DETERMINANTS OF INVESTMENT BEHAVIOR OF INSURANCE COMPANIES IN NIGERIA

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Abstract

This study empirically investigated the determinants of investment behavior of insurance companies in Nigeria using the cointegration and Phillips-Hansen estimation procedure applied to annual time series Nigerian data from 1980 through 2013. The correlates include premium generation ability, capital base, state of the economy, financial market conditions, profit from current operations and investments in the previous periods. The results indicate that the variables significantly and positively influence insurance investment behavior. Only current profitability was found to exert positive but insignificant influence on investment behavior. Previous investments positively and significantly affect the current investment behavior of insurance companies in Nigeria. The results subscribe to the existence of partial adjustment effects. The results also imply that the observed short-run influences will likely persist in the long-run, ceteris paribus.

Keywords: *Investment behavior, Insurance companies, Nigeria.*

INTRODUCTION

The insurance mechanism has been described as an indispensable tool for development both at micro and macro levels of the economy. Inherent in the functions which Insurance companies perform – production or marketing, underwriting, rate making, claims settlement, funds investment, reinsurance purchase, etc, - is the all-pervading function of financial intermediation. By this, the insurance industry mobilizes funds from the surplus economic agents (such as by premium generation, equity and debt capital) and channels it to the deficit agents in the economy (by way of investments, loans and claims payment). Finance theory submits that the survival and viability of any economic institution depends on the ability of such institution to carry out concerted activities designed to increase, improve, or maintain the productive status of existing level of capital (Okafor, 1983; Ezirim, 1996, 1999, 2000, 2004; Ghimire, 2012).

These activities that involve the commitment of funds into nominated assets in the atmosphere of risks and with the anticipation of reaping future returns are known

as investments. Insurance companies, as economic institutions who want to remain viable and relevant, do engage in investments. The way and manner they go about them, as well as the direction and volume of these economic activities are affected by a plethora of endogenous and exogenous forces. These forces range from rational profit expectations to financial market conditions as reflected in prices of available instruments; from their ability to generate investible funds through the vehicle of premiums to equity contributions of shareholders meant to provide a buffer for investments, and from level of economic activity in the country to the prevailing price levels (Ezirim, 1999, 2000, 2004; Diacon & Carter, 1984; Jhingan, (2008). Ghimire, 2012).

Given due recognition to these factors and their possible interplay with insurance investment operations, Ezirim and Isitor (2005) investigated the factors that affect insurance investment behavior in Nigeria, using the Partial Adjustment Mechanism. It was discovered that insurance companies' investment behavior responded positively and significantly to the level of premiums, capital base, and profitability of operations (ROA), but inversely and significantly to the rate of growth of the economy. Investments in the previous periods though positively related, failed to be a significant vector in current investment decisions. It takes the Nigerian insurance industry an average of 44 months, 14 days to attain optimum level of investments, i.e. an achievement rate of 27% in a given year; and a rate that signifies low level and/or improper allocation and utilization of investible resources.

Against these backgrounds; portfolio adjustments, management re-orientation, development and training; and governmental policy review and decree amendments were suggested by Ezirim and Isitor (2005) to assist in improving the investment performance of the companies. That study appears to be a step taken in the right direction and at a proper time, providing quite some useful information but it is arguable whether a single study or a couple of few studies would provide all the needed insight into the major determinants of insurance investments in Nigeria. More so, considering the period covered by that study, it become doubtful to rely on their currency to make plausible and irrefutable conclusions on the factors that influence insurance investment behavior, in the present time. Also given the techniques used in the earlier study, is it not possible that the application of more current and power tools could yield fresh inferences? It is therefore the crux of this study to use the co-integration and the fully modified Phillips-Hansen estimation procedures analyze the extent and direction to which the modeled factors drive the investment activities of insurance companies in Nigeria.

The Research Problem, Aim and Objectives
Given the inter-play of the forces identified to drive investment activities, it is not yet clear how the investment activities of insurance companies respond to them in terms of direction and magnitude in the light of evidence from developing economies such as Nigeria. Not many studies to the best of the researcher's knowledge have investigated the attendant relationships and or effects. Put succinctly, it still an empirical burden to determine how insurance investments

behave given the effects of such factors as level of premium generation ability and capital base of insurance companies, growth rate of the economy and yields condition of the country's financial market, profitability of operations and investments in the previous periods. This work is an attempt to bridge the existing research gap. It is, therefore, the central aim of this study to empirically analyze the factors that affect insurance investment behavior in Nigeria in a bid to determine the extent and direction of the effects on their investment activities.

More specifically, the study seeks to achieve the following objectives:

(i)   Determine the extent to which insurance companies' investment operations are influenced by their ability to generate premiums.
(ii)   Determine the extent to which insurance companies' investment operations are influenced by their capital base.
(iii)   Determine the extent to which insurance companies' investment operations are influenced by the growth rate of the economy.
(iv)   Determine the extent to which insurance companies' investment operations are influenced by the yields condition of the country's financial market.
(v)   Determine the extent to which insurance companies' investment operations are influenced by the profitability of operations.
(vi)   Determine the extent to which insurance companies' investment operations are influenced by the investments in the previous periods.

REVIEW OF SOME EMPIRICAL STUDIES

Several studies have been carried out that demonstrate that the insurance industry has affected the Nigerian economy in very remarkable ways especially in their intermediation operations. Some of such studies include the works of Akintola-Bello (1986), Oyejide & Afolabi (1976), Ezirim (1999), Agiobenebo and Ezirim (2002), Ezirim and Muoghalu (2002), and Ezirim (2004). The indispensability of the intermediation role of the insurance industry in economic causes of Nigeria were clearly documented in the above studies. The role of the insurance industry in economic causation was also underscored in other studies that drew evidence from other economies other than Nigeria. For instance, the insurance - economic growth nexus was studied variously by Raturi (2005), Arena (2008), Haiss and Sümegi (2008), Bedi and Singh (2011), Brainard (2008), Chang, Lee, & Chang (2013), Hongbing, Meng, and Wenhua (2013), Lee, Lee, and Chiu (2013), Outreville (2013), Ward, and Zurbruegg (2000), and Soo (1996). These studies aptly established that a vital relationship existed between the insurance industry and the growth of the economy in different countries of study.

Notably, most of the above studies did not cover the relationship between the investment activities of insurance companies and the factors that determine them. In the literature, however, a number of other studies actually harped on insurance investments, one way or the other. It behooves this study to review some previous works in order to provide an empirical background to this study. *Ip so facto,* some studies like those of Ghimire's (2013), Oloke, Durodola & Emeghe (2015),

Kumari. (2015), Li & Moshirian (2004), Oloke, Durodola & Emeghe (2015), Madukwe & Obi-Nweke (2014), Touny & Shusha (2014), Mitra (2016), and Priyadarsini (2013) stand out in this regard. Hereunder, their main points are summarized.

Ghimire's (2013) study examines the current investment practices adopted by both life and non-life insurance companies of Nepal in comparison with the modified directives of Nepal. Insurance Board of Nepal. Their findings favored preference for solvency over profitability in their investment considerations and decisions. Specifically, it was observed that most companies invested more than required funds in the secured sector of the economy suggesting a regime of giving priority to solvency over profitability. These findings appear to link the behavior of the Nepal companies with their counterparts in Nigeria For instance, Oloke, Durodola & Emeghe (2015) found that Nigerian insurance companies' investment in real estate, a seemingly high profit and secured sector, is currently far below what the law stipulates in Nigeria.

Kumari (2015) analyzed the determinants of investment of the Life Insurance Corporation of India and found premium and claim to be significantly influenced the investment of insurance sector. Li & Moshirian (2004) investigated the determinants of foreign direct investment (FDI) in insurance services in the United States of America. The findings showed that national income (NI), parent countries' insurance market size, and financial development of the host countries influence FDI in insurance services. On the other hand, relatively higher wages and higher cost of capital in the host countries were observed to discourage FDI in insurance services.

Oloke, Durodola & Emeghe (2015) did an analysis of the behavior insurance companies in real estate investments in Nigeria against the background that insurance performs two critical roles in an economy, namely indemnification and institutional investment. The findings indicated that:

> *"Capital security and portfolio stability (diversification) were the principal driving motive for investing in real estate while liquidity concern, high transaction costs, inadequate infrastructure development in the country and unreliable valuation data among others constitute major factors militating against investment in real estate"* (Oloke, Durodola & Emeghe, 2015).

Madukwe & Obi-Nweke (2014) in their study of Nigeria insurance business, capital market and economic growth, using product moment correlation, found a significant relationship existing between Nigeria insurance market investment and the capital market, and also between insurance business and economic growth. It is noteworthy that the statistical tool utilized in the above study does not have the analytical power to establish causal relationship, impact or effects, and the study would not claim that, in any case. The much it could claim would be the existence or otherwise of association.

Mitra (2016) while investigating the influencers of insurance investments in 28 European countries from 2009 through 2014 approached his study on why people invest their money purchasing insurance and found four economic factors, namely GDP per capita, gross savings, competitiveness of nations, and inflation as the major influencers of insurance consumption in the region. The study also disclosed two demographic factors, namely population and education, as well as two cultural factors, namely individualism and long-term orientation as also significantly influencing insurance consumption in the European region.

Dash & Sood (2013) was yet another study that attempted to empirically uncover why someone should invest in a life insurance product. It was revealed that certain positive aspects or features of the insurance product including tax saving, saving scheme with good return, financial security for the family, and risk coverage were the major reasons why the customers purchased, and by so doing, invest in the insurance product. The pension feature of the product was not considered as important by the customers studied.

Priyadarsini (2013) studied investment pattern towards health insurance and attempt to explore the investment behavior of investors towards health insurance in Salem district, Tamilnadu State. It was found that ignorance and lack of consciousness of health insurance among the Salem public. Also, low income levels did not associate with observed high premium policy of the companies. It is clear from the above review that the critical determinants of insurance investments, from the point of view of the companies as institutional investors were not covered in the above studies. It was only the study by Ezirim and Isitor (2005) attempted this but as we had earlier posited, there is need to update the currency of the data and methodology to reflect current realities. The need also to determine both long-run and short-run imperative of insurance investments in the light of the identified determinants provides further justification for this study.

METHODOLOGY

In carrying out the study, we applied the models developed in (Ezirim, 1999) and applied in Ezirim and Isitor (2005). Accordingly, linear regression equations are derived. The ordinary least squares (OLS) method with associated diagnostic tests, unit root test procedure, co-integration test, and the fully modified Phillips-Hansen estimation procedure are adopted for estimating the variables. F-ratios are computed to test the joint-significance of the exogenous variables. Using the computed coefficients, we determine the relative impact of each explanatory variable employing the t-statistics and associated probability to test the relevant hypotheses.

Model Specification and Operational Definitions

The study simply adopted Ezirim and Isitor's (2005) models which were originally developed by Ezirim (1999). It was hypothesized that the overall investment decisions of the insurance industry are a positive function of their level of funds

mobilization (represented by total premiums), capital base, rate of growth of the economy, rate of return on government treasury investments, profitability of operations, and level of investment in the previous period. 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. Following expressions (5-33) through (5-48) with slight amendments, as in Ezirim (1999), we can write the relationship between these variables functionally as

$$INV_t = f(TP_t, CB_t, RGE_t, CP_t, IROI_t, INV_{t-1}, U_t) \ldots\ldots\ldots\ldots\ldots..(1)$$

Where U_t is the stochastic disturbance term.

It is through the partial adjustment procedure that we have the investment of the previous periods entering into the model, and thus the distributed lag effect. The detailed procedure follows the manipulations in Ezirim (1999). Ezirim (1999) used total assets of insurance companies to divide the relevant variables to simplify the procedure. Thus defining investments (INV) as investment to total asset (TA) asset ratio, Total premium (TP) as total premium to total assets ratio, current profitability (CP) as profit before tax to total assets ratio, 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 capital base (CB) as shareholders' fund to total assets ratio; we rewrite expression (1) explicitly as:

$$\left(\frac{INV}{TA}\right)_t = \gamma_0 + \gamma_1\left(\frac{TP}{TA}\right)_t + \gamma_2\left(\frac{SHF}{TA}\right)_t + \gamma_3 RGE_t + \gamma_4\left(\frac{PBT}{TA}\right)_t +$$

$$\gamma_5 TBR_t + \gamma_6\left(\frac{INV}{TA}\right)_{t-1} + U_t \qquad\qquad (2)$$

Where $\gamma_0 = $ constants and $\gamma_i (i = 0, 1, \ldots, 6)$ are coefficients. *A priori*, $\gamma_1 > 0$, $\gamma_2 > 0$, $\gamma_3 > < 0$, $\gamma_4 > 0$, $\gamma_5 < 0$, $\gamma_6 > 0$

Expressions (1) and (2) are in their linear forms. It is noteworthy that the first term in the Right Hand Side is the premium ratio (PR), the second term is the capital ratio (CPR), and the fourth is the return on assets (ROA), while the sixth is the lagged investment ratio (IR_{t-1}). The only term in Left Hand Side is the current investment ratio (CIVR) or simply the investment ratio (IVR). 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 following a priori reasoning in Ezirim (1999).

Estimation Procedure
The first step the study employed was to diagnose the model. Accordingly, the diagnostic tests were conducted for serial correlation, functional form, normality, and heteroscedasticity. The serial correlation test followed the Breusch-Godfrey

Serial Correlation LM Test. Functional forms of the models are diagnosed using Ramsey' RESET test applied to the squares of the fitted values. Normality test was based on the histogram of residuals. Heteroscedasticity test followed the White Heteroskedasticity Test procedure. The second step was to check the stationarity status of the variables using the Dickey-Fuller and Augmented Dickey-Fuller tests. This was also to make sure that the variables were I (1) variables and that the explanatory variables are not themselves cointegrated. Following this the study conducted the cointegration analysis with estimation involving the Johansen and Jusellius co-integration procedure. The fourth step was the estimation of the Phillips- Hansen estimates. Relative statistical estimates were generated for the regressors such as the beta coefficients, standard errors, t-ratios and their associated probabilities in the VAR process. The various computations were done using the MICROFIT for Windows 4.1 Software.

Data
The data required are obtained from: the Central Bank of Nigeria Statistical Bulletin (2006, 2013) and the Nigeria Insurance Commission (NIACOM) Publications (2013) for various years. Among the data required, the following are more prominent: Macroeconomic aggregates such as GDP growth rates and pricing imperatives of relevant activities in the country's money market as proxied by the treasury bills rates; and the operations of the insurance companies in terms of total investments in the financial markets, total loans and advances, excess of income over expenditures, total premium, and total claims. Data obtained relate to the insurance industry in general rather than individual companies.

Table 1 (see appendix) shows the values of the variables used in the study. As indicated, the GDPR was 18.2% in 1980, reached an all-time high of 46.2% in 2002 and an all-time low of – 15% in 2011. The IVR variable was 11.2% in 1980, with a maximum value of 80.5% in 2011 and a minimum value of 0.56% in 1987. The ROA variable was 5% in 1980, with a minimum score of 1.2% in 2010 and maximum score of 7% in 1981 and 1992. The PR variable was 3.16% in 1980; attained a maximum value of 16.93% in 1994 and a minimum value of 2.87% in 1985.The RI variable is a dummy variable and indicates that there exists amply regulation of the insurance industry in all the years studied. The TBR was 5% in 1980 but reached its maximum of 18.8% in 2002 and its minimum rate of5% in 1980 and 1981. The CPR recorded an all-time low of 0.37% in 1980 and all-time high of 61.76% in 2008.

ANALYSIS OF ESTIMATION RESULTS

The first step the study took was to diagnose the constructed model in a bid to check its global usefulness and ascertain whether or not it is suitable for further analysis. The tests involved included Serial Correlation, Functional Form, Normality, and Heteroscedasticity tests. The results of these tests are reported in Table 2. It can be seen that the model passed the serial correlation test with observed values of CHSQ (1) = .94052[.332] and F (1, 24) = .72675[.402] for the LM and F versions. As indicated, the observed probabilities in parenthesis are

higher than the critical probability of 0.05 which makes us to reject the null hypothesis of presence of serial correlation. The functional form test also proved satisfactory with the observed statistics of CHSQ (1) = 1.3266[.249] and F(1, 24) = 1.0379[.318] all of which shows absence of functional form problem. Thus, the model is appropriately specified in the linear form.

TABLE 2
Diagnostic Tests of the Model

Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ(1)= .94052[.332]	F(1, 24)= .72675[.402]
B::Functional Form	CHSQ(1)= 1.3266[.249]	F(1, 24)= 1.0379[.318]
C:Normality	CHSQ(2)= 1.3058[.521]	Not applicable
D:Heteroscedasticity	CHSQ(1)= .21654[.642]	F(1, 30)= .20439[.654]

Note: 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.

That the variables possess randomly distributed values that will permit acceptable statistical conclusions is the mainstay of the normality test. From the test the observed statistics is CHSQ (2) = 1.3058[.521], and with the probability being higher than the critical probability of alpha 0.05, it is easy to see that the study cannot accept a null hypothesis of no normal distribution. Thus, the variables are normally distributed. The last test is that of heteroscedasticity relating to results show that the study passed the heteroscedasticity test with observed statistic of values CHSQ (1) = .21654[.642] and F(1,30) = .20439[.654], which are not significant at alpha 0.05. Thus, there is the presence of monoscedasticity. These results confirm that the model specified for the analysis in this study is globally useful and thus can be relied upon to make useful conclusions.

Stationarity Test and Analysis
The next step undertaken in the analysis was to check the stationarity status of the variables using the Dickey-Fuller and Augmented Dickey-Fuller tests. This was done by conducting the unit root test for the variables. It is easy to see from Table 3 that all the variables achieved joint stationarity at the first difference showing that they are integrated at order 1.

TABLE 3
Unit Root Test Results Summaries

Variable	DF	ADF(1)	Inference
GDPR	-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)

Note: 32 observations used in the estimation of all ADF regressions. Sample period from 1982 to 2013. 95% critical value for the augmented Dickey-Fuller statistic = -2.9558

That is they are I(1) variables. These results are important in two ways. First, they permit that a further co-integration 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. Accordingly, the variables were I (1) variables and that the explanatory variables are not themselves cointegrated. Satisfying these requirements, the study went ahead to carry out both the Johansen and Josephus cointegration and Phillip-Hansen estimations.

Long-Run Relationships between the Variables
The study undertook to determine whether or not there exist an equilibrium long-run relationships between the variables using the Johansen and Jusellius extraction of cointegration test. Accordingly, the study conducted cointegration test with unrestricted intercepts and no trends in the VAR (and more specifically, cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix). The results are summarized in Table 4. From the Table, it can be seen that the variables are cointegrated at order 1 of VAR. The hypothesis of no cointegration would be rejected as the Table show that there are at least 2 cointegrating vectors with observed statistic of 34.0295 against the 95% Critical Value of 27.42. Thus, the study therefore established that long-run equilibrium relationships exist between the variables.

TABLE 4
Cointegration with unrestricted intercepts and no trends in the VAR

Null	Alternative	Statistic	95% Critical Value	90% Critical Value
r = 0	r = 1	79.2489	39.8300	36.8400
r<= 1	r = 2	39.8395	33.6400	31.0200
r<= 2	r = 3	34.0295	27.4200	24.9900
r<= 3	r = 4	10.2496	21.1200	19.0200
r<= 4	r = 5	8.6439	14.8800	12.9800
r<= 5	r = 6	2.9492	8.0700	6.5000

Note: Cointegration LR Test Based on Maximal Eigenvalue of the Stochastic Matrix.
a.   33 observations from 1981 to 2013. Order of VAR = 1.
b.   List of variables included in the cointegrating vector:
c.   IVR, GDPR, TBR, PR, ROA, CPR
d.   List of eigenvalues in descending order:
e.   0.90942, 0.70098, 0.64342, 0.6699, 0.23044, 0.085491
f.   Use the above table to determine r (the number of cointegrating vectors).

Short-Run Relationships between Variables and Test of Hypotheses
The short-run relationships that are needed to test the hypotheses drawn the specific objectives formulated in the introduction of this study were estimated using the fully modified Phillips-Hansen estimation procedure. The results are summarized in Table 5.

Test of Hypotheses
Six hypotheses were formulated in this work as earlier stated. They are tested in this sub-section.

Hypothesis I: Relationship between insurance investment behavior and premium generation ability

Statement: There is no significant relationship between the insurance companies' investment operations and their ability to generate premiums.

TABLE 5
Fully Modified Phillips-Hansen Estimates

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
Intercept	35.2009	6.5367	5.3851[.000]
GDPR	47599	.082272	5.7855[.000]
TBR	1.5599	.44468	3.5079[.002]
PR	3.0244	.88879	3.4028[.002]
ROA	.011623	.014874	.78143[.442]
CPR	.086839	.023396	3.7118[.001]
IVR(-1)	.74015	.088446	8.3684[.000]

Note: Dependent variable is IVR. 32 observations from 1982 to 2013 are used for estimation.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is insurance Premium ratio (PR), which is the ratio of premium to total assets of insurance companies operating in Nigeria. The PR variable recorded a coefficient of 3.0244 and a standard error of .88879 and thus a t-statistic of 3.4028[.002]. This observed t - statistic is significant at 5% level, so we are at least 95% confident the PR variable positively and significantly related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be accepted in the place of alternative hypothesis. The inference is that the premium generation potential or ability of insurance companies in Nigeria positively and significantly affected their investment behavior. The relationship is positive and thus satisfies the *a priori* expected sign of the model.

Hypothesis 2: Relationship between insurance investment behavior and capital base

Statement: There is no significant relationship between the insurance companies' investment operations and their capital base.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is insurance capital ratio (CPR), which is the ratio of premium to total assets of insurance companies operating in Nigeria. The CPR variable recorded a coefficient of .086839 and a standard error of .023396 and thus a t-statistic of 3.7118[.001]. This observed t - statistic is significant at 5%

level, so we are at least 95% confident the CPR variable positively and significantly related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be accepted in the place of alternative hypothesis. The inference is that the capital base of insurance companies in Nigeria positively and significantly affects their investment behavior. The relationship is positive and thus satisfies the *a priori* expected sign of the model.

Hypothesis 3: Relationship between insurance investment behavior and state of the economy represented by the economic growth rate or the GDP rate of growth.

Statement: There is no significant relationship between the insurance companies' investment operations and the growth rate of the economy.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is GDP rate of change which is the economic growth rate or the GDP rate of growth (GDPR), in Nigeria. The GDPR variable recorded a coefficient of .47599 and a standard error of .082272 and thus a t-statistic of 5.7855[.000]. This observed t - statistic is significant at 5% level, so we are at least 95% confident the GDPR variable positively and significantly related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be accepted in the place of alternative hypothesis. The inference is that the state of the economy positively and significantly affects the investment behavior of insurance companies in Nigeria. When the economy is healthy, insurance companies tend to increase their investment activities. The relationship is positive and thus satisfies the *a priori* expected sign of the model.

Hypothesis 4: Relationship between insurance investment behavior and state of the financial market represented by the yields' condition of the market.

Statement: There is no significant relationship between the insurance companies' investment operations and the yields condition of the country's financial market.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is the yields condition of the country's financial market represented by the treasury bills rate (TBR) in Nigeria. The TBR variable recorded a coefficient of 1.5599 and a standard error of 0.44468 and thus a t-statistic of 3.5079[.002]. The observed t - statistic is significant at 5% level, so we are at least 95% confident the TBR variable significantly and positively related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be accepted in the place of alternative hypothesis. The inference is that the state of the capital market positively and significantly the investment behavior of insurance companies in Nigeria. Thus, when the financial markets are in good condition, insurance companies tend to invest more than when

markets are in bad shape. The relationship is positive and thus satisfies the *a priori* expected sign of the model.

Hypothesis 5: Relationship between insurance investment behavior and the profitability of operations.

Statement: There is no significant relationship between the insurance companies' investment operations and the profitability of operations.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is the profitability of operations represented by the return on assets (ROA). The ROA variable recorded a coefficient of .011623 and a standard error of .014874 and thus a t-statistic of .78143[.442]. The observed t - statistic is not significant at 5% level, so we are at least 95% confident that the ROA variable positively but did not significantly related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be rejected in the place of alternative hypothesis. The inference is that it is not current profit that necessarily drives the investment behavior of insurance companies in Nigeria. It may even be more of profit expectations that may positively and significantly spur investment behavior. Thus when there is the tendency to make higher profits, these companies may be inclined to invest more than when profit expectations are low. On another note, it may be that the causal relationship is not mutual; where investments may affect profitability but not the other way round. The observed relationship in this study was positive and thus satisfied the *a priori* expected sign of the model.

Hypothesis 6: Relationship between insurance investment behavior and investments in the previous periods

Statement: There is no significant relationship between the insurance companies' investment operations and the investments in the previous periods.

Test Statistic, Procedure and Result: The study utilizes the t - statistics estimated from the fully modified Phillips-Hansen estimation procedure as summarized in Table 5. From the Table, the relevant determinant of insurance investment operations variable for this hypothesis is the investments in the previous periods represented by the lagged values of current investments [IVR(-1)] in Nigeria. The IVR(-1) variable recorded a coefficient of .74015 and a standard error of .088446 and thus a t-statistic of 8.3684[.000]. The observed t - statistic is significant at 5% level, so we are at least 95% confident that the IVR(-1) variable significantly and positively related to insurance investment operations. The hypothesis of no significant short-run relationship cannot be accepted in the place of alternative hypothesis. The inference is that investments in the previous periods positively and significantly affect the current investment behavior of insurance companies in

Nigeria. The relationship is positive and thus satisfies the a priori expected sign of the model.

Discussion of Major Findings
It is important at this stage to examine the major findings of this study in the light theory and previous empirical studies where applicable. The first major finding is that the PR variable positively and significantly related to insurance investment operations and thus influence their behavior to invest more or less or even to invest or not to invest. The implication is that the premium generation potential or ability of insurance companies in Nigeria positively affects their investment behavior. The relationship is positive and thus in line with *a priori* expectation. Generation of more premiums implies more funds in the hands of the insurers. Their principal activities, namely investment and claims settlement abilities would naturally be enhanced. The natural behavior is the increase investment spending. Thus, when premiums increase, insurance companies behave as if they would increase business growth through increased investments. This submission is in line the findings of Omoruyi (1984), Ezirim and Isitor (2005) and Haiss & Sümegi (2008). Ezirim and Isitor particularly found that that insurance companies' investment behavior responded positively and significantly to the level of premiums.

The second major finding of this study relates to the CPR variable, which was observed to be positively and significantly related to insurance investment operations. The implication is that the size of the capital base of insurance companies in Nigeria positively and significantly influences their investment behavior. The relationship is positive and thus satisfies the *a priori* expected sign of the model. This result agrees with Ezirim and Isitor (2005) who found that that insurance companies' investment behavior responded positively and significantly to the level of capital base of the companies.

The third major finding of this study is that the GDPR variable positively and significantly related to insurance investment operations. The inference is that the state of the economy positively and significantly affects the investment behavior of insurance companies in Nigeria. When the economy is healthy, insurance companies tend to increase their investment activities. The relationship is positive and thus satisfies the *a priori* expected sign of the model. However, this result is result does not agree with Ezirim and Isitor (2005) who found that that insurance companies' investment behavior responded inversely but significantly to the rate of growth of the economy.

The fourth major finding is that the TBR variable significantly and positively related to insurance investment operations. This was the inference because the hypothesis of no significant short-run relationship could not be accepted in the place of the alternative hypothesis. The inference is that the state of the capital market positively and significantly the investment behavior of insurance companies in Nigeria. Thus, when the financial markets are in good condition, insurance companies tend to invest more than when markets are in bad shape. On the other hand, the insurance companies are not encouraged to invest in financial

markets that do not promise good returns. The relationship is positive and thus satisfies the *a priori* expected sign of the model.

The fifth major finding is that the ROA variable did not significantly related to investment operations, nonetheless it positively related to insurance investment operations. The hypothesis of no significant short-run relationship was not rejected in the place of the alternative hypothesis. Thus, the ROA variable positively but did not significantly relate to insurance investment operations. The hypothesis of no significant short-run relationship cannot be rejected in the place of alternative hypothesis. The inference is that it was not current or previous profit that necessarily drives the investment behavior of insurance companies in Nigeria. It may even be more of profit expectations that may positively and significantly spur investment behavior. Thus, when there is the tendency to make higher profits, these companies may be inclined to invest more than when there is no such profit expectations. On another note, it may even be that the causal relationship is not mutual; where investments may affect profitability but not the other way round. The observed relationship in this study was positive and thus satisfied the *a priori* expected sign of the model. The argument of profit expectation driving investments agrees with theory and the very essence of investments – to generate higher returns. The finding in this study however does not agree with Ezirim and Isitor (2005) who found that that insurance companies' investment behavior responded positively and significantly to the profitability of operations.

The final major finding is that the IVR (-1) variable significantly and positively related to insurance investment operations. This was the inference since the hypothesis of no significant short-run relationship could not be accepted in place of the alternative hypothesis. Evidently, investments in the previous periods positively and significantly affect the current investment behavior of insurance companies in Nigeria. The relationship is positive and thus satisfies the *a priori* expected sign of the model. This finding does agree with the result in Ezirim and Isitor (2005) that "investments in the previous periods though positively related, failed to be a significant vector in current investment decisions". The major point of departure relates to the level of statistical significance.

CONCLUSION

From the analysis, six variables namely premium generation ability, capital ratio, level of economic activity or simple state of the economy, financial market conditions, profit from operations and investments in previous periods. These variables significantly and positively influence insurance investment behavior. Only current profitability was found to exert no insignificant influence on, though positively related to, investment behavior. Previous investments.

That the variables are co-integrated with investment imply that the observed short-run influences will persist in the long-run, ceteris paribus. Thus, the way and manner they relate in the short run, as well as the magnitude of those relationships, are likely to continue in the long-run.

RECOMMENDATIONS

That the variables of premium generation ability, capital ratio, level of economic activity (or simple state of the economy), financial market conditions and investments in previous periods significantly and positively influence insurance investment behavior; would implicate the following action programs:

1. To boost investments, the insurance companies would need to improve on and increase their premium mobilization and collection efficiency. Capitalizing on the legal provision of 'no premium, no cover', they can form ally with banks to assist them in premium collection through standing orders, electronic transfers and such the like. Financial institutions' cooperation instead of competition is called for in this case.
2. The periodic increases in capital base of insurance companies should be continued in a prudential manner by National Insurance Commission (NAICOM) (2013). In this way, improved capital would provide the necessary buffer for increased investments.
3. Since investments are found to increase as the economy grows and suffers when the economy is depressed, then every growth-oriented policy - monetary, fiscal, stabilization, income alike- should be supported and ensured by the governmental authorities, if insurance investments boost is coveted by the country. Expansionary policies are preferred for this purpose than contractionary policies.
4. If insurance investments are worth the trouble as the Government of Nigeria muted in the intensity of regulating that activity of insurance companies, and seeing that the yields' condition in the country's financial markets attract insurance investments, the Securities Exchange Commission and the Nigeria Stock Exchange should brace up with the challenges of ensuring that the markets are not depressed or remain with low yield for relatively long periods of time. The Central Bank of Nigeria should ensure that the rates of treasury securities remain competitive and attractive, since much of insurance investments are compulsorily channeled to purchase them.

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

SIGNIFICANCE OF STUDY AND CONTRIBUTION TO KNOWLEDGE

This study has unveiled the effects of Insurance Companies premium generation ability, capital ratio, state of the economy, financial market conditions, profit from operations and investments in the previous periods on their investment operations. It has updated the earlier study of Ezirim and Isitor (2005) both in terms of

currency and estimation procedure. It is expected to guide insurance companies to have proper basis for policy directions and assessment of the corporate, business, and economic environments; so as to make a functional investment decision. The result of this study will be of great benefit to policy makers, government and its agents in this case National Insurance Commission (NAICOM) for policy, regulation and or deregulation (2013). More specifically, regulatory institutions, especially the NAICOM will benefit immensely from this study in shaping their regulatory framework for the insurance industry. Finally, study has added to existing stock of knowledge in finance, banking and economic theory and practice. The incorporation of both the relevant micro and macroeconomic variables has formed a good background for other research in this area.

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APPENDIX
TABLE 1
Insurance Investments and Its Determinants in Nigeria

Year	GDPR	IVR	ROA	PR	RI	TBR	MRR	CPR
1980	18.24	19.30	5.00	3.17	1	5.00	6.00	0.38
1981	-4.06	30.89	7.00	4.91	1	5.00	6.00	25.01
1982	3.04	10.97	6.00	5.07	1	7.00	8.00	6.69
1983	8.23	17.71	2.00	3.61	1	7.00	8.00	0.75
1984	12.27	39.18	7.00	3.45	1	8.50	10.00	1.11
1985	13.90	4.66	4.30	2.88	1	8.50	10.00	17.67
1986	1.82	11.56	2.00	3.68	1	8.50	10.00	35.04
1987	52.17	0.56	6.00	3.86	1	11.75	12.75	26.67
1988	32.18	27.18	4.00	3.50	1	11.75	12.75	38.12
1989	55.87	20.14	2.00	3.10	1	17.50	18.50	84.55
1990	23.41	14.20	6.00	3.79	1	17.50	18.50	9.89
1991	16.67	73.57	6.00	4.15	1	15.00	14.50	26.22
1992	70.63	41.59	7.00	4.59	1	21.00	17.50	58.68
1993	28.40	59.20	3.70	7.21	1	26.90	26.00	33.70
1994	31.58	12.55	4.70	16.13	1	12.50	13.50	51.00
1995	114.83	13.28	5.40	7.00	1	12.50	13.50	14.72
1996	39.80	22.66	2.50	4.10	1	12.25	13.50	9.62
1997	3.67	3.06	2.64	3.90	1	12.00	13.50	1.40
1998	-3.34	9.98	2.57	4.32	1	12.95	14.31	16.63
1999	17.93	25.75	1.74	4.57	1	17.00	18.00	20.29
2000	43.46	59.51	2.74	4.92	1	12.00	13.50	4.96
2001	3.12	52.68	2.39	6.13	1	12.95	14.31	8.54
2002	46.29	47.92	3.63	5.46	1	18.88	19.00	12.20
2003	22.78	36.51	2.78	5.12	1	15.02	15.75	37.32
2004	34.45	63.35	2.72	4.39	1	14.21	15.00	28.35
2005	27.70	77.57	3.34	4.63	1	7.00	13.00	2.63
2006	27.40	32.76	2.00	4.39	1	8.80	12.25	5.15
2007	11.27	12.14	1.74	4.31	1	6.91	10.00	9.23
2008	17.62	17.46	1.48	4.41	1	9.55	9.50	61.76
2009	2.05	20.44	1.47	6.19	1	9.25	8.00	25.00
2010	17.79	70.31	1.20	5.10	1	9.55	6.00	37.05
2011	-15.30	80.50	2.50	5.04	1	9.44	10.00	27.96
2012	12.30	72.50	2.80	5.50	1	7.25	11.00	30.60
2013	13.10	73.80	5.40	6.20	1	8.50	12.00	40.50

Sources: Computed from data obtained from Statistical Bulletins of CBN and NAICOM