The Empirical Analysis of the Impact of Inflation on the Nigeria Insurance Industry

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Abstract
The recent contribution of high rate of inflation and a general poor economic performance of Nigeria has presented a serious problem to the insurance industry. This paper uses the Insurance Industry to show that the persistent high rate of inflation in the Nigeria economy are 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. It is an aspect that provides savings plans and in direct competition with other investment assets from the commercial banks, savings associations, mutual funds, real estate, and also whole life policies. The study covers the period from 2003-2007. The first part of this paper discusses the types of life insurance products and the effect inflation has on the demand and costs of the policies. The second part looks at the historical performance of the Insurance Industry during the high inflationary period of 2003-2007. Finally, conclusions and corporate policy implications for the insurance industry are presented.

Keywords: inflation, insurance, investible funds, developed economy, life insurance

INTRODUCTION
The development of the financial sector in a less developed economy like Nigeria has been the concern of some economist for the past two decades. Shaw (1973) used the expression “financial deepening” to describe a well-developed and organized financial sector in a less developed economy where financial institutions are well structured and interest rates and prices of financial assets are set in equilibrium to reflect efficient capital market conditions. Saunders (2000) also has analyzed the importance of developing the financial sector to promote economic development.

This study focused on the Life Insurance product of the Industry which provides a unique product (Insurance Protection). It is an aspect that provides savings plans and in direct competition with other investment assets from the commercial banks, savings associations, mutual funds, real estate, and also whole life policies. Hence, as the rate of inflation increases, investible funds will be directed into securities and assets which provide an inflation hedge or the highest real returns. Even for the pure Insurance product that carries no investment or savings aspect, the actuarial implications and the pooling of risk principle suggests that the expected utility (EU) from the Insurance should be greater than the expected utility derived (EUd) from non-Insurance products and face the odds of ruin, else people will not buy Insurance to protect themselves, that is, for people to buy Insurance EU; > EUd or else people will not buy.

Babbel (1999) has demonstrated empirically that the demand for whole life insurance is sensitive to the price of the policy. Thus, the significant price elasticity of demand for insurance implies that policy premium cannot be increased arbitrarily without decreasing the demand for the insurance product.

The first part of this paper discusses the types of life insurance products and the effect inflation has on the demand and costs of the policies. The second part looks at the historical performance of the Insurance Industry during the high inflationary period of 2003-2007. Finally, conclusions and corporate policy implications for the insurance industry are presented.

LITERATURE REVIEW
There are three main types of life insurance policies in actuarial literature (Black and Skipper, 2000) including (a) Whole life insurance – which provides a death benefit for lifetime; (b) term life insurance— that provide a death benefit for a limited number of years and, (c) endowment life insurance – which is a term life insurance with a saving medium for consumers. It also plays important psychological and social roles.

As Hofstede (1995) stated, ‘the major function of life insurance is to protect against financial loss from loss of human life. Besides covering the risk of death, it also covers the risks of disability, critical illness, and superannuation’. Life insurance is therefore developed on the economic component of human life.
Any event affecting an individual’s earning capacity has an impact on the individual’s human life value. This event may be premature death, incapacity, retirement or unemployment (Campbell, 2000).

The human life value concept provides the philosophical basis for the life insurance, which is a product designed to protect the individual against two distinct risks: premature death and superannuation (Browne and Kim, 1993). Thus while death is not a risk, the time of death is. For most people, death at any age may be considered premature when one dies before adequate preparation has been made for future financial requirements of dependents. Life insurance thus becomes the mechanism for one to ensure a continuous stream of income to the beneficiaries (Black and Skipper, 2000).

In this regard, life insurance may be regarded as a saving medium, financial investment, or a way of dealing with risks. (Kunreuther, H. 1979) this was also supported by Butzreuil in 1996 and quoted by Omar and Owusu-Frimpong (2006) in their research study on the attitude to life insurance purchase. Life insurance was described as an instrument of savings that encourages and forces thrift among the low income people. Savings in the bank can easily be withdrawn but the payment of life insurance premiums however is considered a payment that cannot be easily withdrawn. (Epetimehin, 2002). It was further submitted that a life insurance is the financial instrument, the proceeds of which can be protected against the claims of a creditor of the assured by effecting a valid assignment of the policy (Campbell, 1980).

Shanker (2002) is of the view that Life Insurance is developed on the concept of human life value. Human life value focuses on the economic component of human life; therefore, any event affecting an individual’s earning capacity has an impact on the individual’s life value.

Inflation is one of the most frequently used terms in economic discussions, yet the concept is variously misconstrued. There are various schools of thought on inflation, but there is a consensus among economists that inflation is a continuous rise in the prices (Bassetto, 2005). Simply put, inflation depicts an economic situation where there is a general rise in the prices of goods and services, continuously. It could be defined as ‘a continuing 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 loses purchasing power. (Bassetto, 2004).

The purchasing power of a given amount of naira will be smaller over time when there is inflation in the economy.

In the definition of inflation, two key words must be borne in mind. First, is aggregate or general, which implies that the rise in prices that constitutes inflation must cover the entire basket of goods in the economy as distinct from an isolated rise in the prices of a single commodity or group of commodities.

The implication here is that changes in the individual prices or any combination of the prices cannot be considered as the occurrence of inflation. However, a situation may arise such that a change in an individual price could cause the other prices to rise. An example is petroleum product prices in Nigeria.

This again does not signal inflation unless the price adjustment in the basket is such that the aggregate price level is induced to rise. Second, the rise in the aggregate level of prices must be continuous for inflation to be said to have occurred. The aggregate price level must show a tendency of a sustained and continuous rise over different time periods. This must be separated from a situation of a one-off rise in the price level.

Insurance Product and Inflation

The Life insurance plans which have savings as well as pure insurance components are called permanent plans. These plans have a cash surrender value if the plan is terminated before the policy matures. Examples of these plans are the endowment and whole life policies. The second major product is the term insurance or the pure insurance coverage plan. This involves no savings or cash value.

The plan is usually of a limited maturity and benefits are paid only when death or an accident occurs. Examples of such policies are the level term life plan; the decreasing term plans. Assuming an individual buys an endowment policy and pays an annual premium of P Naira and the maturity of the policy is specified over T years then the net Present Value (NPV) of the policy at maturity is:

\[ NPV = B e^{-rt} - \int_{0}^{T} Pe^{rt} dt \]  

(1)

Where B is the total benefit or the face value of the policy which is known at the beginning of the contract, the discount rate, R is the opportunity cost of funds used to purchase the insurance policy. For the policy to be actuarily sound, it is expected that NPV > 0 as maturity. But if the policy is terminated at any time before maturity then it is likely that NPV < 0 because the initial premium go to cover administrative expenses, and is takes quite a while for the cash value to build up. For such termination of the plan, B will be the cash surrender value and not the face value (coverage) of the policy.
Policies which provide pure insurance protection with no cash value or savings component have their benefits paid only when an event like an accident occurs. The term Life Insurance falls under this category. Defining $E(B)$ as the expected value of the benefit to be paid, if an event occurs, then the expected net present of the policy is

$$NPV = E(B)e^{-r(T-k)} - \int_0^{T-k} Pe^{-rt}dt \quad (2)$$

Where $K$ is the number of years remaining to maturity when the event occurred. For such a term plan, the shorter the policy was in force before the incident occurred the higher the NPV. If as maturity of the policy, the event for which the policy was bought never occurs when the NPV is negative because $E(B)$ is zero and only Premiums would have been paid.

**Effect of Inflation**

One factor which discourages investment in financial assets is a high rate of inflation. Unfortunately the rates of inflation in Nigeria have been over 100% in some years. The discount rate $(r)$ is the nominal interest rate which can be obtained in a comparable safe investment like a bank savings deposit. This is the opportunity cost of the forgone comparable financial investment. By fisher hypothesis (1971) the nominal interest rate $s$ the sum of the real returns $(R)$ and the expected rate of inflation $h$. Thus started in an equation, the nominal discount rate, $r$, is given by the Fisher equation which includes a cross-product term

$$r = R + h + (R \cdot h) \quad (3)$$

Since the expected rate of inflation, “$h$” is an additive variable, as the expected rate of inflation increases, the discount rate, “$r$” gets bigger. The bigger discount rate reduces the present value of the expected benefits of the insurance pay-off. In the case of Nigeria where nominal interest rates are fixed, the higher rates of inflation will render negative the real interest rates. The negative real return on any financial asset including an insurance policy will discourage investors’ and policyholders and hence, the demand for Insurance Policies which have savings features will decrease.

As policyholders become aware of the implications of the high rate of inflation vis-à-vis the low rate of growth of the cash value, they will protect themselves with only term plans and invest the differences in premium in other assets whose returns provide at least a partial hedge against inflation. (Oluwemi, 2005)

Thus the demand for permanent plans like endowment and whole life policies will fall with the increase in the rate of inflation if the insurance industry cannot provide satisfactory protection and security for property savings and capital, then where else can prospective consumers turn to protect their property, businesses and Capital against the odds of ruin.

**Inflation and Returns**

An insurance plan can be considered as one of the numerous financial securities which are expected to provide a hedge against inflation, so the returns of the insurance company are expected to increase commensurately with the realized rate of inflation. (Oldenboom et al. 2000)

Table 1 provides the nominal returns, realized inflation and the real return (inflation adjusted) for Nigeria Insurance Industry 2003-2007.

<table>
<thead>
<tr>
<th>Table 1: Nominal and Real Returns (%) of Total Assets 2003-2007</th>
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<tbody>
<tr>
<td>Nominal Returns on Total Assets (%)</td>
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<tr>
<td>Inflation Rate (%)</td>
</tr>
<tr>
<td>Real Returns (%)</td>
</tr>
</tbody>
</table>


With the exception of 2004, the nominal returns on asset of the insurance Industry have been less than 4% annually. The real returns on asset of the industry have been negative over the period being examined. The negative returns were as large as -16% during 2005 and 2006. For the 5year period of 2003-2007, the average real return has been -10% per year. This means the real assets and shareholder equity of the company are being eroded at rate of about 10% per year since 2003.

The enough rate of inflation magnifies the claims of life insurance. This increase eats into the profitability of the insurance Industry in general and the life companies in particular because insurance premium cannot be increase fully and immediately to compensate for the increases in claims. Moreover, actuarially, there is a limit to which premiums can be raised periodically. Generally, a rational investor will invest to earn a return which will at least compensate him for the rate of inflation in the economy. In such an economy with a very high rate of inflation, all fixed interest financial assets are not attractive to investor. Thus, from $r = R + h + (R \cdot h)$, the realized real rate of return on assets of the insurance Industry was calculated as

$$R = (1+r) - 1 \quad (4)$$

The realized rate of inflation was calculated from the Nigeria Government Consumer price index which is reported in the Central Bank of Nigeria reports. This index may understate the true observed rate of inflation because it uses government controlled prices. As discussed earlier, the high rate of inflation makes endowment and whole life policies unattractive. The cash surrender value grows at a very low guaranteed rate so the present value of the cash...
values is very small for such plans. However, the insured or prospective insured decides to invest in non-financial assets like real estate and other commercial activities that may likely yield high returns which provide investors with a hedge against inflation. The attractive feature of these plans is the savings they generate over time in addition to the pure insurance, attribute, for the same premium, a rational investor can provide himself with a pure insurance plan (no cash Value) and save the difference in premium elsewhere and be better off.

PORTFOLIO PERFORMANCE
Portfolio Composition and Performance
In analysing the profitability of the Nigeria Insurance Industry in section one, reference was made in the portfolio Composition of the assets of the insurance Industry. This discussion will focus on the portfolio composition of the assets of the life insurance aspect of the industry. The principal of matching of assets and liabilities is practice better in the life insurance industry. The average maturity or duration of the life policies is long, so the assets into which premium are invested should also be of long maturity. This provides a hedge against reinvestment risk.

Table 2: Distribution of Assets (%) of Life Insurance Companies 2003-2007

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Assets</td>
<td>15.8</td>
<td>19.5</td>
<td>20.88</td>
<td>20.00</td>
<td>11.4</td>
</tr>
<tr>
<td>Mortgage Loan</td>
<td>0.6</td>
<td>2.4</td>
<td>2.4</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Policy Loan</td>
<td>0.3</td>
<td>0.6</td>
<td>0.8</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Govt. and Semi Govt.</td>
<td>3.3</td>
<td>4.5</td>
<td>2.0</td>
<td>1.0</td>
<td>4.8</td>
</tr>
<tr>
<td>Shares, stock &amp; Bond</td>
<td>38.7</td>
<td>49.7</td>
<td>53.1</td>
<td>52.7</td>
<td>59.5</td>
</tr>
<tr>
<td>Cash and Bank balance</td>
<td>10.0</td>
<td>4.5</td>
<td>2.1</td>
<td>9.8</td>
<td>7.5</td>
</tr>
<tr>
<td>Outstanding Premium</td>
<td>2.4</td>
<td>5.1</td>
<td>4.9</td>
<td>7.9</td>
<td>7.5</td>
</tr>
<tr>
<td>Other Debtor</td>
<td>26.9</td>
<td>13.6</td>
<td>13.8</td>
<td>7.6</td>
<td>8.1</td>
</tr>
<tr>
<td>Other Loans</td>
<td>2.1</td>
<td>0.2</td>
<td>0.05</td>
<td>0.3</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Nigerian Insurers Association 2008

Table 3: Expense Ratio Distribution

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expense Ratio</td>
<td>39.89</td>
<td>39.56</td>
<td>44.76</td>
<td>31.95</td>
<td>38.99</td>
</tr>
</tbody>
</table>

Source: Nigerian Insurers Association 2008

Table 2 gives the percentage distribution of assets in the portfolio of the Life Insurance Industry. For better and efficient management of the life Industry, greater proportion of the assets of the portfolio should be in mortgages and loans and less in short term government securities and cash and bank deposits. The mortgage loan went from 0.6% in 2003 and rose gradually to 0% in 2007. The shares, stock and bond that formed the greater proportion of the investment portfolio rose from 38.7% in 2003 to 59.5% in 2007. As a result of the global crisis in the financial world, the shares and stock provide very low interest rates. The combination of low fixed interest rates and high rates of inflation makes the returns on such assets negative. The negative returns imply that policyholders and shareholders fund is being eroded over the years. The surprising feature of the portfolio composition is the magnitude of the cash and bank deposits. In 2003 was 10% dropped in 2004 and 2005 o move to 9.8% and 7.5% in 2006 and 2007 respectively. This is a sign of inefficient investment management because cash yields no returns but rather its value is decreased over the years by inflation. The increase in the proportion of funds in the fixed asset since 2003 might be due to the revaluation of those assets to reflect the high rate of inflation in the country.

The Expense Ratio
The good management of cost, the Insurance Industry should be able to control its discretionary expenses in relation to the growth of its assets. The expense ratios were calculated as shown in Table 3. The expense ratio is defined as the management expenses plus sales commissions divided by the total assets. It is supposed to measure the controllable expenses of the company. This ratio rose from 39.89% in 2003 increasing to 44.76% in 2005 before dropping to 38.99% in 2007. As a ratio, a good cost control would have implied a near zero growth rate because the inflationary effect on assets will offset the inflationary effect on the expenses. Since an insurance premium is a reflection of mortality factors, implied interest or dividend and the expense of providing the service, inefficient cost control will increase the premiums. But as it has been discussed, the demand for insurance policies has been found to be price elastic. Thus, increasingly high premium may decrease the premium revenue to the company through a switch in demand from high premium policies to low income premium policies or other investments.

Table 4: Premium and other Investments Income

<table>
<thead>
<tr>
<th></th>
<th>Direct Premium 000</th>
<th>Interest 000</th>
<th>Dividend 000</th>
<th>Real Estate 000</th>
<th>Total 000</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>10,126,386</td>
<td>743,995</td>
<td>1,105,758</td>
<td>1,045,264</td>
<td>13,021,403</td>
</tr>
<tr>
<td>2004</td>
<td>12,193,787</td>
<td>814,732</td>
<td>1,210,880</td>
<td>1,144,648</td>
<td>15,364,047</td>
</tr>
<tr>
<td>2005</td>
<td>12,700,215</td>
<td>894,576</td>
<td>1,329,546</td>
<td>1,256,824</td>
<td>16,422,985</td>
</tr>
<tr>
<td>2006</td>
<td>12,742,666</td>
<td>1,118,220</td>
<td>1,661,933</td>
<td>1,571,030</td>
<td>17,093,849</td>
</tr>
<tr>
<td>2007</td>
<td>15,783,115</td>
<td>1,397,775</td>
<td>2,077,416</td>
<td>1,963,788</td>
<td>21,222,094</td>
</tr>
</tbody>
</table>

Source: Nigerian Insurers Association 2008
The two main sources of cash flow to the Insurance Industry are premiums and investment income. Out of those inflows, outflows, like claims and expenses are covered and the difference reinvested or paid out as dividends. The proportion of premium income and investment income (other income) are shown in Table 4. The other component comprises the investment income from mortgages, leaseholds and equity holdings. Good a thing that the Industry does not over rely only on premium income as a source of cash which normally indicate the absence of diversification in the sources of investible funds. The inherent risk in this 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. An increase in the proportion n of investment income will provide the insurance Industry with diversification effect and inflationary hedge, and hence will improve the cash flow position of the Industry.

CONCLUSION AND POLICY IMPLICATIONS
It has been discussed that given the high rate of inflation (implying negative real returns) the future of the insurance Industry in Nigeria is bleak unless good corporate policies are implemented by the Life insurance Companies to offset the effect of these Macro-economic factor.

It has been shown that:
1. There may be a switch in demand from permanent plans (with cash value or savings) to pure term insurance plans. This will imply a drastic drop in premium income.
2. Unless the life offices diversify its cash flows to increase its income, from investment, the industry will expose itself to unexpected losses and both shareholders and policyholders capital will be erode by the high rate of inflation.
3. The industry for now should relax their investment in shares and stocks to enable the life companies have or determine their optimal mix of portfolio.
4. Given the high rate of inflation being experience in Nigeria compared with other developing countries, the Insurance Industry should design cash surrender value insurance products which will provide at least a reasonable partial hedge against inflation

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