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UNDERWRITING RISK APPETITE, LIQUIDITY RISK APPETITE, AND OPERATIONAL EFFICIENCY OF GENERAL INSURANCE COMPANIES IN NIGERIA

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Abstract

Purpose: *The study examines the interactions between underwriting risk appetite, liquidity risk appetite, and the operational efficiency of general insurance businesses in Nigeria.*

Design/methodology/approach: *The study adopts an ex-post facto research design, as it uses secondary data from 15 selected companies with a population of forty (40) licensed non-life insurance companies, consisting of general and composite insurance businesses, operating in Nigeria as of 31 December 2023, from 2012 to 2022. Panel data methods were adopted for the study.*

Findings: *The reported regression coefficients indicate a negative but statistically non-significant relationship between underwriting risk appetite and resource utilization ($p = 0.5885$), and a positive but statistically non-significant relationship between liquidity risk appetite and profit growth ($p = 0.4132$).*

Limitations and research implications: *The research is limited to fifteen insurance firms and may not generalize to the industry's risk appetite. Therefore, more firms and longer timeframe datasets may be adopted for future research to better understand the concepts*

Practical implications: *Based on findings, insurance firms should develop strong frameworks for managing liquidity risk by implementing liquid evaluation processes and diversifying their investment portfolios and reassessing their underwriting strategies to explore flexible underwriting approaches, tailored to specific market conditions and operational demands, to improve resource utilization and profit growth.*

Originality/value: *The study provides distinct empirical contributions in the African context of a developing nation, Nigeria, unlocking interactions between the variables and stating the importance of maintaining adequate risk appetite to influence the operational efficiency of the insurance industry.*

Keywords Liquidity Risk Appetite, Operational Efficiency, Resource Utilization, Underwriting Risk Appetite

Introduction

The insurance industry operates in a landscape shaped by both internal and external factors. These factors include fluctuations, rising claim costs, inflation, changes in regulations, low levels of insurance penetration, and more complicated operations (Siopi & Poufinas, 2023). This has invariably influenced the ability of insurers to make sound underwriting decisions and manage liquidity risk essential for the survival and development of their firms. However, many general insurance companies still struggle to create and use a proper risk appetite framework that helps them take on the right amount of risk, maintain enough liquidity, and run their operations smoothly.

An insurer's underwriting risk appetite is the amount of risk they are willing to take on in exchange for possible rewards (Luciana & Rochet, 2022). Some insurers pursue aggressive underwriting strategies such as underpricing premiums, accepting inadequate risk information, weak claims controls, and high exposure concentration to increase market share (Collins, 2024). These kinds of actions may help the company make more money in the short term, but they can also lead to higher loss ratios, unstable earnings, and financial trouble in the long run. Concerns arise regarding the alignment of insurers' underwriting risk appetite with sustainable profitability and solvency requirements (Hissiyah & Meylianingrum, 2023).

In the same vein, liquidity risk appetite describes the degree to which an insurer is willing to assume liquidity shortfalls in his operations (Institute of Risk Management, 2017 and Sonjai, 2021). Therefore, general insurance companies must maintain certain level of liquid to meet claims obligations promptly, yet many face liquidity pressure due to delayed premium collections, high operating expenses, poor investment decisions, and unexpected large claims (Nwala, Aza & Sukana, 2024). Weak liquidity management can result in delayed claims settlement, reputational damage, loss of customer confidence, and regulatory sanctions (Allan & Oladunni, 2023). Despite this, it remains uncertain how strategically liquidity risk appetite is defined and incorporated into risk management decisions within Nigeria's general insurance sector (Sonjai, 2021).

In addition, the ability of insurance firms to remain competitive depends largely on operational efficiency, including cost control, claims processing speed, service delivery, technology adoption, and internal control systems (Rahul, 2021). However, many Nigerian insurers struggle with inefficiencies such as manual processes, high administrative costs, weak fraud controls, and inadequate staff capacity (Oyerinde et al. 2025). These inefficiencies can undermine profitability and the ability to sustain underwriting and liquidity positions.

Many studies have examined risk appetite in different forms and also in difference sectors around the world, African

context and within the concept of Nigeria. Some of the highlighted literatures only looked at risk appetite as it affects financial performance of firms, which has created the gap this study tends to uncover by interaction of Underwriting risk appetite, Liquidity risk appetite and the operational efficiency of selected non-life insurance companies in Nigeria which will be measured using resource utilization and profit growth. This gap creates unpredictability for stakeholders who seeks risk-taking approaches that ensure liquidity sufficiency and improved operational efficiency.

Consequently, this study seeks to examine the relationship between underwriting risk appetite, liquidity risk appetite, and the operational efficiency of general insurance companies in Nigeria, with a view to providing insights that can improve risk management practices, strengthen liquidity planning, and enhance operational performance within the sector.

The research is divided into sections such as introduction, literature review, research methods, results and discussion, conclusion and recommendations, Contribution to knowledge and Suggestions to future studies and references

Literature Review

Conceptual review

This section contextualizes the various variables examined in the literature

Underwriting risk appetite

Underwriting is the assessment of hazards attributed to the subject matter of insurance, and to determine whether the risk is to be considered or not (Insurance Institute of East Africa, 2023). The underwriting risk appetite emphasizes the quality of the insurer's underwriting activity and is measured through the loss ratio, which is computed as a ratio of gross claims to gross written premium. Underwriting risk reflects the adequacy of insurers' underwriting performance (Onafalujo & Awolode, 2025). Therefore, sound underwriting guidelines are pivotal to an insurer's financial performance and this depends largely on appetite of these insurers. Nafiu et al. (2025) contends that organizations that engage in risky activities are likely to have more volatile cash flows than entities whose management is more averse to risk-taking. Therefore, a negative connection between the underwriting risk and the insurers' financial performance is expected, since taking an excessive underwriting risk can affect the company's stability through higher expenses, (Francis & Steffensen 2024). Furthermore, insurance companies with high annual insurance losses will tend to increase their level of corporate management expenses (e.g., claims investigation and loss adjustment costs) which could further exacerbate a decline in their reported financial performance. In contrast, insurers, and reinsurers with lower-than-expected annual losses are likely to exhibit better financial performance because, for example, they do not incur such high monitoring and claim handling costs (Chakladar, 2021).

Liquidity risk appetite

Liquidity indicates a firm's financial readiness to settle expected and unexpected cash requests at any point in time (Munich Business School, 2026). Thus, for firms to maintain their operations and remain in existence for the longest time possible, they must always strive to be liquid to meet contingent expenses. Liquidity risk can also be viewed as the company's capability to meet likely and unforeseen demand for liquid cash through current liquid cash movement (Onafalujo & Awolode, 2025). Liquidity risk appetite derives from the possibility that an entity would be unable to resolve risks arising from changes in its cash inflows and outflows (Nguyen, 2024). Liquidity risk appetite measures the ability of managers in insurance and reinsurance companies to fulfil their immediate commitments to policyholders and other creditors without having to increase profits on underwriting and investment activities and/or liquidate financial assets (Central Bank of Trinidad & Tobago, 2025). Also, AbdulRahman et al. (2022) observed that due to the nature of insurer liability, liquidity and investment are important determinants of insurance's profitability. At its core, controlling liquidity necessitated the availability of funds to execute any financial promise, as well as the guarantee of cash availability, so that insurance companies could fulfil their commitments as and when they were due. The way in which they accomplish this is by altering the many sources of income that are available to the company under both normal and emphasized circumstances. Therefore, liquidity is the lifeblood of an insurance operation (Kwatmak et al., 2025). Liquidity risk appetite is operationalized through the liquidity risk ratio to measure the level at which current assets of organization drive them to take on more risk and are able to finance its consequences when they arise (Ogunsola, 2023)

Operational efficiency

Operational efficiency (OE) is a concept that illustrates how effectively a firm converts its inputs (resources) into outputs (services and financial results) efficiently (Akalegbere, 2022). In the insurance sector, OE describes an insurer's ability to deliver underwriting, policy administration, claims settlement, customer service, and risk management functions at the lowest possible cost while maintaining service quality and compliance (Rahul, 2021). It is also viewed as the degree to which an organisation reduces operational costs relative to its revenue or output, to maximize effectiveness (Kibirigbe et al., 2019). It is measured in the study by resource utilization and profit growth. The study uses these proxies because if resources (assets) are effectively utilized, it reduces cost for the organization and this result to increase in the profit made by the organization as it is measured against expenses (Abass et al., 2025). The study of Cummins & Weiss (2013) supports that fact that an efficient firm will show higher profit from the same resources. Therefore, RU measures asset turnover while PG measures sensitivity of an organization to cost changes such as claims cost, underwriting cost and other operational cost

Resource Utilization

Resource utilization (RU) is the process of efficient utilization of an organization's

resources so as to accomplish its goals (Danao & Williams, 2024). To do this, resources such as human capital, financial assets, technological assets, and physical infrastructure must be well managed. Barry and Barida (2024), posit that efficient resource management is important to increase productivity, decrease expenses, and maximize overall organizational performance. For insurance companies, RU refers to the process of managing resources to support their primary responsibilities, such as underwriting, policy issuance, claims processing, risk management, and customer service (Ali & Kamraju, 2023). Insurance companies must develop the ability to improve their operational performance, increase competitive customer happiness, and achieve sustainable growth in a market landscape in their core resource areas across human, financial, and technological domains. For this research RU is operationalized through total premium to total asset. This measure the underwriting leverage and asset utilization efficiency of an insurance firm and shows how efficiently an insurance company uses its asset to generate more income (Rejda & McNamara, 2017)

Profit growth

Growth in profit is a complex process driven by a range of internal and external factors (Vaz, 2021). To achieve sustained profitability, insurers must rely on a mix of underwriting performance, investment returns, cost control, market circumstances, ethical practices and regulatory compliance (Siopi & Poufinas, 2023). Their profit margin is generated when premiums are collected to cover unexpected claims and other expenses through detailed risk selection and pricing techniques. Therefore, to enter into new market and handle new risk, thorough risk assessment, pricing models, and product development must be done to improve profit (Olawale et al. 2022). Likewise, investment returns have an impact on insurance companies' profitability. Also, the goal of portfolio diversification and strategic asset allocation is to increase returns while controlling risk exposure (Hines, 2023). In summary, an all-encompassing strategy that includes superior underwriting, investment optimization, cost effectiveness, market responsiveness, ethical practices, and regulatory agility is needed for insurance companies to increase profits.

Theoretical Review

Retention Capacity Theory: According to James and Joan (2003), secondary insurers take on risk as a result of reinsurance contracts. The decision-making and purchasing power of reinsurers are impacted by the insurer's retention capacity, which is measured by transferred and hedged capacity, as well as other risk financing values. Cummins et al. (2012) and Garven & Lamm-Tennant (2003) both state that ceding businesses will seek reinsurance programmes to lessen the impact of business risk, fortuitous dangers, and other insurable risks. As a consequence of compensation values, reinsurance manages the occurrence of fortuitous losses and the maintenance of financial solvency margins. This study rests on this theory and posits that by knowing the retention levels of insurer based on decision factors, their risk appetite can be increased to take on more risks and expands their operational efficiency to increase insurance penetration and has more global recognitions

Also, if proper underwriting strategy is developed it has an influence on the liquidity techniques as well as investment measures adopted by the company which helps the insurance firms makes informed decisions on the level of their retained risk and number of reserves to set aside to meet claims costs and other emergency costs that might arise from their activities to ensure effective allocation of its resources resulting to increase in profitability

Empirical Review

Soye et al. (2022) examined the study to determine how reinsurance, a risk management strategy, influences the profitability of Nigerian non-life insurance firms. The research employed an ex-post-facto research design using multiple correlation and regression. The study found that these variables are not significant directly or indirectly by premium cession ratio (PCR), ratio of net premium retained (RPR), and reinsurer-dependent ceded premium (RDC). This indicates that primary insurance profitability is unimportant when RCES and reinsurer-dependent ceded premiums are taken into account.

Dansu et al. (2026) examined a study on the nexus between technical reserves and solvency margin from selected non-life Insurance Companies in Nigeria using 10 purposively sampled firms. The research adopted a multiple regression technique and found that technical reserves do not have a statistically significant effect on solvency margins.

Sattar (2020) examined liquidity and its impact on profitability in Pakistan's textile sector; a simple regression technique was employed. The results show that the current ratio has a significant influence on return on equity (ROE) and return on capital deployed (ROC) in 2014 and 2015

Aduloju and Ajemunigbohun (2017) examined the relationship between financial stability, underwriting profits, and ceding office gross premium income in Nigeria. A descriptive research design, Primary and secondary data were used in the study. It found that reinsurance uptake boosts insurer premium income, demonstrating positive sensitivity of reinsurance utilization to profitability.

Hissiyah and Meylianingrum (2023) assessed the research on premium income, investment returns, claims expenses, and operating expenses of net profit of Sharia life insurance companies to determine their effect in Indonesia. The study found that premium income and investment return slightly affect net profit. Also, claims expenses and operating expenses do not affect net profit.

Mohammed et al. (2020) examine the relationship between corporate liquidity and the financial success of listed insurance companies in Nigeria. Over the course of ten years, from 2009 to 2018, information was obtained from the annual reports and accounts of ten (10) insurance companies. Multiple regression analysis was used to examine 42 of the data. According to the statistics, the current ratio and cash ratio had a somewhat positive impact on the profitability of Nigerian-listed insurance companies, as measured by ROA, after controlling for firm size and leverage. Free cash flow, however, has a slight detrimental effect on ROA, according to the report.

Overall, the analysis indicates that during the study period, liquidity had no discernible effect on the profitability of listed insurance companies in Nigeria.

Chakladar (2021) examined a study on how insurers can reduce cost and become efficient. The study found that through automation and leveraging data analytics as well as embracing digitalization, their efficiency can be improved to minimize operational cost.

Anandasayanan and Subramaniam (2020) researched 26 commercial banks in Sri Lanka on liquidity management and profitability. The study found that there is a positive association between return on assets and capitalization ratio, while negative relationship exists between capital adequacy ratio and return on assets.

Onafalujo and Awolode (2025) examined a study on firm-specific characteristics on profitability of quoted non-life insurers in Nigeria using a panel research design on 15 quoted non-life insurance companies for 15 years for the period 2008 -2022. The research found that firm size is negatively significant while financial leverage (FL) and liquidity were positively significant to profitability. FL has more significance at 67.57%, while other variables such as loss ratio (underwriting risk), retention rate, premium growth rate, expense ratio and age have no effect on profitability of these firms

Conceptual Framework



Source: Researcher view, 2025

Figure 1: A Conceptual model connecting Underwriting risk appetite, Liquidity risk appetite on indicators of Operational Efficiency of selected quoted/listed insurance firms in Nigeria.

From the literature review underpinning the research, it aims to test the following hypotheses

H1: Underwriting risk appetite has a significant impact on resource utilization of general insurance companies in Nigeria.

H2: Liquidity risk appetite significantly influences profit growth of non-life insurance businesses in Nigeria

Research Methods

This study adopts an ex-post facto research design with the population comprising all forty (40) licensed non-life insurance companies, consisting of general insurance and composite insurance businesses, operating in Nigeria as of 31 December 2023. 15 non-life insurance companies were selected for the study. The study purposively selected only insurance companies that were in continuous existence from 2012 to 2022 and had complete audited financial statements and among the leading firm by gross premium written. Fifteen (15) companies met these criteria and were selected

Table 1: Sample insurance companies and their gross written premiums

S/N	INSURANCE COMPANIES	GROSS WRITTEN PREMIUM (BILLIONS) (2022)
1.	Leadway Assurance Ltd.	92.50
2.	AIICO Insurance Plc	88.30
3.	AXA Mansard Insurance Plc	41.23
4.	Custodian & Allied Insurance Plc	37.98
5.	NEM Insurance Plc	33.37
6.	Zenith General Insurance Co. Ltd	20.90
7.	Consolidated Hallmark Insurance Plc	12.83
8.	Coronation insurance Plc	19.84
9.	NSIA Insurance Ltd	18.02
10.	Sovereign Trust Insurance Plc	15.23
11.	Rex Insurance Company Ltd	14.20
12.	LASACO Assurance Plc	13.91
13.	Linkage Assurance Plc	12.98
14.	Prestige Assurance Nigeria Plc	12.44
15.	Sterling Assurance Nigeria Ltd	4.90

Source: Audited Annual Reports, 2022. Researcher computation, 2025

The research is quantitative in nature and adopts secondary data sourced from the available published financial statements of the companies for the period 2012-2022, with reliability from NIA reports as well as NAICOM filings. The study adopts panel data methods. The panel data model was used to observe and analyze the data from the same selected cross-sectional units over time using EViews version 10.0

Measurement of variables

Table 2: Measurement of variables

VARIABLES	INDICATORS	DEFINITIONS	EXPECTED SIGN PER VARIABLE	AUTHORS
Independent Variables	Underwriting risk appetite	Gorss claims Gross Earned premium	+/-	Amana, Mahoud and Abdulwahid (2026)
	Liquidity risk appetite	Total current asset Total liability	+/-	Lusy, Hermanto, Panjaitan and Widyastuti, 2018
Dependent Variable	Operational efficiency (resource utilization)	Total premium Total asset	+/-	Moro & Anderloni (2014)
	Profit growth	PGnew – PG old PG old	+/-	Pane, 2023
Control Variable	Firm Size	Log of Total Assets		Onafalujo & Awolode, 2025

Source: Researcher's compilation, 2025

In this research, operational efficiency measured through resources utilization and profit growth is the dependent variable while underwriting risk appetite and liquidity risk appetite are the explanatory variables. The model specification explains the mathematical relationship between variables of interest. This is computed below:

$$(OPEit) = f(URAit) + (LRAit)$$

Where:

OPE = operational efficiency

URA= underwriting risk appetite

LRA = Liquidity risk appetite

Thus, the panel data regression model is expressed as follows:

$$RU_{it} = \beta_0 + \beta_1 URA_{it} + \beta_2 FS_{it} + \boldsymbol{\mu}_{it} \quad (3.3)$$

$$PG_{it} = \beta_0 + \beta_1 LRA_{it} + \beta_2 FS_{it}\boldsymbol{\mu}_{it} \quad (3.4)$$

t = 2012, … 2022 (annual time series)

Subscript i = 1, 2, …, 15 (individual non-life insurance companies)

RU = Resource Utilization
PG = Profit Growth
FS = Firm Size
β_0 = intercept coefficient
β_1 = Partial slope coefficient of URA with respect to RU
β_2 = Partial slope coefficient of LRA with respect to PG
Note: Expected signs of the coefficient (a priori expectation) β1, β2 < 0

4. Results and Discussion

This section describes the data analysis of the study comprising the descriptive analysis, the pre-estimation tests such as unit root test analysis and co-integration test, model estimation and post estimation tests such as autocorrelation and stability tests as well as result and discussion of findings

Descriptive Statistics

Table 3 -: Descriptive Statistics
Sample Period: 2012 – 2022 for 15 Non-Life Insurance firms in Nigeria

Stat	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
RU	0.474234	0.410494	1.219794	0.126065	0.204241	0.892773	3.500691	23.64222	0.000007
PG	13.77306	13.68377	16.36469	8.559678	1.270685	-0.55211	4.188900	18.10045	0.000117
LRA	544.5140	0.404789	89708.67	0.060068	6983.746	12.72816	163.0061	180468.6	0.000000
URA	0.930720	0.759199	5.129687	0.046600	0.806777	3.354825	16.23390	1513.569	0.000000
FS	16.58581	16.49186	19.79380	12.98476	0.982672	0.274009	4.804368	24.44797	0.000005

Source: Researcher's computation, 2025

Table 3 presents the summary statistics of the series being examined in the study. Series such as Underwriting Risk Appetite (URA), Liquidity Risk Appetite (LRA), Resources Utilisation (RU), Profit Growth (PG) are expressed in scales of percentages and Firms Size (FS) is expressed in natural log form. It could be observed that the standard deviations, as measures of spread, are higher than the respective averages for the data in the series. This suggests that there are moderate dispersions in the values or observations of the variables around the averages over the sampled period. The foregoing suggests that the series exhibits high dispersions around the averages. Also, majority of the variables appear to be positively skewed (long right tail) having positive coefficients of skewness with few such as PG reporting a negative skewness. Apparently, variables such as Underwriting Risk Appetite (URA), Liquidity Risk Appetite (LRA), Resources Utilisation (RU) and Profit growth (PG) Firms Size (FS)appear to have sharp peak and fat tails (leptokurtic) relative to the normal distribution, having their kurtosis coefficients higher than the threshold of 3 in the case of moment distribution.

The Jarque-Bera statistics are significant for all variables ($p < 0.05$); therefore, the null hypothesis of normality is rejected. The reported data do not satisfy the univariate normality assumption. This result should not, by itself, invalidate panel regression, but it indicates substantial non-normality and possible outliers—particularly for liquidity risk appetite—and warrants robust inference and further diagnostic checks.

Pre-Estimation Tests

In this section, pre-tests such as correlation tests are provided to evaluate the statistical healthiness (relationship) of the variables being examined in the study.

Correlation Matrix

The table below shows the correlation result of the study.

Table 4: Shows the correlation factor of the variables.

	RU	PG	LRA	URA	FS
RU	1.0000				
PG	-0.1585	1.0000			
LRA	0.1506	-0.0360	1.0000		
URA	-0.0357	0.1587	-0.0518	1.0000	
FS	0.0220	0.0987	-0.0778	-0.0388	1.0000

Source: Author's Computation, 2025

Table 4 presents the correlation factors between various variables to identify potential strong relationships among the independent variables, as such relationships could violate the assumptions required for accurate estimation techniques. The correlation analysis is crucial in understanding the statistical relationship between underwriting risk appetite, liquidity risk appetite and operational efficiency of non-life insurance firms in Nigeria, particularly in terms of how these variables interact linearly with one another.

The correlation value of -0.1585, 0.1506, -0.0357, and 0.0220 suggests a mixed relationship between underwriting risk appetite, liquidity risk appetite and operational efficiency indicators. This implies that as resources allocation has a positive relationship with LRA and FS but negative relationship with URA, which implies that increase in RU tends to increase/decrease on the risk appetite indicators. This could be interpreted as effective risk appetite positively contributing to the efficient operational efficiency of these non-life insurance firms.

Interestingly, Profit Growth (PG) shows a negative relationship with LRA, with a correlation value of -0.0360 but positive with URA and FS. This suggests that as the

risk appetite by the insurance firms increase, their profit growth tends to decrease.

Based on these findings, it can be deduced that risk appetites have a positive relationship with the operational efficiency of the selected non-Life insurance firms in Nigeria. Suggesting that effective risk appetite in these areas can significantly enhance the operational efficiency of these firms. The period covered by the study further underscores the consistency of these relationships over time.

Panel Unit Root Tests

Panel unit root tests must be performed in order to assess the stationarity condition of the variables being studied, prior to the panel model estimate. Based on the presumption of cross-sectional independence, the panel test types Im, Pesaran, Smith (IPS) and Levin, Lin, Chu (LLC). These tests are done to check robustness as LLC is restrictive in assuming homogeneity while IPS relaxes this assumption. The panel estimator used was pooled Ordinary Least Square (OLS)

Table 5: Results of Panel Unit Root Tests
Sample: T = 11years (2012 – 2022), N = 15 Non-Life Insurance firms

	Statistics			
Variables	Type	Level	Δ	I(0)
RU	LLC t	-3.8884***	-	I(0)
	IPS W-stat	-1.7451***	-	
PG	LLC t	-4.6875***	-	I(0)
	IPS W-stat	-1.1160***	-	
URA	LLC t	-3.7562***	-	I(0)
	IPS W-stat	-1.1963***	-	
LRA	LLC t	-6.7761***	-	I(0)
	IPS W-stat	-2.1408***		
FS	LLC t	-6.5778***		I(0)
	IPS W-stat	-2.4831***		

Note: ***, ** &* denote statistical significance at 0.01, 0.05 and 0.1.Δ = first difference operator
Source: Researcher's computation, 2025.

Table 5 presents the results of the panel unit root tests, which were conducted using the IPS (Im, Pesaran, and Shin) and LLC (Levin, Lin, and Chu) testing criteria. These tests are essential in determining whether the time series data is stationary, which is a key requirement for reliable regression analysis. The results indicate that all the variables under consideration Underwriting Risk Appetite (URA), Liquidity Risk Appetite (LRA), Resources Utilisation (RU), Profit growth (PG) and Firm Size (FS) are integrated at order zero, denoted as I(0). This means that each of these series is stationary at their levels, without requiring differencing to achieve stationarity. In other words, the statistical properties of these variables, such as their mean and variance, do not change over time, making them suitable for analysis without further transformation.

The stationarity of these series is confirmed by their p-values, which are all

below the 5% significance level. This indicates that the null hypothesis of a unit root (which suggests non-stationarity) can be rejected for all variables. The fact that all the variables are stationary at their levels implies that the data is well-suited for regression analysis, specifically using the Ordinary Least Squares (OLS) method. The stationarity of the variables is critical because it ensures that the regression results will be valid and unbiased. Non-stationary data can lead to spurious results, where the regression may indicate a relationship between variables when none actually exists. By confirming that the data is stationary, we can proceed with confidence that the regression analysis will accurately reflect the relationships between the variables, allowing us to test the level of significance and draw meaningful conclusions from the data. In summary, the panel unit root tests have demonstrated that the variables are stationary at their levels, making the data appropriate for regression analysis using OLS. This finding is crucial for the integrity of the study, ensuring that the relationships identified between the variables are robust and reliable.

Model Estimation

Test of Hypotheses

Following the panel unit root results, the Panel regression model Using Ordinary Least Square (OLS) was estimated to obtain the significant estimates. Meanwhile, the natural logs of the variables were used in the estimation process, thereby generating elasticity coefficients

Hypothesis One

H1: Underwriting risk appetite has a significant impact on resource utilization of general insurance companies in Nigeria.

Table 6: Estimated Panel Regression coefficients

Sample Structure: T = 11 (2012 – 2022), N = 15 Non-Life Insurance Firms	
	Response Variable RU
Co-efficient Estimates	
□□□□−1	**0.136083 (0.2172)**
Regression Estimates	
URA	**-0.004130 (0.5885)**
FS	**-0.004348 (0.5054)**
Overall Test	
F-Stat.	**262.2364*** (0.0000)**
Normality Test	
Durbin-Watson stat	**1.888856 > 1.5**

Note: ***, ** &* denote statistical significance at 1%, 5% and 10%. Meanwhile, values in parentheses are p-values.
Source: Researcher's computation, 2025.

Where RU means Resources Utilization, URA means Underwriting Risk Appetite

The outcome of the panel regression estimate using the ordinary least square estimator is shown in Table 6 above. As a measure of adjustment speed, the coefficient estimate of (0.136083) is positive but does not statistically significant (p = 0.2172 > 5%). The data suggests that there is lag period before Resources Utilisation (RU) responds to Underwriting Risk Appetite. That means that Underwriting Risk Appetite has a positive coefficient estimate I,e there is relationship but does not statistically significant on the operational efficiency measure (Resources Utilisation (RU)) of the selected non-life insurance firms in Nigeria.

Also, underwriting risk appetite has a negative but statistically non-significant coefficient for resource utilization (β = -0.004130, p = 0.5885 > 0.05). Accordingly, the reported evidence does not support the alternative hypothesis that underwriting risk appetite has a significant impact on resource utilization. The null hypothesis of no statistically significant effect should therefore not be rejected at the 5% level. The negative sign indicates direction only and should not be interpreted as a statistically established effect.

Hypothesis Two

H2: Liquidity risk appetite significantly influences profit growth of non-life insurance businesses in Nigeria.

Table 7: Estimated Panel Regression coefficients

Sample Structure: T = 11 (2012 – 2022), N = 15 Non-Life Insurance Firms

	Response Variable PG
Co-efficient Estimates	
□□□□−1	**2.715375 (0.0002)**
Regression Estimates	
LRA	**7.4106 (0.4132)**
Model Diagnostics	
Overall Test	
F-Stat.	**20.20721 *** (0.0000)**
Normality Test	
Durbin-Watson stat	**2.500 > 1.5**

Note: ***, ** &* denote statistical significance at 1%, 5% and 10%. Meanwhile, values in parentheses are p-values.
Source: Researcher's computation (2025).

Where PG means Profit Growth, LRA means Liquidity Risk Appetite.

According to Table 7, liquidity risk appetite has a positive but statistically non-significant coefficient for profit growth (β = 7.4106, p = 0.4132 > 0.05). Thus, the reported evidence does not support the alternative hypothesis that liquidity risk appetite significantly influences profit growth. The null hypothesis should not be rejected at the 5% level. Although the coefficient is positive, the magnitude should

not be interpreted as a statistically established effect.

When using Profit Growth as a metric of operational efficiency, it can be shown that the Profit Growth of non-life insurance businesses in Nigeria has a positive response to variations in the Liquidity risk appetite, but does not statistically significant based on the p-value. The conclusion that can be drawn from this is that the Liquidity risk appetite has no significant impact on the Profit Growth of general insurance companies in Nigeria.

Model Adequacy Tests (Residual Diagnostics)

In essence, the post-estimation tests are the normality test and the cross-sectional dependence test. Table 6 and 7 displays the outcomes of the cross-sectional dependence and normality tests. With regard to the cross-sectional dependency test, the Breusch-Pagan (BP) Chi-square test statistics (for T > N) have a p-value of 0.0042, which is lesser than 0.05 threshold of significance, meaning that the null hypothesis of "no serial cross-sectional dependence" can be ruled out as there is serial cross-sectional dependence. This suggests that the cross-section residuals exhibit cross-sectional independence.

Discussion of findings

The reported model-level F-statistics are statistically significant, but the individual coefficients reported for underwriting risk appetite (p = 0.5885) and liquidity risk appetite (p = 0.4132) are not significant at the 5% level. Consequently, the discussion should distinguish overall model significance from the statistical significance of the focal explanatory variables and should not claim significant individual effects unless the regression output or p-values are corrected and re-verified.

Building on these findings, similar conclusions were drawn by previous studies. Mohammed et al. (2020) explored the impact of corporate liquidity on the profitability of Nigerian listed insurance businesses. Their analysis, after adjusting for firm size and leverage, revealed that both the current ratio and cash ratio had a modest positive influence on profitability as measured by return on assets (ROA). However, free cash flow exhibited a minor negative impact on ROA. Adebayo and Olowofela (2023) investigated the impact of risk management techniques on the performance of insurance companies in Nigeria, filling a gap in empirical studies that assess this core aspect of insurance strategy. Their findings revealed that risk management approaches had a significant positive impact on underwriting profitability for Nigerian insurance firms.

In a related study, Aduloju and Ajemunigbohun (2017) explored the relationship between financial stability, underwriting profits, and ceding office gross premium income. Their findings demonstrated that reinsurance purchases significantly boost insurers' premium income, highlighting the positive sensitivity of reinsurance utilization to profitability. This helps reduce bankruptcy risk and improve retention capacity. Interestingly, while gross written premiums were the main driver of insurance business performance, the role of equity capital contradicted traditional assumptions in Nigeria. Additionally, economic, technological, and

environmental factors were found to have a favorable impact on the performance of insurance businesses in Nigeria.

Thus, the body of research consistently highlights the critical role of risk appetite strategies, such as underwriting as well as liquidity risk appetite, in shaping the operational efficiency of insurance firms. Liquidity management presents mixed effects, with certain liquidity measures positively influencing profitability while others, like free cash flow, show a slight negative impact. Moreover, the evidence underscores that although risk management techniques contribute significantly to underwriting profitability. Ultimately, these studies affirm that effective risk management is pivotal for sustaining profitability and mitigating financial distress, though the influence of external factors such as economic and technological changes cannot be overlooked.

Theoretical Implications

This study makes significant contributions to the retention capacity theory and insurance risk appetite literature. First, it validates the notion that retention capacity of insurance firms is influenced mainly by risk appetite of the firms, reinsurance contracts and other internal and external factors particularly in developing market. The positive cognitive established between RU and LRA and PG and URA supports the theory that retention levels of insurance will increase if adequate resources are channel into investment and proper underwriting guidelines are implemented to increase profit

Second, the positive relationship between RU and LRA and a negative one with URA depicts that if insurance firms make informed decision on how their resources are to be utilized especially on liquid investments, financial stability and solvency levels can be maintained to increase their retention capacity which does not influence underwriting risk levels. Also, profitability of the firms increase as more stringent underwriting guidelines are followed which influence their capacity to take on more risk but a negative relationship was found with LRA which shows that meeting obligations does not equate with profit growth rather reduces profit if claims costs increase which influence their appetite to retain more risk

Thirdly, the research contributes empirically to the field of knowledge in the Africa continent where insurance operations is gradually developing when compared to developed nations and underscores the research gap on the areas that risk appetite techniques can be increased or decreased to influence retention capacity of these firms

Conclusion

This study examined the interaction of underwriting risk appetite, liquidity risk appetite and operational efficiency among selected non-life insurance businesses in Nigeria. Based on the coefficients and p-values reported in Tables 6 and 7, underwriting risk appetite shows a negative but statistically non-significant relationship with resource utilization, while liquidity risk appetite shows a positive but statistically non-significant relationship with profit growth at the 5% level. Therefore, the study does not provide sufficient statistical

evidence, as presently reported, to conclude that either focal risk-appetite variable significantly affects its corresponding operational-efficiency indicator.

Given the reported non-significant individual coefficients, recommendations should be framed cautiously rather than as direct consequences of statistically significant effects. General insurance companies may still review underwriting strategies, resource-allocation practices and liquidity-management frameworks as prudent risk-management measures, but the present estimates do not establish that underwriting risk appetite significantly affects resource utilization or that liquidity risk appetite significantly affects profit growth.

Also, future research should consider examining the impact of recent regulatory changes, such as those implemented by industry regulators, on underwriting risk appetite, liquidity risk appetite and their influence on the overall operational efficiency of firms. This would provide valuable insights into how regulatory frameworks affect the effectiveness of risk appetite management. Moreover, expanding the study to include more insurance firms and life insurance businesses could offer a broader perspective on how risk appetite management impacts various segments of the insurance industry in Nigeria, enhancing the understanding of its role in company operations across different business lines.

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