



Gross Premium Income and Claims Settlement of Marine and Aviation Insurance in Nigeria: A Panel Approach

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Abstract: Maritime and aviation facilities carry a sizable percentage of world trade by volume and value, with the percentages being larger in developing nations as well as creating millions of employment. The most significant point of interaction between the insured and the insurer in the maritime and aviation sectors is the claim, which is the lifeblood of the viability of insurance. In this study, claims settlement in Nigeria's marine and aviation insurance markets were compared to gross premium income between 2011 and 2021. The Nigerian Insurers Association (NIA) annual reports and digest were used to extract information on gross premium income and gross claims paid for the time period. The data were subjected to a stationarity test, which showed that the data are stationary at the 1%, 5%, and 10% levels of significance. The computed probability value of 0.0866 using the ordinary least squares regression is larger than the 0.05 significant value, demonstrating the statistical insignificance of the data. The independent variable, gross premium income, accounts for 29.12% of the total claims payment, according to the linear co-efficient of determination ($R^2=0.291294$). The link between gross premium revenue and gross claims payment for marine and aviation insurance was therefore found to be insignificant.

Keywords: marine and aviation insurance, premiums income, claims settlement, premium calculation principles, premium rating

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1. Introduction

International trade would be severely hampered without the marine and aviation transportation systems, which are essential to the growth of the global economy. According to records, maritime facilities carry a sizable percentage of world trade

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by volume and value, with the percentages being larger in developing nations. (Thana, 2016). Additionally, by facilitating quicker and simpler transportation of passengers and commodities as well as creating millions of employment, aviation transport has improved world trade accomplishments. Many millions of people depend on the aviation industry for employment, which generates up to 2.4 trillion dollars in Gross Domestic Product and is expected to rise to 6 trillion dollars in the next twenty years (Cederholm, 2019). The maritime sector is a vital part of Nigeria's economy because it facilitates trade, generates significant revenue, promotes tourism, creates jobs, ensures socio-political harmony, strengthens defence and security, especially when it comes to territorial protection, and fosters the growth of other commercial pursuits (Igbokwe, 2017).

It is expected that important aviation and maritime assets require insurance protection against potential liabilities and property damage. In general, the insurance sector contributes significantly to a country's economic growth in a variety of ways, particularly by making available the necessary finance for the substitution of lost or damaged goods. (Shittu, 2018). Additionally, it serves as security for loans; banks could request that a borrower's loan be insured so they can receive their money back in case the borrower defaults. Additionally, it aids in boosting people's businesses, especially in cases of unexpected death. Insurers offer protection against damage or risks of loss to aviation hulls and marine vessels and air cargoes, collision freights, and responsibility of passengers for the aviation and marine industries. Swiss Re (2019) studies shows that world premiums for marine and aviation insurance have climbed significantly over a decade, and as of 2012, they were expected to exceed 44 billion US dollars. In Nigeria context, Onuoha (2018) examined from 2009 to 2017, the Nigerian Insurers Association's (NIA) five-year marine and aviation insurance gross premium income climbed dramatically. For this type of business to be underwritten profitably, specialist technical skills are necessary, like every other big pools and high premiums, it is not different in the case of marine and aviation insurance. Poor underwriting methods that are reflected in premium rates frequently combined with unhelpful behaviours on the part of some aircraft operators pose a significant difficulty (Baker, 2019). Baker (2019) further notes that it can be difficult to confirm the actual passengers on board, for example, in an air collision. Many domestic airlines are striving to adjust to the local content rule while also seeking insurance coverage from international underwriters due to the numerous difficulties the insurers in the Nigerian insurance industry are facing (Akah, 2020). Currently, about 6 billion tons of cargo, 93,000 merchant ships, 1.25 million seafarers, and nearly 80% of all global trade are transported by water. Piracy, one of the earliest ever offenses against trade, has plagued the global shipping industry in recent years (Katides, 2020). Additionally to significant losses from air crashes, marine vessel standings and sinkings, and growing passenger responsibility claims the fact that marine insurance involves consignments or vessels that call at ports around the

world, involving various cultures, infrastructures, and legal systems, distinguishes it significantly from other types of insurance and makes the topic of pricing for marine insurance challenging, even for those in the actuarial profession.

A person's primary worry when making a purchase is whether the item will serve the purpose for which it is intended. Most of the time, before making a purchase, he would have satisfied himself by checking the thing and testing how well it works. Since insurance is concerned, there is no tangible item to evaluate (Agu, 2019). The only thing the policyholder actually purchases is a commitment to make payment for a claim that occurs after the sale and in accordance with the insurance policy that was offered. The real test will not start until the insured or other person involved makes a claim of this nature. The insured is happy with his purchase if the insurance at that moment keeps his promise. The policyholder is unhappy when the insurer fails. The insurer may incur significant costs as a result of the policyholder's discontent. He might feel so terribly wronged that he decides to take legal action, which will almost always bring the insurance into the public eye. In other words, an insurer's decision to settle a claim can make or break its financial situation. A claim is a crucial component of the insurance industry since a terrible claim settlement record can spell doom for an insurance provider, whilst a positive reputation for claim settlement can lead to increased business. If the Nigerian insurance sector is prepared and ready to promptly resolve all valid claims, growth and development will result. The image issue insurance companies in Nigeria continue to face is largely down to what is perceived as their attitude of "smiling to collect premium and frowning to pay claim." The insurance public does not even trust the insurers because they think they will always try to avoid paying out even if the claims are legitimate (Oshinloye, 2019). Therefore, a wise claims administration approach encourages customer satisfaction and loyalty because it makes customers feel like they belong to a certain group. This gives the business the chance to keep its current customers while also luring in profitable new ones. In other words, the insurance industry's claim-handling practice best exemplifies its purpose. Numerous studies show that swift claims resolution enhances business effectiveness. Butler and Francis (2021), for instance, find that quick claim resolutions have a favourable and significant association with insurance performance in terms of client loyalty and satisfaction. They contend that insurers' tardiness in resolving claims is one of the factors contributing to the low penetration of the insurance market in the majority of countries. Despite the fact that the insurance industry in Nigeria is plagued by fraud, the insurance business is dependent on trust. Daniel (2019) also asserts that failure to settle claims and delay claims settlement are the causes of insurance failure in Nigeria.

2. Statement of Problem

The majority of importers are not even familiar with the foreign insurers, and communication and linguistic barriers are evident. If an incident occurs, it might be challenging to file a claim because, in most situations, importers are unaware of the scope of coverage, making it challenging for them to obtain the intended outcomes from the filing of claims. These challenges can occasionally be found in the underwriting process, policy wording, and the highly technical nature of marine and aviation insurance. This makes it difficult for importers (supply side) to comprehend the terms outlined in the policy. Despite being rare, marine and aviation accidents have the potential to cause significant property damage and fatalities. While numerous studies have looked at how airline stocks respond to mishaps (Chance & Ferris, 2017; Walker, 2019, Davidso, 2017) there has been no study to date that examines how insurance companies, which ultimately pay the bills, are affected. The study therefore intends to examine the effect of gross premium income and claim settlement pattern in the marine and aviation insurance business in Nigeria from 2011 to 2021.

3. Literature Review

3.1. Theoretical Review

Expected Utility Theory was used as the theoretical foundation for this essay. Daniel Bernoulli proposed this hypothesis in 1738 as a means of resolving the St. Petersburg paradox. The idea is applied to determine the likely usefulness of a course of action when there is ambiguity regarding the outcome. It promotes the idea that making a decision based on projected benefit means making the rational choice. In order to analyze decision-making under uncertainty, which occurs when people must choose without knowing the potential outcomes of their choice, expected utility theory is a useful tool. These individuals will choose the action that will result in the highest expected utility, which is the sum of utility and probability over all possible outcomes. The person's risk aversion and utility relative to other agents will also play a role in the decision. According to this argument, the overall value of money and its utility are not exactly the same. This explains why individuals could get insurance coverage to protect themselves from a range of risks. Paying insurance premiums would be expected to result in financial loss. The falling marginal utility of wealth, however, might allow the possibility of significant losses to result in a sharp decline in utility. This theory was chosen because it can be applied to evaluate situations that do not clearly have a payoff, like decisions about whether to purchase insurance. Insurance looks to be a superior choice when compared to keeping the premium payment and utilizing it to purchase other chances and goods vs paying an

insurance premium to an insurance company in exchange for a guaranteed income or reimbursement should an insured contingency occur.

3.2. Empirical Review

Afolabi (2018) examined the impact of claims payments on profitability in the Nigerian insurance sector with reference to marine and aviation insurance from 2011 to 2016 employing descriptive statistics and multiple regression approaches. The ability of an insurance business to pay claims when they are due is determined by its profitability. The findings show that profitability (ROA) has a direct link with expense ratio (ER) but an indirect association with loss ratio (LR) and net claims (NC). It also demonstrates that net claims significantly improve loss ratio.

Caren and Muwangi (2017) from 2010 to 2014, the effects of underwriting and claims management practices on the performance of general insurance businesses in East Africa were investigated. Utilizing primary and secondary data gathered from 82 general insurers in Kenya, Uganda, and Tanzania, multiple linear regression analysis was employed in the study. The outcome showed that the underwriting and claims management strategies used by the firms and non-financial performance have a strong positive association, although the relationship with financial performance was inconsequential. As a result, a profit-driven insurance company should embrace a claims department that is closely linked to the underwriting and pricing of the company's portfolio in order to generate meaningful results. To enhance overall financial performance, it is advised that general insurance businesses concentrate on other crucial elements outside underwriting and claims administration.

Unachukwu, Afolabi and Alabi, (2018) with particular reference to the chosen insurance businesses in the metropolis of Ilorin, the study critically examined the effect of claims resolution on Nigerian insurance companies' performance in the maritime and aviation sectors. Data were gathered as a sample for the study using a structured questionnaire. The outcomes revealed that timely claim settlements possess a greater effect on consumer satisfaction than fidelity. The studies of Yusuf and Dansu (2018) showed the connection between claims expense and profitability in the non-life insurance market in Nigeria. Two linear regression models were created as part of the study and utilized to predict upcoming industry events. Ten (10) insurance firms' financial reports covering the years 2002 through 2011 were used to compile the data. The coefficient of determination (R^2), the standard error test, the ANOVA (F), the multiple linear regression method, the test of correlation (T), and ordinary least square regression were all used to evaluate these data. Additionally, two hypotheses were examined. The findings showed that PBT (profitability) connects inversely with loss ratio (LR) but directly with expense ratio (ER).

4. Research Methods

The study's objective was accomplished by using an ex-post facto research approach. This research technique was chosen by the researchers as it enables them to examine different groups, individuals, objects or events. (Abiodun,Oyeniya, Moses, obamiro, & Osibanjo, 2016; Rowthwer, 2019). Using information from the Nigeria Insurers Association's insurance digest, this study attempted to assess the link between gross premium revenue (GPR) and gross claims paid (GCL) for the years 2011 to 2021. The data collected was quantified with the use of ordinary Least Square Regression methods.

Thus, the model is represented functionally as:

$$GCP = F (GPI) \quad (1)$$

Where

GCP = Gross Claim Payment is dependent variable

GPI =Gross Premium Income is the independent variable

In a linear function or equation, it is shown as follows:

$$GCP = \beta_0 + \beta_1GPI + \mu \quad (2)$$

Where β_0 = constant term, β_1 = regression co-efficient of GPI and

μ_t = error term.

5. Results and Discussions

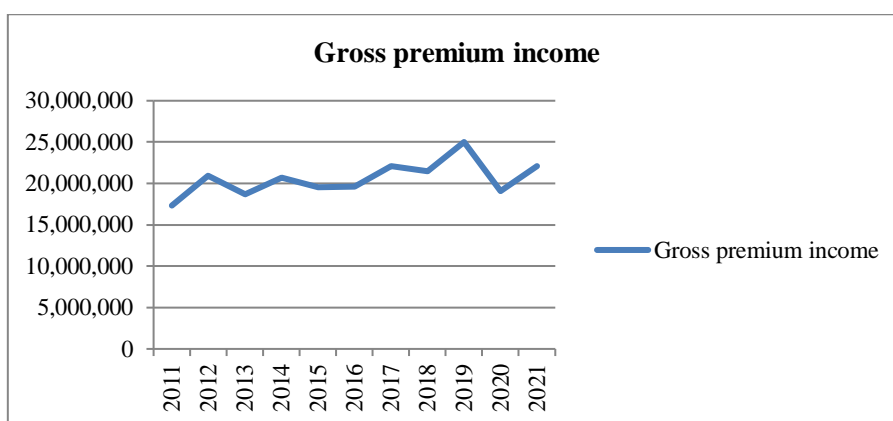


Figure 4.1. Secondary Information of Gross Premium Income from 2011-2021

The graph above displays the trend analysis of the gross premium income from 2011 to 2021. In 2011 it showed a downward movement, 2012 showed an upward movement, 2015 and 2016 was slightly constant, from 2012 to 2019 there is an upward and downward movement. From 2011 to 2018, in 2020 there is a significant downward trend due to the COVID 19 pandemic and an upward trend in 2021. The difference in between the years is due to changes in the gross premium figure.

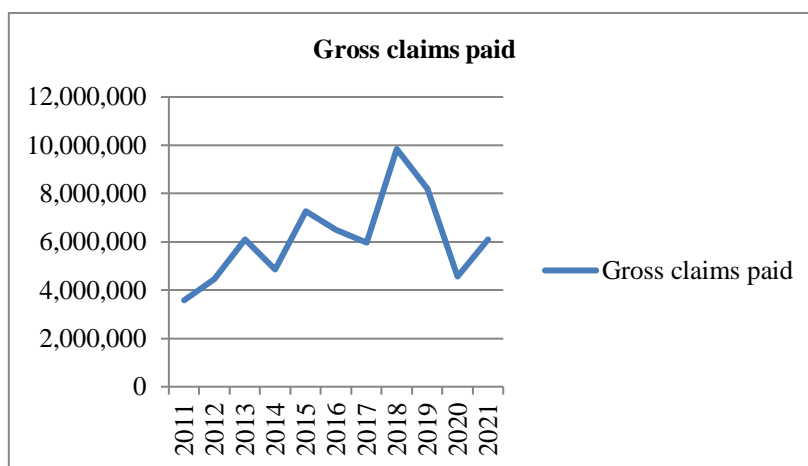


Figure 4.2. Secondary Information of Gross Claims Paid from 2011-2021

From 2011 to 2021, the trend analysis of the gross claim paid is shown in the graph above. 2011 to 2012 shows a consistency in an upward movement, in 2013 there was a downward movement, 2014 showed an upward movement, 2015 has an upward movement, there is a downward movement in 2016 and 2017, 2018 showed a sharp upward movement, a slight downward movement is shown in 2019, a sharp downward movement is shown in 2020 as a result of the COVID 19 pandemic and in 2021 there is an upward movement.

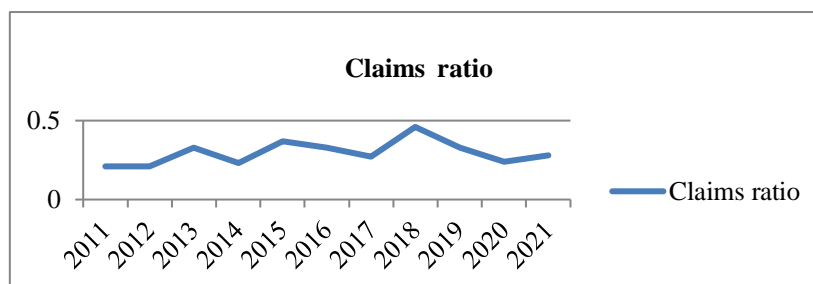


Figure 4.3. Secondary Information of Claims Ratio from 2011-2021

According to the graph above, the claims ratio—which depicts the relationship between gross premium written and gross claim paid—showed both an upward and

a downward linear movement in 2012, a downward movement in 2013, 2014 was followed by an increase trend, however from 2015 to 2016, there was a decline trend., while in 2017 there is a sharp upward movement, A falling trend is seen from 2018 to 2020, but the COVID 19 epidemic caused a significant drop trend in 2020, followed by an increase trend in 2021.

OLS Regression Result

Dependent Variable: GCP
 Method: Least Squares
 Date: 06/13/22 Time: 11:29
 Sample: 2011 2021
 Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3531560.	5047761.	-0.699629	0.5018
GPI	0.469196	0.243950	1.923329	0.0866
R-squared	0.291294	Mean dependent var		6131967.
Adjusted R-squared	0.212548	S.D. dependent var		1813902.
S.E. of regression	1609629.	Akaike info criterion		31.58387
Sum squared resid	2.33E+13	Schwarz criterion		31.65622
Log likelihood	-171.7113	Hannan-Quinn criter.		31.53827
F-statistic	3.699193	Durbin-Watson stat		2.323463
Prob(F-statistic)	0.086593			

The equation for long-term linear regression is provided as $GCP = -3531560 + 0.469196GPI$ which show that the gross claim will drop by 3531560 times if there is no premium. And a unit rise in gross premium will result in an increase in gross claims of 0.469196 times. According to the calculated coefficient of determination (R squared=0.291294), gross premium income (GPI) accounts for 29.1294% of the overall variation, while other factors that are not taken into account by the multiple regression function are responsible for the remaining 70.8706%. There is no autocorrelation, according to the Durbin Watson (DW) value of 2.323463 at a 5% significance level. The P value of constant coefficient is not statistically significant at 0.5018; the P value of gross premium income (GPI) coefficient is not statistically significant at 0.0866.

6. Discussions of Results

In this study, it is examined how, between 2011 and 2021, the gross premium income and total claims paid for marine and aviation insurance in Nigeria affected the business. There is an inverse relationship between gross premium income and gross

claims paid for the time period under consideration. The equation for long run linear regression equation is given by $GCP = -3531560 + 0.469196GPI$ which showed that the absence of premium will bring about 3531560 times decrease in gross claim. A unit increase in gross premium will bring about 0.469196 times increase in gross claims. The computed coefficient of determination ($R^2 = 0.291294$) shows that 29.1294% of the total variation is accounted for by gross premium income (GPI), while the remaining 70.8706% is accountable to the influence of other factors which are not included in the multiple regression function. This result is consistent with the findings of Olusegun (2019) who said that substantial premium income improves timely claims payment. Thus, it was argued that claim managers should limit their attention to the most important claim tasks and should also prioritize maximizing net premium income. In line with the findings, earlier studies (such as Angima & Mwangi, 2017; Soye & Momoh, 2021; Uruakpa, 2019; Yusuf et al., 2017) noted that for insurers to attain operational efficiency and effectiveness in claim payment, they must look directly at implementing modern claims system that must be properly covered by equitable premium income.

7. Conclusion, Recommendations and Directions for Future Research

The findings amply demonstrate faint relationship between claims payments and premium income for marine and aviation insurance in Nigeria. Findings from this research show that despite the weakness and threats in the operating environment of the marine and aviation insurance business in Nigeria, claims settlement is still significant and consistent. Marine and aviation insurance business would require the combined and sustained effort of both the insurance firms and the regulatory authorities. The government through its regulatory agencies should continuously strengthen the operating environment of marine and aviation insurance in line with global standards. It is recommended that insurance firms should focus more on customers and create multi-channels of communication and interactions in marine and aviation insurance business. Training of technical manpower in the industry (by both government and practitioners) should be a continuous process in order to be at par with international best practices in marine and aviation insurance business in Nigeria. Efforts should be sustained at improving the performance of insurance firms in the area of marine and aviation insurance business. This study contributes to the body of knowledge by warning claims managers about the significance of treating policyholders of marine and aviation insurance business with respect and zeal during the claims settlement process. As a result of this study, marine and aviation insurance business will benefit from the creation of a mathematical model that defines the relationship between premium revenue and claims settlement. The paper recommends more investigation into the relationship between asymmetric information issues in premium rating, insurance contract wordings, and claims

settlement in the marine and aviation insurance business. Finally, future research might concentrate on problems with insurance fraud brought on by the insurance claims settlement manual in marine and aviation insurance business in Nigeria.

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