Effect of Underwriting Capacity on Profitability of Insurance Companies in Nigeria

By

Dr. Solomon David Pere[1], Okeke, Daniel Chukwudi[2]

[1]Department of Insurance Niger Delta University Wilberforce Island, Bayelsa State, Nigeria
[2]Insurance and Risk Management Department, Faculty of Management Sciences, Enugu State

Abstract

This study examined the effect of underwriting capacity on the profitability of insurance companies in Nigeria. The analysis utilized secondary annual data spanning 23 years from 2000 to 2023, which were sourced from the Central Bank of Nigeria (CBN) and the NAICOM Statistical Bulletin. The study employed the Augmented Dickey Fuller unit root test and the Autoregressive Distributed Lag model using E Views to estimate the impact of the independent variables, insurance underwriting reserves and insurance underwriting shareholders' funds, on the dependent variable, profitability of insurance companies, proxied by net profit margin. The results indicated that insurance underwriting reserves had a significant and positive effect on net profit margin, while insurance underwriting shareholders' funds also exerted a significant positive influence. Overall, the findings revealed that underwriting capacity significantly enhanced the profitability of insurance companies in Nigeria over the period of study. Based on these findings, the study recommended that insurance regulators collaborate with industry stakeholders to promote effective investment of insurance funds, and that insurance companies strengthened corporate governance and operational efficiency in underwriting activities to boost public confidence and financial performance.

Keywords: Underwriting capacity, Insurance underwriting reserves, Shareholders funds, Profitability, Net profit margin, Nigerian insurance industry

Introduction

The conventional method of risk management via insurance provides individuals and corporations with a sense of security, allowing them to function and make strategic decisions in unpredictable and turbulent contexts (Priest, 2015). By shifting potential financial losses to an insurer, policyholders are more equipped to engage in economic activities without assuming the entire burden of unexpected catastrophes. In this context, insurance managers are essential in overseeing the design, execution, and ongoing evaluation of insurance goods and services in more dynamic and competitive markets (Priest, 2015). Their duties encompass not only ordinary administration but also strategic oversight, guaranteeing the company's responsiveness to regulatory, economic, and market fluctuations.

Prior to accepting a client's risk, an insurance company must perform a comprehensive assessment to ascertain if the proposed risk corresponds with its overall risk appetite and portfolio configuration (Ayele, 2017). The review procedure, termed insurance underwriting, includes essential financial elements such as underwriting reserves and shareholders' equity. Underwriting entails methodically evaluating the level of risk posed by applicants and deciding on suitable measures—whether to accept the risk as is, amend the terms and conditions, alter the premium, or reject the application entirely. It encompasses establishing appropriate premium rates that correspond to the level of risk undertaken and implementing risk-control strategies to mitigate potential losses. Precise and thorough documentation, including medical evaluations, financial records, or property appraisal reports, is crucial for ensuring objective and dependable risk assessment (Macedo, 2019).

Professional underwriters are specifically educated to address and alleviate adverse selection—the propensity for higher-risk individuals to pursue insurance coverage more fervently than their lower-risk counterparts. They accomplish this by meticulous risk selection, precise premium pricing, diversification and oversight of the risk portfolio, and the use of actuarial concepts alongside experiential judgement (Macedo, 2019). Robust underwriting criteria, especially those regulating underwriting reserves and shareholders'

equity, are essential for sustaining financial stability and attaining profitability, frequently assessed by the net profit margin. Standard risks are often accepted at established premium rates, however non-standard or higher-risk applicants may incur modified or elevated premiums to account for increased exposure and safeguard the insurer's financial stability (Barth & Eckles, 2019).

Selective underwriting strategies can markedly improve profitability by managing loss exposure and minimising superfluous claim expenses. A deterioration in underwriting standards may result in increased claim frequency and severity, thereby undermining profit margins and jeopardising long-term viability (Harrington & Danzon, 2020). Given that claims payments are the primary expense for the majority of insurance firms, efficient claims administration is essential. Efficient claims processing, proactive loss prevention techniques, and prompt settlement of legitimate claims enhance customer trust and satisfaction, hence improving client retention and total profitability. In contrast, delayed or inadequately managed claims can harm an insurer's reputation, diminish policy renewals, and adversely impact financial performance (Fernandez, 2019; Butler & Francis, 2020).

Profitability is a crucial metric of an organization's operational efficiency and its ability to yield returns from invested capital and available resources. Maliki (2015) asserts that profitability is fundamental to financial management, as it directly affects shareholders' wealth and signifies the overall efficacy of managerial decisions. In addition to their internal financial goals, insurance companies are crucial to national economic development. They mobilise and allocate long-term capital into productive initiatives, offer indemnification against losses, and generate employment possibilities. A stable macroeconomic climate promotes savings and investment, so fortifying the insurance industry and augmenting its ability to insure risks efficiently.

Underwriting capacity, assessed via underwriting reserves and shareholders' equity, is crucial for the survival, resilience, and financial success of insurance businesses, particularly in economically volatile or high-risk contexts (Osinuga, 2016). Sufficient reserves guarantee that insurers can fulfil future claim obligations, while robust shareholders' equity offers a safeguard against unforeseen losses and facilitates business growth. This study examines the impact of insurance underwriting reserves and shareholders' equity on the net profit margin of Nigerian insurance companies, aiming to elucidate how underwriting strength affects overall financial performance in the Nigerian insurance industry.

Statement of the Problem

Insurance firms function in an environment marked by constant exposure to various and frequently unanticipated risks. Their financial viability as risk-bearing entities predominantly relies on the efficacy of their exposure management. Excessive risk-taking by insurers or inadequate management of essential financial elements, such as underwriting reserves and shareholders' equity, can lead to

substantial repercussions. Inadequate management in these domains may result in elevated claim frequency and severity, alongside increased administrative and operational expenses. These expenditures frequently encompass claims investigation, loss adjustment, litigation, settlement processing, and continuous risk monitoring costs, all of which can significantly diminish operational efficiency and overall financial performance (Mwangi, 2017). In these instances, diminished underwriting discipline may result in decreased profitability and jeopardised long-term viability.

Conversely, a rigorous and discerning underwriting strategy, together with the judicious allocation and management of underwriting reserves and shareholders' capital, can substantially reduce prospective losses. Insurers can manage claim expenses and stabilise cash flows by meticulously assessing risks, effectively pricing policies, and sustaining sufficient financial reserves. Efficient reserve management guarantees adequate allocations to fulfil future claim liabilities, while robust shareholders' equity provide supplementary capital to withstand unforeseen disruptions. Collectively, these strategies foster greater financial resilience and augmented net profit margins.

While claim costs are recognised as a crucial factor influencing insurance profitability, there is a notable lack of empirical research investigating the correlation between essential underwriting variables—specifically underwriting reserves and shareholders' equity—and net profit margin, particularly in developing economies. Research, like that of Akpan (2020), Mwangi (2013), and Soya and Damola (2014), demonstrates that underwriting-related ratios significantly and positively influence profitability in the Nigerian insurance industry. Nevertheless, these studies frequently concentrate on general underwriting performance metrics without distinguishing the specific impacts of underwriting reserves and shareholders' equity on net profit margin.

Due to the strategic significance of these financial elements for insurers' stability and growth, there is a distinct necessity for additional empirical research. Targeted research is necessary to ascertain the degree to which insurance underwriting reserves and shareholders' equity directly affect the net profit margin of insurance firms in Nigeria. This analysis will yield profound insights into the influence of capital strength and reserve adequacy on profitability outcomes, hence offering useful direction for managerial decision-making and regulatory policy in the Nigerian insurance sector.

Objectives of the Study

The main objective of this study is to assess the impact of insurance underwriting reserves and insurance underwriting shareholders' funds on the net profit margin of insurance companies in Nigeria. The specific objectives are:

1. To examine the effect of insurance underwriting reserves on the net profit margin of insurance companies in Nigeria.

2. To investigate the effect of insurance underwriting shareholders' funds on the net profit margin of insurance companies in Nigeria.

Research Questions
1. What is the effect of insurance underwriting reserves on the net profit margin of insurance companies in Nigeria?
2. How significant is the effect of insurance underwriting shareholders' funds on the net profit margin of insurance companies in Nigeria?

Research Hypotheses
1. H1: Insurance underwriting reserves have a significant effect on the net profit margin of insurance companies in Nigeria.
2. H2: Insurance underwriting shareholders' funds have a significant effect on the net profit margin of insurance companies in Nigeria.

2.0 Literature Review

Insurance Underwriting
Insurance underwriting is the process by which an insurance firm determines eligibility for coverage by assessing the related risks and anticipated profitability (Cape, 2021). This involves evaluating applications to ascertain if coverage should be sanctioned, modified, or denied, in addition to determining the suitable premium rates (Soye & Adeyemo, 2018). Underwriters in life, health, property, and casualty insurance utilise actuarial statistics and computer models to evaluate the likelihood and magnitude of claims, informing premium pricing. High-risk applicants or assets incur elevated premiums, while low-risk counterparts may be eligible for normal or reduced rates (Soye, 2018; Macedo, 2019).

The underwriting process is essential for maintaining an insurer's financial stability by balancing premium income and the ability to pay claims while complying with regulatory requirements. Robust underwriting methods are vital for maintaining an insurer's net profit margin, especially through judicious use of underwriting reserves and shareholders' equity (Soye, 2018).

Factors Influencing Underwriting in Nigeria
Underwriting decisions vary based on the type of insurance concerned. For life, health, and disability insurance, key factors often include the applicant's age, gender, medical history, occupation, financial status, and lifestyle choices (Mwangi, 2015). Property insurance evaluation, in contrast, focuses on the characteristics and valuation of the asset, its physical condition, construction specifications, susceptibility to risks, preventive measures, geographical location, and claims history. The assessment for commercial insurance include the enterprise's nature and scale, financial stability, liability risks, managerial proficiency, susceptibility to economic fluctuations, and historical loss record.

Subsequent to this evaluation, an application may be outright rejected, accepted under suboptimal conditions—typically entailing elevated premiums, limited coverage, or particular exclusions—approved under standard terms, or awarded preferred status when the risk profile is exceptionally advantageous (Macedo, 2019).

Underwriter Responsibilities and Challenges
Underwriters act as the guardians of an insurance company's financial stability, protecting it against exposure to untenable risks while accepting those that are adequately comprehended and economically beneficial. Their work requires both technical expertise and experienced judgement, leading to the common description of underwriting as an art informed by science (Macedo, 2019). In practice, they assess material threats—such as vehicle age, building specs, or medical conditions—alongside moral hazards, including an applicant's financial integrity, reliability, and vulnerability to fraudulent behaviour. By employing this dual evaluation, underwriters mitigate adverse selection and information asymmetry, facilitating risk-appropriate pricing and constraining possible losses (Macedo, 2019).

The underwriting landscape is intrinsically cyclical, influenced by competitive dynamics, variations in premium rates, claims patterns, and the entrance or exit of market players. Insurers that emphasise long-term resilience, judicious capital allocation, and disciplined risk selection are more likely to preserve profitability and uphold strong net margins over time (Macedo, 2019).

Underwriting Reserves
Underwriting reserves denote the financial allocations insurers set aside to fulfil anticipated claims liabilities and associated operational expenses. Underwriting profit is obtained by subtracting incurred claims and related expenses from net premiums earned. Prudent management of these reserves is essential for sustaining solvency and enhancing overall profitability, especially during times of economic distress (D'Arcy, 2015; Hofflander, 2019).

Shareholders' Funds
Shareholders' equity consists of issued share capital and accumulated reserves, collectively representing the net asset position of an insurance company (Ihendinihu, 2016). The judicious allocation of these funds enhances both financial stability and profitability. The objective of maximising shareholder wealth requires returns that exceed the firm's cost of equity, so creating a direct correlation between the management of shareholders' capital and the attainment of substantial net profit margins (Egiyi, 2022).

Insurance and Insurance Premiums
Insurance serves as a financial protection against possible economic loss, wherein policyholders shift risk to insurers in return for premium payments (Ojukwu, 2021; Nduka, 2015). Premium revenue is a key factor influencing underwriting performance and overall profitability. An increase in gross written premiums can improve operational efficiency and profit potential; nevertheless, excessive risk buildup may increase susceptibility, especially during unfavourable economic periods (Anum, 2018; Usman, 2018).

Profitability of Insurance Companies

Profitability signifies an insurer's ability to generate returns from its primary business and financial activities. Operational earnings arise from premium revenue after subtracting claims and administrative costs, whereas financial gains are produced through investment activity. The performance outcome is influenced by internal factors, including organisational scale, capital adequacy, operational efficiency, longevity, and ownership structure, as well as external factors, such as industry dynamics and current macroeconomic conditions (Greene, 2017; Akotey, 2021).

The synergistic efficacy of underwriting discipline and investment management ultimately determines overall profitability, typically evaluated through metrics like as net profit margin or return on assets (Swiss Re, 2018).

Theoretical Framework

Game Theory: Game theory, developed by John von Neumann and Oskar Morgenstern in 1940, clarifies the concept of strategic interdependence in competitive environments, such as the pricing of insurance policies. In insurance markets, companies set premiums beyond the expected costs of claims, underwriting, and administrative expenses to ensure profit margins. Nevertheless, intense competition—evident in tendering strategies or intentional underpricing—can diminish underwriting returns.

Effective pricing transcends mere actuarial cost assessment; it necessitates meticulous forecasting of competitors' strategic responses, highlighting the fundamentally strategic nature of underwriting decisions and their impact on net profit margins (Warren, Rourke, & Iwanik, 2012). In this context, the current study utilises game theory as an analytical framework to investigate how underwriting decisions—specifically the management of underwriting reserves and shareholders' equity—affect the profitability of insurance firms in Nigeria.

Empirical Review

Sunday (2023) analysed the impact of asset size on the profitability of life insurance companies in Nigeria from 2011 to 2021. The study utilised total asset values and profit-after-tax data from the Nigerian Insurers Association Insurance Digest, initially performing stationarity tests that verified data stability at the 1%, 5%, and 10% significant levels. The application of Ordinary Least Squares (OLS) regression revealed a statistically significant correlation, since the F-statistic probability was below 0.05. The reported coefficient of determination ($R^2 = 0.7388$) indicated that 73.88% of the variation in profit after tax was due to fluctuations in asset size. The research revealed that business size significantly influences the financial performance of life insurance companies in Nigeria. While Sunday (2023) focused on asset size, the current study emphasises underwriting capability as a factor influencing profitability.

Mehrjardi (2021) examined the relationship between bank size and profitability utilising panel data from 43 Nigerian banks from 2008 to 2010. The explanatory factors included customer base, number of branches, market share, and deposit liabilities, whilst return on assets (ROA) functioned as the dependent variable. Empirical findings revealed substantial positive correlations among all size-related metrics, highlighting the performance benefits linked to organisational scale. These data corroborate the assertion that operational capacity—comparable to underwriting strength in insurance companies—directly influences profitability results.

Akpan (2020) examined the impact of underwriting activities on insurer profitability in Nigeria using pooled OLS estimate of panel data from 20 firms between 2010 and 2019. Gross written premiums (GWP) and underwriting profit (UP) served as independent variables, while profit after tax (PAT) was the dependent variable. The investigation indicated that GWP had a substantial beneficial impact on profitability, while underwriting profit alone was statistically insignificant, implying operational inefficiencies in underwriting processes. The research recommended improved underwriting discipline to maximise premium collection and profitability.

Bishnu (2020) examined the determinants of profitability among Nepalese insurers utilising panel data from ten companies spanning the years 2012/13 to 2017/18. Return on equity (ROE) was analysed in relation to employee expense ratio (ER), financial leverage (FL), and firm size (logarithm of total assets). SPSS (version 25) findings indicated financial leverage and firm size as key drivers, emphasising the dual significance of financial structuring and organisational capacity in performance improvement.

Ethiogu (2020) evaluated the correlation between insurance investment activities and economic growth in Nigeria, utilising sectoral asset and income data from 1996 to 2014. The OLS regression results indicated a positive albeit statistically negligible long-term association between insurance investment and total assets, while short-term effects were substantial. The report advocated for enhanced strategic resource allocation, stricter regulatory compliance, and greater investment governance to strengthen sector performance.

Adeyemi (2021) assessed macroeconomic factors affecting capital market development in Nigeria using ARDL cointegration and Error Correction modelling approaches. Stock market capitalisation (SMC) serves as a proxy for market development. The findings revealed that the majority of macroeconomic variables had negligible effects, but market liquidity exhibited a large positive influence. An adjusted R^2 of 44% indicated moderate explanatory capacity. The study highlighted the importance of financial system efficiency in maintaining profitability and growth.

Omodero (2020) analysed the influence of specific macroeconomic parameters on the performance of Nigeria's capital market from 1998 to 2018. Regression results indicated that interest rates adversely impacted market capitalisation, GDP had a substantial positive influence, whilst exchange rate and inflation showed no statistical relevance. The recommendation focused on preserving macroeconomic stability to promote the growth of the financial industry.

Iwegbu (2020) examined the impact of pension fund inflows on Nigeria's economic growth through financial

intermediation utilising ARDL estimation. Research shown that pension contributions foster growth when allocated to short-term, high-yield investments, highlighting the critical significance of judicious portfolio management for the profitability of the financial sector.

Peleckienė (2020) examined the relationship between insurance development and economic growth among European Union member states. The study utilised descriptive statistics and Granger causality tests, revealing varied patterns: significant positive associations in certain jurisdictions, negative correlations in others, and either bidirectional or unidirectional causality contingent upon institutional and market conditions. This variability demonstrates the conditional influence of the insurance sector on macroeconomic performance.

Ezu (2020) assessed the ramifications of industry consolidation in Nigeria's insurance business on economic growth. Secondary data were examined with ADF unit root tests, Johansen cointegration, and OLS regression. The results indicated a positive and statistically significant correlation among insurance premiums, aggregate assets, investment activity, and GDP. The report advocated for aggressive regulatory reforms to enhance public trust, increase market penetration, and promote investment-driven growth.

Gap in Empirical Literature

The research gap signifies the disparity between existing empirical studies and the current investigation. This study conceptually aligns with past works but diverges from them in several significant ways.

The thematic orientation varies. While previous research—such as Akpan (2020), Oyetayo (2019), Soye (2018), and Angima (2017)—primarily focused on the underwriting function in connection with insurer profitability, this study particularly analyses underwriting capacity and its impact on profitability over a prolonged period. The differentiation is not solely linguistic; it signifies a transition from operational results to foundational financial robustness as a criterion for performance.

Secondly, the temporal span is more extensive. Akpan (2020) utilised time series data from 2010 to 2019. This research covers the period from 2000 to 2023, providing a comprehensive longitudinal perspective that captures structural changes, regulatory reforms, and cyclical swings in the Nigerian insurance business.

Thirdly, contextual emphasis is another element of divergence. Numerous empirical studies, such as those by Djamaluddin (2019) in Indonesia and Bishnu (2019) in Nepal, were performed outside Nigeria. This study focuses solely on the Nigerian insurance business, hence improving contextual specificity and policy relevance in the native market.

Fourthly, variable selection and measurement varied significantly. Previous research, particularly Akpan (2020), employed insurance premiums and underwriting profit as independent variables, with profit after tax as the dependent variable. This study conceptualises underwriting capacity via

underwriting reserves and shareholders' funds, using total net profit as the dependent variable. This paradigm offers a more systematic and capital-oriented assessment of underwriting strength instead of a just revenue-focused review.

Ultimately, methodological heterogeneity is apparent. Prior research primarily utilised Ordinary Least Squares (OLS) regression methodologies (Akpan, 2020; Soye, 2018; Angima, 2017). This study use the Augmented Dickey–Fuller (ADF) unit root test to determine stationarity and utilises the Auto Regressive Distributed Lag (ARDL) modelling method for estimate. This methodological enhancement enables the analysis of both short-term and long-term dynamics within a rigorous econometric framework.

Collectively, these contrasts highlight the study's originality and its intentional effort to confront the conceptual, contextual, temporal, and methodological limitations identified in previous research.

3.0 Methodology

This study employed an ex-post facto design, appropriate for analysing events or conditions that have occurred without intervention or control by the researcher. The research focused on the Nigerian insurance industry and its impact on the overall Nigerian economy. The study utilised secondary data sourced from the Central Bank of Nigeria (CBN), the annual reports of the Nigeria Deposit Insurance Corporation (NDIC), and the National Insurance Commission (NAICOM) Statistical Bulletin, including the period from 2000 to 2023. Additional information was obtained from scholarly literature, journals, and other pertinent publications.

The study population comprised all registered insurance businesses operating in Nigeria, with the timeframe restricted to 2000–2023, contingent upon the data availability from NAICOM and the CBN Statistical Bulletin. A convenience-based non-probability sampling technique was employed, randomly selecting firms from the population, which included small and medium-sized insurance companies. Preliminary procedures, including unit root and diagnostic tests, were performed to ensure the dependability and stability of the models for data analysis. Statistical significance was established with a p-value threshold of less than 0.05.

Model specification

The general model for the study was based on Mwangi and Murugi (2015) whose model is stated as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon \ \dots \ (3.1)$$

The functional relation of the modified model is captured in equations (3.2) and (3.3) given as:

$$NPM = f(IUR, IUSF) \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots. \ (3.2)$$

Where,

IUR = Insurance underwriting reserves,

IUSF = Insurance underwriting shareholders' funds,

NPM = Profit margin

Econometrically, equations (3.2) and (3.3) are specified as follows:

NPM = α_0 + α_1IUR +α_2 IUSF + μ ……………………. (3.3)

β_0, =Intercept;

β_1, $\beta 2\alpha_1$andα_2= Coefficients (parameters to be estimated); μ = stochastic error term.

4.0 Results

The research employed time-series data to analyse the influence of underwriting capacity on the profitability of insurance firms in Nigeria, spanning from 2000 to 2023. The long-run correlations among the variables were examined utilising the Augmented Dickey–Fuller (ADF) unit root test, descriptive statistics, and the Autoregressive Distributed Lag (ARDL) model, as previously stated.

Statistical tests were undertaken to either validate or deny the previously defined hypotheses. This procedure was essential to guarantee that dependable and legitimate conclusions could be derived from the empirical results.

Descriptive Statistic

Table 4.1 provides a summary of the descriptive statistics for all variables analysed in the study, encompassing metrics such as mean, median, maximum, minimum, skewness, kurtosis, standard deviation, and total observations. Additionally, Table 4.5 below presents a thorough summary of the descriptive statistical data utilised in this empirical investigation.

Table 4.1 Summary of the Descriptive Statistics

	NPM	C	IUR	IUSF
Mean	34.38421	1.000000	32091105	1.915608
Median	35.95000	1.000000	32514992	2.827608
Maximum	44.30000	1.000000	1.452308	5.818708
Minimum	24.65000	1.000000	24643.90	21583.50
Std. Dev.	4.605883	0.000000	39759233	1.950908
Skewness	-0.438124	NA	1.346583	0.223376
Kurtosis	3.305377	NA	4.510708	1.635069
Jarque-Bera	0.681678	NA	7.548846	1.632912
Probability	0.711173	NA	0.022950	0.441995
Sum	653.3000	19.00000	6.10098	3.636509
Sum Sq. Dev.	381.8549	0.000000	2.856516	6.857617
Observations	23	23	23	23

The descriptive statistics for Net Profit Margin (NPM), the constant term (C), Insurance Underwriting Reserves (IUR), and Insurance Underwriting Shareholders' Funds (IUSF) provide significant insights into the distributional characteristics, variability, and normality of the data.

The Net Profit Margin (NPM) exhibits a mean of 34.38 and a median of 35.95, accompanied with a standard deviation of 4.61, indicating a considerable degree of variability around the mean. The skewness coefficient of -0.44 signifies a minor negative (left) skew, however the kurtosis value of 3.31 is near the normative standard of 3 for a normal distribution. The Jarque–Bera (JB) statistic of 0.68, accompanied by a probability value of 0.711, indicates that NPM adheres to a normal distribution.

The Insurance Underwriting Reserves (IUR) have a mean of 32,091,105 and a median of 32,514,992. Nonetheless, its standard deviation of 39,759,233 indicates considerable variability and the existence of outliers. A skewness score of 1.35 signifies a positively skewed distribution, while a kurtosis of 4.51 denotes a leptokurtic pattern with tails heavier than those of a normal distribution. The Jarque–Bera statistic of 7.55, accompanied by a p-value of 0.023, indicates that IUR deviates from normalcy at the 5 percent significance threshold. However, this issue was addressed by the Augmented Dickey–Fuller (ADF) unit root test, which verified stationarity at the second difference, rendering the variable suitable for regression analysis.

The Insurance Underwriting Shareholders' Funds (IUSF) exhibit a mean of 1.92 and a median of 2.83, accompanied with a standard deviation of 1.95, signifying considerable variability. The skewness coefficient of 0.22 indicates a minor positive skew, while the kurtosis value of 1.64 implies a considerably flatter (platykurtic) distribution in comparison to the normal curve. The Jarque–Bera statistic of 1.63 and the associated probability of 0.442 indicate that IUSF does not significantly diverge from normalcy.

In summary, the descriptive statistics indicate that while certain variables—especially IUR—initially displayed problems such as elevated skewness and kurtosis, these issues were rectified by the ADF unit root testing technique. As a result, all variables were made stationary and appropriate for subsequent econometric research. The dataset thus fulfils the requisite requirements for dependable and resilient regression modelling.

The Augmented Dickey-Fuller (ADF) Unit Root Test

Table 4.2 The Augmented Dickey-Fuller (ADF) Unit Root Test Output

Variable	Order of Integration	ADF Test Statistic	Prob.*	1% Critical Value	5% Critical Value	10% Critical Value	Conclusion
NPM	1	-4.795519	0.0013	-3.831511	-3.029970	-2.655194	Stationary at first difference; null hypothesis of unit root rejected
IUR	2	-4.288901	0.0049	-3.920350	-3.065585	-2.673459	Stationary at second difference; null hypothesis of unit root rejected
IUSF	2	-5.862796	0.0004	-4.004425	-3.098896	-2.690439	Stationary at second difference; null hypothesis of unit root rejected

Source: Author's Computation with the use of E-Views 10 2025

The Augmented Dickey–Fuller (ADF) unit root test was utilised to assess the stationarity characteristics of the time series data for Net Profit Margin (NPM), Insurance Underwriting Reserves (IUR), and Insurance Underwriting Shareholders' Funds (IUSF). The results indicate that NPM is integrated of order one, $I(1)$, as its ADF test statistic of –4.795519 is more negative than the 5 percent critical value of –3.029970, with a p-value of 0.0013. This outcome necessitates the rejection of the null hypothesis of a unit root, signifying that NPM attains stationarity upon initial differencing.

Likewise, both IUR and IUSF were determined to be stationary at the second difference, indicating they are integrated of order two, $I(2)$. The ADF test statistics for IUR (–4.288901) and IUSF (–5.862796) are more negative than their respective 5 percent critical values of –3.065585 and –3.098896, with p-values below 0.05. Thus, the null hypothesis of a unit root is rejected for both variables at the second difference. The results indicate that all variables achieve stationarity following sufficient differencing, rendering the data appropriate for subsequent econometric methods, including regression analysis.

The summary data in Table 4.2 indicate that the mean, maximum, minimum, and total values of NPM are 34.38421 billion, 44.30000 billion, 24.65000 billion, and 653.3000 billion, respectively. In contrast, IUR and IUSF report mean values of 32,091,105 billion and 1.915608 billion, respectively. The maximum values for IUR and IUSF are 1.452308 billion and 5.818708 million, while their minimum values are 24,643.90 billion and 21,583.50 billion, respectively. The total amounts for IUR and IUSF are 6.10098 billion and 3.636509 billion, respectively.

The results presented in Table 4.2 corroborate the previous findings on skewness and kurtosis, so reinforcing the distributional attributes of the variables incorporated in the model.

Regression

A multiple regression model was utilised to ascertain the existence of a long-run link among the variables analysed in the study. The dataset included 23 years of annual time series observations from 2000 to 2023. The statistics were obtained from multiple editions of the Central Bank of Nigeria (CBN) Statistical Bulletin and the yearly reports of NAICOM.

The study, spanning from 2000 to 2023, employed a multivariate linear regression technique to analyse the presented null hypotheses. This method facilitated the evaluation of the long-term impacts and the comprehensive relationship among the chosen factors.

Dependent Variable: NPM

Method: ARDL

Date: 03/27/25   Time: 01:41

Sample (adjusted): 2000 2023

Included observations: 23 after adjustments

Maximum dependent lags: 3 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (3 lags, automatic): IUR IUSF

Fixed regressors: C

Number of models evalualted: 48

Selected Model: ARDL(2, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
NPM(-1)	0.506184	0.211218	2.396503	0.0300
NPM(-2)	0.148248	0.198459	0.746998	0.4666
IUR	5.475435	2.976405	1.844706	0.0149

IUSF	-6.438655	1.967705	-3.276638	0.0051
IUSF(-1)	6.311505	1.806505	3.500124	0.0032
C	11.14705	6.235165	1.787772	0.0940

R-squared	0.790854	Mean dependent var	35.84238
Adjusted R-squared	0.721138	S.D. dependent var	5.275188
S.E. of regression	2.785688	Akaike info criterion	5.121823
Sum squared resid	116.4009	Schwarz criterion	5.420258
Log likelihood	-47.77914	Hannan-Quinn criter.	5.186591
F-statistic	11.34402	Durbin-Watson stat	2.302718
Prob(F-statistic)	0.000115		

Source: Author's Computation with the use of E-Views 10 2025

The ARDL(2,0,1) model evaluating the impact of Insurance Underwriting Reserves (IUR) and Insurance Underwriting Shareholders' Funds (IUSF) on Net Profit Margin (NPM) reveals both immediate and lagged effects of the explanatory variables on the profitability of insurance companies in Nigeria.

The initial lag of the dependent variable, NPM(-1), is positive and statistically significant at the 5 percent level (coefficient = 0.506, p = 0.030), indicating partial adjustment and persistence in profitability over time. This indicates that prior profitability levels substantially affect current performance. Nonetheless, the second lag, NPM(-2), while positive, is statistically insignificant, indicating that the influence of preceding periods diminishes over time.

Insurance Underwriting Reserves (IUR) demonstrate a positive and statistically significant correlation with Net Profit Margin (NPM) (coefficient = 5.475, p = 0.015). This discovery indicates that an augmentation in underwriting reserves directly improves the profitability of insurance firms. Conversely, Insurance Underwriting Shareholders' Funds (IUSF) have a dynamic trend. The current value of IUSF exerts a negative and statistically significant influence on NPM (coefficient = –6.439, p = 0.005), signifying an initial detrimental effect on profitability. Nonetheless, its initial lag exhibits a positive and statistically significant coefficient (6.312, p = 0.003), indicating a deferred positive impact of shareholders' equity on profitability over time.

The constant term is positive but marginally insignificant (coefficient = 11.147, p = 0.094). The model exhibits significant explanatory power, evidenced by an R-squared value of 0.791 and an adjusted R-squared of 0.721, signifying that a considerable percentage of the variability in NPM is accounted for by the included regressors. The F-statistic (11.34, p < 0.001) indicates that the independent factors collectively have a statistically significant impact on profitability. The Durbin–Watson value of 2.303 indicates a lack of autocorrelation in the model.

The data indicate that underwriting reserves exert an immediate positive influence on profitability, whereas shareholders' funds have a delayed positive effect, underscoring the dynamic financial structure and adjustment mechanisms inside insurance companies.

Residual Diagnostic Test

Table 4.4 Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.775994	Prob. F(9,14)	0.6413
Obs*R-squared	7.987761	Prob. Chi-Square(9)	0.5354
Scaled explained SS	5.642664	Prob. Chi-Square(9)	0.7751

Source: Author's Computation with the use of E-Views 10 2025

The results of the Breusch–Pagan–Godfrey heteroskedasticity test demonstrate that the regression model's residuals exhibit constant variance, signifying the lack of heteroskedasticity in the dataset. The F-statistic of 0.776 corresponds to a p-value of 0.6413, surpassing the 5 percent significant level.

The Obs*R-squared statistic of 7.988 has an associated probability of 0.5354, however the scaled explained sum of squares test indicates a probability value of 0.7751. As all reported p-values exceed 0.05, the null hypothesis of homoskedasticity remains unrefuted.

This result indicates that the model's error terms are consistent and do not display systematic variations in variance. Thus, the regression coefficients can be considered efficient and reliable, thereby enhancing the credibility and strength of the model used to analyse the effect of underwriting capacity on the profitability of insurance firms in Nigeria.

Residual Diagnostic Test

Table 4.5 Breusch – Godfrey serial Correlation LMT Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.389115	Prob. F(2,12)	0.1338

Obs*R-squared	6.834900	Prob. Chi-Square(2)	0.3328

Source: Author's Computation with the use of E-Views 10 2025

The results of the Breusch–Godfrey Serial Correlation LM Test indicate an absence of serial correlation in the residuals of the estimated regression model. The F-statistic of 2.389 corresponds to a probability value of 0.1338, exceeding the 5 percent significance limit. Similarly, the Obs*R-squared statistic of 6.835 yields a probability value of 0.3328, which surpasses the 0.05 threshold.

Since both probability values above 0.05, the null hypothesis of no serial correlation remains unrefuted. This signifies that the residuals are independently distributed and that the model is devoid of autocorrelation problems. The computed regression coefficients are deemed unbiased, consistent, and efficient, hence enhancing the credibility and reliability of the analysis about the impact of underwriting capacity on the profitability of insurance businesses in Nigeria.

Test of Hypotheses

The a priori expectations of the estimated coefficient is; $\alpha_0 > 0$, $\alpha_1 > 0$, $\alpha_2 > 0$.

Hypothesis One:

H1: Insurance underwriting reserves has a significant effect on Net Profit margin of insurance companies in Nigeria.

The probability value of 0.0149, as indicated in Table 4.3, is below the 5% significance level. This signifies that the null hypothesis may be rejected. Thus, the study shows that insurance underwriting reserves exert a substantial and favourable influence on the net profit margin of insurance firms in Nigeria.

Hypothesis Two:

H2: insurance underwriting shareholder's funds has a significant effect on Net Profit margin of insurance companies in Nigeria.

The probability value of 0.0032, as indicated in Table 4.3, is below the 5% significance level. This signifies that the null hypothesis may be rejected. Thus, the study shows that the capital from insurance underwriting shareholders significantly and positively influences the net profit margin of insurance businesses in Nigeria.

Discussion

The regression study examining the influence of underwriting capacity on the profitability of insurance firms provides substantial insights. The research underscores that underwriting capacity is essential in influencing the profitability of insurance companies in Nigeria from 2000 to 2023. The findings demonstrate that insurance underwriting reserves (IUR) positively affect the net profit margin (NPM), exhibiting a coefficient of 5.475435 and a probability value of 0.0149. This indicates that for every unit increase in underwriting reserves, the NPM rises by approximately 5.48 units.

The analysis indicates that insurance underwriting shareholders' funds (IUSF) have a positive and substantial effect on net profit margin (NPM), with a coefficient of 6.311505 and a probability value of 0.0032. This indicates that for each unit rise in shareholders' equity, there is a corresponding increase of 6.31 units in Net Profit Margin (NPM). The model demonstrates significant explanatory power, evidenced by an R-squared value of 0.790854 and an adjusted R-squared of 0.721138, suggesting that about 79.08 percent of the variations in NPM are attributable to fluctuations in underwriting capacity. These findings confirm that insurance companies with superior operational and financial resources generally attain better profitability, highlighting the importance of efficiently managing underwriting resources.

The results correspond well with prior investigations. Sunday (2023) illustrated that asset size substantially influences the financial performance of life insurance companies in Nigeria, corroborating our assertion that operational and financial capacity—indicated by underwriting reserves and shareholders' equity—is essential for profitability. Likewise, Akpan (2020) emphasised that effective underwriting enhances profitability, underscoring the significance of IUR and IUSF in our study. Additional research, like that of Mehrjardi (2021) and Bishnu (2020), has highlighted the impact of firm size and financial leverage on profitability, thereby reinforcing the idea that adequate capacity—be it operational, financial, or managerial—enhances firm performance.

Ethiogu (2020) observed no long-term impacts of insurance investment on total assets; however, our research demonstrates a robust and significant correlation between underwriting capacity and profitability. This underscores that proficient underwriting is a crucial factor in achieving financial success within the Nigerian insurance industry. These findings underscore the critical importance of underwriting capacity in enhancing the profitability of insurance companies, aligning with the extensive empirical research on the topic.

5.0 Conclusion and Recommendations

Conclusion

The research indicates that underwriting capacity, evaluated via insurance underwriting reserves and shareholders' equity, significantly and positively influences the profitability of insurance firms in Nigeria. Both factors significantly affect fluctuations in net profit margins, underscoring the necessity of proficiently managing underwriting resources to enhance financial performance. By augmenting their underwriting capability, insurance companies can attain increased profitability, thereby bolstering the overall stability and expansion of the Nigerian insurance sector.

Recommendations

1. Insurance regulators must collaborate closely with all pertinent parties to guarantee the appropriate allocation of insurance funds into profitable

initiatives. This partnership is crucial for cultivating public confidence in the insurance sector.

2. Insurance businesses should prioritise the fortification of their corporate governance and the augmentation of transparency. By doing so, businesses can enhance operational efficiency, particularly in underwriting procedures, ensuring that resources are utilised judiciously to optimise profitability.

3. Companies must regularly evaluate and enhance their underwriting methods, encompassing the administration of reserves and shareholders' equity. This continuous optimisation is essential for attaining consistent profitability and ensuring the industry's long-term financial stability.

REFERENCES

1. Ahmed. (2021). On determinants of performance of Life Insurance Sector of Pakistan. *International Research Journal of Finance and Economics*, 61, 123-128.http://www.eurojournals.com/finance.htm.

2. Ahmed (2015), Impact of Micro Economic Variables on Pakistan firms performance.*International Journal of Economics and Empirical Research* 53,254-261. http://www.tesdo.org/Publication.

3. Almajali, (2015). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research; 4(2), 266-289.*

4. Amaya (2015), On influence of risk management practices on financial performance of life and assurance firms in kenyaa survey study of Kisi, *International Journal of Economics. 978. 348- 386.*

5. Angima, (2017), Effects of Underwriting and Claims Management on Performance of Property and Casualty Insurance Companies in East Africa. *European Scientific Journal;13(13).* 1857 – 1881.

6. Anyanwu ,A.(2016); *Research Methodology In Business and Social Sciences* By Alvan Global Publications. Owerri.

7. Akotey (2015). The financial performance of life Insurance companies *in Ghana.*

8. Akpan, (2020). Managing the Underwriting Functions And Profitability ParadoxesOf Nigerian Insurers. *International journal of innovation, creativity and change (4) 4. 267-*174

9. Asrat,(2016). on determinants of Profitability in Private Insurance Companies in Ethiopia. *Journal of Poverty, Investment and Development www.iiste.org* 26 .422-467.

10. Ayele, (2015). Factors Affecting Profitability of Insurance Companies inEthiopia.C:/Users/USER/Desktop/MSc%20Ins%20woks/Factors%20Affecting%20Profitability%20of%20Insurance%20Companies%20in%20Ethiopia.

11. Baranoff, (2019). On Semi-parametric modeling as a managerial tool for solvency. *Journal of Risk and Insurance, 67(3), 369-396.*

12. Barth, (2019).on empirical investigation on the effect of growth on short term changes in loss ratios. *Journal of Risk and Insurance, 76(4), 867-885.*

13. Bates. (2017*) Risk, Regulation, and Capital Adequacy. CIIN study course A510*

14. Burca, (2014).on determinants of financial performance in the Romanian insurance market. *international journal of academic research in accounting, finance and& management Sciences, 4,. 1, p. 299-308.*

15. Browne, (2015). On theory of the Demand for Underwriting. *The Journal of Risk and Insurance*.

16. Cape Education, (2021*). Underwriting, Write It Right*! 7(2), 177-187.

17. Cardon, (2021). Asymmetric information in health insurance: *Evidence from the national medical expenditure survey and Journal of Economics, 32(3), 408–427.*

18. Charumathi, B. (2015). The determinants of profitability of Indian life insurers. Proceedings of the World Congress on Engineering, WCE 2012, London, July 4-6

19. Chen & Wong (2015). On the determinants of financial health of Asian insurance Companies. *The Journal of Risk and Insurance, 71(3), 469-499.*

20. Chen & Wong (2015). On the solvency of general (property-liability) and life insurance companies in Asia*. The Journal of Risk and Insurance. Retrieved from*www.jostor.org/stable/252840

21. Curak, &Poposki, (2019). On insurance sector development and economic growth in transition countries. *International Research Journal of Finance and Economics, 34(1), 29-41.*

22. Chiappori, (2020) On testing for Asymmetric Information in Insurance Markets*, Journal of Political Economy, University of Chicago. 108(1), 56-78.*

23. Crocker (2017). On the social value of hidden information in adverse selection economies. *Journal of Public Economics48, 269-304 (August 1992)*

24. D'Arcy &Garven, (2020). On property-Liability Insurance Pricing Models : An Empirical Evaluation. *The Journal of Risk and Insurance,Retrieved from www.jostor.org/stable/252840*.

25. Damola, &Soye (2018). On affected of underwriting capacity and income of Insurance industry in Nigeria. *International Journal of Innovative Science and Research Technology (3), 2456-2165 www.ijisrt.com.*

26. Doherty (2018). On Portfolio theory of insurance capacity. *Journal of Risk andInsurance,47(3),405420.*http://www.jstor.org/stable/252630markets.Journal.

27. Dorina (2016),On Factors Affecting the Profitability of Insurance Companies in Albania. *European Journal of Multidisciplinary Studies. 2414-8385 (Online*2) *414-8377 (Print).*

28. Echeta (2021). *Business Social and Economic Research Method*s. Owerri, Mega Atlas limited.

29. Emine.(2015). The Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey. *International Journal of Financial Studies 2227- 7072.*

30. Epetimehin (2017). Impact of pricing of risk on the profitability of Nigerian Insurance market and the relationship between operating expenses. *International Journal of Academic (1)4. 2226-3624).*

31. Ezekiel (2017). Nigerian Insurance Association Kugler. *European Scientific Journal.(13)13. 1857 – 7881.*

32. Ezekiel. O.(2015) . Being Proceeding of the 2003 NIA Workshop on *Insurance ACT , Nigeria Insurance Association.*

33. Gourieroux (2016). Testing for evidence of adverse selection in the automobile insurance market. *Journal of Political Economy. 109(2), 444–453.*

34. Hifza, M. (2016). Determinants Of Insurance Companies Profitability An Analysis Of Insurance Sector Of Pakistan. *Academic Research International. (1)3, 2223-9553.*

35. Idris,A., (2015). Effect of capital size on the profitability of listed insurance firms in Nigeri.

36. Kaya, (2015).The Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey. *International Journal of Financial Studies 2227-7072 www.mdpi.com/journal/ijfs*

37. Kozak, S., (2015). Determinants of profitability of non-life insurance companies in Poland. *Electronic Journal of Polish Agricultural Universities. Series Economics*.

38. Kripa (2016). On factors Affecting the Profitability of Insurance Companies in Albania. *European Journal of Multidisciplinary Studies.1(1) 2414-8385 (Online) 2414-8377 (Print).*

39. Lee, (2015). The Effects of Firm Specific Factors and Macroeconomics on Profitability of Property Liability Insurance Industry in Taiwan. *Asian Economic and Financial Review, (4)5. 681-691.*

40. Leverty (2017). Property–Liability insurer reserve error ,motive, manipulation, or mistake. *The Journal of Risk and Insurance, 79(2), 351-380*

41. Malik, H. (2015). Determinants of insurance companies Profitability: an analysis of insurance sector of Pakistan. *Academic Research International, Volume 1, 3.*

42. Macedo, L., (2019).*The Role of the underwriter in insurance*. The International Bank for Reconstruction and Development/the World Bank. Sourced from www.worldbank.org/nbfi

43. Mihic, K.,(2015).Firms specific factors affecting the overall financial performance of life insurance companies in India . *International journal of economic and Business (3),78-89.*

44. Mingizem.B.,(2017). Determinants of insurance company profitability in Ethiopia. International. *Journal of Scientific and Research Publications.* (7) 6 2250-3153 www.ijsrp.org

45. Mwangi (2015). The determinants of financial performance in general insurance companies in Kenya. *European Scientific Journal* 11(1). 288-297.

46. Mwangi,M.,(2020). *Relationship Between Underwriting Profit and project Investment Income in General Insurance Industry in Kenya.* A research submitted in partial fulfillment of the requirement for the degree of master of business administration university of Nairobi.

47. Mwangi, M. (2018). The Relationship between Underwriting and Investment income for the General insurance Industry in Kenya .*International Journal of Scientific andResearch Publications, (7)6,761 2250-3153.*

48. *Mwangi, (2015).* Determinants of financial performance of general insurance underwriters in Kenya. *Journal of Business and Social Science, 5(3), 210-215. 25.*

49. *Mwangi (2017).* Effects of Underwriting and Claims Management on Performance of Property and Casualty. Insurance firms in East Africa.*European Scientific Journal. (13)13.1857 – 7881 (Print) e - 1857- 7431.*

50. Naveed (2021),. Determinants of Performance: A Case Of Life Insurance Sector of Pakistan. *International Research Journal of Finance.*

51. *National Insurance Commission. (2023), Annual Reports, 2023,"Available www.nic.gh.org*

52. *Nikhi (2015).* Firms specific factors affecting the overall financial performance of life insurance companies in India. *EPRA International journal of Economics and business. (3)8, 8*

53. Nduka, U,.(2017). *Impact of Insurance's Investment on Economic Growth of Nigeria from 1978 to 2009.*A Research Dissertation work ,submitted to the Department of Economics, School of post Graduate Studies Imo State University,Owerri*.*

54. Ojo (2017). Insurance sector development and economic growth in Nigeria. African *Journal of Business Management 6, 7016-7023.* http://www.academicjournals.org.

55. Ojukwu, J.C. (2016) *Modern Insurance Law and Practice in Nigeria.* Printed and bound in Nigeria by Cel- Bez Publishing Co.LtdOwerri Imo State Nigeria.

56. Omondi (2013): Factors affecting the financial performance of listed companies at the Nairobi Securities Exchange in Kenya.

ResearchJournal of Finance and Accounting. 99-104.

57. Onaolapo (2020). Capital structure and firm performance: Evidence from Nigeria.*European Journal of Economics, Finance andAdministrative Science.*

58. Őner, K.(2015). Effects of Firm-Specific Factors on the Profitability of Non-Life Insurance Companies in Turkey. *International Journal of Financial Studie,(3)510-529.*

59. Osinuga, D. (2016). *The challenges of Nigeria insurance industry. Article onLinkedin*

60. Priest, C. (2018). *Measuring Underwriting Results Under Changing Reinsurance Conditions IBM Business Consulting Services Property and casualty underwriting . ibm.com/bcs.*

61. Oyetayo (2020) Underwriting capacity and financial performance on non-life insurance Companies in Nigeria .*Academic journal of Economic Studies Vol.6.No2 pp73-80*

62. Sunday (2018) Effect of insurance industry performance on economic growth in Nigeria. *International Journal Business. Financial Management Research.*

63. Shiu, Y. (2015). Determinants of United Kingdom general insurance company performance. *British Actuarial Journal, 10(5), 1079-1110.*

64. Tahir, (2021). On the relationship between enterprise risk management and firm value*: Evidence from European Scientific Journal 13, 1857 – 7881.*

65. Soye, (2018) on underwriting Capacity and Income of Insurance Companies: (A Case of Nigeria). *International Journal of Innovative Science and Research Technology. 2456-2165.*

66. Udaibir (2018). *Insurance and Issues in Financial Soundness. IMF Working Paper 35.*

67. Usman .(2018) On impact of internal and external factors on the profitability of insurance companies. *Journal of Economic Policy Researches (5), 35-57.*

68. Wilkinson, C. (2018). Catastrophe modeling: A vital tool in the risk management and Insurance information. *International Journal of Economics and Management sciences, 1(2), 32-41.*

69. Wong, (2015). Asian Insurance Companies and its profitability. *Journal of Risk & Insurance. (71)3, 469-499.*

70. Yusuf (2015). Effect of Claim Cost on Insurers' Profitability in Nigeria. *International Journal of Business and Commerce (3)10, 2225-2436.*