INSURANCE INVESTMENTS, INTERMEDIATION INDEX, AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM NIGERIA

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Abstract

The study investigates the short-run and long-run effects of the various aspects of insurance companies' investments on the insurance intermediation index and the GDP growth of the economy over time using cointegration procedure and classical linear regression analytical techniques. The results indicate that the investment activities of insurance companies jointly exert considerable positive impact on the insurance inter-relation index as well as on the GDP growth of Nigeria both in the short-run and the long-run. This implies that the investment operations of insurance jointly exerted positive boost on overall growth of the economy of Nigeria.

Key Words: Insurance Investments, Intermediation index, inter-relation ratio, GDP growth, Nigeria.

INTRODUCTION

Several empirical studies such as the works of Bahrami (2014), Okolo and Ani (2014) , Hongbing, Meng, & Wenhua, (2013), Lee, Leen & Chiu (2013), Chang, Lee & C (2013), Brainard (2008), Arena (2006) and Ward and Zurbruegg (2003) attest to the growing importance of the insurance mechanism in economic growth and development of various countries. Insurance companies perform very distinctive economic functions associated with risk indemnification, production and or marketing of 'coverage' and policies, underwriting, rate making, claims settlement, funds' investment, reinsurance purchase, and advisory services. They are seen as the champions of the non-banking financial institutions carrying out the all important function of financial intermediation. As posited in Ezirim (2004), 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). It is through this channel that the insurance industry affects the economy most, in terms of the latter's growth and development. This channel

is known as the insurance inter-relation ratio or simply, the insurance intermediation ratio. It is defined in terms of the relationship between the total assets of the insurance industry and the gross domestic product of the country. It shows the proportion of country's GDP that are attributable to total assets of the insurance industry. The aggregate effect of all the intermediation functions and roles of the insurance companies (represented by total assets) is to contribute to economic growth and development.

In the same vein, the degree to which insurance companies perform these functions also would have implications for overall industrial/corporate performance. In developed economies, where many things tend to work as planned, profitability of insuring financial institutions would be a positive and significant function of their net intermediation activities. Given this assumption, models built with such indicators as return on assets (ROA) and return on equity (ROE) would behave well in the light of their relationship with the indicators of intermediation operations, and taking due cognizance of the prevailing structural efficiencies and realities. On the other hand, it is not yet well ascertained whether or not the same results are likely to be obtained using data from developing economies that are fraught with structural deficiencies and irregularities (Ezirim, 2004).

In a previous study by Agiobenebo and Ezirim (2002) it was observed that the factors of net allocation potentials, loan levels, and investments were positively related, but not significant at conventional levels, to profitability of insurance companies in Nigeria. It was deduced from the study that for the fact that these important aspects of financial intermediation did not exert significant influences on profitability would be indicative of possible improper channeling of funds into avenues other than the traditional profit centers that inform the intermediation activities. It was also underscored that in any one year, during the period 1970 through 1997, the insurance industry, on the average, achieves only about 27.3% of its expected optimum level of profitability. By implication, it was easy to see a clear case of sub-optimality of operations. The results in Ezirim (2004) also agreed with the earlier study by Agiobenebo and Ezirim (2002) in respect of a suffocating preponderance of sub-optimality syndrome in the management and use of available funds by the institutions studied.

The sub-optimal use of available monetary resources by insurance companies, it can be seen from the above two studies, appears to be the bane of profitable insurance operations. Funds' utilization is an investment question, which implies that there is a need to take a critical look at the investment function and decisions of these companies or the industry as a whole. Questions that would naturally arise include: what, for instance, is responsible for the poor utilization of funds in the industry? Why are they sub-optimal in funds' allocation? What factors explains their investment decisions, activities, or function? How do the different facets of insurance investments affect the insurance inter-relation ratio (or the

insurance intermediation index)? How do the different facets of insurance investments affect the growth of the Nigerian economy? As can be seen in the section of the literature review most of the above questions have been addressed by different authors except the last two posers. This present study is an enquiry into how the different facets of insurance investments affect the intermediation index and the growth of the Nigerian economy.

Research Problem and Objectives

The insurance industry has been accused of suboptimal performance in their intermediation operations in a typical developing country like Nigeria. It is a known fact that sub-optimality does not encourage or result in growth in any economy. However, certain activities in the staple of insurance activities such as investments are meant to boost growth of the aggregate output of the economy. The fact remains that the Nigerian economy has not achieved expected stable growth levels over the years. There have been known variances. Does it then imply that such activities that are expected to encourage economic growth are not carried out in a creditable manner as desired? Or does it mean that the growth in the output of the Nigerian economy does not respond to these investment activities? These are empirical questions that demand immediate empirical answers. It must be stated that it is not yet clear as to the magnitude and direction each facet of the insurance investment activity contribute to boosting total output or the growth in aggregate output in the light of evidence from developing economies such as Nigeria. It is not even fully determined as to the magnitude and direction each facet of the insurance investment activity contributes to the overall insurance intermediation index. Not many studies, to the best of the researcher's knowledge, have investigated the attendant relationships between the different investment channels on macroeconomic variables. Such channels include investments in government securities (IVGS), investments in stocks and bonds (IVSB), investments in real estate and mortgages (IVRM) and investments in cash, deposits and marketable securities (IVCD). Put succinctly, it is still an empirical burden to determine how each of the above facets of insurance investments affects the inter-relation ratio as well as the growth rate of the Nigerian economy. This work is an attempt to bridge the existing research gap. Thus, it is the central objective of this study to analyze the effects of insurance investment on the general intermediation performance as well as on the growth of the Nigeria economy. Specifically, the study seeks to

(i) Determine the extent and direction to which changes in various aspects of insurance companies' investments (namely, IVGS, IVSB, IVRM, and IVCD) affect changes in the insurance inter-relation ratio (IIR).

(ii) Determine the extent and direction to which changes in various aspects of insurance companies' investments (namely, IVGS, IVSB, IVRM, and IVCD) affect changes in the gross domestic product (GDP) of the economy.

REVIEW OF RELATED LITERATURE

Oyejide and Soyode (1976) investigated the patterns, growth and problems of insurance company's investments in Nigeria and underlined "the needs of the life insurance companies for long-term securities, for high-yield, even risky, industrial ordinary stocks; and its non-need for marketable short-term securities". The paper also observed large and growing size of investible insurance funds, about ₦15 million in 1971, and that for life companies, a greater percentage of these funds were put in securities. The Investment behavior of Insurance Companies in Nigeria was the mainstay of the study by Akintola-Bello (1986) which observed the great variation in the asset holdings of life and non-life insurance companies, owing to the need to match assets with the maturity structure of their liabilities. While non-life companies prize liquidity very highly, life insurance companies did not. For life companies emphasized government securities, mortgages and real estate, common stocks and corporate bonds, all of which are long-term high income-yielding assets in their portfolio. Although portfolios differ widely in maturity structure and in riskiness between life and non-life companies, both hold a wide variety of financial assets. Another perceived area of difference in investment behavior relate to distribution of investments between quoted and unquoted investment. Life companies tended to hold a greater proportion of unquoted investments, though their proportion of quoted investment has been increasing since 1978. For non-life companies, while the proportion of unquoted investment declined from 33% in 1978 to 12.1% in 1987, the proportion of quoted investments shows an upward trend.

Omoruyi (1984) made an econometric analysis of the determinants of investments by insurance companies in Nigeria, where he developed models of investment on each asset in the portfolio. Accordingly, each asset is made a function of insurance fund (or total assets) deflated with GDP, average rate of interest as a proxy for returns on investments, premiums/claims ratio and a dummy for legislation years. Use was also made of time-series annual data for 13 years (1969 – 1981) in acquisition of 4 major assets; namely government securities; stocks, shares and bonds; mortgage and loans; as well as cash and bills receivables. The result showed a good fit for life insurance companies using the log linear specification while the non-life and mixed insurance companies had their data showing good fit with the linear form. All the hypothesized variables were found to be statistically significant, though some at 10% significance level.

Haiss & Sümegi (2008) investigated both the impact of insurance investment and premiums on GDP growth in Europe, applying cross-country panel data analysis from 1992 to 2005 for 29 European countries. They found a positive impact of life insurance on GDP growth in the EU-15 countries, Switzerland, Norway and Iceland. For the New EU Member States from Central and Eastern Europe, they found a larger impact for liability insurance. Furthermore their findings emphasized the impact of the real interest rate and the level of economic

development on the insurance-growth nexus. They argued that the insurance sector needs to be paid more attention in financial sector analysis and macroeconomic policy (Haiss & Sümegi (2008)).

Raturi (2005) in his empirical work on the use of derivatives by US insurers posited that derivatives are important risk management tools widely used by financial institutions, including Insurers. It is noteworthy from the paper that derivatives "allow investors to trade exposures, diversifying risks and reducing earnings volatility; and not surprisingly, the market in derivatives has grown dramatically over the last 15 years. Today, derivatives have moved beyond the more familiar instruments used for managing interest rate, currency, commodity, equity and credit market risk to instruments used for mitigating risks such as catastrophe, pollution, electricity, weather and inflation. Insurers rely on derivatives for several purposes. For example, a life insurer with a large portfolio of guaranteed minimum death-benefit annuities can hedge against a steep decline in equity markets. Life insurers offering interest rate guarantees on their life-savings products can use derivatives to hedge against low interest rates. Property-liability (P-L) insurers can transfer some of their catastrophic risk to the capital markets via swap transactions. Furthermore, they can purchase options to sell their equity to a counterparty at a pre-negotiated price should they be faced by a liquidity crisis."

According to Raturi (2005), insurers rely on derivatives for managing actuarial, market, credit as well as liquidity risks, but quite alarmingly, there was a dearth of knowledge and publication about the recent use of derivatives by insurers – a gap in the literature, which the paper attempted to fill. The approach in the current study was to analyze data based on statutory company filings with state regulators in the USA. The analysis suggested that derivatives were used by larger companies, especially in the life insurance industry. This could be explained by the significant economies of scale that are possible when using derivatives. Smaller firms do not have the resources to invest in the latest risk management technologies, and management may be uncomfortable using such new tools. Surveys and anecdotal evidence also suggest that, for insurance companies, the lack of familiarity with the regulatory and accounting treatment of derivatives was another reason for their cautious derivative usage.

Despite their usefulness, past surveys and research show that insurers have been slow to employ derivatives. Some reasons for this are: unfamiliarity with derivatives; distrust in derivatives due to derivative-related scandals; the high infrastructure costs necessary in order to avoid the operational risk associated with derivative usage; low reinsurance rates that discouraged the use of insurance derivatives in the1990s' soft insurance cycle; the basis risk involved in the use of the available index-based insurance derivatives; and regulation and accounting complexities. Although derivative usage by insurance companies was not high,

there are reasons to believe that it will increase significantly in the future (Raturi, 2005).

The Goldman Sachs CIO survey as reviewed in Raturi (2005) asked companies the reasons for their planned use of derivatives in the upcoming six months. It revealed that L&H insurers make more significant use of derivatives than P-L insurers. It should be recalled that life insurers sell long-term contracts, which are more sensitive to interest rate fluctuations and inflation. This may partly explain why life insurers make more use of derivatives than the average P-L insurer. The survey also found that larger companies make more active use of derivatives than smaller companies. The survey suggests that small companies make more use of exchange-traded options than over-the-counter derivatives such as swaps. Call options, swaps and futures were the three most important derivatives used by insurers. Insurers use derivatives most frequently to hedge interest rate risk

A broader survey of Property-Liability insurers conducted in 1997 by Bouzouita and Young (1998b) provided some additional interesting insights. In this survey, about 60 percent of the177 respondents reported assets of less than USD250 million; 57 percent were stock companies (owned by shareholders) and 39 percent were mutuals (owned bypolicyholders). Only 12 percent indicated that they used financial derivatives. Again, derivatives usage was more extensive among large insurers. Of the firms with assets in excess of USD1 billion, 40 percent reported they were using derivatives. The survey found that 15 percent of stock companies used derivatives, compared to 10 percent of the mutuals in the sample. The Bouzouita and Young survey also indicated that insurers did not often use derivatives to hedge underwriting risk. In the survey, only nine out of 177companies claimed to use insurance derivatives such as catastrophe insurance options. The main impediments cited to using such products were a lack of familiarity with their workings and uncertainty about the regulatory implications of using them.

Cummins et al. (1997 2001) carried out a statistical analysis of insurers' use of derivatives and found that those that were well capitalized were less likely to use them since their probability of incurring distress costs was relatively low. This suggests that some insurers view derivatives and capital as being substitutes for each other. The authors also found evidence that insurance companies used derivatives to hedge asset volatility, liquidity and exchange rate risks. Life insurers were found to use derivatives to manage interest rate risk and the risks arising from embedded options in individual life insurance and guaranteed investment contract (GIC) liabilities. Finally, the authors found that there were significant economies of scale to be exploited by using derivatives. Only large firms, with higher than average risk exposure, found it worthwhile to invest in setting up and managing derivatives operations.

As explained in Ghimire (2012, 2013), insurance is a pooling arrangement used by a group of policyholders to accumulate a fund that pays a stated benefit in case of financial loss by covered risk or perils. Insurance companies share the risk among the large numbers of risk exposures. Modern insurance companies are typical financial institutions like banks and investments companies that manage the fund as well as absorb the risk of customers with due risk management practices. The investment policy of the insurance fund is basically directed by twin goals: solvency and profitability. This means they must guarantee commitments but generate financial income as well (Ghimire, 2013). One-sided regulations that promote only one of these objectives would not be effective. In this regard, investment regulation must be concerned with the risks inherent both in the investments themselves and in the commitments that those investments are intended to cover. It must, in particular, take into consideration the provisions which regulate these commitments and be adapted accordingly (Kocken, 2006).

According to the Insurance Regulatory and Development Authority (Investment) (Amendment) Regulations (2001), life insurers should invest at least 50 percent fund in Government approved Securities including the 25 percent in government securities, at least 15% fund in infrastructure and social sector, rest of the 35 percent in others sector which to be governed by Exposure norms as specified in regulation 5.Out of 35 percent, not exceeding by the15 percent fund can invest in the other than not approved sector. The regulation strictly regulated the insurance fund (at least 85 percent) in approved sector. Similarly, non life insurers also should strictly follow the rules where they should invest at least 30 percent fund in Central and State Government Securities and other Guaranteed Securities including at least 20 percent fund in central Government securities, at least 5 percent they should invest in loan portfolio which should guaranteed by government, not exceeding 25 percent in other than approved investments and not exceeding 30 percent fund need to invest in the sectors which to be governed by Exposure Norms specified in regulation 5 (IRDA, 2001).

Against the above theoretical and regulatory background, Ghimire's (2013) study aimed exploring the real status of investments portfolio structure of both life and non-life insurance companies of Nepal. Insurance Board of Nepal has issued modified directives for the safe and secure investments of Insurance fund. The paper examines the current investment practices adopted by the insurance companies and compare with the norms of directives. Most of the companies have invested more than required fund in secured sector giving priority to solvency over profitability. Among the 234 cases, 37 cases are non-compliances whereas 197 cases are compliances. Out of 37 noncompliance cases, 28 cases are more sensitive. Life insurers fail to comply with the statutory provision in 5 cases and non-life in 23 cases. However, in voluntary category, 1 and 8 cases are not complied by the life and non-life insurers respectively. Overall scenario of the investments portfolio is satisfactory ignoring few cases.

From the reviewed studies, it is obvious that there are more of empirical works that draw evidence from foreign data than those from Nigerian data or even from Africa. As can be verified, the only works that utilized Nigerian data include those of Oyejide and Soyode (1976) who focused on the patterns, growth and problems of insurance company's investments in Nigeria; Akintola-Bello (1986) who surveyed the Investment behavior of Insurance Companies in Nigeria; Omoruyi (1984) who made an econometric analysis of the determinants of investments by insurance companies in Nigeria; and Ezirim and Isitor's (2005), who also studied the determinants of insurance investments in Nigeria. There is none that investigated the effect of the various facets of insurance investments on the economy, whether through the channel of GDP growth or through the inter-relation or intermediation route. Even Ezirim and Isitor's (2005), which happens to be the most recent among all the works reviewed, covered the period 1970 to 1998. More recent data would expectedly provide fresh insights about the chosen area of study. This is the main thrust of the present study.

METHOD OF STUDY

The Models and Techniques of Analysis

The study utilizes simple econometric modeling following the classical linear regression procedure and estimations were done using such techniques as Least Squares, unit root tests, and cointegration tests. It is hypothesized that the insurance intermediation index or the Insurance inter-relation ratio (IIR) of the Nigerian economy is a positive function of overall investment decisions and activities of the insurance industry decomposed into investments in government securities (IVGS), stock and shares (IVSB), real estates and mortgages (IVRM), and cash and deposits IVCD). It is also hypothesized that the GDP growth of the Nigerian economy is a positive function of overall investment decisions and activities of the insurance industry decomposed into investments in government securities (IVGS), stock and shares (IVSB), real estates and mortgages (IVRM), and cash and deposits IVCD). We can write the relationship between the variables in the first hypothesis functionally as

$$IIR_t = f(IVGS, IVSB, IVRM, IVCD, U_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.......(1)$$

Where U_t is the stochastic disturbance term and f1, f2, f3, f4 > 0

Explicitly, Expression becomes,

$$IIR_t = \psi_0 + \psi_1 IVGS + \psi_2 IVSB + \psi_3\, IVRM + \psi_4\, IVCD + U_{1t}\ ;\ \psi_{is} > 0 \text{ .. (2)}$$

We can also write the relationship between the variables in the second hypothesis functionally as

$$GDP_t = f(IVGS, IVSB, IVRM, IVCD, E_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots..(3)$$

Where E_t is the stochastic disturbance term and f1, f2, f3, f4 > 0

Explicitly, we re-write Expression as follows

$$GDP_t = \partial_0 + \partial_1 IVGS + \partial_2 IVSB + \partial_3 IVRM + \partial_4 IVCD + E_t \; ; \; \partial_{is} > 0 \quad .. (4)$$

Expressions (2) and (4) are used to estimate the relationship between IIR, GDP and the investment variables. 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).

Data and Preliminary Analysis

The data required for this study include; GDP growth rates, total investments in government securities, stocks and bonds, real estate and mortgages, and cash, deposits and marketable securities. Data obtained relate to the insurance industry in general rather than individual companies, which also includes total assets. The rates of change are used. The data are obtained from the publications of the Central Bank of Nigeria namely, the Statistical Bulletin, Annual Reports and Statement of Accounts for various years. Table 1 presents the descriptive statistics of the collected data. The descriptive statistics of the four variables used in the analysis are summarized on Table 1. As can be seen, the mean values of the variables are 24.2% for GDP growth, 11.9% for IIR, 0.9% for IVCD, -13.9 for IVGS variable, 0.03 for IVRM, and 0.27 for IVSB variable. The variables posted median values of 18.1, 4.5, 0.29, 0.30, 0.02, and 0.025 for the GDP, IIR, IVCD, IVGS, IVRM, and IVSB variables respectively. The maximum growth rate of the Nigeria economy during the period was 11.4%, while the highest IIR rate was 35.9%.

The maximum values for IVCD, IVGS, IVRM, and IVSB were 17.35, 41.26, 0.37, and 6.78 respectively. The minimum growth (negative) of output was – 15.29%, while the least IIR rate was 0.01. For the investment variables of IVCD, IVGS, IVRM, and IVSB, the minimum values were -7.1, -341.4, -0.22, and -0.22 respectively. In terms of variability of the data values, GDP recorded a standard deviation of 25.29, while IIR posted 12.73. The standard deviation for IVCD, IVGS, IVRM, and IVSB were 3.96, 63.3, 0.11, and 1.2 respectively. The variables were skewed at 1.5, 0.29, 2.1, -4.5, 1.2, and 5.1 respectively for GDP, IIR, IVCD, IVGS, IVRM, and IVSB. The Kurtosis and Jarque-Bera statistics showed that the data for the variables were not normally distributed with probabilities that are less than the conventional alpha 0.05 except IIR. Thus we cannot reject a hypothesis of no normality for all the variables except, of course, the IIR.

TABLE 1
Descriptive Statistics of Data

Statistic	GDP	IIR	IVCD	IVGS	IVRM	IVSB
Mean	24.24719	11.90993	0.921346	-13.91438	0.035625	0.270313
Median	18.08602	4.488113	0.294325	0.300000	0.020000	0.025000
Maximum	114.8339	35.98116	17.35526	41.26000	0.370000	6.780000
Minimum	-15.29620	0.012357	-7.104830	-341.4200	-0.220000	-0.220000
Std. Dev.	25.29360	12.73787	3.960469	63.35126	0.111238	1.203271
Skewness	1.527657	0.292287	2.103281	-4.557271	1.280254	5.178849
Kurtosis	6.419161	1.410395	10.90468	23.87966	6.320186	28.52927
Jarque-Bera	28.03415	3.824759	106.9055	692.0469	23.43979	1012.034
Probability	0.000001	0.147728	0.000000	0.000000	0.000008	0.000000
Sum	775.9102	381.1179	29.48306	-445.2600	1.140000	8.650000
Sum Sq Dev	19832.76	5029.852	486.2446	124414.9	0.383588	44.88370

ESTIMATION RESULTS AND ANALYSIS

Stationarity and Long-run Equilibrium Analysis

The results of the unit root test to determine whether or not the variables are stationary or not are summarized on Table 2: Form the results of the Augumented Dickey-Fuller unit root tests as in the Table, it is easy to see that all the six variables, namely, GDP, IIR, IVCD, IVGS, IVRM, and IVSB are all stationary at first difference. with the observed t-statistics of -6.440007, -5.134267, -7.663929, -6.763564 , -10.33807, and -6.469035 respectively, greater than the critical t-value of -3.679 at !% level of significance.. This implies they are all integrated at order one, i.e., I(1) series. These will allow a cointegration test following the Johansen-Jusellius procedure. By implication, the short-run OLS results can be deemed sustainable, in their effect in the long-run, if the cointegration test criteria are satisfied. As can be seen from Table 3, which depicts the result of the cointegration test between IIR and the investment variables, the observed trace statistic of 54.41 is greater than the critical value of 47.85, and with a probability of 0.01 which is less that the critical probability of alpha 0.05, the study rejected the null hypothesis of at most one cointegrating equation and accept the alternate hypothesis of at least 2 cointegrating equations. Thus, the five variables are cointegrated at 5% level of significance. It can, therefore be inferred that there exist a long-run equilibrium relationship between the IIR and the four investment variables.

Table 4 summarizes the result of the cointegration test between IIR and the investment variables of IVCD, IVGS, IVRM, and IVSB. The observed the observed trace statistic of 43.5 is greater than the critical value of 40.2, and with a probability of 0.022 which is less that the critical probability of alpha 0.05, the study would not fail to accept the null hypothesis of at most one cointegrating equation, neither will it reject the alternate hypothesis of at least 3 cointegrating

equations. Thus, the GDP variables and four investment variables are cointegrated at order 1 and the study asserts this with over 95% confidence. By inference, therefore, there exist a long-run equilibrium relationship between the GDP and the four investment variables of IVCD, IVGS, IVRM, and IVSB.

The magnitude and direction of the observed long-run equilibrium relationship are summarized on Table 5. As depicted, the IVSG and IVSB variables were positive and significant in their relation with the insurance inter-relation index. The observed long-run coefficient of 0.578 and t-statistic of 4.45 for the IVSG variable is significant at 5% level. For the IVSB variable, the estimated long-run coefficient of 20.995 and t-statistic of 2.39 is significant at 5% level. Thus, there is no reason to accept the null hypothesis of no significant relationship between the insurance inter-relation ratio and insurance investments in government securities on one part and those in stocks and bonds. On other hand, investments in cash and deposits (IVCD) is observed to be negative but significant (Beta = 4.02, t = -5.09) at conventional levels. This buttresses the negative effect of stock-piling cash over a long period of time with attendant loss of value in the light of inflationary conditions and time value of money. The IVRM variable is positive but not significant at 5% level (Beta = 22.9; t = 0.71) in its relationship with the insurance inter-relation ratio.

The long-run relationships between GDP and the insurance investment variables follow similar trends like in the case of the IRR (see Table 5), especially when the sign implications are considered. For one thing the same variables, namely IVSG, IVSB, and IVRM are all positively related to GDP. They are equally significant, at conventional levels, in their effects on the economy. Their t-statistics were 2.74, 3.4, and 3.34 respectively. However, for the IVCD variable, it was again negative but not significant at 5% level of significance (Beta = -2.84, t = -1.77). Again, the negative sign point to the problem associated with carrying excessive cash whose values erode with time in the light of inflation and interest rate conditions. Generally, however, the investment variables of IVGS, IVSB, IVRM, and IVCD, jointly affect both the IIR and the GDP significantly and positively in the long-run (see Table 5).

Analysis of Short-run Equilibrium Relationships

Table 6 summarizes the estimated results of the short-run relationships between the IIR and the insurance investment variables. As can be seen the global adjusted coefficient of determination (R^2) of 0.243 and F-statistics of 3.48 posited a probability of 0.05. By implication, the investment variables – IVGS, IVSB, IVRM, and IVCD- jointly relate with the IIR positively and significantly. I n an established causality framework, it is easy to infer that the totality of the insurance investment variables jointly cause the insurance intermediation index of the economy. This is simply in agreement with plausible theoretical expectations. On the individual note, IVGS and IVSB significantly related with the IIR variable (t = -2.93, prob = 0.007 and t = 2.15, prob = 0.04 respectively)

while the relationships of IVRM, IVCD and IIR are not significant but positive (t = 0.19, prob =0.85 and t = 1.87, prob = 0.07 for IVRM and IVCD respectively). The study notes that the relationships of IIR with IVGS and IVSB ought not to be negative, contrary to a priori expectation. It however agrees with the result of the global statistics of joint positive and significant influence of the investment variables on the insurance inter-relation ratio. The study takes such a side in agreement with the plausible theoretical reasoning that investment is a critical financial intermediation activity.

Table 7 depicts the result of the short-run relationships between the GDP and the investment variables. As can be seen in the results, the insurance investments in all areas jointly accounted for about 34% of the changes in or growth in GDP of Nigeria as shown by the adjusted R-square of 0.340. This level of performance (34%) is statistically significant at 5% level with F-statistic of 3.622 and probability of 0.03. A hypothesis of no significant relationship between economic growth and investments of insurance companies in Nigeria would have to be rejected. It can therefore be concluded that the four avenues of investments of the insurance companies significantly related with growth in GDP of Nigeria. This is in line with theory: Investments boost output.

On individual specific relationship between the changes in insurance companies' investments in government securities (IVGS) and changes in the country's GDP, the IVGS variable recorded a coefficient of 0.767679 and a t-statistic of 2.74 (0.005). This observed coefficient is significant at 1% alpha level. Thus, the IVGS variable was positively and significantly related to GDP growth. The hypothesis of no significant relationship must be rejected and the alternative hypothesis accepted. That the relationship is positive satisfies the *a priori* expectation. The IVSB variable recorded a coefficient of 60.5 and t-statistic of 3.4 (0.003). This observed coefficient is significant at 1% alpha level. Thus, the IVSB variable was positively and significantly related to GDP growth. The hypothesis of no significant relationship must be rejected and the alternative hypothesis accepted. In the case of the IVRM variable, it recorded a coefficient of 230.1296 and a t-statistic of 3.338 (0.003). This observed coefficient is significant at 1% alpha level. Thus, the IVRM variable was positively and significantly related to GDP growth. The hypothesis of no significant relationship must be rejected and the alternative hypothesis accepted. On the other hand, the IVCD variable recorded a coefficient of -2.846970 and t-statistic of 1.774 (0.076). This observed coefficient is not significant at 1% or even 5% alpha level. Thus, the IVCD variable was negative and insignificantly related to GDP growth. The hypothesis of no significant relationship must be accepted and the alternative hypothesis rejected. That the relationship is negative, however, goes contrary to the *a priori* expectation.

SUMMARY OF FINDINGS AND IMPLICATIONS

The study sought to determine the extent and direction to which changes in various aspects of insurance companies' investments (namely, IVGS, IVSB, IVRM, and IVCD) affect changes in the insurance intermediation index and the GDP growth of the economy over time. These variables are observed for the period covering 1980 to 2012, implying about 32 observations. Rates of change were used in the computations. The cointegration procedure and regression analysis techniques were used.

In the short-run, the investment variables – IVGS, IVSB, IVRM, and IVCD- jointly relate with the IIR positively and significantly. On the individual note, IVGS and IVSB significantly related with the IIR variable, unlike the IVRM, IVCD variables that were not significant but positive. There exist a long-run equilibrium relationship between the IIR and the four investment variables. In the long-run, three out of the four investment variable, namely IVGS, IVSB, IVRM, positively related to the IIR Only IVGS, IVSB were significant. The IVCD was observed to be negative but significant in its long-run relationship with IIR.

Also, in the short-run, the investment variables – IVGS, IVSB, IVRM, and IVCD- jointly relate with the GDP positively and significantly. Individually, in the short run, positive and significant relationships exist between GDP and three variables, IVGS, IVSB, and IVRM. The cash variable, IVCD, is negative but significant in its effects. A long-run equilibrium relationship exists between the GDP and the four investment variables. In the long-run, IVSG, IVSB, and IVRM are all positively and significantly related to GDP. For the IVCD variable, it was again negative but not significant.

Thus, it is evident that when all the variables are put together they exerted a very significant influence on the economy by way of affecting the insurance intermediation index as well as GDP growth positively and remarkably. However, it is only the investments in cash and related assets that did not appear to have impacted the GDP considerably. The reason is found in finance theory. Cash when not invested is not productive but docile and dormant. Theory even claims that stock-piling cash can be counter-productive. The unwritten finance adage says the cash (money) is like manure; when you spread it on your plants (investments), it will increase your harvest (output and returns) bountifully, but when you leave it idle in the dump, it will stink. This explains why the IVCD variable was also found to be negative. On the other hand, investments in the other assets are proper investments. They are direct productive activities which work to generate output (and returns). It is easy therefore to see why GDP responded to them both positively and significantly. Recall the even the GDP is the aggregate output of the economy. It is only reasonable that these proper investments in government securities, stocks and bonds, and in real estate would contribute to boosting output.

CONCLUSION AND RECOMMENDATIONS

It is the main conclusion of this work that the investment activities of insurance companies jointly exert considerable positive impact on the GDP or economic growth of Nigeria. This implies that the investment operations of insurance jointly exerted positive boost on economic growth of Nigeria. This is true of all the various facets of their investment activities in government securities, stocks and bonds, and in real estate and mortgages. The only exception is cash.

Since three cardinal investment outlets of insurance companies (namely investments in government securities, stocks and bonds, and in real estate and mortgages) are found to significantly associate with growth in GDP and insurance inter-relation index, then it is a good strategy to gear all efforts to encourage the insurance companies to increase their investments in these areas. The government and its agencies as well as the insurance companies will do well to make deliberate efforts to increase the funds' allocations and utilization into these avenues. It will profit both the economy and the companies as well. Also, the results suggest that investments in cash should be reduced by the insurance companies. The government on their own part should use its monetary policy tool of open market operation to mop up excess liquidity so as to reduce too much cash holding by the insurance companies.

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APPENDICES

TABLE 2
Augmented Dickey-Fuller Stationarity Test Results of the Variables

Panel A: Null Hypothesis: D(GDP) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.440007	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

Panel B: Null Hypothesis: D(IIR) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.134267	0.0002
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

Panel C: Null Hypothesis: D(IVSB) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.469035	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

Panel D: Null Hypothesis: D(IVGS) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.763564	0.0000
Test critical values:	1% level	-3.752946	
	5% level	-2.998064	
	10% level	-2.638752	

Panel E: Null Hypothesis: D(IVRM) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-10.33807	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

Panel F: Null Hypothesis: D(IVCD) has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.663929	0.0000
Test critical values:	1% level	-3.679322	
	5% level	-2.967767	
	10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

TABLE 3
Johanse Cointegration Test Result of Series: IIR IVGS IVSB IVRM IVCD

Trend assumption: Linear deterministic trend
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.652733	86.14239	69.81889	0.0015
At most 1 *	0.560144	54.41254	47.85613	0.0107
At most 2	0.439460	29.77330	29.79707	0.0503
At most 3	0.308939	12.40768	15.49471	0.1384
At most 4	0.043106	1.321871	3.841466	0.2503

TABLE 4
Johanse Cointegration Test Result of Series: GDP IVGS IVSB IVRM IVCD
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.510457	64.95956	60.06141	0.0182
At most 1 *	0.470856	43.53107	40.17493	0.0221
At most 2 *	0.353067	24.43624	24.27596	0.0477
At most 3	0.256031	11.37086	12.32090	0.0717
At most 4	0.079900	2.498174	4.129906	0.1346

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

TABLE 5
Estimated Long-run Coefficient of the Two Models

Normalized cointegrating coefficients (standard error in parentheses)

IIR	IVGS	IVSB	IVRM	IVCD
1.000000	0.578749	20.99518	22.90769	-4.024266
	(0.13019)	(8.77141)	(32.4065)	(0.79075)

Normalized cointegrating coefficients (standard error in parentheses)

GDP	IVGS	IVSB	IVRM	IVCD
1.000000	0.767679	60.50090	230.1296	-2.846970
	(0.27991)	(17.7559)	(68.9269)	(1.60460)

TABLE 6
Estimation Results of the Short-run Relationship between IIR and Investments Operations of Insurance Companies

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.06760	2.138028	4.708824	0.0001
IVGS	-0.221602	0.075522	-2.934254	0.0067
IVSB	-8.535793	3.955011	-2.158222	0.0400
IVRM	3.705941	19.68765	0.188237	0.8521
IVCD	1.013941	0.542128	1.870297	0.0723
Adjusted R-squared	0.242836			
F-statistic	3.485565	Prob(F-statistic)		0.020280

TABLE 7
Estimation Results of the Short-run Relationship between GDP and Investments Operations of Insurance Companies

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IVGS	0.767679	0.27991	2.74	.005
IVSB	60.50090	17.7559	3.407	.003
IVRM	230.1296	68.9269	3.338	.003
IVCD	-2.846970	1.60460	1.774	.076
Adj. R-squared	0.340			
F-statistic	3.622	Prob(F-stat)	0.030	