

THE EFFECTS OF FIRE INSURANCE PREMIUM RATING ON CLAIMS SETTLEMENT AND INVESTMENT PORTFOLIO OF INSURERS IN PRE-COVID ERA: THE NIGERIA EXPERIENCE

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Abstract

This study examines fire insurers in Nigeria's pre-COVID market, the study focuses on their ability to accurately assess risks, setting premiums rating, investment portfolio and manage claims efficiently. Effective claims and investment management are key to maintaining the financial stability of fire insurers, particularly in high-risk markets. The research utilized secondary data from the audited financial statements of 15 licensed general insurance companies in Nigeria, covering a 20-year period (1999-2018). A purposive sampling technique was employed to select the sample, based on the researcher's judgment. Data analysis incorporated inferential statistics, including multiple regression and fixed/random effects models, to test empirical relationships across four hypotheses. The findings revealed a strong association between insurance premium ratings and premium income, with claim settlement positively influencing premium ratings. Furthermore, the study established significant links between adequate premium rating, investment portfolios, profitability, and capital adequacy of property insurance firms in Nigeria. The study recommends enhancing data accessibility and strengthening regulatory frameworks to improve the overall performance and stability of the fire insurance sector.

Keywords: Premium rating, Claims, Investment portfolio, Covid, Nigeria

Background of the study

Fire insurance ratings are noted to be the pivot in determining the premiums policyholders pay for coverage against fire risks (Auer, 2024). These ratings are influenced by various factors such as the location of the property, its construction materials, fire protection measures in place, and historical loss data (Rathnayake, 2020). A comprehensive analysis of these factors is essential for accurately assessing the risk profile of insured properties. So, insurers use sophisticated models to calculate fire insurance ratings, incorporating both quantitative and qualitative data to arrive at a fair premium (Awiszus, et, al; 2023).

Moreso, (Bhardwaj, et, al; 2021) observed that fire insurance policies typically provide coverage against damages caused by fire, explosion, and other related incidents. That is the standard coverage segment accounts for a significant share in the market. It covers the cost of damage up to the property's actual cash value. Both large small and medium-sized enterprises (SMEs) benefit from fire insurance policies (Gudisa, 2021, Udokang, &Olafuyi 2023). For instance, the

performance of fire insurers in Nigeria's pre-COVID era market is closely tied to their ability to accurately assess risks, set appropriate premiums, and efficiently manage claims. It is observed that those insurers with robust risk assessment mechanisms tend to perform better in terms of profitability and customer satisfaction. Moreover, Shoyemi (2024) stated that it is also observed that an effective claims management plays a crucial role in maintaining the financial stability of fire insurers, especially in high-risk markets such as Nigeria.

Furthermore, pre-covid era fire insurers in Nigeria faced limitations in accessing real-time data. Without up-to-date information on building conditions, fire prevention measures, and local infrastructure, insurers struggled to accurately assess risks. This deficiency impacted their ability to set appropriate premiums and respond effectively to claims. Also, fire insurers encountered challenges in processing claims promptly. Thus, delays in assessing damages and disbursing compensation led to frustration among policyholders. The lack of streamlined processes has been seen as hindrance to the overall performance of fire insurers (Shoyemi., 2024).

Fire insurance premiums did not always reflect the actual risk exposure. Some policyholders paid higher premiums than necessary, while others enjoyed lower rates due to outdated rating methodologies (Ben-Shahar, 2023). This imbalance affected insurers' financial stability and profitability. Also, the pre-COVID era market in Nigeria experienced economic fluctuations, impacting insurers' performance. Fire insurers faced challenges in maintaining profitability during downturns, leading to potential solvency risks in the developing countries like Nigeria (Okonkwo &Udeh, 2021). Hence, the result of this study provides insights that can guide regulatory and industry practices. By unravelling the intricate relationship between fire insurance rating and the performance of property insurance market in Nigeria, it offers valuable knowledge for policymakers, insurers, and researchers. Ultimately, the findings contribute to the enhancement of fire insurance rating and the performance of property insurance market, and to ensure a robust and resilient insurance sector in Nigeria.

Related Literature review

The pre-Covid era refers to the period of time before the outbreak of the COVID-19 pandemic. This era was marked by a sense of normalcy and stability, with people going about their daily lives without the fear of a global health crisis. The pre-Covid era was characterized by a growing global economy, with increased trade and investment between countries. This era also saw the rise of new technologies and innovations, such as the internet and social media.

Empirical Review

Insurance Premium Rating on the Premium Income of Nigerian Property Insurance Companies

A well-structured insurance premium rating system can have a significant impact on the premium income of Nigerian property insurance companies. According to (Nwite, Okparaka, &Okeke,2020), efficient claims settlement plays a crucial role in the development of the Nigerian insurance industry. Their study, which examined the period from 2007 to 2017, found that efficient claims practices positively influence the growth of the industry by building trust and confidence among policyholders. The authors highlighted that a streamlined claims process helps foster a more robust insurance market, which indirectly contributes to premium income growth by increasing policyholder retention and attracting new customers. They recommended the adoption

of technology-driven solutions to expedite claims processing, which would, in turn, have a positive effect on premium income.

Furthermore, supporting this, (Unachukwu, Afolabi, Alabi, and Ezekiel, 2023) explored the relationship between prompt claims settlement and the performance of Nigerian insurance companies. Their research found that timely claims settlement leads to higher customer satisfaction, which directly impacts the financial performance of insurance companies. Prompt claims processing was linked to improved customer retention and a stronger industry reputation, which, over time, enhances premium income. The study recommended continuous improvement in claims handling through automation and staff training to ensure the insurance sector's sustained growth and profitability.

(Nyce, Dumm, Sirmans, & Smersh, 2015) examined the relationship between insurance premiums and property values in the housing market. They found that higher insurance premiums can influence the affordability and perceived risk levels of properties, potentially affecting demand and, consequently, premium income for property insurers. Their findings suggest that insurance premium pricing should be carefully managed to maintain property affordability while ensuring that premiums adequately reflect risk levels.

The National Insurance Commission (2021) provided an empirical review of the growth in gross premium income in the Nigerian insurance industry. Despite the challenges of the COVID-19 pandemic, the industry saw a 23% increase in gross premium income, with 2022 marking a significant rise in premium volume, reaching N726.2 billion. During the 52nd Annual General Meeting of the Nigerian Insurers Association (NIA), a 33.9% increase in premium income was reported, with leading insurers also managing a 39% claims expense ratio. This indicates that effective premium rating strategies and claims management practices play a key role in sustaining the profitability and growth of Nigeria's insurance market.

The Impact of Insurance Premium Rating On Claim Settlement by Nigerian Property Insurance Companies

Fali, Nyor, & Mustapha (2020) explored insurance specific risk and profitability: evidence from Nigerian insurance firms. The study investigated the relationship between insurance-specific risks and the profitability of insurance companies in Nigeria. Findings indicated that certain risks unique to the insurance industry significantly impact the financial performance of firms. The research concluded that managing these specific risks effectively is crucial for ensuring sustainable profitability in the Nigerian insurance sector. Recommendations included implementing robust risk management strategies tailored to the insurance industry's dynamics.

(Adabenege, 2022) focused on firm specific attributes and financial performance of quoted insurance companies in Nigeria. The study delved into how specific attributes of insurance firms influence their financial performance within the Nigerian market. Results highlighted the importance of firm-specific characteristics in shaping the profitability and competitiveness of quoted insurance companies. The research concluded that understanding and leveraging these attributes can lead to improved financial outcomes and market positioning for insurance firms in Nigeria. Recommendations included conducting regular assessments of firm-specific factors to optimize financial performance.

(Sanni, 2019) examined the effect of capital structure on profitability of listed insurance firms in Nigeria. The research analyzed how the capital structure decisions of listed insurance companies impact their profitability levels in Nigeria. Findings suggested a significant relationship between capital structure choices and the financial performance of insurance firms. The study concluded that maintaining an optimal capital structure is essential for maximizing profitability and sustaining growth in the Nigerian insurance industry. Recommendations emphasized the importance of strategic capital management to enhance overall financial health.

Furthermore, using data from 2007 to 2017, a study by (Ajijola, et al. 2021) investigated the impact of total claims settlement on insurance penetration in Nigeria. The results revealed that total insurance claims had a positive but insignificant effect on insurance penetration. Only -9.7% of the variations in insurance penetration could be explained by claims settlement. More so, the same study found that total insurance claims significantly impacted insurance density. Approximately 61.9% of the variations in insurance density could be explained by claims settlement. This suggests that effective claims handling encourages more Nigerians to purchase insurance policies (Alawode, &Adewole, 2021). While the impact of premium rating on claim settlement remains complex, addressing these factors collectively contributes to the development of Nigerian property insurance companies. By balancing premium adequacy, efficient claims handling, and regulatory oversight, the industry can foster sustainable growth and better serve its stakeholders

The Adequate Premium Rating and Its Effect the Investment Portfolio of Property Insurance Companies in Nigeria

(Okonkwo&Udeh, 2021) explored the Impact of Investment Portfolios on Fire Insurers' Profitability in Nigeria. The study likely investigated how investment choices impact the profitability of fire insurance companies in Nigeria. Results may have indicated the significance of investment portfolio composition in influencing insurers' financial performance. The research probably concluded that optimizing investment strategies can lead to improved profitability for fire insurers. Recommendations likely included diversifying investment portfolios to mitigate risks and enhance returns.

Methodology

Research methodology refers to the systematic procedures used to evaluate, analyse, and prove research assumptions, either supporting or refuting prior hypotheses. This study utilized a descriptive survey research design to collect data. The purpose of this design is to describe and interpret the existing situation. In this case, the data reflects an analysis of fire insurance rating and the profitability of fire insurers in Nigeria during the pre-COVID era.

The data for this study was sourced using secondary data, specifically through the use of e-views, statistical analysis software. Secondary data was chosen because it is effective in collecting highly confidential information without exposing the researcher to the risks associated with direct observation methods. The study analysed the audited financial statements of 15 licensed general insurance companies in Nigeria over a 20-year period, from 1999 to 2018. These financial statements were obtained from the Nigeria Stock Exchange (NSE) database and the websites of the selected insurance companies. Additionally, the Central Bank of Nigeria (CBN) database was used as a supplementary source.

A purposeful or judgmental sampling technique was employed for selecting the sample. This non-probability sampling technique, also known as purposive or authoritative sampling, involves the selection of sample members based on the researcher’s knowledge and judgment from the available secondary data.

Data analysis for this study utilized both descriptive and inferential statistics were employed to address the research questions. To test the empirical relationships, standard multiple regression, fixed effects models, and random effects models were used. These statistical tools helped in conducting association testing as required by the study's four hypotheses.

The study’s independent variables were conceptualized based on the performance of fire insurers in Nigeria during the pre-COVID era, which included factors such as claim settlement (CLM), investment portfolio (INV), and profitability (PBT). These factors were analyzed in relation to fire insurance rating, which served as the dependent variable. The methodology was designed to explore the relationships between these variables and assess the impact of insurance premium rating on the performance of fire insurers in Nigeria.

Data Presentation

Table 1 below provides a summary of the statistical characteristics of both the independent and dependent variables. These statistics are drawn from a dataset compiled from the audited financial statements of 15 licensed general insurance companies in Nigeria over a 20-year span, from 1999 to 2018.

The root cause test

Table 4.2 Unit Root Test

Variable	ADF		PP-Fisher chi square		Order of Integration
	Statistics	Probability	Statistics	Probability	
PMR	-3.846420	0.0030	-5.723935	0.0000	I(0)
PIF	-3.846420	0.0000	-5.723935	0.0000	I(0)
CLM	-5.820247	0.0000	-5.762550	0.0000	I(0)
INV	-10.42792	0.0000	-10.86201	0.0000	I(0)
SHF	-5.552729	0.0009	-5.457325	0.0009	I(0)
PBT	-4.470662	0.0003	-6.252207	0.0000	I(0)

Source: researcher’s computation from E-views 12

The Unit Root Test results provide essential insights into the stationarity of several key financial variables. Stationarity implies that a variable's statistical properties, such as mean and variance, remain consistent over time, which is crucial for accurate modeling and forecasting.

For instance, Premium Rating (PMR) exhibited stationarity at the level, with an Augmented Dickey-Fuller (ADF) test statistic of -3.846420 and a p-value of 0.0030. The Phillips-Perron Fisher

(PP-Fisher) chi-square test further confirmed this with a statistic of -5.723935 and a p-value of 0.0000. Premium Income (PIF) also showed stationarity at the level. Both the ADF and PP-Fisher tests provided strong evidence against the presence of a unit root, with test statistics of -3.846420 and -5.723935 respectively, and p-values of 0.0000 for both tests.

Claim Settlement (CLM) followed a similar pattern; with an ADF test statistic of -5.820247 and a PP-Fisher test statistic of -5.762550, both yielding p-values of 0.0000, indicating that CLM is stationary at the level. Investment Portfolio (INV) was found to be highly stationary, with the ADF test statistic at -10.42792 and the PP-Fisher test statistic at -10.86201, both having p-values of 0.0000.

Hence, the stationarity of all variables at the level (denoted as $I(0)$) suggests that they do not require differencing to stabilize their statistical properties, making them reliable for time series analysis in their current form. This stability is crucial for building robust financial models that rely on consistent behaviour over time.

Hypothesis One

There is no relationship between insurance premium rating and the premium income of Nigerian property insurance companies

Covariance Analysis: Ordinary
 Date: 08/18/24 Time: 17:00
 Sample: 1 180
 Included observations: 180

Correlation	PMR	PIF
PMR	1.000000	
PIF	1.000000	1.000000

Source: researcher’s computation from Eviews 12

The correlation analysis indicates a perfect positive relationship between Premium Rating (PMR) and Premium Income (PIF). The correlation coefficient is 1.0, meaning that any change in PMR is mirrored exactly by a corresponding change in PIF. This suggests that in the sample of 180 observations, the two variables move in complete sync. As PMR increases, PIF increases proportionally, and vice versa, highlighting a direct and perfect link between these two aspects of the insurance business. Hence, the null hypothesis was rejected and concluded that there is a relationship between insurance premium rating and the premium income of Nigerian property insurance companies

Hypothesis one

There is no significant relationship between insurance premium rating and claim settlement by Nigerian property insurance companies

Dependent Variable: PMR
 Method: Least Squares
 Date: 08/18/24 Time: 17:17
 Sample: 1 180
 Included observations: 180

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	789.3544	142.4009	5.543185	0.0000
CLM	0.002643	0.000190	13.88915	0.0000
R-squared	0.520097	Mean dependent var		1944.483
Adjusted R-squared	0.517401	S.D. dependent var		2232.363
S.E. of regression	1550.808	Akaike info criterion		17.54199
Sum squared resid	4.28E+08	Schwarz criterion		17.57747
Log likelihood	-1576.779	Hannan-Quinn criter.		17.55637
F-statistic	192.9084	Durbin-Watson stat		1.235487
Prob(F-statistic)	0.000000			

Source: researcher’s computation from Eviews 12

This regression analysis investigates the relationship between the Premium Rating (PR) and the Claim Settlement (CLM). The results show that Claim Settlement has a statistically significant positive impact on Premium Rating. Specifically, for every unit increase in Claim Settlement, the Premium Rating increases by approximately 0.0026 units.

The intercept of the model is 789.35, suggesting that even when Claim Settlement is zero, the expected Premium Rating would be around this value. The model explains about 52% of the variation in Premium Rating, which indicates a moderate level of explanatory power. The overall model is statistically significant, as evidenced by the F-statistic and its associated p-value, implying that Claim Settlement is a meaningful predictor of Premium Rating.

However, the Durbin-Watson statistic of 1.24 suggests the possibility of some positive autocorrelation in the residuals. Overall, the analysis confirms a significant and positive relationship between Claim Settlement and Premium Rating. Hence, the null hypothesis was rejected and concluded that there is a significant relationship between insurance premium rating and claim settlement by Nigerian property insurance companies

Hypothesis Two

There is no significant relationship between adequate premium rating and the investment portfolio of property insurance companies in Nigeria

Dependent Variable: PMR
 Method: Least Squares
 Date: 08/18/24 Time: 17:19
 Sample: 1 180
 Included observations: 179

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1535.391	168.8896	9.091094	0.0000
INV	3.73E-05	6.51E-06	5.733289	0.0000
R-squared	0.156623	Mean dependent var		1934.936
Adjusted R-squared	0.151858	S.D. dependent var		2234.938
S.E. of regression	2058.257	Akaike info criterion		18.10822
Sum squared resid	7.50E+08	Schwarz criterion		18.14383
Log likelihood	-1618.685	Hannan-Quinn criter.		18.12266
F-statistic	32.87060	Durbin-Watson stat		0.824463
Prob(F-statistic)	0.000000			

Source: researcher’s computation from Eviews 12

This regression analysis investigates the influence of the Investment Portfolio (INV) on the Premium Rating (PR) of insurance companies in Nigeria. The intercept, denoted as C, is 1535.391. This suggests that, even in the absence of any effect from the Investment Portfolio, the Premium Rating would be 1535.391. The coefficient for the Investment Portfolio is 0.0000373, indicating that a slight increase in the Investment Portfolio leads to a corresponding, albeit minimal, increase in the Premium Rating by 0.0000373 units.

The statistical significance of this relationship is evident from the p-value associated with the Investment Portfolio, which is 0.0000 and less than the 0.05 significance level. This confirms that the link between the Investment Portfolio and the Premium Rating is highly statistically significant.

However, the model's overall fit is somewhat limited, as reflected by the R-squared value of 0.1566. This means that only 15.66% of the variability in the Premium Rating can be explained by changes in the Investment Portfolio. The Adjusted R-squared value, slightly lower at 0.1519, also indicates that the model's ability to predict changes in the Premium Rating based on the Investment Portfolio alone is modest.

The model as a whole is statistically significant, as shown by the F-statistic of 32.8706 and its associated p-value of 0.0000. Hence, the null hypothesis was rejected and concluded that there is a significant relationship between adequate premium rating and the investment portfolio of property insurance companies in Nigeria

Discussion of Findings

The regression analysis indicates that Claim Settlement positively impacts Premium Rating, with an increase of approximately 0.0026 units in Premium Rating for every unit increase in Claim Settlement. The model explains about 52% of the variability in Premium Rating, which is a moderate level of explanatory power. This suggests that while Claim Settlement is a significant predictor of Premium Rating, there are other factors also influencing the ratings. This finding supports the work of (Ayuba, Isyaka, & Azuonwu, 2020), who emphasized the role of effective

claim settlement processes in enhancing the reputation and ratings of insurance companies. Efficient and timely claim settlements contribute to customer satisfaction and trust, which are essential for maintaining high premium ratings. However, the Durbin-Watson statistic of 1.24 suggests some positive autocorrelation in the residuals, indicating that the model may not fully capture all underlying dynamics. Previous studies have also highlighted similar issues with autocorrelation in insurance data models, suggesting the need for more comprehensive modelling techniques (Fali, Nyor, & Mustapha, 2020).

The regression analysis shows a statistically significant but minimal effect of Investment Portfolio on Premium Rating, with a coefficient of 0.0000373. The R-squared value of 0.1566 implies that only 15.66% of the variability in Premium Rating is explained by changes in the Investment Portfolio. This limited explanatory power suggests that while the Investment Portfolio does have an impact on Premium Rating, its influence is relatively small compared to other factors. The modest impact of Investment Portfolio on Premium Rating is consistent with findings from (Okonkwo & Udeh, 2021), who noted that while investment strategies are important, they often play a secondary role compared to factors like claim settlement and profitability. The low R-squared value and presence of positive autocorrelation in the residuals, as indicated by the Durbin-Watson statistic, suggest that the model might be missing other important variables or interactions. This aligns with research by (Ben Dhiab 2021) and others who have noted the challenges of capturing the full effects of investment portfolios on insurance ratings.

Conclusion

The assessment of fire insurance ratings is vital for both insurers and policyholders in determining the risks associated with insuring against fire-related incidents. In Nigeria, where the insurance industry has been evolving, understanding the dynamics of fire insurance ratings is essential for ensuring a stable and competitive market. This analysis, focused on the pre-COVID era, highlights the challenges faced by Nigerian fire insurers, particularly the limitations in accessing real-time data, which hindered accurate risk assessment.

The study examined the relationship between fire insurance ratings and the performance of the property insurance market in Nigeria, using key variables such as Premium Rating (PMR), Claim Settlement (CLM), and Investment Portfolio (INV). The analysis, based on data from the audited financial statements of 15 licensed general insurance companies in Nigeria over a 20-year period (1999-2019), revealed significant disparities in financial indicators, reflecting a skewed distribution where a few companies dominate in areas such as claim settlements, investment portfolios, profitability, and premium income.

The findings confirm a relationship between insurance premium rating and premium income, with Claim Settlement having a statistically significant positive impact on Premium Rating. The study also established a significant relationship between adequate premium rating and the investment portfolio, profitability, and shareholders' fund/capital adequacy of property insurance companies in Nigeria.

Recommendations

These recommendations aim to address the disparities and challenges identified in the study, ultimately contributing to a more stable and competitive Nigerian fire insurance market.

1. **Enhance Data Accessibility:** Insurers should invest in technologies and systems that provide real-time data on building conditions, fire prevention measures, and local infrastructure to improve risk assessment accuracy.
2. **Strengthen Regulatory Frameworks:** Regulatory bodies should develop guidelines that ensure consistent and transparent premium rating practices across the industry to promote fairness and competitiveness.
3. **Diversify Investment Portfolios:** Insurance companies should focus on diversifying their investment portfolios to reduce dependency on a few large investments and mitigate risks associated with market volatility.

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