Inflation Risk and Performance of Firms in the Nigerian Insurance Sector

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Abstract

This study empirically examines the nexus between inflation risk and the performance of insurance firms in Nigeria using annual time series data that covers the period 1986-2022. Net profit as ratio of total assets of insurance firms was used as a performance measure, which is the dependent variable and is regressed on inflation risk and other control variables (investment by insurance firms, growth rate of nominal GDP, firm size and external vulnerability). The Ordinary Least Squares (OLS) econometric technique was utilized for the estimation of the model, after the preliminary examination of the variables using descriptive statistics. The empirical findings revealed a negative and significant relationship between inflation risk and performance of insurance firms in Nigeria at 5% level of significance. The study concludes that inflation risk remains a bane on the performance of insurance firms and could be deleterious to the overall economy. It is recommended that inflationary pressures be tamed to the barest minimum, and more importantly stabilized to reduce the risk of inflation uncertainty on insurance firms. Insurance firm-investment-enhancing policies through appropriate investment diversification, growth-stimulating measures and shock-mitigating policies and initiatives should also be implemented in order to enhance the performance of insurance firms in Nigeria.

Keywords: Inflation Risk; Insurance; Performance; Inflationary; Macro-economy

1. Introduction

Inflation is the sustained increased in the price level of goods and services across the economy, and it has far-reaching effects on various sectors of the economy, including the insurance sector (Bilalli & Sadiku, 2023). As a core macroeconomic variable inflation is used as one of the key indicators of the performance of any economy. A major policy objective of Central Banks all round the world, including that of Nigeria is to achieve price stability through inflation control anchored on low and stable inflation (Adamson, 2007; Mordi 2009; Owoye & Onafowora, 2007). Thus, policy makers tend to focus on marinating a low and stable inflation in any economy in order to promote the growth and stability of key sectors of the economy, such as the financial sector, as well as insurance sub-finance. More important in the study of inflation is the inflation instability, which is different from the prevailing average inflation rate. Inflation risk is usually induced by instability in the prevailing average inflation rate. (Ozekhome, 2018).

Insurance as a capital-intensive industry generates long-term capital, which is necessary to build infrastructure projects with long gestation period (Ehiogu, Eze & Nwite, 2018) need to be strong, healthy and virile to carry out the onerous role of underwriting risks. The risk absorption role of insurers promotes financial stability in the financial sector and provides a sense of peace to economic entities. Once this capacity is constrained through

inflation risk, then the onerous role of providing cover for business and investment (i.e. insurance of probable risks) is limited. Furthermore, given that the ability of insurance firms to cover risk in any economy hinges on their capacity to create profit or value for their shareholders, the risk of inflation becomes injurious (Kimani, 2021).

The insurance sector plays a vital and indispensable role in the financial system and overall economy of any nation. Apart from conventional banks, insurance companies contribute significantly to financial intermediation of the economy (Ehiogu, Eze & Nwite, 2018). Identifying the key performance indicators of insurance companies can help in facilitating the design of policies that may improve the profitability of the insurance industry. Hence, the performance and growth of insurance companies is of critical interest researchers, financial markets analysts and insurance regulators (Chude & Chude, 2015). Moreover, it is imperative to measure the efficiency and performance of quoted insurance companies in Nigeria especially from the point of view of policy holders, government and other stakeholders considering the increasing risks of inflation. In order to properly utilize economic resources, underwrite risk and efficiently mobilized long-term infrastructure development funds, insurance firms need to be strong and well-performing (Ehiogu, Eze & Nwite, 2018). The increased market competition for financial services has further placed insurance companies in a competitive environment. The performance of the insurance firms is therefore critical.

In the past decade, Nigeria has experienced high inflation episode. Inflation rate rose to 5.3% in 1986, after the introduction of the Structural Adjustment Programme (SAP), rising to 10.2% in 1987. It rose dramatically to 56.04 % in 1988, declining marginally to 50.4% in 1989, before decelerating dramatically to 7.5% in 1990. The inflation rate stood at 44.8% in 1992, 57.2%, 57.03 % in 1994 and a high 72.8 % in 1995, being the highest ever, before falling to 10.7% in 1997. In 2001, the inflation rate was 18.9%; 11.8% in 2010 and 16.2 percent at the end of 2019 (CBN, 2022). Inflation rose to 17.5 in 2020, 21.2% in 2021 and 22.5% by the end of 2022. The rising inflationary pressure, as well as its instability has undermined the performance of the financial sector in Nigeria, including the insurance firms (IMF, 2014, CBN, 2022). Empirically, there have been a growing number of studies investigating the relationship between inflation and key sectors of the economy (see Oyediran, 2006; Habibullah, et al., 2011. Others investigated the nexus between inflation and other macroeconomic variables and/or the general economy (see Imimole & Enoma, 2011; Michael & Ebibai, 2014). Only very few studies have investigated the link between financial sector performance/stability and inflation in Nigeria (see Gbosi, 2002; Ehiogu et al 2018). In particular, there is paucity of empirical evidence on the impact of inflation risk on the performance of insurance firms in Nigeria. In particular, none of the existing few studies has modelled the impact of external vulnerability of the domestic economy that causes inflation risk on the performance of the insurance sector in Nigeria.

The existing studies (Chude, and Chude, 2015; Imimole and Enoma, 2011; Michael & Ebibai, 2014) tend to have overly concentrated on the link between inflation and the general performance of the economy, proxied by growth rate of the economy. The few existing studies on the link between inflation and performance of insurance firms focused on inflation and not the risk of inflation (i.e inflation risk- see Ejike, et al. 2018). In addition, none of the existing studies or any other related studies on has taken cognizance of the effect of external vulnerability to shocks of the domestic economy in inducing inflation uncertainty and risk in the economy or financial sector. The recognition of these gaps is the motivation of this study. The objective of this study is to investigate the relationship between inflation risk and performance of insurance firms in Nigeria during the period 1986-2022. The period is characterized by fundamental economic, financial and structural reforms in Nigeria.

2.   Literature Review
2.1   Conceptual Review
2.1.1   Inflation Risk and Performance of Insurance Firms

Inflation is the increase in the price level over time. Insurance firms are affected by inflation through reduced investment returns, fluctuating assets valuation, surge in claims costs; increase in reserve; and eventually reduced profit (Kimani, 2021). Thus, apart from the rate or accelerating rate of inflation, which is detrimental to the performance of insurance firms and other financial institutions, the risk of inflation has a much more severe impact. While rising inflation rate has a deteriorating impact on the financial sector, inflation risk creates uncertainty in the insurance sector, through insurable risk and investment channels. In addition, inflation risk erodes the value of insurance premium, and increases the cost of underwriting of risks, as well as claim settlements, while making the mobilization of large amounts of funds through premiums for long-term investments difficult (Ozekhome, 2018). To this end, London (2008) has argued any adjustment policy in Africa that does not take cognizance of stabilizing key sectors in order to drive growth through the taming of domestic inflationary pressures might not yield the desired policy outcomes

2.2   Theoretical Review

The theoretical framework for this study is based on the Capital Asset Pricing Model which was developed by Markowitz (1952) and further developed by Sharpe (1964) and Linter (1965). The theory provides explanations on the measurement of risk and the relationship between expected returns and risk of financial assets. The CAPM posits the choice of a portfolio is a function of both the risk-free rate and the market return, consisting essentially of Capital Market Line (CML) and a security Market Line (SML). While the capital market line relates expected return and risk for a portfolio of assets, the security market line relates the expected return and risk of individual securities. CAPM thus shows the relationship between expected return of a security and its unavoidable risk. It provides a framework for the valuation of financial assets relative to the risks, measured as standard deviation from their mean return. Empirical test of the CAPM however performed poorly as its ability invalidate its use and applications.

The CAPM provides the theoretical basis for the analysis of the relationship between insurance risk with the performance of insurance firms. The CAPM Model as a single factor model was developed to explain the differences in the risk premium across assets. According to the theory, these differences are due to differences in the riskiness of the asset returns. The model states that the appropriate measure of riskiness of an asset is its beta and that the risk premium per unit of riskiness is the same across all assets. Risk is mainly explained in term its volatility (Michailidis, et al. 2006).

2.3   Empirical Review

Epetimehin and Fatoki (2011) utilizing data for the period 2003-2007, and multiple regression based on evidence from the insurance industry in Nigeria show that persistent high inflation rate is detrimental to the rapid growth of the insurance industry. Specifically, they used life insurance product of the insurance industry, which provides a unique product of insurance protection and the and found that the inherent risk in default in premium payment for a given year arising from claim settlements on account of high inflation dampens the performance of the insurance industry. They recommend that the insurance industry should design appropriate cash surrender value insurance products that will, provide reasonable partial hedge against inflation.

Jahromi and Gourdazi (2014) empirically examined the link between inflation, GDP

Per capita and the performance of insurance firms measured by the insurance penetration ratio in Iran for the period 1981-2011. The expost-facto research design wherein cointegration, Granger causality tests and dynamic error correction modelling techniques were used. The findings show that there exists long-term equilibrium relationship between the variables examined. The findings further show that insurance penetration has a unidirectional causality with GDP per capital, running from the latter., while no causality was found between inflation and insurance firms. Finally, through several econometric techniques, the study found evidence of a significant relationship between inflation, GDP and performance of insurance firms.

Chude and Chude (2015) examined the impact of inflation on general economic activities, which include the financial sector in Nigeria. They employed multiple regression analysis and find that rising inflation rate has a detrimental impact on economic performance in Nigeria. In view of the findings, they suggested strong anti-inflationary policies and measures to reduce inflation rate to a level compatible with general economic growth in Nigeria. Ehiogu, Eze and Nwite (2018) investigated the impact of inflationary dynamics on insurance penetration of insurance firms in Nigeria. The study utilized regression analysis, collected through secondary data. The empirical findings revealed that inflation has a positive but insignificant effect on insurance penetration in Nigeria. The implication of the finding that inflation, as a macroeconomic variable stimulates the degree of the penetration of insurance firms in Nigeria, though not significant. The study recommends that inflation-control measure be put in place by the monetary authorities in order to enhance its effect on insurance penetration in Nigeria.

In a similar vein, An IMF (2021) study on the link between macroeconomic stability, structural transformation and financial sector development utilizing sample evidence from developing countries revealed that the risk of inflation arising from an unstable macroeconomic environment constrains the ability of financial system, including the insurance sector to effectively carry out their functions. Batayneh, Al-Salamat and MoMani (2021) analyze the short and long-run impacts of inflation risk on the development of the financial sector, including the insurance sector in Jordan for the period 1993-2020. They used auto-regressive distributed lag bound testing approach. The empirical findings confirmed a significant long and short-run negative impact of inflation on the financial sector. The authors recommend policies to curtail inflation rate to drive financial sector development. Ibrahim, et al. (2022) examined the tripartite relationship among inflation, financial development and economic growth for a sample of sub-Saharan African countries. Utilizing panel data for 36 countries based on sample splitting threshold, the findings identify inflation threshold of 7.6% and 6.76% at which the impact of financial development on economic growth changes sign due to inflation. The impact of financial development is significant at low inflation rates, and beyond the threshold, the impact is insignificant, showing that higher inflation does not support the growth-enhancing effects of financial development.

3. Methodology

The research design of this study is an ex-post time series research design, since the researcher does not have the privilege of influencing the value of the independent variables. The relevant data for this study is obtained from the Central Bank of Nigeria (CBN) statistical bulletin. Annual time series data covering the period 1986-2022 are used for the study. The choice of the period stems from the fact that it characterizes fundamental economic and structural changes in the insurance sector and Nigeria, as well as capturing rising period of uncertainty, such as the COVID-19 and rise in the prices of crude oil prices,

which led to soaring inflation rates. The study covers the performances of the entire 67 insurance firms registered by the National Insurance Commission (NAICOM) during the study period.

3.1 Model Specification

Drawing from the theoretical literature as well as theoretical framework, the relationship between inflation risk, other macroeconomic variables and performance of insurance firms t is captured in the functional form as:

$$PINS_t = f\left(INFLR_t, INV_t, GGDP_t, FS_t \; EVD_{t,}\right) \qquad (1)$$

Transforming equation (1) to its econometric form produces

$$PINS_t = \alpha_0 + \alpha_1 INFLR_t + \alpha_2 INV_t + \alpha_3 GGDP_t + \alpha_4 FS_t + \alpha_5 EVD_t + \varepsilon_t \quad (2)$$

Where:
PINS = Performance of insurance firms
INFLR= Inflation risk
INV = Investment by Insurance firms
GGDP = Growth rate of nominal GDP
FS = Firm size of insurance firms
EVD = External vulnerability dummy
e= error term
t= time

3.2. Description, Definition of Variables and Measurement

The description, definitions and measurement of variables to be used in the study are presented in Table 1

Table 1: Description, Definition and Measurement of Variables

Variables	Description	Definition and Measurement	Apriori
PINS		Profit as ratio of total assets of insurance firms	
INFLR	Inflation Risk	3-months standard deviation in annual inflation rate	-
INV	Investment	Total investment by insurance firms	+
GGDP	Growth rate of GDP	Annual growth rate of nominal GDP	+
FS	Firm size	Logarithm of total assets of insurance firms	+
EVD	External vulnerability dummy	1 for year of any external shock and 0 otherwise	-

Source: Authors' Compilation (2024)

4. Data Analyses and Discussion of Findings

The study adopts the Ordinary Least Squares (OLS) econometric technique to estimate the empirical model. The OLS technique is considered appropriate because it yields estimates that are Best, Linear unbiased (BLUE). Prior to the OLS estimation, the characterization of the variables is examined using descriptive statistics.

4.1 Descriptive Statistics

The descriptive statistics of the model is presented in table 2

Table 2: Descriptive Statistics

	PINS	INFLR	INV	GDP	FS
Mean	11.02	19.61	16.16	3.16	15.75
Median	10.42	18.33	14.61	2.71	12.65
Std. Dev.	6.21	17.30	4.60	1.30	4.30
Skewness	2.03	1.91	1.96	2.02	1.15
Kurtosis	3.66	5.67	3.20	2.17	2.86
Jarque-Bera	1.94	26.32	7.68	8.53	6.12
Observations	37	37	37	37	37

Source: Authors' Computation (2024)

Table 2 presents the descriptive statistics of the variables used in the analysis. The table shows the summary values. The mean value of insurance performance (PINS), measured by the net profit to asset ratio is 11.02% with a median value of 10.42%, indicating a mean-centered/converged performance of insurance firms in Nigeria. The standard deviation of 6.25 shows some level of volatility over the period. The mean value of inflation risk (INFLR) is 15.61, with a median value of 12.33. The standard deviation value of 17.30, is a clear indication of pronounced macroeconomic instability in the operating environment of insurances in Nigeria in the period under focus. Such macroeconomic stability is an indication of inflation uncertainty, which may have caused the risks associated with the average inflation rate. The pronounced volatility in the inflation rate, without doubt, had a dampening impact on the performance of insurance firms in Nigeria over the period. Investment by insurance firms has a mean value of 16.16%, with a median value of 14.61%. Growth rate of nominal GDP (GGDP) has a mean value of 31.6% and a median value of 2.71%. The standard deviation value is 1.30%, This volatility may have been caused by the vulnerability of the domestic economy to the twin effects of external oil price shock in the international oil market and the COVID-19 pandemic affected global economy during the period. The mean value of firm size is 15.75 and a median value of 12.65.

4.2 Inflation Risk and Firm Performance

The ordinary least square (OLS) technique is utilized in the estimation to show the association between inflation risk and performance

Table 3: OLS Results: Inflation Risk and Firm Performance

Variable	Coefficient	t-Statistic	Prob.
C	0.057**	1.0776	0.28
INFLR	-0.054**	-2.148	0.04
INV	0.280**	2.144	0.04
GGDP	0.204**	2.015	0.05
FS	0.012	1.125	0.27
EVD	-0.161**	-2.293	0.02
Diagnostics			
R^2 = 0.782			
Adjusted R^2 = 0.724			
F-Stat = 44.28			
D-W Stat = 1.63			

** denotes stationarity at 5% significance level.

Source: Authors' Computation (2024)

An examination of the empirical results shows an R^2 of 0.782, indicating that inflation risk (INFLR) and other exogenous variables explain about 78.2% of the systematic variations of the performance of insurance firms, indicated by their net profit to asset ratio, in Nigeria during the period. After accounting for the degrees of freedom, the adjusted coefficient of determination (i.e. adjusted R^2) stood at 0.724, indicating that approximately 72.4% of the net % of the systematic changes in the dependent variable (performance of insurance firms) is explained by the regressors. With only 27.6% unaccounted for. This shows that the model has good predictive capacity. The overall goodness of fit and joint significance of the model indicated by the F-statistic of 44.28 is highly significant at the 1% level, validating the hypothesis of a significant linear relationship between performance of insurance firms and all the independent variables combined. Thus, inflation risk and other explanatory variables are relevant variables that determine the performance of insurance firms in Nigeria. The DW statistic value of 1.63, shows the absence of autocorrelation in the model. The estimated model, is therefore, fit for policy formulation and implementation.

In terms of the individual contributions of each of the explanatory variables in the model, the result shows that the coefficients are well-signed. Inflation risk (INFLR), the core explanatory variable of interest is negatively signed in line with theory and evidence and sand statistically significant at the 5% level. Thu, increased level of inflation risk has an outright destabilizing impact on the performance of insurance firms in Nigeria. Invariably, by generating pronounced uncertainty and injurious expectation behaviour in the economic environment, investment activities in the insurance firms deteriorates, as well as increasing claim settlement costs. The overall effect is to dampen the profit performance of insurance firm in Nigeria, The finding supports the result of Ehiogu et al. (2018). A 1% rise in inflationary risk causes a deterioration in the performance of insurance firms by 0.05%

Investment (INV) has a coefficient that is positively signed and statistically significant at the 5% level. This implies that the greater the investment undertaken by insurance firms, the higher the performance, in terms of profit. Thus, by investing their pool of funds, collected premiums and other resources in investment outlets, their performance is enhanced. The finding is consistent with the findings of Mwangi, and Iraya, (2014). A 1% increase in investment initiative by insurance firms induces performance by 0.28%. The coefficient of the growth rate of the economy (GGD), made to capture the size of economic activities or output is positively related to performance of insurance firms and significant at the 5% level. Thus, increased economic activities engender greater performance of insurance firms. This is because, as economic means and activities rises, people are induced or encourage undertaking insurance policies. The findings buttress the findings of Jahromi and Gourdazi (2014). A 1% increase in the level of economic activities (proxied by GGDP) causes the performance of insurance firms to rise by 0.20%.

Firm size is positively related the performance of insurance firms' line with extant economic and financial theory and pertinent evidence but fails the significance test. Since the t-ratio is greater than 1, it can be inferred that size of insurance firms influences the performance of insurance firms but the effect is weak. Finally, the variable made to capture external vulnerability to shock (EVD) is negatively signed and significant at the 5% level. By implication, increased susceptibility of the domestic economy to adverse external economic and financial shocks through-a contagion or domino effect has destabilizing effects on the performance of insurance firms in Nigeria. Overall, the empirical results reveal that inflation risk and other external and firm-specific variables have significant impacts on the performance of insurance firms in Nigeria.

4.3. Discussion of Findings and Implications

The results obtained in the empirical analysis provides important policy insights. First, the result gives indications that the inflation risk has a dampening impact on the activities of insurance firms in Nigeria, and by extension, performance. Thus, as the risk of inflation associated with the combine effects of rising inflationary pressures and instability increases, the capacity of insurance firms is reduced, as the value of investment diminishes and operational costs in terms of claim settlements. This is in tandem with the result of Ehiogu et al (2018); Bilalli and Sadiku (2023). The overall effect is to undermine the performance of insurance firms. Policy measure to tame domestic inflationary pressures, particularly with respect to the stability of inflation is therefore important.

Second, the result provides clear indication high investment undertaking and increased growth of the economy stimulate the performance of insurance firms in Nigeria. By implication, with increased investment portfolio and the associated risk diversification capacity, the performance of insurance firms tends to be high. In the same vein, as economic activities increase, there is a concomitant increase in ability of people, businesses and investments to undertake insurance policy. The overall effect of this is enhanced insurance performance in terms of increased returns and profit as the large premiums collected by the insurance firms are channeled into profitable ventures. Measures to enhance investment capacity of insurance through large alternative investment channels, as well as economic-enhancing measures are important, in this respect to enhance the performance of insurance firms in Nigeria.

Finally, the results suggest that the vulnerability of the economy to internationally generated and transmitted shocks tend to undermine the performance of insurance firms in Nigeria. With the negative impact the recent COVID-19 pandemic had on the global economy, it is now understood that no economy in the world is immune to external shocks and uncertainty. Strong policy initiatives to reduce the effect of negative external shocks on the domestic economy, and in particular, the insurance sector is therefore important.

In summary, the findings revealed a significant relationship between inflation risk and the performance of insurance firms in Nigeria. Similarly, a significant positive relationship exists between investment by insurance firms and performance of insurance firms in Nigeria; Growth rate of the economy is positively and significantly related with the performance of insurance firms in Nigeria; firm size is positively related to performance of insurance firms in Nigeria, but the impact is weak. Also, vulnerability to external shock is negatively and significantly associated with performance of insurance firms in Nigeria.

5. Conclusion and Recommendations

This study examines the link between inflation risk and performance of insurance firms in Nigeria. This is predicated on the indisputable impact of the macroeconomic environment on the performance of insurance sub-finance sector in the economy. Using annual data covering the period 1986 to 2022 and Ordinary Least Squares econometric tools Insurance firms play critical role in resource mobilization, investment and in particular in provision of insurance policy over for business, investment (i.e. insurance of probable risks) and life. For insurance firms to perform this onerous task, they must be deemed to be doing very well. To this, end, inflation risk, associated with rising average inflation rates and its instability should be brought under strong anti-inflationary policy control. As evident, from the empirical analysis, the greater the inflation risk in the macroeconomic environment, the lower the ability of insurance firms to perform well. Inflation risk creates an environment of uncertainty, while also increasing claim settlement costs for insurance firms. The combine effect of these is to dampen the performance of insurance firms.

This study makes, the following recommendations for policy action: Strong macroeconomic policies to tame domestic inflationary measures, particularly with respect to the stability of inflation rates should be put in place to enhance the performance of insurance firms in Nigeria; Greater level of investment on the part of insurance firms is important to stimulating the performance of insurance firms in Nigeria; Economic-size enhancing policy and measures should be implement to raise the level of economic activities in Nigeria. Greater production capacity, export drive and industrialization are important in this respect; Size-enhancing policies should be articulated and implemented by the management of insurance firms to enhance the performance of insurance firms in Nigeria; and finally, strong economic measures to reduce the vulnerability of the economy to external shocks should be implemented to enhance the performance of insurance firms in Nigeria.

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