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**FROM UNCERTAINTY TO PROSPERITY: UNLEASHING THE POWER OF ACTUARIAL RISK MANAGEMENT TO REVOLUTIONIZE NON-LIFE INSURANCE COMPANIES' SOLVENCY IN NIGERIA**

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**Abstract**

The profitability of insurance companies hinges on more than just policy volume; adequate premium rates are crucial to ensure timely claim payouts. In Nigeria, many insurers struggle with premium income underwriting performance due to inadequate risk-based pricing, leading to asset depletion and compromised financial stability. This study investigates the impact of actuarial risks on non-life insurance premium income underwriting performance affect solvency, analyzing data by using 72 member companies of the Nigeria Insurers Association (NIA). Using panel least square method to analyze the data collected, the findings revealed that over 90% of premiums collected are allocated to claims payouts, highlighting a pressing need for risk reduction strategies to bolster financial stability. The study recommends that insurers adopt proactive measures to mitigate solvency issues through optimization of premium income underwriting performance.

**Keywords:** actuarial risk; financial risk; nonlife insurance; premium underwriting performance

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**1. INTRODUCTION**

The global financial crisis of 2008 had a significant impact on economies worldwide, particularly on financial institutions. Many insurance companies struggled to maintain solvency and market share, with some resorting to rate cutting practices to maintain market shares. However, this approach can have severe consequences, including insolvency and reputational damage. Inadequate pricing has been identified as a leading cause of failure among insurance companies, with troubled companies often assuming additional risks to survive. The use of common wordings and product uniformity has also been observed to be a challenge in the industry.

If premium rates are inadequate, insurers may struggle to pay valid claims, leading to negative consequences. Conversely, if premium rates are too high, they may drive away potential customers. The need for fair premium rates that balance the two extremes is crucial. In conducting underwriting exercises, underwriters must skillfully assess risks and determine whether to accept or decline them.

The concept of risk is critical in the insurance industry, and it is essential to understand the actuarial risk variables associated with an actuarial phenomenon. These variables include frequency, timing, and severity.

In most countries the regulators aim to improve both risk measurement and capital adequacy in the insurance industry especially those that have not undergone significant regulatory reform since 2006 capital based was implemented in many countries. Under Solvency II, insurance companies are mandated to comply with at least minimum capital requirements by calculating solvency ratios that show how the regulations' principles are being included in their business (Moody's Analytics, 2011).

The regulation of the Nigerian insurance industry is currently based on the EU-based regulatory framework, Solvency II. This framework focuses on capital base determination, ensuring that insurance companies maintain capital funds at least equal to the target solvency margin. In Nigeria, underwriters are expected to underwrite high volumes of policies within their portfolio for stable profit. However, the profitability of insurance

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companies depends not only on policy volume but also on the adequacy of premium rates.

In Nigeria, many non-life insurance companies have failed to charge adequate premiums for the risks they insured, leading to insolvency and ruin (Adeyele, Isimoya, & Adalakun, 2019). This inadequate pricing and reserving have been significant reasons for insurance company failures (Adeyele *et al*, 2019). As part of repositioning insurance companies in Nigeria, underwriters are expected to be able to underwrite high volume of policies within their portfolio for stable profit (Adeyele & Maiturare, 2012). Accuracy in estimating unpaid claims is critical for insurers, and one of the primary objectives of Solvency II capital requirements is to reduce the risk of insurance companies' inability to settle claims. An accurate estimate of unpaid claims is essential for pricing insurance products, and inaccurate estimates can threaten an insurer's financial condition.

For more than three decades, inadequate pricing and reserving has been the significant reason why most Nigerian insurance fail. Accuracy in estimating unpaid claims is critical to insurers because of the uncertainty of quantifying the true expected claims to reported until several years later (Friedland, 2010). One of the basic objectives of Solvency II capital requirements is to reduce the risk of insurance companies' inability to settle claims. If this is achieved, it will boost the confidence in the insurance sector (Moody's Analytics, 2011) which in turn increase solvency of the business entities.

A structured actuarial risk management approach is vital for achieving better organizational results. This includes selective underwriting, good claim management, reserving arrangements, and optimal retention levels. Sound risk management techniques play a significant role in non-life insurance solvency. A company is considered solvent if its assets can meet all claims or liabilities. However, due to the high level of uncertainty in the insurance business, it is challenging to accurately ascertain the extent of assets and liabilities movement. Accurate valuation of assets and liabilities is essential, and a sound financial management policy can lead to solvency margin adequacy Verma (2014).

The regulatory body, National Insurance

Commission (NAICOM), has attempted to address the alleged inability of insurance companies to pay claims by classifying them into two groups based on capital strength. However, this move was resisted by industry practitioners who felt that it would technically exclude companies that could not meet the proposed minimum capital base from the market.

This study aims to determine the effect of actuarial risk on non-life insurance solvency in Nigeria. The specific objectives are to examine the joint effects of reserves, statutory deposit, and legal risk on gross premium income and to determine whether claim payment, operational risk management, statutory deposits, statutory reserves, and legal risks have a significant impact on non-life insurance solvency in Nigeria. The study covers a period of 7 years (2010-2017) and focuses on Nigeria Insurers Association members who transact non-life business in Nigeria.

The study's findings will provide valuable insights into the relationship between actuarial risk and non-life insurance solvency in Nigeria. It will also contribute to the existing body of knowledge on the importance of sound risk management practices in the insurance industry. The study's recommendations will be useful for insurance companies, regulatory bodies, and policymakers seeking to improve the solvency and stability of the insurance industry in Nigeria.

## **2. LITERATURE REVIEW**

Risk and capital requirements for individual business entities can be reduced, through combination of capital and risk transfer across business entities (Asimit, Badescu, Haberman & Kim, 2016). Experience in Canada and the United States indicates that more stringent form of rate regulation can weaken or even disrupt the price/claim link. As a result, an insurer may impair its solvency strength by using its capital to argument claims payment of risk insured. The term 'risk' is used to describe a phenomenon which is an occurrence that can be observed and a specific subject (a person, thing or collaboration of persons and things) in connection with which the occurrence is observed. An actuarial random

phenomenon is a stochastic phenomenon, when the outcome occur within specified periods) of time and are considered desirable or undesirable by one or more participants in an economic system (Allaben et al, 2008). The actuarial risk variables associated with an actuarial phenomenon are: frequency, timing and severity. This actuarial phenomenon is related to insurance promise. According to Babbel and Santomero (1996), risk management enables organisation to save cost and often lead to enhance performance.

Adeyele, Maduchie and Isimoya(2019) argued that if those in charge of risk underwriting are approved persons (i.e. they are professional qualified and exercise due diligence), the level of claims that sometime lead to insolvent in insurance industry will be minimal. This assertion agrees with Verma (2014) which observed that if a sound financial management policy is followed by insurance companies, it will lead to solvency margin adequacy for all time. It must be noted that this cannot be achieved without having board committee with adequate training in risk assessment and risk underrating. Kelly et al. (2012), and Lehmann and Hofmann (2010) both realize the significant of holistic risk management approach to solvency of insurance companies. They noted that holistic risk management is essential for insurance sustainability as this enable them to meet their operational, strategic and financial goals so as to meet. Consequently, a good risk management must be able to highlight the associated probabilities of possible future business scenarios before strategic decision makers commit capital (Stulz 2008).

Examining actuarial risk from an internal management perspective, accuracy in estimation of unpaid claims is essential for proper decision-making in virtually every area of an insurance company's operations including, but not limited to, pricing, underwriting, strategic, and financial decisions, compliant with solvency II (Friedland, 2010). van Vuuren, Reyers and van Schalkwyk (2017) revealed that the outcome of risk management implementation no significant relationship between life insurers having a risk

management system in place and assessing themselves as ready to comply with the Solvency II requirements (van Vuuren *et al*, 2017).

An accurate estimate of unpaid claims is particularly important in pricing insurance products as inaccurate estimates could threaten the financial condition of an insurer. For example, an inadequate estimate of unpaid claims could force an insurer to reduce its rates who may not realize that the estimates of unpaid claims are insufficient to cover historical claims (Friedland, 2010). In this situation, the new lower rates would likely be insufficient to pay the claims that will arise from the new policies.

Distressed insurers sometimes enter into new markets where the risks are unfamiliar, where they temporarily offer aggressive pricing to attract customers and additional revenue in order to gain market share. The problem could be worsened if the insurer gains market share as a result of the lower rates, which ultimately would prove to be inadequate to cover future claims (Friedland, 2010). This claim of events could eventually lead to a situation where future solvency of the insurer is at risk. The minimum guarantee fund which serves as a limitation for new and small companies represents the lowest permissible threshold for the capital funds required (Swiss Re, 2000). On the other hand, the solvency margin sets out the amount of capital funds an insurance company is mandated to be at its disposal during current operations (Swiss Re, 2000).

Solvency, its adequacy, regulation and supervision, is at the heart of the operation of the insurance sector and underpins the prospect for insurers to contribute effectively to the financial sector and the economy (Thorburn, 2004). This suggests the need for underwriters to undertake sound risk management which is a prioritization process whereby the risk with the greatest loss and greatest probability of occurrence is handled first and risks with lower loss are handled later (Kiochos, 2007). In recent time, insurance companies have increased their focus on risk management. A study by Meredith (2014) suggests that there should be careful judgment, by management of insurance companies, of insurable risks in order to avoid excessive losses in settling claims. Adeyele (2020) considers key factors influencing claim handling techniques as part of risk

management approach to insurance underwriting. It follows that risk management is an important factor in improving financial performance (Okoth, 2006).

### **3. THEORETICAL FRAMEWORK AND METHODOLOGY**

**3.2 Theoretical frame work-** Under the actuarial view, the sources of risk to companies are grouped into four broad categories by Black and Skipper (2004) as follows:

**3.1.1 Asset risk: Asset depreciation (C-1)** risk is the risk that assets will lose value because of the possibility that (a) borrowers of insurer funds may default on their obligations to the company or (b) the market value of an insurer's investment assets may decline, except if caused by interest rates investments.

**3.1.2 Pricing risk:** Pricing inadequacy (C-2) risk is the risk that liabilities will increase in value because future operating results are worse than those implicit in product pricing. Negative deviation can occur because of higher than anticipated mortality, morbidity, lapse, or expense experience. Similarly, the possibility of lower than expected investment income or sales gives rise to pricing risk.

**3.1.3 Interest rate risk:** interest rate (C-3) risk is the risk that asset and/or liability values will be negatively affected by interest rate movements. Note that changes in asset and liability values are occasioned by interest rate movements within the C-3 risk category but not in C-1, or C-2 categories. The effect on an insurer's balance sheet of fluctuating rates is complex and, if different for asset than for liabilities, the insurer could be exposed to insolvency. The precise linkage between interest rate movements and asset and liability values will be dependent on whether

**3.1.4 Miscellaneous risk (C-4):** this risk includes risks associated with social, legal, political, technical, and all other changes not included in the three preceding classifications. This category includes risks associated with product obsolesce,

interest rates are rising or falling.

tax and regulatory changes, loss of confidence in the insurer by policyholders, and liability arising from market misconduct of company employees or agent. C-4 lend themselves neither to prediction nor to quantitative analysis. It is for these reasons that rating agencies place great weight on management quality in their company views and rating.

In a rising interest rate environment, both asset and liability values ordinarily will decrease (Black & Skipper, 2004). The financial manager's worry is that the asset value decrease faster than liability value, thus reducing capital. Also, with rising interest rates, more policyholders than projected may exercise their policy surrender and loan options, necessitating forced sale of asset or lapse. In a falling interest rate environment, both asset and liability values, ordinarily will increase. The risk here is that liabilities increase rapidly than assets, thus reducing capital. Also, more policyholders than projected may exercise their option to add funds to their contracts, necessitating the purchase of additional assets at high prices. As a result of asset-liability mismatching, an insurer may incur a liquidity shortage. This lack of liquidity can arise even though the total book value of investments is more than sufficient to satisfy the total book value of obligations.

**3.2 Financial view of risk -** In contrast to the actuarial decomposition of risk, financial risk definitions are used by noninsured financial intermediaries and are coming under increasing consideration by insurers. The classification scheme is in six categories.

**3.2.1 Actuarial risk:** This is the risk that arises from an insurer developing funds via the issuance of insurance policies and other liabilities. In financial terms, it is the risk that the insurer has charged too little for the options that it has sold insureds in the form of the provisions and promises embedded in their insurance policies. In such cases, the insurance cannot expect to achieve satisfactory cash flow in the long run (see C1-C4 in figure 1).

**3.2.2 Systematic risk (or market risk)** is the risk of asset and liability value changes associated with broad economic factors. Systematic risks come in numerous forms, such as foreign exchange risk, inflation risk, basis risk, interest rate risk, and a host of others. Most large insurers track and manage



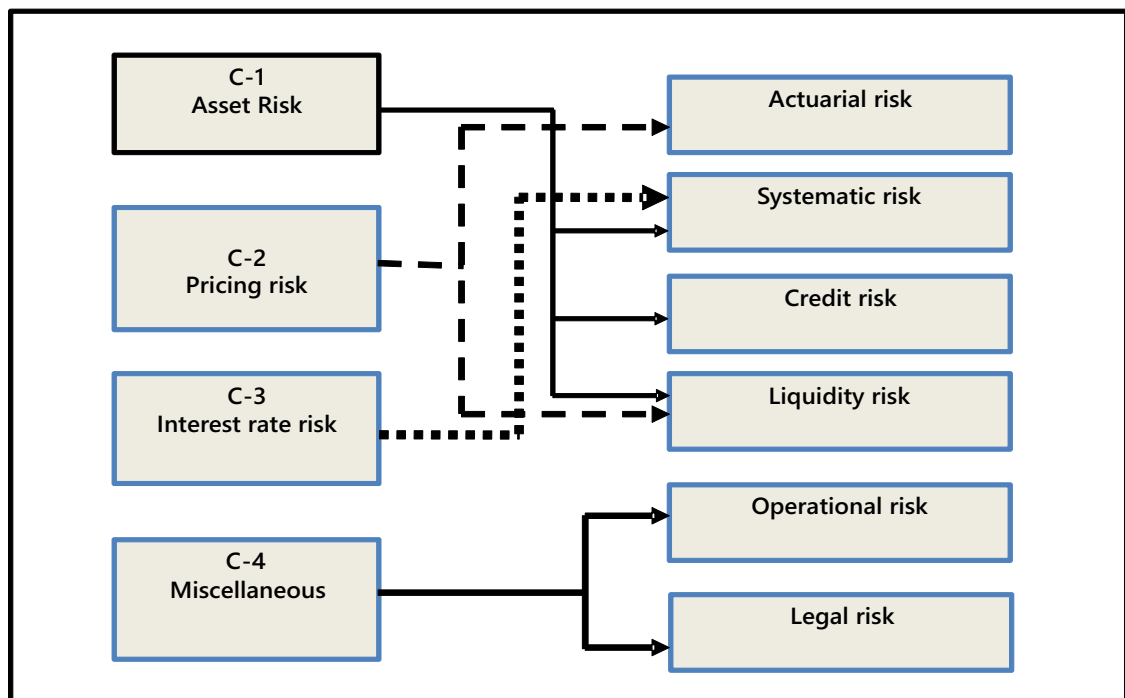
each of the major systematic risks individually (Black & Skipper, 2004).

The most important of these systematic risks for most financial intermediaries, especially life offices, is interest rate risk. Interest rate risk follows from the fact that life insurers facilitate transformation of insured's liquidity and risks possessions. They sell their own secondary securities (insurance contracts) to customers, investing the proceeds in primary securities (bonds, stocks, mortgagers, etc). These primary securities often have maturity and liquidity characteristics that differ from the insurer's secondary securities. This mismatch is the source of interest rate risk (as well as most other systematic risks). This financial risk classification conform most closely to the interest rate (C-1) risk that relates to decreases in the market value of asset, other than those caused by interest rate exchange.

3.2.3 *Credit risk*: Credit risk is the risk that promised

cash flows on primary securities held by the insurer may not be paid in full. The Actuarial C-1 (asset) risk include credit risk (and more see Figure 1). Nonperformance can be a result of either an inability or unwillingness on the part of the borrower to meet his, her or its contractual obligations. Such nonperformance (default) affects not only the investor holding the bond or loan contract but other investors and lenders to the creditors as well. As a result, the financial condition of the borrower and current value of any underwriting collateral are of considerable interest to investors. Firm-specific credit risk is diversifiable in accordance with the law of large numbers. Some portion of credit risk, however, stems from broad economic factors – so called systematic credit risk – and is undiversifiable. Credit risk also includes country (sovereign) risk, which arises when governments interfere with their nationals paying foreign creditors.

Figure 1: Reconciling Actuarial and Financial Risk Classification



Source: Adopted from Black & Skipper (2000)

*2.4 Liquidity Risk* –This is the risk that an insurance company is not able to regain its investments and other assets in a timely manner so as to settle its financial obligations as they fall due (IAIS Glossary, 2014). Liquidity risk is, in essence, the risk of a funding crisis. The actuarial risk classification subsumes liquidity risk in the C-3 (interest rate) risk and, perhaps, also in part of the C-1 (asset) risks (Black & Skipper, 2004). Ordinarily, insurer cash outflows are predictable; in fact, cash inflows usually are larger than cash outflows; thus minimizing the need for insurers to hold excessive amounts of cash. A cash crisis can arise, however, from unexpected events, such as very large claims, a loss of confidence, or a legal crisis. Insurers operate in markets in which they can face massive requests for policy loans and surrender due to changing interest rates (Black & Skipper, 2004). Investments in private placements and real estate have relatively limited liquidity. It is important that an insurer maintain sufficient liquidity to respond easily to any demands for cash. Unless in such a position, an otherwise solvent insurer may have to sell illiquid assets at sacrifice prices, which can lead to significant losses. This in turn could lead to further demands for cash and insolvency.

3.2.2 *Operational risk*- The Basel Committee (2001) defines operational risk as "The risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events." Solvency II framework sets a lot of challenges for every insurance company, since it requires a more sensitive, balanced and sophisticated risk analysis to prepare and establish a better risk coverage

2.3. Operational risk is the risk that system failures or human errors will substantially disrupt operation. Operational risks include technological problems or failures, fraud, negligence, accident, acts of God, failure of supply or marketing channels, and any other destructive factor. These risks often reflect inadequate internal controls and procedures. Although well-run organisation normally faces a low probability of a significant loss in this area, in unusual circumstances, the exposure can be quite expensive. Operational risk could fall within the actuarial C-4 (miscellaneous) risk classification.

*Legal risks*- Legal risk is the risk that new government laws, regulations, or court opinions may decrease the value of the firm. Legal risk also falls within the C-4 actuarial risk category. This risk permeates financial contracting, separate from the legal problems involved with credit and operational risks. Insurers are exposed to another type of legal risk as a result of the activities of their management, employees, and agent. Violations of laws or regulations, fraud, and other actions can lead to massive fines or court awards. Current examples demonstrate that, even where the insurer legally fulfils all of its contractual obligations, massive litigation can result if some policyholders hold expectations about the performance of their policies other than that specified in the contracts.

### **3.3 Data and Methods**

*Data source:* This study employed an ex-post facto research design, which allows for the examination of independent variables in retrospect to determine their possible relationship with the dependent variable. The panel least square method was used to analyze the data collected. The population of the study consisted of 72 members of the Nigeria Insurers Association (NIA), which is an umbrella organization for all insurance companies in Nigeria that submit data to the association in a

specified format. The study covered all insurance companies in Nigeria that deal with non-life businesses.

The data used in this study were secondary data extracted from the NIA for a period of 7 years (2010-2017). These data were sourced through the staff of the association, who made relevant yearbooks available to the researcher.

*Description of Variables:* The study examined the effect of legal risk on gross premium income. Legal risk is a risk that can have a devastating effect on gross premium income if not well managed. If effectively managed, its rate of change is expected to have a positive effect on gross premium income, while a negative effect suggests poor management of it. To proxy for legal risk, this study used taxes. The ability of insurance companies to pay valid claims to policyholders for insured risk is expected to lead to insurance penetration. An increase in the number of policyholders indicates more premium underwriting for such companies. Similarly, the inclusion of reserve, statutory deposit, and legal risk affects gross premium income for the members' insurers companies. Here, the asset of the company was used as a proxy for non-life insurance solvency.

The statistical tools used for the analysis of data collected include descriptive statistics and multiple regressions.

*Model Specification:* Based on the above, the following models were developed to test the rate of changes in the independent variables on the dependent variables (gross premium underwriting and solvency)

*3.3.4 Impact of reserves, statutory deposit and legal risk on gross premium income-* It is important to jointly consider how reserve, statutory deposit legal risk affect gross premium income for the members' insurers companies. Expected priority is that all the independent variables will have negative effect on gross premium income.

*3.3.5 Impact of claims payment, operational risk management, reserves, statutory deposit and legal*

*risk on nonlife insurance's solvency-* The following model was used to determine how the listed explained variables affect nonlife insurance solvency.

$$GPI = \beta_0 + \beta_1 \sum_{i=1}^n RESV_{it} + \beta_2 \sum_{i=1}^n STDP_{it} + \beta_3 \sum_{i=1}^n LGRSK_{it} + \varepsilon_{it} \quad (1)$$

where

*GPI* = Gross premium income,

*RESV* = Reserve

*STDP* = Statutory deposit

*LGRSK* = Legal risk

$\beta_i$  = the rate of change in independent variables

*i* represents the sample of the members companies and *t* the number of years under investigation. It is expected that the coefficient of independent variables

$\beta_0$  to  $\beta_3 < 1$  .

*Impact of claims payment, operational risk management, reserves, statutory deposit and legal risk on nonlife insurance's premium underwriting performance-* The following model was used to determine how the listed explained variables affect nonlife insurance solvency. Premium underwriting performance was proxy for solvency as follow:

$$SOLV = \beta_0 + \beta_1 \sum_{i=1}^n CMP_{it} + \beta_2 \sum_{i=1}^n OPRSKMGT_{it} + \beta_3 \sum_{i=1}^n RESV_{it} + \beta_4 STDP_{it} + \beta_4 \sum_{i=1}^n LGRSK_{it} + \varepsilon_{it} \quad (2)$$

*SOLV* = Solvency of non - life insurance companies,

*CMP* = Claim payment,

*OPRSKMGT* = Operational risk management,

*LGRSK* = Legal risk

$\beta_i$  = the rate of change in independent variables

*i* represents the sample of the members companies and *t* the number of years under investigation. Also, it is expected that the coefficient of independent variables

$\beta_0$  to  $\beta_5 > 0$  These models were estimated using the panel

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least square method, and the results are presented in the next section.

### 4. RESULTS AND CONCLUSION

**4.1 Results** -The information presented in this paper comes largely from published data by the Nigeria Insurer Association year books for different years. This body is the only reliable one responsible for

routinely published reports on insurance matters as relate to members' companies. Most of the information published by this body cannot be seen in other fact books as many insurance companies particularly the listed ones only published facts which regulators need to know which may not necessarily reflect the actuarial risks being investigated in this study.

**Table 1: Impact of reserve, statutory deposit and legal risk on gross premium in Nigeria**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	517.85€	275.674		1.879	0.157
RESERVE	-1.906	0.433	-0.87	-4.407	0.021
STATDEP	-18.869	20.556	-0.154	-0.918	0.420
LGRSK	-3.236	1.421	-0.314	-2.277	0.107
<b>R=0.862</b>					

a. Dependent Variable: GPI

Dependent Variable: PRMPER

Source: Authors' computation.

These results indicate that reserve, statutory deposits and legal risk accounted for 86.2% of gross premium income of insurance companies in Nigeria. Table 1 reveals the impact of reserves, statutory deposit and legal risk on gross premium income. From the table, reserve has negative and significant impact on gross premium income (RESERVE: Beta = -1.906, t = -4.407, p < 0.05) while statutory deposit (RESERVE: Beta = -3.236, t = -.918, p < 0.05) and legal risk (RESERVE: Beta = -18.8696, t = -2.277, p < 0.05) have negative but no significant impact with gross premium income. Actually, these results agreed with common sense as the amount put in reserves, statutory deposits and legal risk has to come from

premium income generated for the members companies. The negative result associated with legal risk implies that ineffective management of the risk may eventually reduce the gross premium income of members companies. Based on these results, the following decisions were reached: the null hypothesis for reserve influence on gross premium income is hereby rejected while the statutory deposit and legal risk were accepted. Hence, the study concluded that reserve has significant impact on gross premium income while statutory deposit and legal risk have not significant impact on gross premium income.

**Table 2: Impact of claim payment, operational risk, reserve, statutory deposit and legal risk on nonlife insurance solvency in Nigeria**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	534.52	62.773		8.515	0.074
CLMP	4.969	0.098	1.639	50.72	0.013
OPRSKMGT	1.399	0.082	0.234	17.001	0.037
RSERV	2.336	0.09	0.451	25.929	0.025
STATDEP	-44.167	4.918	-0.153	-8.98	0.071
LGRSK	11.668	0.346	0.479	33.677	0.019
<b>R<sup>2</sup> = .961</b>					

a. Dependent Variable: PRMPER

Authors' computation.



Table 2 reveals the impact of claim payment, operational risk, reserve, statutory deposit and legal risk on nonlife insurance solvency in Nigeria. As it is evident in the table, claim management (CLMP: Beta = 4.969,  $t = 50.720$ ,  $p < 0.05$ ), operational risk management (OPRSKMGT: Beta = 1.399,  $t = 17.001$ ,  $p < 0.05$ ), reserve (RSERV: Beta = 2.336,  $t = 25.929$ ,  $p < 0.05$ ), and legal risk (CLMP: Beta = 11.668,  $t = 33.677$ ,  $p < 0.05$ ) have positive and significant impact on nonlife insurance solvency in Nigeria while statutory deposit (CLMP: Beta = -44.167,  $t = -8.980$ ,  $p < 0.05$ ) have negative but no significant impact on nonlife insurance premium underwriting performance. This means that effective claim management, operational risk management and legal risk management will serve as strategy to increase premium underwriting performance of insurance companies which in turn lead to their profitability. Based on these results, the following decisions are made: claim management, operational risk, reserve and legal risk management have significant impact on nonlife insurance solvency while statutory deposit does not have any significant impact on insurance solvency.

#### 4.2 CONCLUSION AND RECOMMENDATIONS

This study investigated the impact of actuarial risks on non-life insurance premium underwriting performance in Nigeria using data from the Nigeria Insurers Association (NIA) for a period of 7 years. Despite the limitations of the data, the study found that the rate of change in legal risk management has a higher impact on solvency compared to other significant variables. Additionally, the study revealed that statutory deposit, claim management, operational risk, risk reserving, and legal risk management all have a positive and significant impact on non-life insurance solvency.

The findings of this study have several implications for insurance companies in Nigeria. Firstly, the study shows for insurance companies to pay attention to their reserve levels to ensure that they are adequately prepared to meet the contingency needs of claimants. Secondly, the study suggests that insurance companies should be cautious of the impact of statutory deposit on their premium

underwriting performance, as it may lead to losses that can negatively affect their profitability. Finally, the study highlights the importance of effective claim management, operational risk management, and legal risk management in increasing premium underwriting performance and profitability.

Based on the findings of this study, the following recommendations are made:

- Insurance companies should prioritize effective legal risk management to maintain their solvency and premium underwriting performance.
- Insurance companies should regularly review their reserve levels to ensure that they are adequately prepared to meet the contingency needs of claimants.
- Insurance companies should be cautious of the impact of statutory deposit on their premium underwriting performance and take steps to minimize its negative effects.
- Insurance companies should prioritize effective claim management, operational risk management, and legal risk management to increase their premium underwriting performance and profitability.

Overall, this study highlights the importance of effective risk management in the insurance industry, particularly in the context of non-life insurance premium underwriting performance. By prioritizing effective risk management, insurance companies can maintain their solvency, increase their premium underwriting performance, and ultimately, improve their profitability.

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