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Insurance Risk Management: A Correlate of Economic Growth in Nigeria

Torbira, Lezaasi Lenee
Department of Finance & Banking, Faculty of Management Sciences, University of Port-Harcourt, Nigeria

Abstract
This study empirically investigate the impact of insurance risk management through the window of claims payment on the growth in the output level of Gross Domestic Product in Nigeria. Claims payment-economic growth model patterned after multivariate regression, causality and dynamic model of linear formation were estimated and analyzed. The analysis reveal that, in the long run, insurance claims paid on fire, Accident, motor vehicle, employers' liability and marine policies significantly impact on the output level of Gross Domestic Product in Nigeria. Indemnification successes ginger up the productive quality of existing stock of capital and ensure the continuity of businesses in the economy thereby boosting output performance. The author recommend improved insurance awareness, patronage and prompt claims payments.
Keywords: Risk Management, Economic Growth, Nigeria.

1. Introduction

The working of the insurance sector is vital to the wellbeing and smooth functioning of a modern economy (Osoka,1999). This is because the insurance sector represent the bedrock of an economy's risk management system, ensures financial security, serves as an important component in mitigating the impact of financial risk on businesses, government and the household and positively correlate with economic growth as entrepreneurs' loss exposures are covered while their risk taking ability are enhanced. Thus, a strong insurance industry is a compelling imperative for growth in output and capital formation.

Risk Management is defined as the logical development and execution of plans and program to deal with organizations' and individual's potential losses and/or exposure to loss and to protect their assets, (Dorfman, 2005). For our purpose, risk management is proxied by claims payment. Claims payment is a payment from the insurance companies to the insured for the covered loss.

Risk management function is carried out when insurance companies help individuals, businesses and government and its agencies to manage their resources and mitigate risk efficiently through the sales of insurance policies and payment of claims to the insured (Osipitan, 2009). The availability of this insurance service is essential for the continuity of businesses and the financial stability of the economy for growth purposes. This can encourage business participants to accept aggravated risk. Through the sales of insurance policies, insurance companies pool premiums and form reserve fund and promote financial stability through liquidity guaranteed by insurance coverage.

The economy will however feel the effect of the risk management activities more positively when most businesses in the economy survive and continue to increase the output level of goods and services in the economy despite the occurrence of adverse events that lead to financial losses. This can be achieved through adequate and proper claims settlement or indemnification. That is, if a portion of the premium (net premium) income is properly managed to pay claims to the insured parties guaranteeing the survival and continuity of businesses and other economic activities that would have terminated (cease to exist) on the occurrence of the insured event but for the compensation paid by insurance companies. The claims payment provides risk transfer mechanism and compensation as well as efficient distribution of different risks thereby guaranteeing financial stability, promoting business survival and encouraging economic growth. This however increases the output level of goods and services in the economy since business accidental losses and other unexpected, unplanned reduction in economic value of productive assets are restored or reinstated to the financial position they were prior to the happening of the specified event or peril. As such the aggregate output level in the economy is not reduced but increased.

A major gap in the literature that this study intends to bridge is the lack of consensus as to the direction of causality. Which of these variables precedes the other? Can it be said with certainty and consistency that insurance risk management activities leads economic growth or that insurance risk management activities follows economic growth. This is a cardinal issue to be examined in this study (Lead or follow analysis).

The challenge is to investigate the insurance industry risk management factors or channels or indicators that can drive growth in the output level of goods and services in Nigeria economy. Also, to find out whether the Nigerian economic growth behaviour can be modeled using these key indicators based on multivariate models. The study also applies different methodologies as compared to existing studies on Nigeria to find out the nature, extent, and direction of variation caused by insurance industry risk management variables on Gross Domestic Product (GDP) (and vice versa) both in the short-run and in the long-run.

The basic question this research seeks to address is-Are changes in claims payment by insurance companies important in explaining changes in the output level of Gross domestic products in Nigeria?

The findings of this study will be of great importance to policy holders, investors, financial analysts, researchers and others who have interest in investigating the risk management performance of insurance companies and its implications in economic growth in Nigeria. The study is organized into five sections. Section one introduces the study while two houses the empirical review. Section three contains the method of the study. Section four and five presents the empirical findings and concluding remarks respectively.

2. Literature Review

Risk Management Concept

According to Dorfman (2005), Risk management is the logical development and carrying out of a plan to deal with potential losses in order to manage individual's and organization's exposure to loss and to protect its assets. This could be referred to as traditional risk management.

Risk management could be traditional, financial or holistic.

- The traditional risk management is devoted to solving management problems associated with pure risk – the exposures that can only result in a loss or no change.
- Financial risk management describes a program to manage efficiently potential losses arising from such thing as interest rate changes, currency fluctuations, or commodity price changes.
- Holistic or enterprise risk management refer to a programme that simultaneously consider all sources of loss both pure risk which can only result in loss or no change and speculative risk, which can result in gain, losses, or no change. A holistic risk management program combines traditional and financial risk management programs.

A broader view of enterprise risk management includes cost of capital issues, cash flow management issues which are common threads connected to a holistic risk management program (Dorfman, 2005).

Risk management recognizes two broad approaches to dealing with risk facing an individual or organization: (a) Risk control, (b)Risk financing- Risk control approach focuses on minimizing the risk of loss to which the entity is exposed, and includes the techniques of (i)Risk avoidance and (ii)Risk reduction-Risk financing approach concentrates on arranging the availability of funds to meet losses arising from those risk that remain after application of risk control techniques, and includes (i)Risk retention and (ii)Risk transfer

A brief review of the four basic techniques of risk management subsumed under the broad approaches of risk control and risk financing are: Risk Avoidance, Risk Reduction, Risk Retention and Risk Transfer. Risk avoidance refers to when an individual or organization refuses to accept a risk even temporarily by not engaging in a hazardous activity. Risk reduction refers to all measures other than avoidance designed and applied to reduce the frequency, severity, and/or predictability of losses. It does not include obtaining insurance to indemnify the individual or organization against losses. Risk retention refers to a situation whereby an individual or organization does not take positive action to avoid, reduce or transfer a risk. Risk transfer refers to the movement of risk from the original owner or bearer to another entity, realized through a contractual arrangement such as insurance company (Vaughan and Vaughan, 1999).

Insurance involves the transfer of loss exposures to an insurance pool and the redistribution of losses among members of the pool. Certainty of financial compensation for loss from a pool with adequate resources and accurate predictability of losses are the hallmarks of the insurance business. Risk management includes hedging and diversification. Hedging involves investing in an asset with a pay off pattern that offset one's exposure to a particular source of risk in a portfolio while, diversification controls portfolio risk by investing in a wide variety of assets so that the exposure to the risk of any particular security is limited, (Bodie, Kane & Marcus 1999).

Insurance provides a tool for risk management. That is, a process for dealing with the risk of loss of life and property. Loss is an undesired, unplanned reduction of economic value or outright disappearance of economic value, (Dorfman, 2005). Insurance perform the risk management function by substituting small certain cost (the premium) for a large uncertain financial loss (the contingency insured against) through the pooling of people who share similar loss exposure. Uncertain risks of individuals and corporate bodies are combined under one management, making the possible loss more certain, and providing financial solution to the problems created by the loss. Small certain periodic contributions (premium) by the members of the group provided a pool of fund from which those who suffer losses are compensated (paid claims). The certainty of the premium replaces the uncertainty of a large loss (the contingency insured against). Insurance thus manages the uncertainty of one party (the insured) through the transfer of a particular risk to another parter (the insurer) who offers a restoration/compensation of indemnity of relatively large financial losses suffered by the insured party. The essence of insurance is the principle of indemnity, that the party who suffers a financial loss is placed in the same financial position after the loss as before the loss occurred. The insured party neither profit nor is disadvantaged by the loss. This is much more difficult to achieve in life insurance than in property and liability insurance. However, limiting the amount of life insurance sold to reflect the economic value of the covered life gives

recognition to the principle of indemnity (Dorfman, 2005).

The insurance mechanism is based on risk pooling or a group sharing of losses. Entities expose to a risk agree to share losses equitably. They transfer the financial risk of loss to an insurance company. The insurance company collects and pools the risk and premium of these parties under one management, thereby spreading the risk of loss across the entire pool. By carefully calculating the probability of losses that will be sustained by the members of the pool, insurance companies can equitably and fairly spread the cost of the losses to all the members of the scheme. The risk of loss is transferred from one to many and share by all insureds in the pool. Each person pays a premium that is measured to be fair to all based on the risk they impose on the insurance company and the pool. Insurance is a system for reducing financial risk by transferring risks from individuals and businesses to financial institutions specializing in risk. An insurance contract (policy) transfers a risk, for a premium (consideration), from one party (the policy holder) to another party (the insurer).

Insurance companies receive premiums in exchange for insurance policies payable upon death, illness, or accidents and use the funds to purchase a variety of financial securities and also invest in real estate, mortgage, stocks and bonds. The overall performance of insurance companies is linked to the performance of their investment, premium mobilization and claims payment. These investments, claims payment and premium collection are major channels through which the insurance industry impact on the economy, (Madura, 2003; Dorfman, 2005).

Linkage between Risk Management and Economic Growth

One major function of the insurance industry is the management of various financial risks. Risk management, for our purpose, refers to risk pooling, transfer and indemnification in order to reduce uncertainty and volatility. Skipper, (1997) opined that insurance activities, as a provider of risk transfer and indemnification may contribute to economic growth by promoting financial stability, allowing different risks to be managed more efficiently, encouraging the accumulation of new capital and helping to mitigate losses.

Levine, (2004) posits that insurance activity influence long-run economic growth through the management of risk and mitigating the negative consequences that random shocks can have on capital investment in the economy. Insurance companies provide a risk pass-through mechanism which reduces uncertainty, volatility and smoothen the economic cycle, reduce the effect of loss situations on the various economic units as well as lowering the total risk the economy faces, (Haiss and Sumegi, 2006).

This fundamental aspect of insurance activity (managing the risk of accidental loss) through the structured risk management process involves:

- Identifying the exposures to accidental loss,
- Evaluating alternative techniques for treating each loss exposure.
- Choosing the best alternative
- Monitoring the results to refine the choices

Those economic agents who do not apply a structured process do make decisions about risk sometimes by default rather than design (Leal and Bernard, 2006). However, insurance companies contribute specialized expertise in the identification, measurement and pricing of risk.

According to Curak and Loncar (2008), in the process of making decision on underwriting risk, insurance companies gather relevant information on risk factors and assess risk which reflects in the price of risk (premium) and the policy conditions. So insurers can use premiums as an indirect influence on resource dissipation and for lowering the aggregate risk faced in the economy. High risk-taking individuals and companies should bear much higher insurance cost (premium) than their risk preventing counterpart.

Insurance protect against negative outcomes of activities carried out by individuals or companies threatening themselves, others and the future abilities of both. This reduces jobs bearing safety risks, venturous investment risk and even product liability risk, thereby encouraging firms to willingly develop and market highly beneficial products. This can however increase the output level of goods and services in the economy, increase income and economic efficiency through the growth supporting aspect derived from the development of new products and services which will add to the existing stock of goods and services in the economy (Haiss and Sumegi, 2006).

The risk transfer and indemnification function of insurance can be achieved through the sale of insurance policies to the insured individuals, businesses or government and its agencies, as well as the adequate and timely payment of claims to the insured on the occurrence of the insured event. The claims payment provide a risk transfer mechanism thereby guaranteeing financial stability, promoting business survival and encourage economic growth. This is because business accidental losses and other unplanned or unexpected reduction in economic value of productive assets are restored or reinstated to the financial position they were prior to the happening of the specified peril through claims payment. As such, the aggregate level of output in the economy is increased. For our econometric modeling approach we will use yearly claims payment as total amount resembling a fairly accurate measure for the effects of insurance risk management to the economy at large.

Insurance policy can be used by a lender in securing his money through a process known as underwriting where

the liabilities of the lender is transferred to an insurance company in case of eventual default by the borrowers.

Negative Influence of Insurance Risk Management: It is important to note that some negative influence flows from insurance risk transfer and indemnification to the economy. This can be derived from the change in the behaviour of the policy holder due to the purchase of insurance coverage. Risk transfer not only enables the insured to cover his losses in the case of the occurrences of the insured event, it also dispenses him/her from taking precautionary actions to prevent the occurrence of the covered event and the extent of the resulting damage. Hence, the purchase of insurance (transfer of risk) encourages moral and morale hazard. It has the tendency of creating the attitude of carelessness or indifference toward loss or the outright exaggeration of the extent and severity of loss. Butler, Gardner and Gardner (1998) examines the influence of workers compensation insurance on productivity and their results show that due to the beneficial insurance coverage, productivity is lower, the number of severe injuries is higher and the periods of illness are longer than in companies not offering workers compensation insurance benefit.

Reinsurance: However, significant risks are attached to the services of insurance; these risks are mitigated through the service of another insurance company known as Re-Insurance Company. The re-insurer provides coverage for the main insurance company for significant risks that appear to be too much for the primary insurance company to bankroll.

In other advanced economies, the concept of insurance is statutorily established. This makes it compulsory for all citizens to take insurance policies on every sphere of life because failure to do so is a crime. In Nigeria, under the amended Insurance Act of 2003, certain insurance policies have been made mandatory because of their peculiarity in our daily lives. These are insurance policies relating to building construction for buildings under construction, group life assurance policy undertaken by an organization on behalf of their employees and many more. All these insurance policies have been statutorily made compulsory in Nigeria and anyone who fails to adhere to this is contravening an established law.

3.Method of the Study

This study is design to synchronize with the hypothetical-deductive research method which includes correlational and econometric investigation procedure. The chosen sample for this study includes the insurance companies listed on the Nigerian Stock Exchange. The paper construct a single disaggregated insurance claims payment- economic growth model patterned after multivariate regression analysis as well as granger causality technique, co-integration and variance decomposition within the contest of vector auto regression system.

The relevant data on components of claims paid on fire, accidents, motor vehicle, employers' liability and marine insurance policies were collected from the statistical bulletin of Central bank of Nigeria (2012). The annual data on Gross domestic product(GDP) and the data on the components of non-life insurance claims payment from 1980-2011 are all converted from their absolute values to rate of change and expressed on yearly basis in order to capture growth and performance. The Econometric view 7.0 were used.

Operationally, Gross Domestic Product (GDP) is conceptualized as the total monetary value of all goods and services produced in an economy over a given period of time, usually one year. While Claims payment is a payment from the insurance company to the insured for covered loss.

MODEL SPECIFICATION

Based on the literature review earlier made in this study, we can hypothesize that Gross Domestic Product is a positive function of insurance claims paid on the various forms of non-life insurance policies.

Modelling GDP as positive functions of disaggregated non-life insurance claims payment functionality is expressed as:

$GDP = f(CF, CA, CMV, CEL, CMA)$ - - - - (1)

Where

CF = Claims Payment on fire policies
CA = Claims payment on Accident policies
CMV = Claims payment on Motor Vehicle policies
CEL = Claims payment in Employers Liabilities
CMA = Claims payment on Marine policies

Expressing equations (1) in the econometric model; *we have:*

$GDP = \beta_0 + \beta_1 CF + \beta_2 CA + \beta_3 CMV + \beta_4 CEL + \beta_5 CMA + U_t$;

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$ - - - - - (2)

Where U_t is the error term, L_n represent the logarithmic component and other variables remain as defined above. Log linearly, we have:

$L_nGDP = L_n \beta_0 + \beta_1 L_n CF + \beta_2 L_n CA + \beta_3 L_n CMV + \beta_4 L_n CEL + \beta_5 L_n CMA + V_t$ - - - (3)

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$

The Feedback Effect relationship between GDP and the insurance claims payment variables (ICPV) can be expressed as:

$RGDP = \sum aj\ RGDP_{t-j} + \sum bj\ ICPV_{t-j} + U_t$ - - - - - (4)

With equation (4) we can determine the feedback effect implications of the relationship between GDP and the disaggregated claims payment measures(Insurance Claims Payment Variables(ICPV)).

The analytical framework of this study consists of ten basic steps carried out on the models specified above. They include: descriptive statistical analysis, correlation matrix, unit root test, diagnostic test, ordinary least square regression method, vector error correction mechanism (VECM), co-integration test, granger causality test, impulse response analysis, variance decomposition analysis.

4. EMPIRICAL TEST RESULT AND FINDINGS

Descriptive Statistics

Table 1. Descriptive Statistics for Model Five

Variable	Mean	Median	Maximum	Minimum	Std.Dev.	Skewness	Kurtosis	Jarque Bera	Probability
GDP	24.24719	18.08602	114.8339	-15.29617	25.29361	1.527.659	6.419166	28.03421	0.000001
CF	-1430.892	9.632629	911.3977	-49214.30	8712.043	-5.384785	30.00906	1127.297	0.000000
CA	112.2134	17.72682	1974.200	-8859020	365.2830	4.395014	22.59090	614.7571	0.000000
CMV	32.40783	8.741854	455.3928	-70.11760	85.42583	3.972630	20.18503	477.9364	0.000000
CEL	71.0075	13.26277	862.1394	-89.61900	192.1305	2.855451	11.02925	129.4443	0.000000
CMA	-3484.869	12.36204	824.5630	-114100.0	20186.28	-5.387025	30.02441	1128.532	0.000000

Source: Author's computation

From the result in table 4.42, the mean of the changes in accident claims payment is 112.21 (median =17.73). This is the highest average value seconded by that of employer liability policies of 71.00 (median = 13.26).

However, the rate of change in fire policies claims payment ranges from 911.39 to -49214.30 while that of accident policies spread from 1974.2 to -88.59. The growth rate in motor vehicle, employer liability, and marine insurance claims payments ranges from 455.39 to -70.12, from 862.14 to -89.62 and from 824.56 to -114100.0 respectively. For CMV, the maximum value was attained in the year 2006. Changes in accident insurance claims payment is the most dynamic variable in the model because its values deviate very widely from the mean to the tune of 8712.04.

Comparing the mean values of the variables with their median counterpart, it is observed that GDP, CA, CMV and CEL have the mean values 24.25, 112.21, 32.41 and 71.00 which are larger than their median values – 18.09, 17.73, 8.74 and 13.26 respectively. So, these variables are positively skewed toward normality while CF and CMA are negatively skewed since their mean values are less than the corresponding median values.

Judging from the fact that the kurtosis of all the variables in the series is greater than 3, we conclude that all the variables are leptokurtic in nature in line with the position of theory. The probability of the JB statistic are all significant at a 5% level of significance implying that all the variables in the model are normally distributed. This is consistent with the a priori expectation of the normality assumption of ordinary least square.

Table 2. Correlation matrix result

	GDP	CF	CA	CMV	CEL	CMA
GDP	1.000000					
CF	0.163780	1.000000				
CA	0.010759	0.064539	1.000000			
CMV	0.059812	0.076136	0.208195	1.000000		
CEL	0.233362	0.074880	0.056706	0.409921	1.000000	
CMA	0.162609	0.999769	0.061881	0.075909	0.072503	1.000000

Source: Author's computation

The correlation matrix in table 4.2 reports correlation in respect of GDP.

The correlation matrix shows that the co-efficient of correlation between GDP and CF is 0.16, between GDP and CA is 0.01, between the pair CMV and GDP is 0.06, that of the pair CEL and GDP is 0.23 while the co-efficient of correlation between the pair CMA and GDP is 0.16. Each pair seems to have weak positive correlation. This means that the variables move toward the same direction. That is, an increase in the explanatory variables would increase the performance of the explained variables.

Table 3. ADF Unit Root Test Result

Variable	ADF stat. level	ADF stat. 1st diff	Order of integration
GDP	**-3.091161**	**-6.440007**	**1(1)**
CF	**-3.85856**	**-6.230359**	**1(1)**
CA	**-4.310407**	**-7.056395**	**1(1)**
CMV	**-4.035935**	**-6.568468**	**1(1)**
CEL	**-4.465086**	**-6.864916**	**1(1)**
CMA	**-3.890784**	**-6.248265**	**1(1)**

Critical values: 1% -3.6661; 5% -2.9665; 10% -2.622

Source: Author's computation

Table 4.3 displays that all the variables in the model are stationary both at level data and after first differencing. The series are all integrated series of order 1 (1) and could be use to test for long – run equilibrium relationship between the variables.

Table 4. Summary of the Diagnostic Test Result

Test statistics	L.M. Version	Prob. Value	F- version	P.V.
J.B. Normality test	57.175	0.0000	-	-
First order serial correlation	0,760856	0.6836	0.292270	0.749
White heteroskedasticity	1.5341	0.9091	0.26185	0.9298
Ramsey reset	0.134297	0.7140	0.105140	0.7484

Source: Author's computation

(a) Normality Test

The Jarque- Bera statistics was found to be 57.175 with a corresponding probability value of 0.0000. Given the critical alpha value of 5%, it follows that the residuals of model with the explanatory variables CF, CA, CMV, CEL and CMA are normally distributed. This is confirmed by the significant nature of the probability of JB statistics at 5% significant level.

(b) Serial Correlation Test

Ho: The error terms are not independent

Hi: The error terms are independent.

From the observation that the probability value of the L.M. CHQ statistics (0.6836) and that of F-Statistic (0.749) are all greater than the critical value 0.05, it then means that the alternative hypothesis that the error terms are independent is rejected. Suggesting that the successive error terms are serially correlated which is not in agreement with the a priori expectation of OLS assumptions.

(c) White- Heteroskedasticity Test

Ho: The error terms are not constant

H_1: The error terms are constant

At the given significant level of 5%, we found that the probability of L.M. CHQ statistic of 0.9091 and that of F-statistic of 0.9298 are larger than 0.05, suggesting that the successive error terms are not constant but Heteroskedastic in nature.

(d) Functional Form

Using the Ramsey Reset Test with the hypotheses:-

Ho: The model is not well specified

H_1: The model is well specified.

We observed from table 4.4 that the probability value of the F-statistics (0.7484) and that of L.M CHQ statistic (0.7140) are greater than the critical probability value of 0.05, hence we reject the alternative hypothesis that we cannot ascertain the correct specification of the model.

Table 5. OLS TEST Result

Dependent Variable: GDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.07918	5.385430	4.285485	0.0002
CF	0.004175	0.025845	0.161555	0.8729
CA	-0.000397	0.013462	-0.029504	0.9767
CMV	-0.014458	0.062574	-0.231045	0.8191
CEL	0.031521	0.027417	1.149695	0.2607
CMA	-0.001615	0.011151	-0.144784	0.8860
R-squared				0.078911
F-statistic				0.445490
Durbin-Watson stat				1.666814

Source: Author's computation

The multiple regression results reveal that the changes in CA, CMV and CMA are slight negatively associated with the growth in GDP. These relationships are not significant. CF, and CEL exhibit a very weak positive correlation with GDP implying that, though the association is positive, it is not significant and changes in all the explanatory variables cannot significantly influence growth in Gross Domestic Product. This is a pointer to the fact that this relationship need critical examination to ascertain the reasons for this level of insignificance and that the component claim paid on various insurance policies do not have significant influence on output level of goods and services in the economy.

Table 6. Vector Error Correction Test Result

Variables	Adjustment parameter
GDP	-0.612
CF	0.00017
CA	-0.007
CMV	-0.03
CEL	0.032
CMA	-0.04.

Source: Author's computation

The negative signs means significance, so, the variables GDP, CA, CMV and CMA can be restored back to a long-run equilibrium position at a speed of 61%, 07%, 3%, and 4% respectively in case of short-run distortion in their equilibrium position. GDP possess the highest adjustment capacity in the model.

Table 7. Johansen Co-integration Test Result

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.764941	120.4308	95.75366	0.0004
At most 1 *	0.629656	76.99327	69.81889	0.0119
At most 2	0.445409	47.19361	47.85613	0.0576
At most 3	0.403493	29.50791	29.79707	0.0540
At most 4	0.294994	14.00799	15.49471	0.0827
At most 5	0.110757	3.521535	3.841466	0.0606

Source: Author's computation

Given the trace statistic and the critical values for the hypothesized number of co- integrating equations, the test in table 4.7 indicates the existence of two co integrating equation in a given predictor model at 5% level of significance. This result reveals that there is co-integrating or long-run relationship among the variables in the model. Hence we can say that there is long-run relationship between GDP and the disaggregated claims paid on the various non-life insurance policies to cover the insured losses in the economy.

Table 8. Pair wise Granger Causality test result

Pairwise Granger Causality Tests			
Null Hypothesis:	Obs	F-Statistic	Probability
CF does not Granger Cause GDP	29	1.13316	0.3574
GDP does not Granger Cause CF		0.31055	0.81752
CA does not Granger Cause GDP	29	0.20456	0.89213
GDP does not Granger Cause CA		0.95415	0.43174
CMV does not Granger Cause GDP	29	0.1381	0.93616
GDP does not Granger Cause CMV		0.06503	0.97782
CEL does not Granger Cause GDP	29	0.06984	0.97544
GDP does not Granger Cause CEL		0.46465	0.70986
CMA does not Granger Cause GDP	29	1.1372	0.35587
GDP does not Granger Cause CMA		0.30194	0.82364

Source: Author's computation

Given the probability values of the F-statistic in table 4.8 we can observe that there is no causal relationship between GDP and all the explanatory variables in the model. This further support the OLS test result where there was no significant relationship between GDP and the independent variables. This suggests that the claims paid on non-life insurance policies in Nigeria may not be large enough to significantly influence the growth in GDP. This may be occasioned by low level of awareness and poor patronage of insurance products by Nigeria.

Table 9. Impulse Response test result

Response of GDP:						
Period	GDP	CF	CA	CMV	CEL	CMA
1	20.90778	0.000000	0.000000	0.000000	0.000000	0.000000
	(2.69918)	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
2	5.936686	-10.33711	3.631441	-0.381528	0.423482	1.991836
	(4.13070)	(5.21052)	(4.96269)	(4.87119)	(4.10869)	(4.57726)
3	1.450749	-3.476847	2.697163	4.377265	-11.97487	-12.25233
	(5.29717)	(6.66044)	(6.47721)	(6.35482)	(4.69443)	(4.80265)
4	5.030875	-4.799311	1.630084	-0.867777	-2.198470	-5.400759
	(4.67411)	(7.07600)	(5.62833)	(5.29277)	(4.63790)	(5.38824)
5	2.381364	7.645491	0.302105	4.091894	0.657011	0.200040
	(4.53485)	(5.94007)	(4.95712)	(4.90784)	(3.89153)	(4.60215)
6	0.849985	-0.500909	-0.573670	1.995729	-3.286299	-3.796755
	(3.64464)	(5.42180)	(3.77401)	(3.44850)	(3.56932)	(4.30674)
7	2.237678	-1.818423	0.390288	0.573854	-0.117050	-0.770605
	(2.88521)	(3.79131)	(2.79784)	(3.02715)	(2.90763)	(3.21508)
8	1.022040	1.426797	0.055504	1.103867	-0.212391	0.327655
	(2.54890)	(3.04956)	(2.06968)	(2.13873)	(2.32196)	(2.81838)
9	0.381297	-0.628634	0.027696	0.444840	-1.285579	-1.524977
	(2.04153)	(2.16480)	(1.38738)	(1.49569)	(1.77792)	(2.05683)
10	0.717936	-0.426941	0.420982	0.199285	-0.200673	-0.493679
	(1.58549)	(1.62942)	(1.07789)	(1.29387)	(1.53052)	(1.77174)

Source: Author's computation

In table 4.9, the impulse response of GDP to own innovation is positive 20.90%, but gradually decrease to 5.94% in the second year and 0.72% in the 10th year, while the response of GDP to shocks emanating from the explanatory variables where all zero in the first year and fluctuates throughout the forecast period of 10 year with no define pattern.

Table 10. Variance Decomposition Test Result

Variance Decomposition of GDP:							
Period	S.E.	GDP	CF	CA	CMV	CEL	CMA
1	20.90778	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	24.42775	79.16332	17.90736	2.209994	0.024394	0.030054	0.664875
3	30.51000	50.97264	12.77790	2.198187	2.073997	15.42410	16.55317
4	31.88440	49.16254	13.96573	2.274138	1.973122	14.59846	18.02601
5	33.13678	46.03310	18.25345	2.113800	3.351649	13.55515	16.69285
6	33.59385	44.85301	17.78236	2.085833	3.613992	14.14577	17.51904
7	33.73351	44.92241	17.92600	2.081983	3.613068	14.03008	17.42646
8	33.79947	44.83868	18.03430	2.074135	3.705643	13.97932	17.36791
9	33.86918	44.66696	17.99459	2.065672	3.707655	14.06591	17.49921
10	33.88687	44.66522	17.99168	2.078949	3.707243	14.05473	17.50217

Source: Author's computation

The result in table 4.10 depict that GDP explained about 79% in it own variation in the second year but decrease to explaining only about 44.67% variance in itself at the long-run (10th year). Own innovation still represents the dominant source of variation in the forecast error of GDP. The innovations from the explanatory variables – CF, CA, CMV, CEL and CMA constitutes 12.78%, 2.20%, 2.1%, 15.4% and 16.55% respectively in the 3rd year. However, in the 10th year, the variables contributed 17.99% for CF, 2.08% for CA, 3.71% for CMV, 14.05% for CEL and 17.5% for CMA. These reveal that, as the year progresses, the variance explained by CF, CMV and CMA increased while the contribution of CA and CEL decreases. So CF, CMV and CMA contributed higher in the 10th year than in the early years of the forecast.

5. Concluding Remarks

This study investigated the impact of insurance risk management through the window of claims payments on the growth in the output level of goods and services in a typical less developed economy using Nigeria as a case in point. The augmented Dickey Fuller test results indicated that all the series of data in the model achieved stationarity after first differencing at the order 1(1). Gross Domestic Product and the components of claims paid on various forms of non-life insurance policies were found to be cointegrated indicating the existence of long run

equilibrium relationship between economic growth and insurance indemnification at 5% level of significance.

This result suggest that indemnification of the holders of property and liability insurance policies by the insurance companies could help to maintain and even improve the productive quality of the existing stock of capital in the economy by promoting business survival because business accidental losses and other unplanned, undesired reduction in economic value of productive assets could be restored financially through claims payment, thereby increasing the level of output in the economy. This finding is in line with the opinion of Levine (2004) that insurance activity influence long-run economic growth through the management of risk and mitigating the negative consequences that random shocks may have on capital investment in the economy. Claims payment however reduces the effect of loss situations on the various economic units as well as lowering the aggregate risk the economy faces.

In the short run, there is no significant relationship between GDP and components of claims payment. The Granger Causality test result also confirm the position of the OLS result by showing that there is no Causal relationship between the dependent and independent variables in the model. This could be as a result of the observed low level of insurance patronage by Nigerians occasioned by poor insurance habit and lack of awareness.

The impulse response and variance decomposition analysis of GDP to shocks emanating from disaggregated claims payments exhibit a mixture of contraction and expansion over the ten-year forecast period. Though it is apparent that own shocks remain the dominant source of the total variation in the forecast of error of the dependent variable. The paper recommend increased insurance patronage for all economic units in order to enjoy the attendant benefits associated with insurance risk management and raise the output level of Gross Domestic Product in the economy.

References

Akaike, H. (1969): Fitting Autoregressive Models for regression, *Annals of the Institute of Statistical Mathematics,* 21, 243-247.

Arena M. (2006): Does Insurance Market Activity Promote Economic Growth? *World Bank Policy Research*, December 2006. http://www.econ.worldbank.org working p. 4098.

Arena, M. (2008): Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developing Countries, *Journal of Risk and Insurance,* Vol. 7, No. 4, Pp. 921-946.

Arena, M. (2008). Does Insurance Market Promote Economic Growth? A Cross-Country Study for Industrialized and Developing Countries, *Journal of Risk and Insurance,* 75(4): 921-946.

Avram, K. (2010): Insurance and Growth: A Cross Country Examination, Australian Centre for Financial Studies, *Finsia Banking and Finance Conference 2010.*

Avram, K.Y. Nguyen and M. Skully (2010): Insurance and Economic Growth: A Cross Country Examination, Monash University, Department of Accounting and Finance, *Working Paper*.

Bodie, Z., Kane, A. and Marcus (2005): Investment, New York, McGraw-Hil/Irwin Companies Inc.

Boon, T.K. (2005): Do Commercial Banks, Stock Market and Insurance Market Promote Economic Growth? An analysis of the Singapore Economy, Nanyang Technological University, School of Humanities and Social Studies, *Working Paper*.

Butler, R.J., Gardner, B.D. and Gardner, H. H. (1998): More than cost shifting: Moral hazard lowers productivity, *Journal of Risk and Insurance*, 67(1): 73-90.

Central Bank of Nigeria Annual Report and Financial Statement, 2012.

Curak, M., Loncar, S. and Poposki, K. (2009): Insurance Sector Development and Economic Growth in Transition Countries, *International Research Journal of Finance and Economics,* 34(1): 29-41

Dickey, D.A. and Fuller, W.A. (1981): Distribution of the Estimators for Autoregressive Time Series with a Unit Root, *Journal of the American Statistical Association,* Vol. 74, Pp. 427-431.

Dorfman, M.S. (2005): Introduction to Risk Management and Insurance, (8th Edition) New Delhi, Prentice-Hall of India Private Limited.

Dooley, D. (1984): *Social Research Methods*, New Jersey, Prentice-Hall inc., pp. 225-227.

Engle, R.F. and Granger, C.W. (1987): Co-integration and Error Correction: Representation, Estimation and Testing, *Econometrica,* vol. 55, 251-276.

Ezirim, C.B. (1999): Intermediation Functions of Superstructure and Economic Growth, Evidence from Nigeria, *Unpublished Ph.D. Dissertation*, University of Port Harcourt.

Ezirim, C.B. (2004): *Risk and Insurance in Nigeria: Principles and Applications*, Port Harcourt, Markowitz center for Research and Development.

Gardner, B. and Gardner, H. (1998): More than Cost Shifting: Moral hazard lowers Productivity, *Journal of Risk and Insurance,* Vol. 67, No.1, Pp. 73-90.

Granger, C.W.J. (1969): Investigating Causal Relations by Economic Models and Cross-Spectral Methods, *Econometrica*, 35, 25-27.

Granger, C.W.J. (1991): *Long-Run Economic Relationships: Readings in Co-integration*, Chapter 13, Oxford University Press, New York.

Gujarati, D.N. & Porter, D.C. (2009): *Basic Econometrics*, Fifth Edition, New York, McGraw-Hill/Irwin.

Haiss, P. and Sumegi, K. (2008): The relationship between insurance and economic growth in Europe: a theoretical and empirical analysis, *Empirica,* 35(4): 405-431.

Iyeli, I.I. (2010): *Empirical Econometrics: A Guide to Policy*
Modeling, Port Harcourt, Pearl Publishers.

Kugler, M. and Ofoghi, R. (2005): Does Insurance Promote Economic Growth? Evidence from the U.K., University of Southampton, Division of Economics, Working Paper.

Law of the Federal Republic of Nigeria, The Pension Reform Act of Nigeria 2004.

Law of the Federal Republic of Nigeria, The Insurance Act of Nigeria 2003..

Levine, R., (1999): Law, Finance, and Economic Growth, *Journal of Financial Intermediation,* 8(12): 8-35.

Osipitan, T. (2009): Legal Regulation of Insurance Business in Nigeria: Problems and Prospects, *Chartered Insurance Inst. Nig. J.*, 11(1): 69-82.

Skipper, H. Jr. (1997): Foreign Insurers in Emerging Markets: Issues and Concerns Center for Risk Management and Insurance, *Occasional Paper* 97-2.

Vaughan, E.J. and Vaughan, T.M (199): Fundarmentals of Risk and Insurance (8th Edition) New York, John Wiley & Sons Inc.