substitute life insurance in the growth process. Beck and Webb (2003) posited it is expect that individuals with higher savings and who are more educated and financially sophisticated are more prone to have a life insurance contract – though the study did not estimate the coefficients of the interaction terms between the two variables.

4.3 Error Correction Model:

Having observed the longrun relationship of the variables, we at this point present the error correction result to ascertain the speed of adjustment in the short run. This is shown in table 4.5

Table 4.5. Error Correction Result (Export Model)

Dependent Variables: ΔLX (-1)				
	Coefficient	Std. Error	t-statistic	Prob.
C	0.149020	0.163720	0.910207	0.3726
ΔLRGDP(-2)	-0.007095	0.214318	-0.033104	0.9739
ΔLRGDP(-3)	-0.151139	0.219488	-0.688600	0.4983
ΔLID(-1)	0.203861	0.392538	0.519340	0.6087
ΔLID(-2)	-0.062082	0.458366	-0.135443	0.8935
ΔLID(-3)	-0.098702	0.396211	-0.249115	0.8056
ΔINF(-1)	-0.004169	0.006498	0.641542	0.5278
ΔINF(-2)	0.000385	0.005977	0.064381	0.9492
ΔINF(-3)	0.000479	0.006599	0.072522	0.9428
ΔSR(-1)	-0.009152	0.029728	-0.307853	0.7611
ΔSR(-2)	-0.011962	0.033516	-0.356909	0.7246
ΔSR(-3)	-0.023351	0.030509	-0.765360	0.4522
ECM(-1)	-0.141081	0.137746	-1.024208	0.3169
R-squared	0.129856	Mean dependent var		0.138991
Adjusted R-squared	-0.344768	S.D. dependent var		0.362653
S.E. of regression	0.420547	Akaike info criterion		1.384033
Sum squared resid	3.890924	Schwarz criterion		1.961733
Log likelihood	-11.22057	Hannan-Quinn criter.		1.583455
F-statistic	0.273597	Durbin-Watson stat.		1.761060
Prob(F-statistic)	0.988016			

The result indicates that insurance-growth in Nigeria has an automatic adjustment mechanism; thus it responds to deviations from equilibrium in a balancing manner. The speed of adjustment parameter is -0.1410. This means that the disequilibrium can be corrected at rate of 14%.

5. Conclusion

The importance of the insurance sector within total financial intermediation has risen over time and the magnitude and intensity of links between insurance, banking and capital markets has also risen. Thus the likely impact of insurance on the economy is expected to have gone up. This informed the need to conduct an empirical survey of insurance market activity and economic growth in Nigeria.

Taking note that the insurance industry in Nigeria is highly underdeveloped, it was worrying but not totally surprising that the Insurance density used as a proxy for insurance market activity did not show any significant positive relationship with the real domestic product which was deployed as a measure of economic growth. Thus, functions of insurance companies - providing means of risk management and performing mobilization and allocation of resources - though predicted important for economic growth could not be proved empirically. Other control variables (Inflation and savings rate) used in the study had their effect on growth. Inflation had a negative relationship while savings rate had a positive relationship with growth. The major finding of this study is that insurance density (premium per capita) did not show significant positive relationship with economic growth within the period covered by this study. This result is contrary to theoretical expectation and the findings of Ward and Zurbruegg, (2000), Hammound, (2006).

While sound economic, legal and political environments provide fertile ground for robust insurance markets, the key to insurance market development is investment in market infrastructure. It is this infrastructure that enables an effective marketplace to exist for the pooling, trading, and management of many of society's risks. Unfortunately, this infrastructure is lacking in Nigeria, leaving insurance markets to operate ineffectively and inefficiently. In addition, this study recommends the strengthening of regulatory and supervisory capacity of the insurance industry in Nigeria and the provision of resources for oversight functions especially in the areas of market conduct thereby ensuring that claims are paid fairly and efficiently.

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