

Effect of Inflation Rate on Insurance Penetration of Nigerian Insurance Industry

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Abstract

This study investigated the effect of inflation rate on insurance penetration of Nigerian insurance industry. The study used regression analysis for data analysis while data was collected through secondary sources. The study revealed that inflation rate had a positive but insignificant effect on insurance penetration of the Nigerian insurance industry. The implication is that the macroeconomic variable (inflation) increase the level of insurance penetration in Nigerian insurance industry but it increase was not significant. The study recommended among other things that effort should be put in place to reduce the level of inflation in Nigeria so that it can have significant effect on insurance penetration in Nigerian insurance industry.

Keywords: Insurance, Penetration, Inflation, Capital, Business Sector

1.0. Introduction

Insurance as a capital intensive industry generates long-term capital which is required to build infrastructural projects that have a long gestation period. Like every other business sector the industry follows a business year calendar. At the end of every business year the performance of the industry is weighed. The performance of any firm not only plays the role to increase the market value of that specific firm but also leads towards the growth of the whole industry which ultimately leads towards the overall prosperity of the economy.

Measuring the performance of insurers has gained importance in the corporate finance literature because as intermediaries, these companies are not only providing the mechanism of risk transfer but also helps to channelizing the funds in an appropriate way to support the business activities in the economy. Insurance companies have importance both for businesses and individuals as they indemnify the losses and put them in the same positions as they were before the occurrence of the loss. In addition, insurers provide economic and social benefits in the society i.e. prevention of losses, reduction in anxiousness, fear and increasing employment. Therefore, the current business world without insurance companies is unsustainable because risky businesses have a capacity to retain all types of risk in current extremely uncertain environment.

Macroeconomics encompasses the study of the rate of consumption of goods and services by consumers with a view to studying the effects. When the demand for goods exceeds the supply, it may lead to unwanted macroeconomic factors like inflation and unsustainable periods of economic activities. This sort of intense period of economic activity is known as a period of economic boom. The reason it is undesirable is because it is not sustainable and often leads to a period of downturn, also known as a depression.

Usually, inflation pulls an adverse consequence on the general price level. It discourages investment in financial assets given that it reduces the present value of the expected benefits. It is believed that while high inflation is bad for an economy because of its adverse effect on economic performance, zero inflation is equally harmful because it will lead to eventual stagnation of the economy since its presence at a mild level is needed for economic growth.

The Nigerian insurance industry deals primarily with transferred risk evidenced in the form of premiums paid by insured to insurers. Given the uncertainty in the time of occurrence of risks, it proves very risky for insurers not to have money of sufficient value to match the loss incurred at any time by the insured. This sort of risk facing the insurance industry can be influenced by macroeconomic factors. There exist a lot of studies on a wide number of macroeconomic variables. The objectives of the study is to examine the effect of inflation rate on insurance penetration of Nigerian insurance industry. This is because inflation is assumed to have long-run effect on insurance penetration of Nigerian insurance industry. It covers Insurance industry operational in Nigeria. This involved obtaining and combining data on Life and Non-Life sectors of the insurance industry, i.e. total industry data were used. Operations of the selected variables and the insurance industry were covered from 1985 to 2016. 1985 was chosen as the base year of the study because it was a year following the beginning of the Structural Adjustment Programme in Nigeria; a period that marked the upward swing of the selected macroeconomic variables in this study from which they have not gone down till date.

2.0. Review of Related Literature

Concept of Inflation

According to Investopedia.com Inflation is defined as a sustained increase in the general level of prices for goods and services. It is measured as an annual percentage increase. As inflation rises, every Naira you own buys a smaller percentage of a good or service. The value of a Naira does not stay constant when there is inflation. The value of a Naira is observed in terms of purchasing power, which are the real, tangible goods that money can buy. When inflation goes up, there is a decline in the purchasing power of money. For example, if the inflation rate is 2% annually, then theoretically a 1 Naira pack of gum will cost 1.02 Naira in a year. After inflation, your Naira can't buy the same goods it could beforehand (CBN 2015). There is no commonly accepted definition of inflation, nor is there a common agreement on what constitutes acceptable levels of inflation, bad inflation, or hyperinflation. Generally it can be said that inflation is a measure of a general increase of the price level in an economy. The term indicates many individual prices rising together rather than one or two isolated prices (Chude and Chude 2015).

Inflation is defined as a sustained increase in the general level of prices for goods and services; it is measured as an annual percentage increase (investopedia.com). Inflation is a decrease in the value of purchasing power, which results in demand for more goods than producers can supply (www.moneyconfidentkids.com). Hamilton (2001) describes inflation as an economic situation when the increase in money supply is faster than the new production of goods and services in the same economy.

According to Oner (2010), Inflation is the rate of increase in prices over a given period of time. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the cost of living in a country. But it can also be more narrowly calculated—for certain goods, such as food, or for services, such as a haircut, for example. Whatever the context, inflation represents how much more expensive the relevant set of goods and/or services has become over a certain period, most commonly a

year. Chude and Chude (2015) states that Inflation could be defines as a continuous rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for Gross National Product (GNP). Inflation is frequently described as a state where “too much money is chasing too few goods”. When there is inflation, the currency losses purchasing power.

There are Several Variations on Inflation

Deflation is when the general level of prices is falling. This is the opposite of inflation.

Hyperinflation is unusually rapid inflation. In extreme cases, this can lead to the breakdown of a nation's monetary system. One of the most notable examples of hyperinflation occurred in Germany in 1923, when prices rose 2,500% in one month. Stagflation is the combination of high unemployment and economic stagnation with inflation. This happened in industrialized countries during the 1970s, when a bad economy was combined with OPEC raising oil prices.

Causes of Inflation. There is no one causes that are universally agreed upon, but at least two theories are generally accepted: Demand-Pull Inflation - This theory can be summarized as "too much money chasing too few goods". In other words, if demand is growing faster than supply, prices will increase. This usually occurs in growing economies. Cost-Push Inflation - When companies' costs go up, they need to increase prices to maintain their profit margins. Increased costs can include things such as wages, taxes, or increased costs of imports.

Pressures on the supply or demand side of the economy can also be inflationary. *Supply shocks* that disrupt production, such as natural disasters, or raise production costs, such as high oil prices, can reduce overall supply and lead to “costpush” inflation, in which the impetus for price increases comes from a disruption to supply. The food and fuel inflation of 2008 was such a case for the global economy—sharply rising food and fuel prices were transmitted from country to country by trade. Conversely, *demand shocks*, such as a stock market rally, or *expansionary policies*, such as when a central bank lowers interest rates or a government raises spending, can temporarily boost overall demand and economic growth.

If, however, this increase in demand exceeds an economy’s production capacity, the resulting strain on resources is reflected in “demand-pull” inflation. Policymakers must find the right balance between boosting demand and growth when needed without over stimulating the economy and causing inflation.

Expectations also play a key role in determining inflation. If people or firms anticipate higher prices, they build these expectations into wage negotiations and contractual price adjustments (such as automatic rent increases). This behavior partly determines the next period’s inflation; once the contracts are exercised and wages or prices rise as agreed, expectations have become self-fulfilling. And to the extent that people base their expectations on the recent past, inflation will follow similar patterns over time, resulting in inflation *inertia*.

Concept of Insurance Penetration

Penetration rate shows the level of development of insurance sector in a country. Penetration rate is measured as the ratio of premium underwritten in a particular year to the GDP. Insurance Penetration - refers to a product's sales volume relative to the sales volume of competing products. Within insurance, there is life insurance penetration which considers premiums from life insurance policies only as a percentage of GDP and non life insurance penetration which considers premium from other than life insurance policies like auto insurance, health insurance, etc.

Insurance Penetration compares insurance sales volume of a product group to other competing products. In Nigeria, Total Gross Working Premiums are currently worth less than 1% of GDP, and premiums per capita were at around N1923 (\$6.07) in 2015, the latter of which was one of the lowest rates in the world (Oxford Business Group, 2017).. The low insurance penetration rate in Nigeria is widely regarded as an indicator of the nation’s growth potential. “The insurance industry is hamstrung

by a lack of awareness. Many companies and individuals do not understand the nuances of policies, and expect premiums to cover everything,” Wole Oshin, group managing director at Custodian and Allied Insurance, told OBG. “Awareness is slowly improving, however, as more firms are beginning to see its utility.”

In recent years general coverage policies have accounted for the majority of GWPs across the industry as a whole. In 2014, for instance, general policies generated premiums of N184.9bn (\$583.7m), as compared to life premiums of N108.6bn (\$342.9m) in the same period, according to NAICOM.

Despite its relatively low penetration rate, Nigeria is regularly cited as home to the second-largest insurance sector in Africa. According to RisCura, a South Africa-based global investment advisory and financial analytics firm, total insurance sector assets under management in Africa as a whole were at around \$273bn at the end of 2015. The great majority of this total – around 85% according to RisCura’s data – was held by South Africa’s insurance industry, which is considerably more developed than any other country on the continent. Nigeria, by comparison, was home to around 0.4% of this total. Looking further afield, Africa’s insurance industry accounts for only a small percentage of the global insurance market, which has made it ripe for growth.

In 2012 – the most recent year for which data was available at time of publication – GWPs brought in by African insurers were worth just 1.55% of global GWPs. This figure is well below Africa’s portion of global GDP, for instance, which suggests that the insurance industry is underdeveloped across the continent. By comparison, the G7 nations, which are home to just 10% of the world’s population, generated around 65% of total global GWPs in 2012.

While Nigeria’s overall insurance penetration rate is at less than 1%, uptake is not the same across all regions of the country. Indeed, like most other financial services sectors, the insurance industry is heavily concentrated in the nation’s crowded south-west, centered in Lagos. States in the north, meanwhile, are relatively untapped by insurers, largely due to challenges associated with distributing insurance products in rural areas. Nigerian insurers are optimistic that the increasing penetration of mobile telecoms could eventually allow them to access these remote markets more easily

A measure of the development of an insurance sector is insurance penetration, defined as gross premium income (GPI) as a percentage of gross domestic products (GDP). According to Mahul et al (2010), insurance penetration rate is expressed as the ratio between insurance premium volume and GDP; non-life insurance penetration is expressed as the ratio between non life insurance premium volume and GDP.

According to Mahul (2009), the agricultural insurance penetration rate is lower than the non life insurance penetration in all groups of countries classified by development status. Thus financial penetration is a subset of the financial deepening. The gap decreases with development level. Developing countries’ economies rely heavily on agriculture however agricultural insurance has taken a long time to take off. Honohan (2004), the United States and many European countries have had some form of crop or livestock insurance for more than a century and are mature markets with high penetration rates. In contrast, in many developing countries, agricultural insurance has been operating for only 5–10 years.

Arbitrage Pricing Theory (APT) was proposed by Stephen Ross in 1976. It is an asset pricing theory that states that the expected return of an investment or a financial asset can be modeled as a linear relationship of various macroeconomic variables or where degree of correlation to changes in each variable is represented by a beta coefficient. The model derived rate of return will then be used to obtain the price or value of the asset correctly. The asset value should equal the expected end of period asset value or future cash flows discounted at the rate implied by the model. If the asset value changes, arbitrage should bring it back to line.

Ross’ (1976a) heuristic argument for the theory is based on the preclusion of arbitrage. Ross’ formal proof shows that the linear pricing relation is a necessary condition for equilibrium in a market where agents maximize certain types of utility. There is the assumption of the preclusion of arbitrage

or the equilibrium of utility-maximization. A linear relation between the expected returns and the betas is tantamount to an identification of the stochastic discount factor (SDF).

APT agrees that though many different specific forces can influence the return of any individual stock, these particular effects tend to cancel out in large and well diversified portfolio. This is the principle of diversification and it has an influence in the field of insurance. An insurance company has no way of knowing whether any particular individual will become sick or will be involved in an accident, but the company is able to accurately predict its losses on a large pool of such risk. However, an insurance company is not entirely free of risk simply because it insures a large number of individuals. Natural disaster or changes in health care can have major influences on insurance losses by simultaneously affecting many claimants.

Cummins (1987) states that insurance companies are corporations and insurance policies can be interpreted as specific types of financial instrument or contingent claim thus it is natural to apply financial models to insurance pricing. The models are designed to estimate the insurance prices that would pertain in a competitive market. Charging a price at least as high as the competitive price (reservation price) increases the market value of the company. Charging a lower price would reduce the company's market value. Thus, financial models and financial prices are among the key items of information that insurers should have at their disposal when making financial decisions about tariff schedules, reinsurance contract terms, etc. The model requires estimates of the market prices of risk for the k risk factors as well as the beta coefficients for insurance. Like most other financial pricing models it is possible to get insurance model that gives the price for an insurance policy that is free of default risk.

Jahromi and Goudarzi (2014) investigated the casual relationship between macroeconomic variables i.e. gross domestic production (GDP), Inflation, and national per capita income with the insurance penetration ratio. To study the relationship and causality between the selected variables, the study applied the Johansen and Juselius co-integration and Granger causality methodology. The required data were collected from Iranian Central Bank, Statistics Center and Central insurance for the period of 1981-2011. *Ex-post facto* research design was used. The study was analyzed using Johansen and Juselius co-integration and Granger causality. The study found that the underlying macroeconomics variables and insurance penetration ratio are co-integrated and in short term; there is Bidirectional causal relationship between national per capital income and the insurance penetration ratio. The results further demonstrate that there is unidirectional causal relationship from the insurance penetration ratio to the gross domestic product (GDP). In the case of inflation and insurance penetration ratio, the study found no causal relationship between them. Finally through the use of combined test, the results suggest a causal relationship between inflation, national per capita income and GDP, and insurance penetration ratio in the long-run.

Epetimehin and Fatoki (2011) used the Insurance Industry to show that the persistent high rate of inflation in the Nigeria economy is creating serious problem for the rapid growth of the Insurance Industry. This study focused on the Life Insurance product of the Industry which provides a unique product of Insurance Protection and the effect on the product over the years. The study was based on *Ex-post facto* research design and regression method was employed. The study covered the period from 2003-2007. It was found that with the inherent risk in default in premium payment for a particular year, given the large claims due to the high rate of inflation, the industry may make a loss. As recommendation the Insurance Industry should design cash surrender value insurance products which will provide at least a reasonable partial hedge against inflation.

3.0. Methodology

Research Design: Research design refers to all methods/techniques that are used for conduction of research (Kothari, 2004). The research design adopted in the study was *ex-post facto* design. This is a quasi-experimental study examining how an independent variable, present prior to the study in the

participants, affects a dependent variable (Egbulonu, 2007). A quasi-experimental study simply means participants are not randomly assigned. It is also known as “after the fact” research. The choice of *ex-post facto* design was based on the fact that the study used data already collected, but not necessarily amassed for research purposes. *Ex-post facto* design is considered appropriate when a study deals with data that had already taken place (Onwumere, 2009). However, we use *ex-post facto* design when we do not have control over the independent variables. The study relied on historical data from 1985 to 2016. Data used in the study was secondary data. Secondary data is data that has already been collected by and readily available from other sources (Egbulonu, 2007). Secondary data was obtained from the Central Bank of Nigeria Statistical Bulletin of 2014, as well as World Bank data website.

Model Specification

The basis for modeling in this study was taken from Munir and Khan (2013) whose model is shown below:

$$LnD = \beta_0 + \beta_1 FD_t + \beta_2 IPC_t + \beta_3 GS_t + \beta_4 P_t + \mu \dots \tag{1}$$

Where,

LnD shows the Natural Logarithm of *Demand of Life Insurance* as the Dependent Variable in the study.

FD shows the *Financial Development* at period *t* measured as *M₂*.

IPC shows the *Income Per Capita* at period *t*.

GS shows the *Gross Savings* at period *t*

P shows the *Price of Insurance* at period *t*.

μ Is the *Error Term* at period *t*.

Munir and Khan (2013) empirically verified the link between macroeconomic and demographic variables (i.e. financial development, income, savings, price of insurance, old age dependency ratio, birth rate, death rate and urbanization) with the demand for life insurance (by sums insured) in the context of Pakistan using annual time-series data from 1973 to 2010 of State Life Insurance Corporation of Pakistan. The basic objective of the study was to examine the following hypotheses i.e.; that financial development, gross savings, income level are directly linked while, price of insurance are inversely linked with life insurance demand and the demographic variables of crude birth rate, crude death rate, old age dependency ratio, urbanization are positively related with life insurance demand for Pakistan. For this purpose, Ordinary Least Squares (OLS) was used and the evidence showed the significant implications on policy establishment and the managing and marketing directors of Insurance Corporation.

However, with respect to this study the following modifications were made. This was because the specific focus of both studies was not the same. Primarily, variables were changed. As against five variables per equation the present study was reduced to three variables (the dependent, independent and control variables only). In relation to the respective hypotheses of the study the following respective four models per hypothesis were developed:

The models in their functional form are shown below.

$$IPE = f (INF, GDP) \dots\dots\dots \tag{3}$$

Where:

IPE = Insurance Penetration

GDP = Gross Domestic Product

μ = Error term

Units of Measurement Problem

This study includes variables that are measured in different units (Naira and Percentages). This means that the units of measurement for the estimated regression coefficients will also be different and therefore lack comparability. Regression equation requires that the units of the term (*Y*) on the left side of the equation be the same as those of the total right side of the equation. You can't equate apples with

oranges (Giles, 2013). For this reason, the estimated equations are modeled using the natural logarithm of the variables to ensure like terms and comparability of the coefficients. Thus, from the above functional relationship of the one model, the econometric equation estimated is presented below:

$$\ln IPE_t = B_0 + B_1 \ln INF_t + B_2 \ln GDP_t + \epsilon_t \dots \quad (7)$$

Where:

$B_0, B_1, B_2, B_3,$ and B_4 Are parameters to be estimated. IPE, INFLR, GDP and ϵ are as explained above.

Apriori Expectation

The study expected the following respective interactions between the independent variable and the dependent variable:

Inflation rate was expected to have negative effect on insurance penetration.

4.0. Empirical Result

Summary of Unit Root Test Results

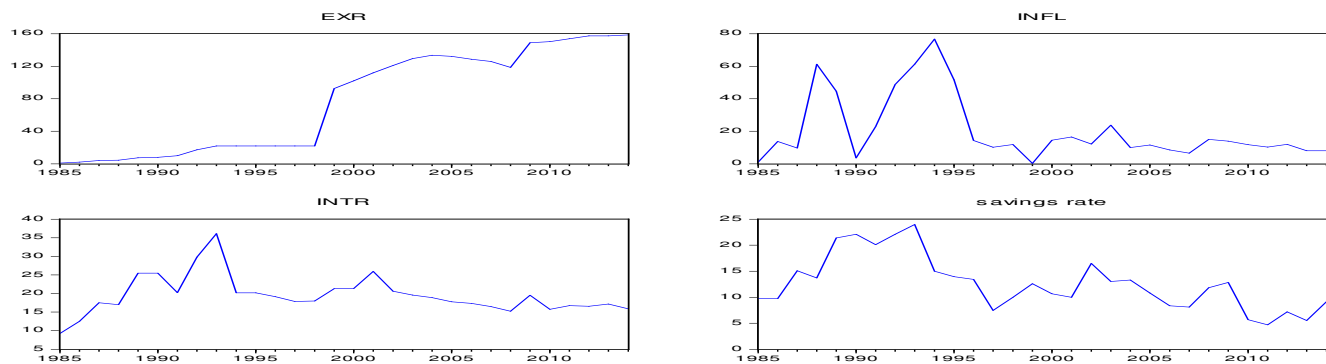
Variables	ADF stat.*	t-Statistic 5%	t-Statistic 10%	I(d)
Insurance Penetration	-5.594611	-2.971853	-2.625121	I(1)
Inflation rate	-4.699396	-2.967767	-2.622989	I(0)
GDP	-5.706749	-2.971853	-2.625121	I(2)

Source: E-views 9.2

See in appendix B for results of the unit root tests above

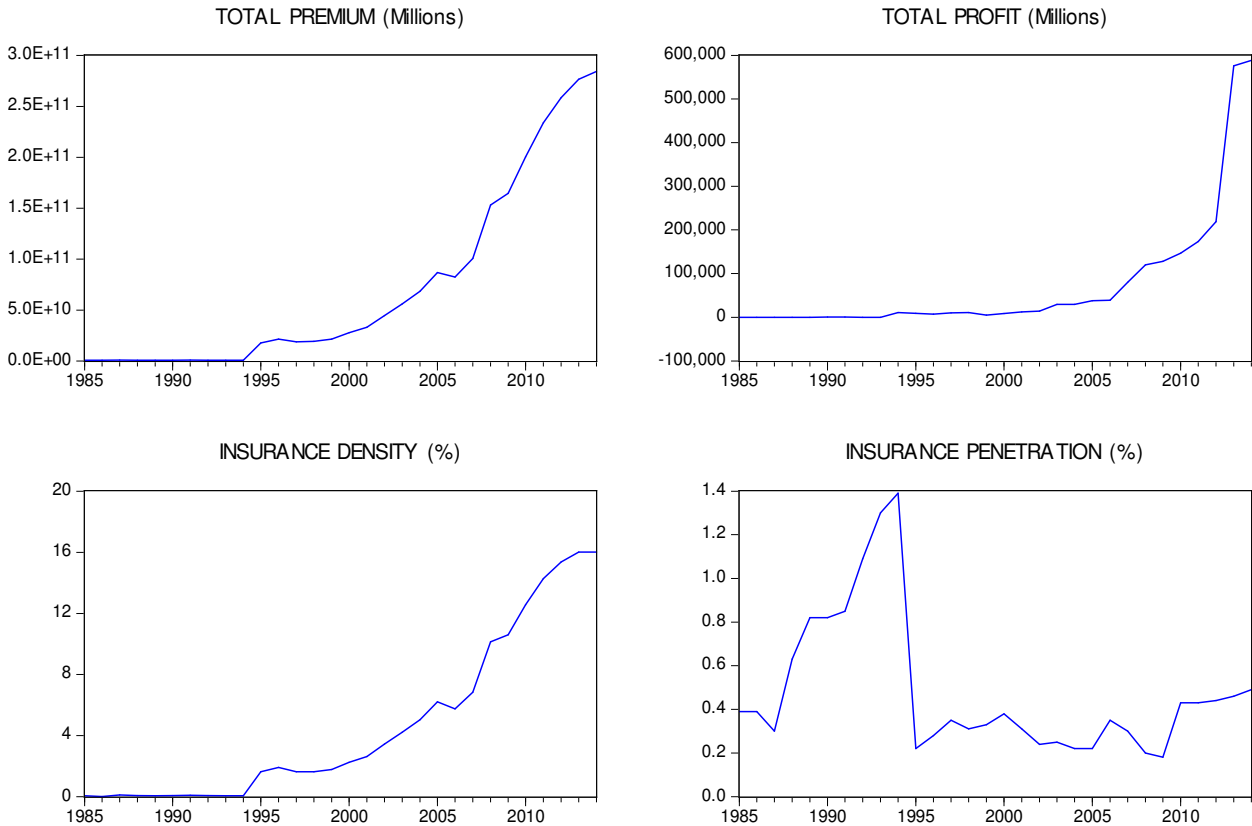
Descriptive Statistics Graph

Figure 1: Trend analyses of independent variables (Interest rate, Exchange rate, Inflation rate and Savings rate)



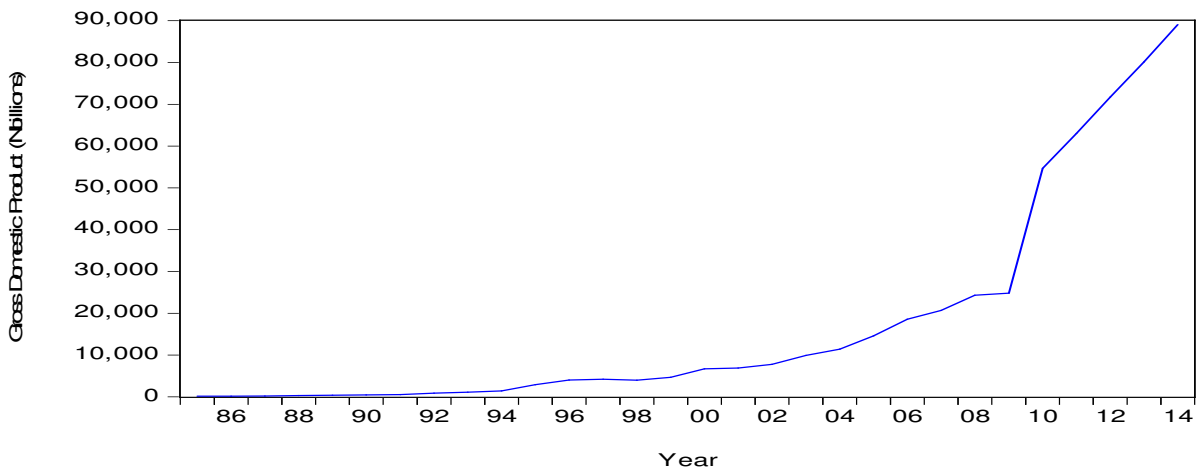
The above graphs represent trend analysis of independent variable over a given period. Inflation rate recorded of a speedy rise and fall trend from 1985 to 1999 and became sluggish in the movement thereafter.

Figure 2: Trend analyses of dependent variables (Total Premium, Profit, Insurance Penetration and Density)



The above table represents trend analysis of dependent variable over a given period. Insurance penetration rose to a certain peak in 1995 and crashed and has struggled to arise.

Figure 3: Trend analyses of control variable (Gross Domestic Product GDP)



The above table represents trend analysis of control variable (Gross Domestic Product GDP) over a given period. It showed a zero trend from 1985 -1992 and sluggishly rise from 1993 but progressed throughout the period.

Descriptive Statistics

	INSURANCE PENETRATION	INFL	GDP Nb
Mean	0.479000	20.48574	17646.12
Median	0.365000	12.06481	5696.39
Maximum	1.390000	76.75887	89043.62
Minimum	0.180000	0.223606	134.59
Std. Dev.	0.321477	19.99793	26096.98
Skewness	1.589621	1.502964	1.662918
Kurtosis	4.572513	4.025283	4.376818
Jarque-Bera	15.72547	12.60851	16.19602
Probability	0.000385	0.001829	0.000304
Sum	14.37000	614.5723	529383.7
Sum Sq. Dev.	2.997070	11597.60	1.98E+10
Observations	30	30	30

The figures highlighted in blue shows the average mean values of the independent and dependent variables over the given period of study.

Results of Hypotheses Tests

Decision rule: In determining individual effect we will accept the null hypothesis where t-calculated is less than t-tabulated. Where the result is otherwise, the alternative hypothesis will be accepted. This is at 5% level of significance.

H₀: Inflation rate has no positive and significant effect on insurance penetration of Nigerian insurance industry.

H₁: Inflation rate has positive and significant effect on insurance penetration of Nigerian insurance industry.

Table 4.6: Analysis of Hypothesis Two

Variable	Coefficient	Std.Error	t-statistic	Prob.
C	-0.408559	0.474540	-0.860958	0.3968
Inflation rate	0.138246	0.080130	1.725272	0.0959
GDP	-0.232261	0.107974	-2.151077	0.0406

From the above result, it was observed that t-calculated for the independent variable (inflation rate) was 1.725272. T-tabulated derived as $t_{\infty/2(n-k)}$, $t(0.05/2)(30-3)$ was 2.052. It is seen that inflation rate had a positive but insignificant effect on insurance penetration of the Nigerian insurance industry. The Durbin Watson value of 0.932776 shows a positive autocorrelation between the independent variables.

Implication of Findings

From the result above, it is seen that inflation rate will increase insurance penetration. {(Inflation rate) was 1.725272. T-tabulated derived as $t_{\infty/2(n-k)}$, $t(0.05/2)(30-3)$ was 2.052.} A higher inflation rate calls for tightening of economic belt. This can indirectly spurs households and organizations to quickly draw up a scale of preference of what to continue spending on as prices rise. Paying premium for insurance cover is likely to end up at the bottom of the list as it will be seen as money tied down when so many other needs are pressing. So inflation would become a disincentive to making provision against unexpected issues arising which is where insurance comes in. However, it indirectly raises awareness to guard against the future which can push upward the need for insurance, thereby widening its penetration.

The effect of Inflation on insurance business is easily seen when the public exhibits heightened concerns that loss events are likely to happen or actually happen. The raised concerns are due to the changing cost of things which if the loss occurs would prove quite high for an affected party to easily offset. To the masses this poses a risk of not being able to satisfy wants (risk of erosion of purchasing power). The increased public consciousness of rising costs due to inflation prompts a need to make provisions against the hike in prices. One such measure available to the general masses is Insurance. This is because the public's awareness of their eroding purchasing power due to rising inflation becomes heightened. However, the prime risk covering measure they take to is likely not insurance given that few will have the purchasing power to buy. The findings of the study align with Epetimehin and Fatoki (2011) who observed that inflation reduces demand for insurance.

5.0. Summary of Findings, Conclusion and Recommendations

The findings emanating from this study indicates that Inflation rate had a positive but insignificant effect on insurance penetration of the Nigerian insurance industry.

Conclusion

The insurance business is significantly influenced by the state of the economy of a country. Economic environments have a profound effect on the growth of the insurance industry. Such environment is largely shaped by macroeconomic variables. Macroeconomic variables are factors that are pertinent to a broad economy at the regional or national level and affect a larger population rather than a few select individuals.

The study based on the aforementioned finding we conclude that all the macroeconomic variable Inflation rate had a positive but insignificant effect on insurance penetration of the Nigerian insurance industry growth.

Recommendations

1. Effort should be put in place to reduce the level of inflation in Nigeria so that it can have significant effect on insurance penetration in Nigerian insurance industry.
2. Growth rate for insurance industry will be achieved by pushing compulsory insurance deeper to grass root especially motor vehicles insurance. Even though there are over seven million vehicles in the country, less than 14% of these are insured and a greater percentage is with fake insurance cover.
3. The insurance industry cannot overcome some its challenges in isolation. They services of similar other financial industries such as banking and pensions, good governance and consumer education is needed to enable the industry to reach its full potential.
4. A special investigation should be conducted to assess the means and extent through which adjustments of Monetary Policy stimulates the effects of these Macroeconomic variables on the Insurance industry.
5. The magnitude of insurance awareness and penetration in Nigeria needs drastic attention in order to bridge the gap between the general public's tendency to see insurance as a secondary need and just been aware of the risk in our business environment. Instead to emphasise on the benefit of insurance and encourage the public into taking further steps to appreciating risk management options like insurance in managing our risks.

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