Effect of Cooperative Farmers' Insurance Premium on the Growth of Agricultural Gross Domestic Product in Nigeria

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Abstract: The study investigated the effect of cooperative farmers' insurance premium on the growth of agricultural gross domestic product in Nigeria. The objective of the study was to ascertain the effect of cooperative farmers' insurance premium on the economic growth of agricultural sector. Secondary data was sourced and used for the study. The study adopted *ex-post facto* research in which secondary data obtained from the Nigeria Agricultural Insurance Corporation (NAIC) Headquarters, Abuja and Statistical bulletins of Central Bank of Nigeria, from 1989 to 2015 were used for analysis. Data for the study were analyzed using descriptive statistics, graphs, ordinary least square, panel unit root analysis, pairwise granger causality test and co-integration. Result showed that total cooperative farmers' insurance premium had positive insignificant effect on the growth of agricultural gross domestic product in Nigeria, with co-efficient value of 0.028603, t-value of 0.140011 and p-value of 0.8898. The study concluded that in order to record positive significant effect on Nigeria's agricultural gross domestic product consistently over a long period of time, sufficient funds as agricultural loans should be delivered to cooperative farmers to make agricultural produce and products available, accessible and affordable especially at this period of economic recession and also an increase in the coverage of insurance to Nigeria's cooperative farmers in order to attract more premiums to government by bringing into the insurance sector larger number of cooperative farmers through credit delivery to service their agricultural businesses. The study advised NAIC to offer agricultural insurance to cooperative farmers at a reduced and subsidized rate of 25%, instead of the 50% premium they currently pay.

Key words: insurance premium, agricultural GDP, Nigeria.

I. INTRODUCTION

Nigeria's governments over the years have facilitated agricultural production through the delivery of agricultural loans and agricultural insurance. Governments have interest in agricultural insurance from the perspective of maintaining productivity for the economy and safeguarding the wellbeing of the rural community. Agricultural insurance is therefore, one of the programmes instituted to ensure that cooperative farmers are compensated in event of losses arising from natural disasters. Agricultural insurance can be defined as a financial tool to transfer production risks associated with agricultural production to a third party through payment of premium (cooperative farmers' contribution). Akinsoroton (2007) defined agricultural insurance as the stabilization of income, employment, and deliberate savings and accumulation of funds through installments by people for financial protection in bad time periods.

One of the major obstacles facing small-scale farmers, cooperators and cooperative societies in contributing to the intensive growth of the Nigerian economy is inadequate access to working capital (Nwite, 2004). The supply and delivery of capital to agricultural sector is still inadequate, as most of the small-scale farmers have been severally constrained in the credit market (Omonona, Lawal and Oyinlana, 2010). However, because of low output and price uncertainties associated with farming business in the rural sector, farmers and cooperators in developing economies cannot afford to self-finance of their agric-business enterprises (IMF, 2013). This is obvious because farm credit increases the level of productivity, farm profit, efficiency and enhances standard of living in the rural areas (Abu, Odoemenem and Ocholi, 2011).

In Nigeria's agricultural insurance, loan is given to a particular farmer or cooperator for investment in the agribusiness by the Bank of Agriculture or other banks (Adeyefa, 2013). The buyer of an insurance contract buys security and the seller accepts a risk. The premium charged by the seller must give him adequate compensation for the risk bearing service he provides, and of course be acceptable to the buyer (Borch, 2000). Premium is an amount paid periodically to the insurer by the insured for covering a risk. For taking this risk, the insurer charges an amount called the premium, which can be paid in monthly, or quarterly, semiannually, annually or in a single premium. Cooperative farmers' insurance premium represents the committal of the cooperative farmers to Nigeria Agricultural Insurance Corporation (NAIC), which is 50% of NAIC full premium. The other 50% premium is shared by the Federal Government and the State Government at the rates of 37.5% and 12.5% respectively. Since banks are not willing to give out loans to farmers in Nigeria, this contribution enables the cooperative farmers to access credit from financial institutions under insurance cover (NAIC, 1995).

In an effort to provide agricultural risk insurance to Nigerian farmers, the government established the Nigeria Agricultural Insurance Scheme in 1987. This scheme evolved into a corporation, fully owned by the Federal Government of Nigeria called the Nigeria Agricultural Insurance Corporation (NAIC) in 1988. The main objectives of NAIC are to promote agricultural production, provide financial support, increase the flow of agricultural credit and minimize the need for emergency assistance to farmers (Uzoma, 2013). The scheme was established for all categories of farmers: small, medium and large scale at the individual or group level. The crop insurance package covers crops like maize, rice, cassava, yam and sorghum. The livestock insurance package covers livestock such as cattle, poultry, pigs, rabbit and sheep (NAIC, 1995).

The perils covered under crop insurance are fire, lightening, wind storm, flood, drought, pests and diseases, while the perils covered under livestock include accident, disease, fire, pest and flood (NAIC, 1995).

. The objective of the paper is to investigate the effect of cooperative farmers' insurance premium on the economic growth of agricultural sector in Nigeria

Ho: There is no significant positive relationship between cooperative farmers' insurance premium and agricultural GDP;

II. REVIEW OF RELATED LITERATURE

Ward and Zurbruegg (2000) examine causal relationship between growth in insurance activity and economic growth for nine OECD countries during the period from 1961 to 1996. The annual real GDP is used as a measure of economic activity and annual total real insurance premiums as a measure of insurance activity. The authors apply bivariate VAR methodology to test for Granger causality. Causality tests from vector auto regressions in levels show that the insurance activity leads economic growth in two countries (Canada and Japan), while in the case of Italy there is a bidirectional relationship between insurance and economic activity. However, this relationship is weaker and less significant than for two above mentioned countries. For all other countries there is no evidence for the interaction. Causality tests from the error-correction models show similar results as previous tests. Exceptions are Australia and France for which results show some kind of connection. The authors conclude that the causal relationships between insurance and economic growth might well vary across countries because of the influence of number of country specific factors, such as cultural, regulatory and legal environment, the improvement in financial intermediation and the moral hazard effect in insurance.

Kugler and Ofoghi (2005) examine long-run relationship between insurance market size and economic growth in United Kingdom for the period from 1966 to 2003 for long-term insurance, and for the period from 1971 to 2003 for general insurance (from 1991 to 1997 for marine-aviation-transport insurance and reinsurance). In comparison to Ward and Zurbruegg, who used aggregate variable in their estimation (total written premiums) because of which there is possibility of co- integration, this study use disaggregated data for the measure of market size. Namely, net written premium for each market in insurance industry in the United Kingdom is used as a measure or market size for that market. The market is divided into long-term insurance market, that includes life insurance, annuities, individual pensions and other pensions, and general business insurance market including motor, accident and health, liability, property, pecuniary loss, marine, aviation and transport insurance and reinsurance. Using Johansen's cointegration tests the authors find a long-run relationship between development in insurance market size and economic growth for all components of insurance markets. Causality tests show that there is a long-run causality from growth in insurance market size to economic growth for eight out of nine insurance markets (the exception is pecuniary loss insurance). Arena's (2006) empirical study on causal relationship between insurance market activity and economic growth includes 56 countries (both developed and developing ones) in the period from 1976 to 2004. Insurance premiums are used as proxies of total and life and non-life insurance activity separately. As an estimation method, the author uses the generalized method of moment for dynamic models of panel data. The

results show a positive and significant effect of total life and non-life insurance market activity on economic growth. Impact of life insurance on economic growth is driven by high-income countries only. In the case of non-life insurance, its impact is driven by both developed and developing countries, but it is larger in developed countries than in the developing ones. The author also examines the possibility of non-linear effects of life and non-life insurance variables on economic growth, but the results do not show the non-linearity in the relationship.

Wadlamannati (2008) examines the effects of insurance growth and reforms along with other relevant control variables on economic development in India in the period from 1980 to 2006. Grow of insurance penetration (life, non-life and total) is used as proxies of insurance sector growth. The author applies ordinary least squares, co integration analysis and error correction models. The study confirms positive contribution of insurance sector to economic development and a long run equilibrium relationship between the variables. While the reforms in the insurance sector do not affect economic activity, their growth has positive impact on economic development.

Although there are strong theoretical explanations for positive impact of insurance sector to economic growth, the results of empirical researches carried out up to date are mixed. However, the number of empirical studies is relatively small, especially in relation to those on banking contribution to economic growth. For the surveys see Levine (2004) and Thirtle (2001).

Han et al (2010) studied the relationship between insurance development and economic growth using a dynamic panel data model on 77 countries for the period of 1994-2005. The insurance density is used to measure the development of the insurance; they concluded that the development of insurance is positively correlated with economic growth. The estimated sample is then divided into developed countries for developing economies, the development of insurance is more important than that played in the case of developed economies.

Kjosevski (2011) examined the impact of insurance on economic growth using the insurance penetration as a measure of insurance development, three variables were used: life insurance penetration, penetration of non-life insurance and total insurance penetration. The analysis used data for the period 1995-2010 (of the Republic of Macedonia), using the OLS technique, followed by an analysis of the variability in order to identify the effects of each variable. The result of this analysis shows that the development of total insurance sector positively affects economic growth; this result is confirmed in non-life insurance, while the result show that life insurance negatively affects economic growth.

Browne et al (2000) studied the relationship growing insurance including car insurance and general liability insurance on a sample of countries belonging to the Organization for Economic Cooperation and Development (OECD). The authors' analysis suggests that income has a much greater effect on the auto insurance consumer that the liability insurance that include wealth shape the legal system in the country.

Esho et al (2005) studied the role of legal factors in determining insurance density across countries using GMM on panel data for the period 1984-1998. The results show that there is a strong positive relationship between the protection of property rights, income and consumption of insurance.

Adams et al. (2005) conduct an analysis similar to Kugler and Ofoghi (2005) but focus on Sweden for the period of 1930-1998 and include additional variables like bank lending. Bank lending seems superior to insurance service and cause growth in the nineteenth century. In the twentieth century causality is reversed. Insurance seem to be more driven by the economic growth.

Ojo (2012) examined the relationship in the short and long-term relationship between economic growth and the development of the insurance sector in the Nigerian economy over the period 1985-2009. The results showed that the development of the insurance sector positively and significantly affects economic growth.

Randle and Ahuja (2001) in an attempt to examine a two-period model patterned after the McKinnon and Shaw (1973) theory to increase savings assets allocation and promote economic growth, argued that: an additional accessible financial service for the private households should increase asset allocation and enhanced competition in the insurance sector. Tests estimations were carried out and validation conducted by comparing the bankruptcy and solvency features of insurance companies and banks. The findings showed that, in the short run, where no income or efficiency improvement have emerged yet, savings/asset allocation decline and because of lesser credit constraints resources dissipation rises. The result suggests that insurance bankruptcies cause more volatility in the economy, and funds intermediation and consumer welfare is lower than those of the banking sector.

Beck and Webb (2002) specifically investigated the relationship between life insurance penetration, insurance density, life insurance percentage in private savings and Life insurance percentage in force to Gross Domestic Product (GDP) as the dependent variables, and GDP, young and old dependency ratio, life expectancy, secondary school enrolment, inflation volatility, banking sector development, real interest rate and others are the explanatory variables. The ordinary least square and fixed-effects estimation model was employed on cross-country and time-series data for sixty eight (68) countries, including fourteen (14) European Union (EU) countries over the

period 1960 to 2000. The study reported that anticipated inflation, real interest rate, secondary school enrolment significantly correlate with the private savings rate. The ratio of life insurance in private savings decreases with an increasing saving rate. They posited that this could be due to the behavior of the household to limit life- insurance expenses and transfer additional income to their savings. They added that institutional development is an indicator that is positively related to insurance demand.

Zou and Adams (2004) studied the Chinese property insurance market, sampling two hundred and thirty five (235) public liability companies for the period 1997 to 1999. They specifically examined the relationship between property insurance propensity and premium as dependent variables, and leverage, growth opportunities, state and managerial ownership as explanatory variables. Utilizing the heterogeneity fixed effects estimation model on panel data, they found that there is a tendency for companies that are highly leveraged or have physical assets intensive production to consume property insurance, while state ownership decreases the demand for insurance. They further reported that increased managerial or foreign ownership and better growth options facilitate the demand for insurance while the size of the company inversely correlate with insurance demand.

Boon (2005) examined the growth supportive functions of banks, stock markets and the insurance sector in Singapore for the years 1991 to 2002. The study ran a regression of real GDP and real gross fixed capital formation against total insurance funds, stock market capitalization as percentage of nominal GDP, and loan to nominal GDP using the vector error correction model on time series data. The results showed short and long run causality running from bank loans to GDP, and a bi-directional causality between real gross fixed capital formation and bank loans.

GDP growth seems to enhance stock market capitalization in the short run and the stock market capitalization significantly granger causes capital formation in the long run. Total insurance funds significantly affect GDP growth in the long run while total insurance funds influences capital formation in both the short run and long run respectively.

Arena (2008) examined the causal relationship between life and non-life insurance market activity, and economic growth. The study utilized the average rate of real per capital GDP growth as dependent variable. The insurance market activity was proxy for the ratio of life insurance premiums to GDP and the ratio of property-liability insurance premiums to GDP (insurance penetration). Using the generalized method of moments (GMM) for dynamic models on panel data for fifty six (56) countries over the period 1976 to 2004, they found that both life and non-life insurance have a positive and significant causal effect on the growth of the economies. High-income countries drive the results in the case of life insurance. Both high-income and emerging economies drive the results in the case of property and liability insurance.

The work of Ching, Kogid and Furuoka (2010), examined the causal effect of life insurance assets on economic growth. This was experimented using the co-integration analysis with quarterly data drawn from Malaysia for the period 1997 to 2008. On the whole, the evidence, particularly from the regression result seems to suggest that there is a one way relationship flowing from real GDP to life insurance sector. No causal relationship flowed from life insurance to GDP. This shows that the response by the economy growth indicators to life insurance sector variables like savings mobilization, risk management and investment do not completely grow the economy.

Agwuegbo, Adewole and Maduegbuna (2010) predicted insurance investment using a factor analytic approach and the implication for economic growth in Nigeria. The study focused on the role played by insurance companies in enhancing the efficient functioning of the financial system in Nigeria. It was observed that insurance companies issue and sell indirect financial securities to the surplus economic units and consequently, purchase other financial securities, which are primary in nature, from the ultimate borrowers of those funds. The study reported that the insurance industry in Nigeria holds a reasonable percentage of the country's total investable fund generated by the capital market. These investments in the stock market serve as a shield for insurance against predictable underwriting losses (covered losses) which are more prominent than their return on investment. These findings suggest that insurance investment activities not only boost the output level of goods and services in the economy but also, enhance the performance of the risk management function of insurance, hence, stabilizing and growing the economy.

According to Onuorah and Charles-Anyaogu (2013), the modern theory of financial intermediation covers the general functions of insurance and this includes: common pool fund, equitable premium, provision of means for clearing and settling payments to facilitate exchange of goods and services; provision of mechanism for polling resources; resources allocation; resource stabilization and resource coordination, risk management; provision of price information decentralized decision making in various sectors of the economy and provision of means as solution to moral hazard and physical hazards. Osiegbu, Ezirim and Okereke (2002) collaborated this result.

Empirically, Oke (2012) used fixed effect model and co-integration analysis to determine the short-run and long-run relationship between economic growth and insurance sector growth and development in Nigeria. The study

spans from the period of 1986 to 2009. The result reveals that insurance sector growth and development positively and significantly affects economic growth. The result of the granger causality test indicates that the extent of influence the insurance sector growth had on economic growth was limited and not direct because of some cultural, attitudinal traits and values in the economy.

Davies and Yuwei (2004) studied the Chinese property insurance market, sampling thirty five (35) public liability companies for the period 1997 to 1999. They specifically examined the relationship between property insurance propensity and premium as dependent variables, and leverage, growth opportunities, state and managerial ownership as explanatory variables. Utilizing the heterogeneity fixed effects estimation model on panel data, they found that there is a tendency for companies that are highly leveraged or have physical assets intensive production to consume property insurance, while state ownership decreases the demand for insurance. Wadlamaannati (2010) reported that increased managerial or foreign ownership and better growth options facilitate the demand for insurance while the size of the company inversely correlate with insurance demand.

Onuorah (2010) investigated how people perceive insurance companies and their services in Nigeria using four insurance companies in Port-Harcourt. The result reveals that majority of the respondents have unfavourable perception of insurance companies and their services and thereby concluded that there is a low confidence of insurance on the service delivery of the insurer, and the insurer should inform the insured on the policy interpretation.

Peter and Kjell (2006) worked on the relationship of insurance and economic growth, a theoretical and empirical analysis. They applied a cross country panel data analysis using annual insurance premium data from 29 European countries over the 1992 to 2004 period. They observed a weak evidence for a growth- supporting role of life insurance and explain this with similarities to recent bank and stock sector findings.

Szablicki (2002) conducts a cross-sectional analysis and a panel regression for causality between three different life insurance figures and premium and socio-economic country variables for the time period from 1960 to 1996. The analysis of the data from 63 developing and developed countries is one of the few to find education level to enter significantly. Furthermore the findings emphasis the importance of banking sector- development and the results for the role of the income level are in line with the results of previous works. The panel data regression mainly confirms the results of the cross-section estimation.

Shittu (2012) carried out a study on financial intermediation and economic growth in Nigeria for the period of 1970 to 2010 using unit root test, co-integration test, Error correction Model (ECM) and Engle-Granger causality test. The result observed that the financial intermediaries have significant impact on the growth of Nigerian economy.

III. THEORETICAL FRAMEWORK

Farm Risk Theory

Agriculture based business organizations and farmers are more likely to face risk than other business sectors owing to the fact that agricultural operations, products and services are related and dependent on the weather and biological variables, natural processes and plant and animal diseases. Therefore, farmers have to develop risk management strategies to cope with the adverse events and sometimes to use government assistance, in order to ameliorate the farm risks or cushion the adverse effect of the occurrence of farm perils. This study largely benefits from the concepts of farm risk theory. Farm risk theory got more empirical backings from the works of Koundori, Nounges and Tzouvelekas (2004) who demonstrated that the perception of risks by farmers affect their level of adoption of technologies and acquisition of credit. Risks in agriculture have been a matter of worldwide concern (Knight, 2002). The field of agricultural risk shows that it is difficult to evaluate and manage risks in agriculture (Hardaker, 2004; Landanyi, 2003). Agricultural enterprises have to cope with large numbers of uncertainties.

The farm risk theory is related to the Modern Portfolio Theory (MPI) which holds that the return of any kind of investment is conditioned by a determined level of risk (Iyiola, Munirat and Nwufo, 2012). The theory, MPT, is an investment decision approach that aids an investor to classify, estimate and control both the kind and the amount of expected risk and return. Essential to the portfolio theory are its quantification of the return and the assumption that investors must be compensated for assuming risk (Edwin and Martins, 1997).

There are five distinct risk factors in agriculture: production risk, marketing risk, credit risk, personal risk and environmental risk (Johnson, 2008; Adams, 2008). Whereas, Hardaker, Huime, Anderson and Lien (2010) expanded this list with political and business risks. There are other numerous risks among them are speculative and pure risks. Thus, each of these risks plays a role in the farmer decision-making process. Credit, economic and political risks are regarded as risk inherent to the entire market, since they are faced by all businesses (i.e. systemic risk), while production and personal risks are industry specific risk that are inherent in each investment (i.e.

unsystemic risk) (Laura, 2012). Usually, unsystemic risks can be reduced by means of appropriate diversification and use of government assistance. Government assistance through the Nigerian Agricultural Insurance Corporation since 1988 is available to Nigerian farmers.

Agriculture, unlike many other investment activities in Nigeria, is exposed to a wide variety of risks and uncertainties ranging from input supply, post harvest losses to the vagaries of nature such as inclement weather conditions, pests and diseases. Other natural hazards such as floods and fire outbreak are equally important with regards to their impact on the success or failure of an agricultural enterprise in Nigeria. The need for a mechanism that functions specifically to keep the farmers in business, in spite of the farm risks cannot be over emphasized, in order to reduce the impact of these risks and uncertainties to the barest acceptable minimum. This research effort is therefore anchored on the farm risk theory.

IV. METHODOLOGY

This research adopted the *ex-post facto* research design. Based on the nature of this paper which examined the effect of co-operative farmer' insurance premium on the growth of agricultural gross domestic product in Nigeria, which is a cause-effect study as well as the use of data which the researcher cannot manipulate, the *ex-post facto* research design suites this study. Secondary data was collected from the statistical bulletins of the Central Bank of Nigeria on Agricultural GDP and its various components, and from the Nigeria Agricultural Insurance Corporation (NAIC), covering the period 1989 to 2015. Data for the dependent variables were collected from the CBN, while data for the independent variables were collected from NAIC. Data for the study were analyzed using descriptive statistics, graphs, ordinary least square regression, panel unit root analysis, pairwise granger casuality test and cointegration.

V. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Data Presentation   Table 1: Number of Policies, volume of risks and premium generation, 1988-2015.

NIGERIAN AGRICULTURAL INSURANCE CORPORATION

NUMBER OF POLICIES/VOLUME OF RISK/PREMIUM GENERATION (WITHOUT GOVT. SUBSIDY)1988 - 2016

YEAR	NO OF POLICIES	CROP SUM INSURED	PREMIUM	NO OF POLICIES	LIVESTOCK SUM INSURED	PREMIUM	NO OF POLICIES	COMMERCIAL SUM INSURED	PREMIUM	NO OF POLICIES	TOTAL SUM INSURED	PREMIUM

Table 2: Volume of Risks/Premium generation

Year	CROPS_SUM_INSURED	CROPS_PREMIUM	LIVESTOCK_SUM_INSURED	LIVESTOCK_PREMIUM	TOTAL_SUM_INSURED	TOTAL_PREMIUM
1989	91687563.00	6509817.00	44192013.00	3314401.00	146747461.00	10204594.00
1990	159575967.00	10484141.00	27370080.00	2052756.00	234010590.00	14184156.00
1991	244094064.00	16036980.00	81642693.00	6123202.00	572337757.00	30791217.00
1992	130531860.00	3214421.00	34036000.00	1546419.00	1075895860.00	28271355.00
1993	156485011.00	2633812.00	71405286.00	4946209.00	978338109.00	40052822.00
1994	198636654.25	4296040.00	137265061.07	4659648.00	2156776695.75	25357840.00
1995	256327096.71	8836928.37	178391449.15	5140924.46	1899744983.73	37740547.51
1996	1174797422.42	21775915.67	206427684.97	8499512.10	3112139551.42	56965512.60
1997	848700865.74	18265344.58	2187551045.05	8324312.63	7681139746.32	62963754.13
1998	2218495471.59	23135747.57	198166994.44	6315940.40	5054721999.93	77556298.09
1999	1557247252.38	26506878.90	416844067.90	11588914.04	5192093618.49	77656464.31
2000	1319843788.09	26511348.17	250744841.16	8275655.67	4550707456.10	65593428.81
2001	1271755946.25	30503677.09	362249017.12	12709460.79	4068178486.70	82874793.14
2002	1897197279.08	40828339.78	653104146.74	19930689.53	6291279024.30	137665494.04
2003	2473386761.54	69472608.72	555479748.99	38268804.56	9835936230.83	248881293.37
2004	5766236045.17	167856524.24	1215546151.49	47123725.41	26904832161.19	498299586.33
2005	5733886849.00	189331785.00	1883241405.00	71844941.00	18407612182.00	562029352.00
2006	20111644710.00	226602032.00	2542298013.00	73406380.00	43104670291.00	555874934.00
2007	7147490858.50	131960430.76	3174922912.32	79343229.04	25040763085.81	548981069.20
2008	6521997244.67	130040419.43	5185105361.45	109388562.65	20624482647.20	679604097.07
2009	8008353350.96	528278104.13	4303813298.67	98993845.93	28070732265.73	827712934.55
2010	8228703850.10	332160320.97	5362461605.66	131390643.02	61908297264.33	842176358.91
2011	10189788235.10	175998784.84	6102993258.98	148035676.90	37725797714.01	570369993.57
2012	12259735518.42	218093209.11	8825970013.21	384169587.64	46906495971.94	939625903.04
2013	13189678793.75	202157173.38	6835672336.64	138303094.47	71118988932.34	771346558.79
2014	15163925791.90	399363783.87	6647925657.60	173172790.38	110017817382.54	1007799333.87
2015	14380994143.00	263513113.38	6082447910.60	154367135.14	107265104285.62	694058798.21

Source: NAIC Headquarters, Abuja, 2017.

Table 3: Agricultural GDP
Source: CBN Statistical Bulletins, 1989 - 2015

Year	Agric_GDP	CROP_GDP	LIVESTOCK_GDP	FISHERY_GDP
1989	6990000	5650000	820000	320000
1990	8460000	6830000	980000	420000
1991	9770000	7990000	1080000	470000
1992	14560000	12060000	1590000	620000
1993	23230000	19590000	2530000	740000
1994	3500000	29660000	3750000	101000
1995	62100000	52690000	6720000	191000
1996	84310000	71290000	9010000	301000
1997	95540000	80680000	10020000	363000
1998	105970000	8910000	10940000	440000
1999	113000000	94710000	11360000	508000
2000	119550000	99890000	1190000	541000
2001	159800000	133640000	1576000	753000
2002	336010000	304780000	18690000	906000
2003	362860000	327280000	20670000	1066000
2004	390890000	347530000	2491000	1303000
2005	140538240	125213040	8780400	4683600
2006	27109800	7860600	11026800	5853600
2007	33849360	10499760	13633200	7074000
2008	27286920	880920	15631200	7758000
2009	35333640	4135680	18464400	9165600
2010	6707160	7235640	21009600	10465200
2011	11185596	7056360	23835600	11815200
2012	21362868	11649960	27216000	13449600
2013	14897304	34758360	31086000	15415200
2014	25527600	2491200	35197200	17521200
2015	706931	618839028	62928900	17141184

VI. DATA ANALYSIS AND INTERPRETATION

Unit root Test

In order to make sure one is not carrying out a spurious regression, the variables employed were subjected to a stationarity test. For this purpose, the Augmented Dickey-Fuller (ADF) test was used to test the stationarity of the data.

Table 4: Augmented Dickey-Fuller unit root test

Variables	Level		1st Difference	
	No Trend	With Trend	No Trend	With Trend
LOG(Agric_GDP)	-1.35631	-2.342629	-5.209459	-5.824057
LOG(Crop_GDP)	-2.500305	-2.419965	-6.382834	-6.124608
LOG(Fishing_GDP)	-0.420694	-2.252896	-5.450805	-5.425417
LOG(Livestock_GDP)	-1.329757	-4.214224	-6.870626	-6.723593
LOG(Total_Sum Insured)	-1.864637	-3.451261	-6.173304	-6.328673
LOG(Total Premium)	-1.758864	-1.574448	-5.199904	-4.958616
LOG(Crop_Premium)	-1.076290	-2.560921	-4.801803	-4.431821
LOG(Livestock_Premium)	-0.837974	-4.397194	-10.75473	-10.57623
Critical values				
1%	-3.711457	-4.211868	-3.724070	-4.374307
5%	-2.981038	-3.529758	-2.986225	-3.603202

The result of the unit root test on the variables using the Augmented Dickey-Fuller test statistic found that the series has no unit root and stationary over time at first difference since their test statistic value has a more negative value than the critical values assuming a 95% confidence level. This result implies that the series has no unit root at the first difference I(1) and stationary overtime and can be used to make forecast for future behaviour of the process.

VII. HYPOTHESIS

There is no significant positive relationship between cooperative farmers' contribution and agricultural GDP;

Table 5: Result of Regression model of AgricGDP on Total Premium

Dependent Variable: LOG(AGRIC_GDP)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 03/24/17   Time: 13:51
Sample: 1989 2015
Included observations: 27
LOG(AGRIC_GDP) = C(1) + C(2)*LOG(TOTAL_PREMIUM)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	16.79771	3.868000	4.342738	0.0002
C(2)	0.028603	0.204293	0.140011	0.8898

R-squared	0.000784	Mean dependent var	17.33767
Adjusted R-squared	-0.039185	S.D. dependent var	1.516254
S.E. of regression	1.545676	Akaike info criterion	3.779987
Sum squared resid	59.72788	Schwarz criterion	3.875975
Log likelihood	-49.02983	Hannan-Quinn criter.	3.808530
F-statistic	0.019603	Durbin-Watson stat	1.559999
Prob(F-statistic)	0.889773		

The result of the least squares regression model obtained in Table 8, found R-square value of 0.0784% which implies that total premium was able to explain about 0.0784% of total variation in economic growth in Agriculture in Nigeria. It was found that cooperative farmers contribution has a positive insignificant impact on agricultural GDP with a coefficient value of 0.028603, t-value of 0.140011 and p-value of 0.8898 which falls on

the acceptance region of the hypothesis assuming 95% confidence level. The model was found to be serial correlation free with a Durbin-Watson value of 1.56.
The obtained model was expressed as

$$LOG(AGRIC\_GDP) = 16.79771 + 0.028603* LOG(TOTAL\_PREMIUM) \qquad (2)$$
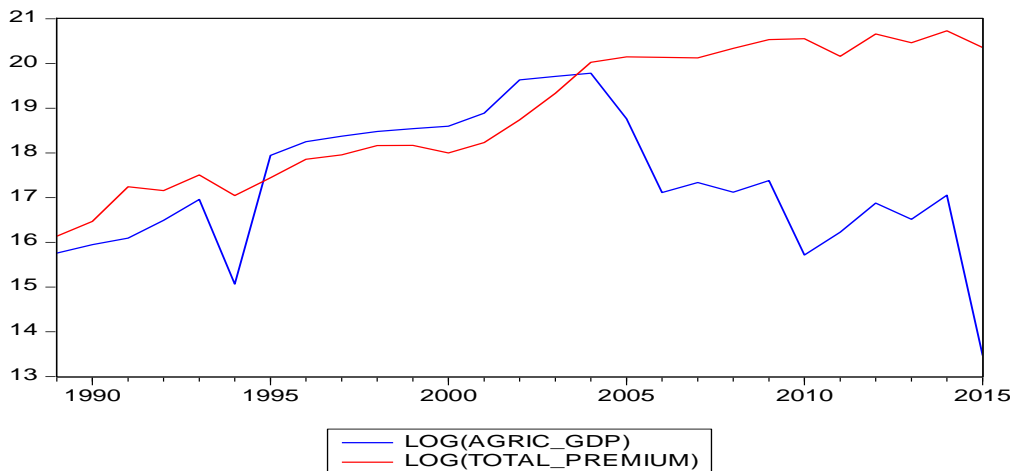
Figure 1: Line Graph of Agric_GDP and Total Premium

Co integration Test of Agric_GDP and Total Premium

Table 6: Result of Co-integration TestAgric_GDP and Total Premium

H_O	H_1	Trace Statistic	5% Critical value	Maximum-Eigen value statistic	5% Critical value
$r = 0$	$r = 0$	10.52660	15.49471	7.551842	14.26460
$r \leq 1$	$r = 1$	2.974762	3.841466	2.974762	3.841466

The result of co-integration test obtained in Table 9 revealed from the tests the presence of cointegration at r=0 that the test statistic for both the Trace and Maximum Eigen-value statistic does exceeds the 5% level significant (10.53< 15.49), hence we have strong evidence not to reject the null hypothesis of no cointegration. We can conclude that the rank of the matrix r is not greater than 0.

Table 7: Long-run Coefficient of Agric_GDP and Total Premium
This was arrived at by multiplying all the variables by (-1) in order to normalize them.

LOG(AGRIC_GDP)	LOG(TOTAL_PREMIUM)
-1.00000	-7.064606 (2.65662)

The normalized long run coefficient showed that total cooperative farmers contribution has negative impact on agric economic growth at the long run which was validated by result displayed in Figure 2 where Agric GDP is in a decrease trend.

VIII.   DISCUSSION OF RESULTS
The variables were tested for unit root test using the Augmented Dickey-Fuller test statistic and findings revealed that all the series has no unit root and stationary over time at first difference. This result implies that all the series has no unit root at the first difference I(1) and stationary overtime and can be used to make forecast for future behaviour of the process.
The result of assessing the effect of total premium on economic growth in agriculture found that total cooperative farmers contribution has a positive insignificant impact on economic growth in Agriculture with the obtained regression model Equation (2) found to be serial correlation free. The result of co-integration test between total cooperative farmers contribution and economic growth in Agriculture revealed strong evidence no cointegration which implies that the rank of the matrix is not greater than 0. Findings further revealed that total cooperative farmers' contribution has negative impact on agric economic growth at the long run. The total premium (co-operative farmers' contribution) has a positive insignificant impact on Agricultural GDP with a co-

efficient value of 0.028603 which is less than 0.05. Starting from 2005 to 2015 (Fig. 2), the graph of the premium and Agricultural GDP failed to co-integrate and if this status quo is maintained, in the long, the premium must likely has a negative impact on agricultural economic growth. Government should increase its premium from 50% to 75% and allow co-operative farmers to pay 25% premium.

IX. CONCLUSION AND RECOMMENDATIONS

Based on the objective and hypothesis tested, the findings emanating from this research are summarized as follows: The total cooperative farmers' insurance premium has a positive insignificant impact on agricultural GDP with a coefficient value of 0.028603, t-value of 0.140011 and p-value of 0.8898. Total premium (cooperative farmers' insurance premium, although positive has insignificant impact on Nigeria's economic growth. In order to improve individual welfare of the cooperative farmers in Nigeria, the premium being paid by them at currently 50% should be reduced to 25%, such that if the economic growth is not positively impacted, the welfare of Nigerians who are engaged in agriculture and agribusiness should be improved by that reduction of the insurance premium. It is important to suggest an increase in the coverage of insurance to Nigeria's cooperative farmers in order to attract more premiums to government by bringing into the insurance sector larger number of cooperative farmers through credit delivery to service their agricultural businesses. Government should subsidize further the premium paid by the cooperative farmers; by increasing its own from 50% to 75% and allow cooperative farmers to pay 25% premium, instead of the 50% premium they are currently paying. Since agricultural insurance is beneficial to cooperative farmers and enhances their agricultural business operations, more Nigerians should be encouraged to farm by extending agricultural loans and insurance to them.

REFERENCES

[1].   Abu G.A., Odoemenem, I.U. & Ocholi, A. (2011). Determining optimum farm credit need of small scale framers in Benue State. Journal of Economics and International Finance 3(10): 564-570
[2].   Adams, K.F. (2008). Risk perception and Bayesian analysis of international construction contract risks: The case of payment delays in a developing economy. International Journal of Project Management, 26:31-38.
[3].   Adams, M., Anderson, J., Anderson, L., & Lindmark, M. (2005). The historical relation between banking, insurance and economic growth in Sweden: 1830 to 1999. University of Wales Swansea working paper, UK, http:/nhh.no/sam/res-publ/2005/26.pdf.
[4].   Adeyefa, F.K.A. (2013). Agricultural insurance: The Nigerian initiative, experience and prospects. Ibadan: Multiprint Concepts
[5].   Agwuegbo S.O.N., Adewole A.P., & Maduegbuna A.N. (2010). Predicting Insurance Investment: A Factor Analytic Approach. J. Math. Stat. Sci. Publication, 6(3): 321-324.
[6].   Akinsorotan, A.O. (2007). Monitoring and evaluation for sustainability in the Nigerian local government community development projects. European Journal of Social Sciences 1(2): 48-65.
[7].   Arena, M. (2006). Does insurance market activities promote economic growth? A cross-country study of industrialized and developing countries. World Bank Policy Research Paper 4098, 1-3.
[8].   Beck, T., & Webb, I. (2002).Economic, demographic, and institutional determinants of life insurance consumption across countries.World Bank Economic Review, 17(1): 51-88.
[9].   Boon, T.K. (2005). Do commercial banks, stock market and insurance market promote economic growth? An analysis of the Singapore economy. Working Paper of the School of Humanities and Sociual Studies, Nanyang Technology University.
[10].   Borch, K (2002) "A theory of insurance premiums" Paper presented at the 11th seminar of the European Gr Boon, T.K. (2005). Do commercial banks, stock market and insurance market promote economic growth? An analysis of the Singapore economy. Working Paper of the School of Humanities and Sociual Studies, Nanyang Technology University.
[11].   Brown, M.J. Chung, J.W & Frees, E.W (2000). International property-liability insurance consumption. The Journal of Risk and Insurance, 67(1): 73-90
[12].   Ching, K.S., Kogid, M. & Furuoka, F. (2010). Causal relationship between life insurance funds and economic growth: Evidence from Malaysia, ASEAN Economic Bulletin, August.
[13].   Davies, E. Phillip, D. & Yuwei, H.U., (2004). Is there a link between pension-fund assets and economic growth? - A cross-country study, public policy discussion papers Department of Economics and Finance, Brunei University, Uxbridge, Middlesex UB8 3PH, England.
[14].   Edwin, J.E. & Martin, J.G. (1997). Modern portfolio theory, 1950 to date. Journal of Banking and Finance 21:1743-1759.
[15].   Esho, N., Kirievsky, A., Ward, D. & Zurbruegg, R. (2004). Law and the determinants of property-casualty insurance. Journal of Risk and Insurance 71(2): 265-283.

[16]. Han, L., Li, D., Moshirian, F., & Tian, Y. (2010).Insurance development and economic growth.The Geneva Studies on Risk and Insurance-issue and Practice, 35, 183-199.

[17]. Kjosevski, J. (2011). The impact of insurance on economic growth: The case of Republic of Macdonia Stopanska Bank AD, vol. 4.

[18]. Hardaker, J.B., Huirne, R.B.M., Anderson, J.R., & Lien, G. (2010). Coping with risk in agriculture. (2nd ed.). Wallingford: CABI Publishing.

[19]. International Monetary Fund (IMF) (2013). Statistics on the growth of the global domestic product from 2003 to 2013. IMF Working Paper. October.

[20]. Iyiola, O., Munirat, Y. & Nwufo, C.I. (2012).The modern portfolio theory as an investment decision tool.Journal of Accountig and Taxation, 4(2):19-28.

[21]. Johnson, T.C. (2008). Volume, liquidity and liquidity risk. Journal of Insurance Economics87, 388-417.

[22]. Kjosevski, J. (2011). The impact of insurance on economic growth: The case of Republic of Macdonia Stopanska Bank AD, vol. 4.

[23]. Knight, F.H. (2002).Risk, uncertainty and profit. (4th ed.), Houghton: Mifflin Publishers.

[24]. Kugler, M. & Ofoghi, R. (2005). Does insurance promote economic growth? Evidence from the UK.Division of Economics, University of Southampton, UK.

[25]. Johnson, T.C. (2008). Volume, liquidity and liquidity risk. Journal of Insurance Economics87, 388-417.

[26]. Ladanyi, M. (2003). Risk methods and their applications in agriculture. Applied Ecology and Environmental Research, 6(1),147-164.

[27]. Levine, R. (2004). Finance and growth: theory and evidence. NBER Working Paper No.

[28]. Laura, G. (2012). Risks in agriculture and opportunities of their integrated evaluation. Procedia-Social and Behavioural Sciences 62(2012) 783-790.

[29]. Nigerian Agricultural Insurance Corporation (NAIC) (1995). Operational Guidelines, Abuja, Nigeria

[30]. Nwite, S.C. (2004). Elements of insurance. Enugu: Immaculate Publication Limited.

[31]. Ojo, A.T. (2012): The Maladapted Financial System: Reforming Tasks and Development Dilemma. Ota-Nigeria: Merit Publishers.

[32]. Oke, N.A (2012). Financial markets and growth. An overview. European Economic Review 2(4): 613-622

[33]. Onuorah A.C. (2010), "Public perception of insurance consumers and non consumers in Port Harcourt, Nigeria. Journal African of Entrepreneurship.2 (1).16-34.

[34]. Onuorah, A.C. & Charles-Anyaogu, N. (2013).Empirical analysis of insurance consolidation and the economic growth in Nigeria.International Journal of Empirical Finance, 1(3):65-76.

[35]. Peter, R.H, & Kjell, S. (2006). "The relationship of insurance and economic growth, A theoretical and Empirical analysis". Paper presented at the 2006 EcoMod Conference, Hongkong. June 28-30.

[36]. Randle, A. & Ahuja R. (2001).Impact on saving via insurance reform, Indian Council for Research and International Economic Relations; Working Paper 67.

[37]. Shittu, A.I. (2012). Financial intermediary and economic growth in Nigeria .British Journal of Arts and Social Sciences 4(2): 104-119

[38]. Shittu, A.I. (2012). Financial international and economic growth in Nigeria. British J. Arts and Social Sciences. 4(2): 104-179.

[39]. Szablicki, R. (2002). Growth and the life insurance market. Draft paper for the Department of Economics, Vienna University of Business Administration and Economics.

[40]. Thirtle, C; X. Irz L. Lin; V. Mackenzie- Hill & Wiggins, S (2001). "Relationship between changes in agriculture productivity and the incide.nce of poverty in developing countries", Report Commissioned by Department for International Development, London.

[41]. Uzoma, O.A. (2013). "The relevance and benefit of agricultural insurance scheme to farmers in Anambra State". Paper presented at an interactive session/forum on value chain stakeholders' meeting, held at the ADP conference hall, Awka, 26th March.

[42]. Ward, D. & Zurbruegg, R. (2000). Does insurance promote economic growth? Evidence from OECD countries.Journal of Risk and Insurance, 67(4): 489-506.

[43]. Zou, H. & Adams, M.B. (2004). The corporate purchase of property insurance: Chinese evidence. Journal of Financial Intermediation, 56(15): 1174-1180./

Appendix

Cointegration Test of Agric GDP and Total Premium

Date: 03/24/17   Time: 13:59
Sample (adjusted): 1991 2015
Included observations: 25 after adjustments
Trend assumption: Linear deterministic trend
Series: LOG(AGRIC_GDP) LOG(TOTAL_PREMIUM)
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.260716	10.52660	15.49471	0.2424
At most 1	0.112184	2.974762	3.841466	0.0846

 Trace test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.260716	7.551842	14.26460	0.4261
At most 1	0.112184	2.974762	3.841466	0.0846

 Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

 Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LOG(AGRIC_GDP)	LOG(TOTAL_PREMIUM)
0.103046	0.727924
0.879515	-0.189144

 Unrestricted Adjustment Coefficients (alpha):

D(LOG(AGRIC_GDP))	-0.537723	0.033914
D(LOG(TOTAL_PREMIUM))	-0.080501	0.090182

1 Cointegrating Equation(s):	Log likelihood	-34.21315

Normalized cointegrating coefficients (standard error in parentheses)

LOG(AGRIC_GDP)	LOG(TOTAL_PREMIUM)
1.000000	7.064060
	(2.65662)

Adjustment coefficients (standard error in parentheses)

D(LOG(AGRIC
_GDP))   -0.055410
                  (0.02049)

D(LOG(TOTAL
_PREMIUM))   -0.008295
                  (0.00678)