Archives of Business Research – Vol.5, No.12
Publication Date: Dec. 25, 2017
DOI: 10.14738/abr.512.3908.
Ezirim, C. B., Ezirim, U. I., Eniekezimene, D., & Elike, U. (2017). Finametric Determination of Insurance Profitability: Analysis of The Nigerian Experience. *Archives of Business Research, 5(12),* 50-62.

Finametric Determination of Insurance Profitability: Analysis of The Nigerian Experience

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ABSTRACT

The study set out to finametrically investigate the key determinants of insurance profitability in Nigeria using least squares and associated diagnostic tests, co-integration and the fully modified Phillips-Hansen estimation procedures. The results indicate that five variables namely premium ratio, level of economic activity (or simply, state of the economy), and investments ratio, and profitability in previous periods significantly and positively influenced current profitability of insurance companies in Nigeria. Only financial market conditions and claims ratio were found to exert significant but negative influence on current profitability. There also existed long-run equilibrium relationship between the variables such that the observed influences are likely to persist in the long-run, ceteris paribus.

INTRODUCTION

The insurance mechanism is a very unique one in that its industry is about the only one that exists purposely to ensure that other industries and sectors of the economy do not fail, should they solicit for its help in dealing with their risks. Both individuals, families, businesses and the economy in general benefit from the operational functions of insurance companies, if they approach them to assist in indemnifying them against the effects of risk of loss. Being assured of indemnification, these agents are rest assured and geared for gainful economic operations that eventually aggregate to the common good of the economy at large. Also, insurance companies, on their own part contribute directly to the growth and development of the economy by their sheer operations along the lines of premium generation, investments, and claims settlements, re-insurance, among others. It has been posited that these operations manifest in the areas of boosting aggregate savings, domestic investments and capital formation, financial intermediation, stemming capital flight, aggregate output, national income and overall improvement of living standards (Ezirim, 2004).

In view of these, it becomes a very important and in fact urgent fact that the insurance industry should be given the vital attention it deserves in order for a country to reap the amply benefits

the industry promises. This need for attention has been dully recognized by developed countries of the world to the extent that they are constantly harnessing the benefits accruable from developing their insurance industries. It is of note that in the developed countries, the insurance industry appears to be more active, buoyant, booming, and perhaps more socio-economically relevant than even the over-dramatized banking industry. This may not be said of the developing countries of the world, and definitely not for poorer countries of Asia and Africa. These countries still have a long way to go as far as developing the full potentials of the insurance mechanism is concerned.

Notwithstanding, it is of note also that the developing countries are not resting on their oars in trying to make their insurance industries to be more socio-economically relevant and thus contribute their much needed quota in economic growth and development. To this end, the National Insurance Commission (NAICOM) attempted to revitalize and re-invigorate the Nigerian insurance industry and thus re-position it for more veritable and enhanced profitable performance, in a bid to make the respective companies compete favorably among the comity of other financial institutions operating in the country and beyond. Having appreciated the global village phenomenon, the re-capitalize insurance companies have been given fresh impetus to enhance their performance and to make them formidably strong players both nationally and internationally.

Despite this macro and other efforts by the companies themselves and the regulatory authorities, the revelation was that the corporate performance of the Nigerian insurance companies can only be described as suboptimal. For instance in 2014, the statistics showed that the industry contribute only 0.3% of overall GDP of Nigeria and 2.3% of Africa's total premium generated. By comparison, this is nothing to compare with what obtained in South African where the insurance industry contributed about 16% of the country's GDP and about 78.13% of total premiums generated by insurance companies the Continent (Daniel, 2015). This is a cause for worry, especially when the country is boasting of having the largest insurance market in Africa. What then could have been responsible to this development?

A number of internal and external factors has been identified to influence the profitability of insurance companies by different commentaries. The internal or company-specific factors include, risk defined as loss ratio or in terms of earnings volatility, liquidity, tangibility of assets, company or business growth, firm size and age, leverage and or capital base. The external factors include social, political, economic, legal and regulatory and general environmental factors. What is not yet clear from available studies is which of these factors are responsible for the present profitability status of insurance companies in Nigeria? It is in view this worry and poser that the present study attempts to uncover the most important explanatory factors determining insurance profitability in Nigeria, drawing empirical evidence from insurance companies listed on the Nigeria Stock Exchange.

EMPIRICAL BACKGROUND AND REVIEW OF RELATED LITERATURE

The banking sector, until recently, dominated studies on determinants of profitability. For instance, Abreu and Mendes (2001) studied banks in four European countries (German Portugal, France and Spain) for the period of 1986-1999 and provided evidence that equity to assets and loan to assets ratios had positive relationship with interest margins and profitability of the banks. In their analysis of external factors, inflation significantly related with profitability and interest margins of the banks while exchange rates did not exert strong influence on profitability. Staikouras and Wood (2003) examined the effect of internal and external factors on the profitability of banks operating in 13 different European countries using panel data methodology. It was found that internal factors exerted the strongest

influence the performance of the banks than the external factor. More so, banks with greater levels of equity were found to be more profitable than those with greater levels of debt. Externally, GDP growth and interest rates were inversely related while with profitability of banks.

More recently studies on the insurance sector started surfacing in good numbers. For instance, Ahmed, Ahmed and Usman (2011) investigated the determinants of performance in life insurance sector of Pakistan by using panel data of five insurance companies from 2001-2007. The results showed that leverage, size of the firm and risk were the most important arguments in explaining insurance corporate performance while growth, tangibility, age of the firm, and liquidity did not associate significantly with performance of life insurance firms. Hifza (2011), in a study of 35 listed life and non-life Pakistani insurance companies attempted to unearth the key determinants of profitability for the period ranging from 2004-05 to 2008-09, found insignificant association between profitability and age of the company but a positive and significant association between firm size, volume of capital and profitability, while loss ratio and leverage were negatively linked to profitability. Amal et al. (2012) studied twenty five Insurance Companies in Jordan from 2002-03 to 2007-08 and found leverage, liquidity, firm, and managerial competence to be positively and significantly related to financial performance of the companies studied. The age of the company was not found to influential in determining performance.

Bilal, Khan, and Tufail (2013) studied the determinants of profitability of 31 Pakistani insurance firms Pakistan from 2006-2011 applying fixed effects and random effects models with associated Hausman's specification test. The results indicate that leverage, size, earnings volatility and age of the firm were significant determinants of profitability while growth opportunities and liquidity were not. Olajumoke (2012) studied the life companies in Nigeria from 2003-04 to 2007-08with results indicating profitability as being not so much affected by the ownership structure, leverage and size of firms. Instead, profitability associated negatively with the level of reinsurance, but positively affected by interest rates.

Mwangi and Murigu (2015) used the multiple linear regression to investigate the correlates of profitability for Kenya's general insurance companies from 2009-10 to 2012-13 and found profitability to be significantly and positively related to leverage, equity capital, management competence index, but negatively related to size and ownership structure. Loss retention ratio, liquidity, underwriting risk and age were not significant. It was uncovered that the contribution of the general insurance industry to the gross domestic product was only 2.08%. Ibrahim's (2016) study applied regression analysis to examine the factors determining the performance of insurance companies in Nigeria using both primary and secondary data for the years 2007 to 2014. The results indicate that the variables considered most significant are equity, gross written premium, liquidity, leverage, company's age, solvency and assets tangibility. In the order of contribution to performance economic factors ranked highest, followed by technological factors and lastly by environmental factors in that order. Equity capital was found to make the strongest contribution to insurance performance contrary to popular belief that favors gross written premium.

Berhe and Kaur (2017) examined the internal or firm specific variables (firm size, capital adequacy, leverage, liquidity, and loss ratio) and external or macro variables (market share, growth rate of GDP and inflation) in a bid to identify the key factors influencing insurance profitability in Ethiopia using the fixed effect model against panel data from 2005-06 to 2014-15 for seventeen (17) insurance companies. The findings showed that firm size, capital

adequacy, liquidity ratio and growth rate of GDP were the major factors that significantly impacted the profitability of insurance companies. Conversely, leverage, loss ratio, market share and inflation were insignificant in their impact.

METHODOLOGY

The study utilizes the finametric approach that involves quantitative and statistical measurements, modeling, and estimation of financial relations among financial phenomena (in this case, endogenous and exogenous variables manipulations) that crystallizes in addressing defined financial problems.

Analytical Techniques

In carrying out the study, we adapted the models developed in (Ezirim, 1999) and applied in Ezirim and Isitor (2005). Accordingly, linear regression equations are derived. The least squares (LS) method for associated diagnostic tests, unit root test procedure for stationarity imperatives, cointegration test, and the fully modified Phillips-Hansen estimation procedure are adopted for estimating the variables. The study underlines that the use of the fully modified Phillips-Hansen estimation procedure requires that the variables are I(1) and that the predictors are not themselves cointegrated with each other. The Parzen lag window was employed to compute the Phillips-Hansen estimates using the parzen weights in the estimation of the long-run variance. However, the study tests the long-run equilibrium relationship between the dependent variable and the predictors using the cointegration procedure with unrestricted intercepts and no trends in the vector autoregression (VAR). Specifically, it undertook cointegration LR test based on maximal eigenvalue of the stochastic matrix and also based on trace of the stochastic matrix.

The study did a variety of diagnostic tests to confirm the global usefulness of the model. These include the Lagrange multiplier test of residual serial correlation, Ramsey's RESET Functional Form test using the square of the fitted values, Normality test based on a test of skewness and kurtosis of residuals, and Heteroscedasticity test based on the regression of squared residuals on squared fitted values. The Lagrange multiplier (LM) and Fisher's (F-statistic) versions were computed and employed in the analysis. The relative impact of each explanatory variable was determined by employing the t-statistics and associated probability of the fully modified Phillips-Hansen estimates to test the relevant hypotheses. Preliminary analysis of data was done using relevant descriptive statistical measures of central tendency, variability, skewness and line charts.

The Model and Operational Definition of Variables

It is hypothesized that the overall profitability of the insurance industry represented by the profit after before tax is a positive function of their level of funds mobilization (represented by total premiums, which is an inflow in the intermediation process), investment decisions resulting in level of investment in the period, rate of growth of the economy representing the state of the economy, and profitability of operations in the previous period; but a negative function of claims payment (which is an outflow in the intermediation process), rate of return on government treasury investments, and the state of the economy. It is reasoned that since the insurance companies are in existence to indemnify other economic units against 'bad times', their operations can as well be boosted even when the economy is in down turn. Expectedly, their business would increase with turbulent times that plague other economic units who would run to them for cover against risk of loss. The inclusion of the rates on government's treasury investment is predicated on the fact that much of insurance funds are constrained by law to be plunged into government securities in the money market. This in part captures the regulatory influences on their assets allocation and funds' utilization.

This study would have considered the inclusion of the capital base as a major argument in the model since it is supposed to make funds available for operations. However, the tradition of insurance companies was not that of aggressive working capital management. More so, any available funds from the shareholders' fund would have been transmitted through the investment channel, so this study down-plays the capital base variable. Again, the regulatory environment ordinarily should be of remarkable influence in the profitability of insurance companies in view of the fact that their operations, especially investments, are heavily regulated in Nigeria. This would have suggested an inclusion of the government regulatory index (GRI) as a major argument in the model. However, since the model has captured most of these operations that are keenly regulated, its inclusion may be a mere repetition. Thus, with some amendments in the specifications of Ezirim (1999), we can write the relationship between the selected variables functionally as

$$ROA_t = f(INV_t, TP_t, RGE_t, CP_t, ROTI_t, ROA_{t-1}, U_t) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where, $f_1 > 0$; $f_2 > 0$; $f_3 > < 0$; $f_4 < 0$; $f_5 < 0$; $f_6 > 0$
ROA = Current return on assets
INV = Investments
TP = Total premium
RGE =rate of economic growth
CP = Claims payment
ROTI = rate of return on treasury instruments
ROA_{t-1} = Previous return on assets
U_t = Error term

It is through the partial adjustment procedure that we have the return on assets of insurance companies of the previous periods entering into the model, and thus a hypothesized distributed lag effect is herein suggested. The detailed procedure follows the manipulations in Ezirim (1999). The study used total assets of insurance companies to divide the relevant variables to simplify the procedure and reduce possible finametric diagnostic problems. Thus, defining current profitability as profit before tax to total assets ratio (which is return on assets, ROA), investments as investment to total asset ratio (IVR), total premium as total premium to total assets ratio (TPR), rate of return on treasury investments (ROTI) as proxied by the rate of return on the treasury bills or treasury bills rate (TBR), RGE as the actual rate of economic growth, and claims payment as claims to total assets ratio (CPR); we rewrite expression (1) explicitly as:

$$ROA_t = {}_0 + {}_1TRP_t + {}_2\,\mathrm{CPR}_t + {}_3RGE_t + {}_4INVR_t + {}_5TBR_t + {}_6ROA_{t\ 1} + U_t \quad (2)$$

Where ${}_0$ = constants and ${}_i$ (i = 0, 1, ..., 6) are coefficients. *A priori*, ${}_1 > 0$, ${}_2 < 0$, ${}_3 > < 0$, ${}_4 > 0$, ${}_5 < 0$, ${}_6 > 0$; and U_t is the stochastic disturbance term.

Expressions (1) and (2) are in the functional and linear forms, respectively. It is noteworthy that the first term in the RHS is the total premium ratio (TPR), the second term is the claims payment ratio (CPR), and the fourth is the investment ratio (INVR), while the sixth is the lagged ROA (ROA_{t-1}). The only term in LHS is the current return on assets (ROA). These would help to simplify the equations and handling thereof. The direction or nature of relationships existing between the explanatory variables and the explained variable has been hypothesized to follow the *a priori* reasoning as shown in the model above, while the relevant variables in the model are as hereunder defined:.

PBT= Profit before tax, where ROA is return on assets of insurance companies in Nigeria
TP= Total premium, where PR is the premium ratio; a ratio of premium to total assets
CP= Claims payment, where claims payment ratio (CPR) is ratio of total claims paid to total assets.
RGE= a measure of rate of growth of the economy or state of the economy and proxied by gross domestic product rate of change (GDPR)
INV= is the total investments, where IVR, the investment ration of Insurance companies in Nigeria is a ratio of investments to total assets
ROTI= Return on treasury instruments proxied by treasury bills rate (TBR); a proxy for money market yield rate.
ROA_{t-1}= Lagged return on assets of insurance companies
TA= Total assets

ANALYSIS OF ESTIMATION RESULTS

Descriptive Statistical Analysis

The data for this study were obtained from the Statistical Bulletins of the Central Bank of Nigeria (CBN) and National Insurance Commission (NAICOM). Computations were made to transform the level values into rates of growth and ratio where applicable. The descriptive statistics of the resultant values of each variable are depicted on Table 1. As can be seen, the mean scores of the variables were 3.6% for ROA, 3.3% for RGE, 85.1% for IVR, 54.3% for PR, 20.3% for CPR, and 11.7% for TBR. The standard deviation of each of the variables were 1.8 for ROA, 3.03 for RGE, 5.4 for IVR, 9.9 for PR, 13.8 for CPR, and 4.8 for TBR. These are indicative that the variables did not fluctuate violently but somewhat mildly. This can easily be confirmed from Figure 1, which shows the graphical presentation of the variables. All the variables, except IVR were positively skewed indicating that the distributions have long right tails. Thus the IVR being negatively skewed did have a long left tail. The Kurtosis statistic which measures the peakedness or flatness of the distribution of each of the series was calculated at 1.9 for ROA, 5.3 for RGE, 2.9 for IVR, 2.5 for PR, 2.0 for CPR, and 4.2 for TBR.

Table 1: Descriptive Statistics of Variables: ROA, RGE, IVR, PR, TBR, and CPR

Statistic	ROA	RGE	IVR	PR	CPR	TBR
Mean	3.639412	3.319006	85.06157	54.31062	20.39093	11.74735
Median	2.790000	2.942082	85.29817	51.10800	18.97810	11.75000
Maximum	7.000000	11.48400	92.96130	78.87300	50.99690	26.90000
Minimum	1.200000	-4.055140	72.50000	39.05000	0.375374	5.000000
Std. Dev.	1.814831	3.032996	5.371625	9.890309	13.77735	4.817905
Skewness	0.542495	0.562206	-0.682357	0.567757	0.228071	1.071958
Kurtosis	1.944784	5.254321	2.909318	2.536068	2.019783	4.236656
Jarque-Bera	3.245135	8.990541	2.650111	2.131550	1.655930	8.678070
Probability	0.197391	0.011162	0.265788	0.344461	0.436938	0.013049
Sum	123.7400	112.8462	2892.093	1846.561	693.2916	399.4100
Sum Sq. Dev.	108.6892	303.5691	952.1938	3228.001	6263.906	766.0029
Observations	34	34	34	34	34	34

As a rule, the kurtosis of the normal distribution is 3. If the kurtosis exceeds 3, the distribution is peaked (leptokurtic) relative to the normal; if the kurtosis is less than 3, the distribution is flat (platykurtic) relative to the normal. From the distribution, ROA, IVR, PR, CPR and were all platykurtic while RGE and TBR were leptokurtic. The Jarque-Bera statistic, tests whether or not a series is normally distributed; measuring the difference of the skewness and kurtosis of the series with those from the normal distribution. From the Table, a hypothesis of normal distribution can only be accepted for ROA, IVR, PR, and CPR but not for RGE and TBR which were not individually normally distributed. The Figure 1 indicated that many of the variables

were more flatly distributed than violently fluctuated. The extent to which the independent variables relate with ROA is the burden of further analysis of estimation results.

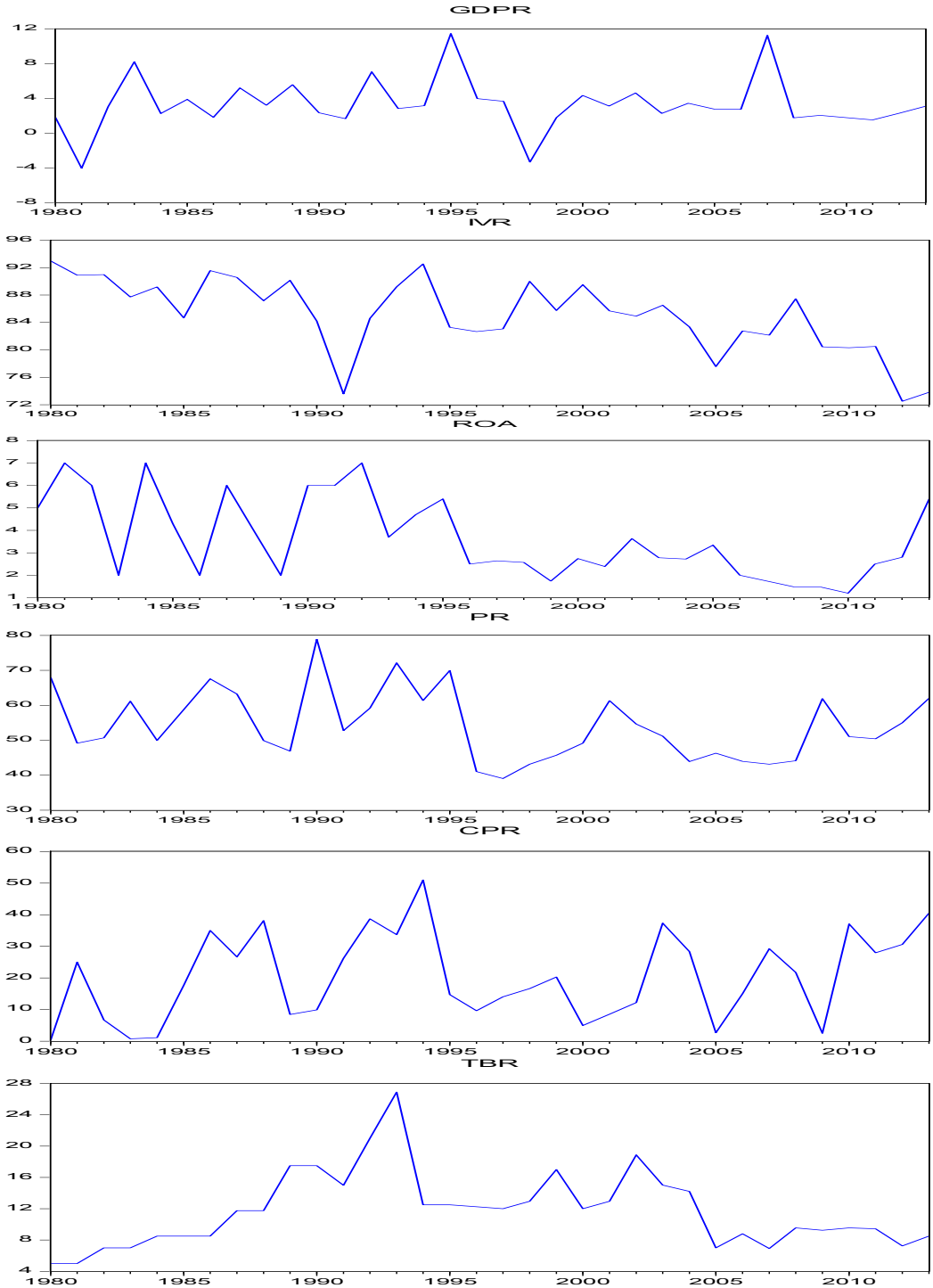

Figure 1: Graphical Presentation of the Variables: ROA, RGE, IVR, PR, TBR, CPR

Diagnosis of Specified Model

The first step undertook by the study was to diagnose the model by testing for serial correlation, functional form, normality and heteroscedasticity. As can be seen from Table 2, the test indicated that there was no need to worry about problems associated with serial correlation. The observed values of CHSQ (1) = 0.63805[.424] and F(1, 25) = .49291[.489] for the LM and F versions. As indicated, the observed probabilities in parenthesis are higher than the critical probability of 0.05 which suggested the rejection of the null hypothesis of presence

of serial correlation. The functional form test also suggested that the linear specification is adequate, with the observed statistics of CHSQ (1) = .0076593[.930] and F (1, 25) = .0058039[.940].

Diagnostic Tests results of the Model

Test Statistics	LM Version	F Version
A: Serial Correlation	CHSQ (1) = .63805[.424]	F(1, 25)= .49291[.489]
B: Functional Form	CHSQ (1) = .0076593[.930]	F(1, 25)= .0058039[.940]
C: Normality	CHSQ (2) = 4.4532[.108]	Not applicable
D: Heteroscedasticity	CHSQ (1) = .11973[.729]	F(1, 31)= .11289[.739]

A: Lagrange multiplier test of residual serial correlation
B: Ramsey's RESET test using the square of the fitted values
C: Based on a test of skewness and kurtosis of residuals
D: Based on the regression of squared residuals on squared fitted values

Table 3: Unit Root Test Results Summaries

32 observations used in the estimation of all ADF regressions.

Variable	DF	ADF (1)	Inference
RGE	-4.5779	-3.2585	I (1)
IVR	-3.6442	-3.2766	I (1)
ROA	-4.8262	-3.5571	I (1)
TBR	-4.2451	-3.9865	I (1)
PR	-3.5231	-3.5068	I (1)
CPR	-5.2564	-3.5904	I (1)

95% critical value for the augmented Dickey-Fuller statistic = -2.9558

That the variables possess randomly distributed values that will permit acceptable statistical conclusions is a primary emphasis of the normality test. From Table 2, the observed statistics is CHSQ (2) = 4.4532[.108], and with the probability 0.108 being higher than the critical probability of alpha 0.05, the study cannot accept a null hypothesis of no normal distribution. Thus, the variables are jointly normally distributed. The heteroscedasticity test was also satisfactory with observed statistics of CHSQ (1) = .11973[.729] and F(1,31) = .11289[.739], which are not significant at alpha 0.05. Thus there is the absence of heteroscedasticity or the presence of monoscedasticity. These results lend credence to the global utility of the specified model.

The study also undertook to check the stationarity status of the variables using the Dickey-Fuller and Augmented Dickey-Fuller unit root tests. As shown from Table 3 all the variables achieved stationarity at the first difference showing that they are integrated at order 1; they are I(1) variables. These results are important in two ways. First, they permit that a further cointegration analysis can be done using the Johansen and Josellius approach. Second, they are amenable to the requirements of the estimation using the Phillips-Hansen approach. However,

it is needful for the explanatory variables to be co-integrated with the dependent variable for the study to establish that long-run equilibrium relationships exist among them. It is to this effect that cointegration with unrestricted intercepts and no trends in the VAR was conducted in two lights; namely cointegration LR test based on maximal eigenvalue of the stochastic matrix and that based on trace of the stochastic matrix. When based on maximal eigenvalue of the stochastic matrix as shown on Table 4a, the null hypothesis zero cointegrating equation is rejected against the alternative, with the observed statistic of 49.7 against the 95% critical value of 39.8. Similarly, the null hypothesis of 1 cointegrating equation and 2 cointegrating equations were also rejected against the alternatives. By implication, there are 3 cointegrating vectors. Based on trace of the stochastic matrix, there are 4 conitegrating equations (observed statistics was 32.3 against the critical 95% value of 31.5). These evidenced that equilibrium long-run relationship existed among the variables.

Table 4a: Cointegration with unrestricted intercepts and no trends in the VAR
Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix

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Order of VAR = 1.
List of variables included in the cointegrating vector:
ROA IVR RGE TBR PR
CPR
List of eigenvalues in descending order:
.78842 .69218 .58950 .40358 .26700 .16661

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	49.7006	39.8300	36.8400
r<= 1	r = 2	37.7039	33.6400	31.0200
r<= 2	r = 3	28.4918	27.4200	24.9900
r<= 3	r = 4	16.5380	21.1200	19.0200
r<= 4	r = 5	9.9395	14.8800	12.9800
r<= 5	r = 6	5.8322	8.0700	6.5000

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Table 4b: Cointegration with unrestricted intercepts and no trends in the VAR
Cointegration LR Test Based on Trace of the Stochastic Matrix

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Order of VAR = 1.
List of variables included in the cointegrating vector:
ROA IVR RGE TBR PR
CPR
List of eigenvalues in descending order:
.78842 .69218 .58950 .40358 .26700 .16661

****

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r>= 1	148.2061	95.8700	91.4000
r<= 1	r>= 2	98.5055	70.4900	66.2300
r<= 2	r>= 3	60.8016	48.8800	45.7000
r<= 3	r>= 4	32.3098	31.5400	28.7800
r<= 4	r>= 5	15.7718	17.8600	15.7500
r<= 5	r = 6	5.8322	8.0700	6.5000

****

Use the above table to determine r (the number of cointegrating vectors).

The results of the fully modified Phillips-Hansen estimation procedure showed that all the variables were significant at 1% and 5% levels as shown in Table 5. From the Table, it can be seen that the RGE variable representing the state of the economy positively and significantly influenced the profitability of insurance companies in Nigeria. This is evidenced by the fact that the observed coefficient of .059743 and a standard error of .0025839, and thus a t-statistic of 23.1217[.000], was significant at 5% level, so the study is at least 95% confident that a hypothesis of no significant relationship cannot be accepted in the place of alternative hypothesis. Thus, when the economy is healthy, insurance companies tend to increase their profitability, ceteris paribus. The relationship is positive and thus satisfies the *a priori* expectation of the model.

The premium ratio (PR) variable which was measured by the ratio of total premiums to total assets of insurance companies operating in Nigeria recorded a coefficient of .28434 and a standard error of .025524 and thus a t-statistic of 11.1402[.000]. This observed t - statistic is significant at 5% level, demonstrating at least 95% confidence that the PR variable positively and significantly related to insurance profitability. By implication, generation of higher volumes and levels of premium guarantees more funds to the companies which would be channeled into more profitable operations.

Table 5: Fully Modified Phillips-Hansen Estimates (Parzen weights, truncation Lag = 16, Non-trended Case)

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Dependent variable is ROA

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Regressor	Coefficient	Standard Error	T-Ratio[Prob]
Intercept	3.0366	.23233	13.0700[.0 00]
GDPR	.059743	.0025839	23.1217[.000]
IVR	.021990	.0023314	9.4324[.000]
TBR	-.23278	.014035	-16.5863[.000]
PR	.28434	.025524	11.1402[.000]
CPR	-.017350	.6519E-3	-26.6137[.000]
ROA(-1)	.098072	.033389	2.9373[.007]

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The investment ratio (IVR) variable expressed as total investments to total assets ratio recorded a coefficient of .021990 and a standard error of .0023314 and thus a t-statistic of 9.4324[.000]. The observed t - statistic is significant at 5% level and thus yields to an inference that, with at least 95% confidence level, the IVR variable significantly and positively related to insurance profitability. Thus, a hypothesis of no significant relationship cannot be accepted in the place of alternative hypothesis, implying that investments in the current periods positively and significantly affect the current profitability of insurance companies in Nigeria. The relationship is positive and thus satisfies the *a priori* expected sign of the model. This result agrees with theory that the critical objective criterion of an investment activity is to generate future returns for the investor. It also agrees with the findings in Ezirim and Isitor (2005) and Ezirim **xxxx.**

The insurance claims payment ratio (CPR), which is the ratio of claims to total assets of insurance companies operating in Nigeria posted a coefficient of -.017350 a standard error of .006519 and thus a t-statistic of -26.6137[.000]. This observed t - statistic is significant at 5% level and permit at least 95% confidence level that the CPR variable negatively but significantly related to profitability. This result is consistent with expected theoretical underpinning that

claims payment is an outflow activity that would not directly support the generation of returns to the firm.

The state or level of activity in the country's financial market is represented by the yield's condition in the market and proxied by the market risk-free or treasury bills rate (TBR) variable. The study observed a coefficient of -.23278 and a standard error of .014035 and thus a t-statistic of -16.5863[.000]. The observed t - statistic is significant at 5% level, so the study suggests that the financial market (TBR) variable significantly but negatively related to insurance profitability. The hypothesis of no significant relationship cannot be accepted in the place of alternative hypothesis. The inference is that the state of the financial market negatively but significantly influenced the profitability of insurance companies in Nigeria. Thus when the financial markets are in bad conditions, insurance companies tend to increase in their profitability. This is not in line with a priori expectations but can find plausible explanation in the point that insurance companies are the created to cover the economy in bad times (other economic agents run to them in bad times or when such times are anticipated) and thus insurers would ordinarily perform well in such times.

The final variable in the estimated model is lagged return on assets (ROA_{t-1}) of insurance companies. From Table 5, this variable posted a beta coefficient of .098072, standard error of .033389 and t-statistic of 2.9373[.007]. The observed probability of .007 is much less that the critical probability of .05 and thus yield to a rejection of null hypothesis of no significant relationship. By implication, previous levels of profitability significantly and positively encourage current profitability. This had been argued to be possible through the partial adjustment mechanism of distributed-lag formulation (Ezirim, 2005).

CONCLUSION

From the analysis, five variables namely premium ratio, level of economic activity or simply state of the economy, and investments ratio, profitability in previous periods significantly and positively influenced current profitability of insurance companies in Nigeria. Only financial market conditions and claims payment ratio were found to exert significant but negative influence on current profitability. That the variables are co-integrated with profitability implies that the observed short-run influences will persist in the long-run, ceteris paribus. Thus, as they related in the short run, in terms of observed magnitude and direction, so are they likely to continue in the long-run. In the light of these results, the study recommends as follows

RECOMMENDATIONS

In a bid to boost profitability, the insurance companies would need to insist on improved premium mobilization machinery. To achieve this there may be need to cooperate with other financial institution such as banks to assist them in premium collection. Since profitability is found to improve as the economy grows and suffers when the economy is depressed, then every growth oriented policy - monetary, fiscal, stabilization, income alike- should be encouraged by the government Expansionary policies should be given preference to contractionary one for this purpose. Since profitability is naturally driven investment activities, then it is only proper for insurance companies to channel much of their mobilized funds to investments. This is only a rational economic behavior.

SUGGESTION FOR FURTHER STUDIES

It is the suggestion of the researcher the further work be carried out on the determinants of insurance portfolio to see whether a better understanding can be derived on the actual nature of relationship between the identified variables and investment behavior. There is also the

need to further the analysis in this study to explore the possibility of partial adjustment behavior of insurance profitability and investments.

LIMITATIONS OF STUDY

It is the suggestion of the researchers that further work be carried out on the determinants of insurance investments to see whether a better understanding can be derived on the actual nature of relationship between investment behavior and its determinants. More so, there is need to further the present analysis to determine a possibility of partial adjustment behavior of insurance profitability, which this study could not carry out.

Table 1: Insurance Profitability and Determinants in Nigeria

Year	GDPR	IVR	ROA	PR	RI	TBR	MRR	CPR
1980	1.82434	92.9613	5	67.985	1	5	6	0.375374
1981	-4.05514	90.893	7	49.14987	1	5	6	25.00716
1982	3.044163	90.9738	6	50.69669	1	7	8	6.690653
1983	8.229385	87.7131	2	61.157	1	7	8	0.74899
1984	2.26788	89.17522	7	49.937	1	8.5	10	1.11479
1985	3.89746	84.6629	4.3	58.767	1	8.5	10	17.6683
1986	1.823688	91.55975	2	67.562	1	8.5	10	35.03712
1987	5.21727	90.563	6	63.23	1	11.75	12.75	26.66975
1988	3.218	87.17506	4	49.892	1	11.75	12.75	38.11843
1989	5.5874	90.13901	2	46.89	1	17.5	18.5	8.455
1990	2.341007	84.20086	6	78.873	1	17.5	18.5	9.88929
1991	1.6666	73.5686	6	52.765	1	15	14.5	26.21757
1992	7.0633	84.588	7	59.1865	1	21	17.5	38.68
1993	2.84	89.1984	3.7	72.118	1	26.9	26	33.7
1994	3.1584	92.5461	4.7	61.35	1	12.5	13.5	50.9969
1995	11.484	83.28	5.4	69.96	1	12.5	13.5	14.71823
1996	3.98	82.665	2.5	41.04	1	12.25	13.5	9.622157
1997	3.672355	83.0585	2.64	39.05	1	12	13.5	14.034
1998	-3.33842	89.98	2.57	43.155	1	12.95	14.31	16.63
1999	1.793	85.755	1.74	45.702	1	17	18	20.2879
2000	4.346	89.506	2.74	49.172	1	12	13.5	4.95781
2001	3.11992	85.6766	2.39	61.34	1	12.95	14.31	8.544245
2002	4.63	84.91974	3.63	54.635	1	18.88	19	12.20232
2003	2.278	86.505	2.78	51.186	1	15.02	15.75	37.32498
2004	3.4453	83.35028	2.72	43.905	1	14.21	15	28.34608
2005	2.7703	77.57095	3.34	46.297	1	7	13	2.634549
2006	2.749	82.76143	2	43.95	1	8.8	12.25	15.011
2007	11.27266	82.14054	1.74	43.14	1	6.91	10	29.2281
2008	1.762	87.45623	1.48	44.13	1	9.55	9.5	21.76413
2009	2.049319	80.44	1.47	61.90	1	9.25	8	2.5
2010	1.779	80.31	1.2	51.03	1	9.55	6	37.05481
2011	1.53	80.5	2.5	50.41	1	9.44	10	27.962
2012	2.3	72.5	2.8	55.00	1	7.25	11	30.6
2013	3.1	73.8	5.4	62.00	1	8.5	12	40.5

Source: Computed from Data from CBN Statistical Bulletin and NAICOM Bulletin (2014)

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