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## GROSS PREMIUM INCOME AND CLAIMS SETTLEMENT FOR FIRE INSURANCE POLICY IN NIGERIA: A PANEL APPROACH

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### Abstract

*Claims, being the heartbeat of the workability of insurance, are the most critical contact influencer between the insuring public and the insurer. It serves as a critical path to truth that shapes the policy holders' ultimate perceptions of their insurers. This study evaluated the relationship between gross premium income and claims settlement with specific focus on fire insurance business in the Nigerian insurance industry from 2010 to 2021. Data on gross premiums income and gross claims paid over the period were extracted from Nigerian Insurers Association (NIA) annual reports and digest. Stationarity test carried out on the data revealed that data is stationary at the 1%, 5% and 10% levels of significance. Using the ordinary least squares regression, the calculated probability value of 0.0000 is lower than the 0.05 significant value, which shows that there is a significant significance of the data. The computed linear co-efficient of determination ( $R^2 = 0.928731$ ) shows that 92.87% of the total return on asset is accounted for by the independent variables which are expense ratio and net claims. It was therefore concluded that there is a significant relationship between gross premium income and gross claims payment of fire insurance in careful consideration must be given to other administrative costs, such as underwriting, which have the potential to reduce the Revenues and profits of the company.*

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**Keywords:** *profitability, premiums income, claims settlement, premium calculation principles*

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### INTRODUCTION

The term "fire insurance" refers to property insurance that protects against fire-related loss or damage. In the event that their property is at risk of being damaged by fire, homeowners can acquire supplementary coverage. (John, 2017). Fire insurance will cover the cost of replacement, property rebuilding, and repairs to the damaged item or structure. War, nuclear war, and other related risks are often excluded from coverage under this policy. (Ade, 2018). Nigeria has been dubbed a global economic behemoth for failing to reach its full economic growth and development potential. The country also features a big number of urban centres that outperform certain African countries in terms of economic strength and market size. (Taiwo, 2017). The economy of every country is strongly reliant on markets. Nigeria's national economy has lost around N6 trillion in the last five years as a result of constant fire outbreaks, with major cities like Lagos, Ibadan, Kano, Port Harcourt, and Abuja suffering catastrophic consequences. (Izuoba, 2017). Risk management is what insurance is often referred to as. Its importance to market participants cannot be emphasized. The most popular type of property insurance is a regular fire insurance policy. Any unexpected property loss or damage caused by fire or other risks covered by the policy is covered by the fire insurance policy (Donelon, 2014). A fire insurance policy covers

homes, offices, shops, hospitals, and places of worship, as well as their belongings such as machinery, plants, equipment, and accessories; finished goods in factories, such as raw materials, material in process, semi-finished goods, finished goods, and packing materials, among other things (Taiwo, 2017). The fire crisis in the country has reached worrisome proportions. In Nigeria, there isn't a day that goes by without some form of mishap, the bulk of which involves fire. Fire is known as the best servant but the worst master since it is impossible to manage when it erupts into an inferno and continues to burn everything in its path (Danielle, 2016). Fire, as we all know, bears no regard for man's wealth or financial difficulties. There is always the risk of fire, theft, floods, and a range of other hazards. Insurance tries to mitigate the impact of all of these risks. Many individuals assume that if they are cautious, they will be less likely to have a fire (Rumah, 2015).

The popularity of fire insurance appears to have reversed, since the rate of premium growth among major insurance providers has slowed (Ali, 2016). According to results based on the financial records of roughly eight insurance companies, the fire policy premium increased by 19 percent year-on-year to N13.4 billion, compared to 59.2 percent in the same time of 2019 (James, 2016). Fire insurance premiums increased by 59.2 percent year on year in 2019 to Nil.19 billion from N7.03 billion in 2018, reversing a 35.5 percent fall in 2018 compared to N10.9 billion in 2017. However, in 2018, the figure fell by 35.5 percent to N7.03 billion, down from N10.9 billion in 2017. The incident comes amid a string of fires around the country, with a total worth of assets damaged estimated at N32 billion every year. In 2020, the Federal Fire Service (FFS) responded to 3,555 fire calls and 353 rescue crises, according to the FFS. In addition, 1,100 lives were saved while 147 were lost, according to the report. Property was projected to be rescued at N1.351 trillion, with a loss of N32.12 billion. Meanwhile, payment of claims by the eight insurers has followed a same pattern, falling by 11.4 percent year on year in 2020 to N7.7 billion from N8.71 billion in 2019. From N6.7 billion in 2018, claims payments climbed by 35.8% to N9.1 billion in 2019. However, the figure fell by 24.7% to N6.7 billion in 2018 from N8.9 billion in 2017, with the value of assets destroyed estimated at N32 billion each year. The Insurance Act of 2003 lists public building insurance as one of the five mandatory insurance products, however it has yet to be implemented at the federal and state levels (Jude, 2017). Section 65 of the Insurance Act 2003 requires the owner or occupier of every public structure to be insured against responsibility for property loss or damage, as well as death or physical harm, caused by collapse, fire, earthquake, storm, or flood. A public building is one to which the general public has access for educational, recreational, medical, or commercial purposes, according to the Act (Idowu, Okoye, Oni, Benjamin, Bello, 2016). Noncompliance has a maximum penalty of N 100,000 in fines or a year in prison, or both. In addition, under Section 64 of the same Act, any owner or contractor of a building under construction with more than two floors must purchase insurance to cover liability for construction risks caused by his or her servants', agents', or consultants' negligence, which may result in death, bodily injury, or property damage to workers on the job or members of the public. This coverage also covers you in the event that a building you're working on collapses. Failure to comply with this clause carries a penalty of N250, 000 in fines or three years in prison, whichever comes first. The Nigerian Council of Registered Insurance Brokers (NCRIB) has encouraged the Lagos State Government to pay greater attention to market insurance across the state in order to give safety and succor to victims in the event of human and material asset losses.

## Statement of problem

Fire is one of the most common sources of waste in any country. As a result, in the insurance sector, the term "fire waste" is employed. Man has been afflicted by fire-related losses since the invention of fire at the dawn of civilisation. Surprisingly, the rate of fire losses has increased as a result of today's sophisticated nature (Izuoba, 2017). Every year, fire claims the lives of hundreds of people and destroys property worth millions of naira. Calculating the extent of damage to property and people in Nigeria is exceedingly challenging due to the fact that most damages caused by fire-related risks are not typically covered. Even if a fire-ravaged property's owner is reimbursed, fire insurance can only cover the financial side. A fire could be caused by arson, natural elements, defective wiring, gas equipment, and other things.

## LITERATURE REVIEW

### Theoretical Review

The theory of insurance risk premium is applicable to this research. However, actuaries are largely responsible for forecasting insurance premiums, and they have proposed and used a variety of statistical methodologies in the past to try to build a relationship between risk occurring concepts and risk factors. It is necessary to convert the unpredictable future losses or gains into monetary terms in order to calculate a price or premium for a risk (Landsman & Sherris, 2010). Leaven and Groovaerts (2007) stated that the price of insurance is a monetary value whereby two parties agree to share risk. They went on to say that the cost of insurance is determined by two factors: when the person who bears the risk buys insurance from an insurance company at a predetermined price, and when insurance portfolios are exchanged on a financial market. According to Sukono, Riaman, Lesmana, Wulandari, Napitupulu, & Supian (2018) noted that the statistical model for such risks, the economic model for desirable outcomes, and premium principles to convert risk estimates into financial terms are the components of appropriate insurance risk pricing or premium. David (2015) stated that the estimations for differentiated prices in the insurance portfolio are based on the principle of premium calculations, as reflected by pricing methodologies that include both a priori and a posteriori premium determination Kahane (1979). Previously, it was hypothesized that administrative costs are frequently included in predicted gross claims. It should be highlighted that an insurer's ratemaking decisions are dependent on its ability to assess projected claims as well as the choice of a fair, reasonable, and equitable risk loading (Eeckhoudt, Fieri, & Gianin, 2018; Francis, Harel, & Harpaz, 2010; Ramos, 2017)

### Empirical Review

Angima and Mwangi (2017) examined the relationships between *underwriting and claims management and the financial performance of property and casualty insurance companies in East Africa*. The research was conducted using a descriptive research approach. Primary and secondary data were used in the investigation. While a questionnaire survey was used to collect data from 82 members of staff at property and casualty firms, secondary data was obtained from the annual financial report for the years 2010 to 2014. In the research outcome, a linear regression model was used to analyze the data. Significant correlations between the variables were confirmed and established in the study. Nwite, Okparaka, and Okeke (2020) Between 2007 and 2017, the progress of claims settlement in the Nigerian insurance business was assessed. While their study used an ex-post facto research design, secondary data on total claims settlement and insurance penetration in the business was acquired. The ordinary least square regression technique

was used to analyze the data, and it revealed a positive but negligible link between insurance claims settlement and insurance density in Nigeria's insurance business. According to the survey, efficient claims departments should be well-equipped by insurers with cutting-edge technology and employ skilled and experienced claims managers.

Several surveys have been conducted in Nigeria and other countries across the world to identify and establish the relationship between claims settlement and insurance premium income, as well as how they relate to motor insurance plans (e.g. Bortoluzzo, Claro, Caetano, & Artes, 2011; Gangil & Vishnoi, 2020; Gurung, 2016; Islam & Hossain, 2018; Mathiraj & Nagalakshmi, 2020; Yusuf & Ajemunigbohun, 2015).

Assessment of employee perceptions on the purchase of motor insurance was conducted by Epetimehin and Akinselure (2016). With a sample size of 250 individuals, a survey research approach was used. The data was analysed using simple frequency percentages and the Chi-square statistical approach. The study found a link between employee perceptions at Joseph Ayo Babalola University and the purchase of car insurance. When it comes to purchasing automobile insurance, the report suggests that employees consult with an insurance professional.

Angima and Mwangi (2017) The study looked at the links between underwriting and claims administration, as well as the financial performance of East African property and casualty insurance carriers. The research was conducted using a descriptive research approach. Primary and secondary data were used in the investigation. While a questionnaire survey was used to collect data from 82 members of staff at property and casualty firms, secondary data was obtained from the annual financial report for the years 2010 to 2014. In the research outcome, a linear regression model was used to analyze the data. Significant correlations between the variables were confirmed and established in the study. Nwite, Okparaka, and Okeke (2020) Between 2007 and 2017, the progress of claims settlement in the Nigerian insurance business was assessed. While their study used an ex-post facto research design, secondary data on total claims settlement and insurance penetration in the business was acquired. The ordinary least square regression technique was used to analyze the data, and it revealed a positive but negligible link between insurance claims settlement and insurance density in Nigeria's insurance business. According to the survey, efficient claims departments should be well-equipped by insurers with cutting-edge technology and employ skilled and experienced claims managers.

**RESEARCH METHODS**

An ex-post facto research design was used to achieve the study's goal. The researchers chose this research strategy because it allowed them to look into two or more groups, people, events, or objects (Oyeniya, Abiodun, Obamiro, Moses, & Osibanjo, 2016; Rowthwer, 2013). This study tried to quantify the relationship between gross premium income (GPR) and gross claims paid (GCL) for the years 2010 to 2019, using data from the Nigeria Insurers Association's insurance digest. The Augmented Dicker Fuller unit root test and Ordinary Least Square Regression techniques were used to quantify the data collection. A total of forty-one (41) non-life companies were included in the data extraction.

Thus, the model is represented in a functional form below:

$$GCL = F(GPR).....(1)$$

Where

GCP = Gross Claim Payment (dependent variable)

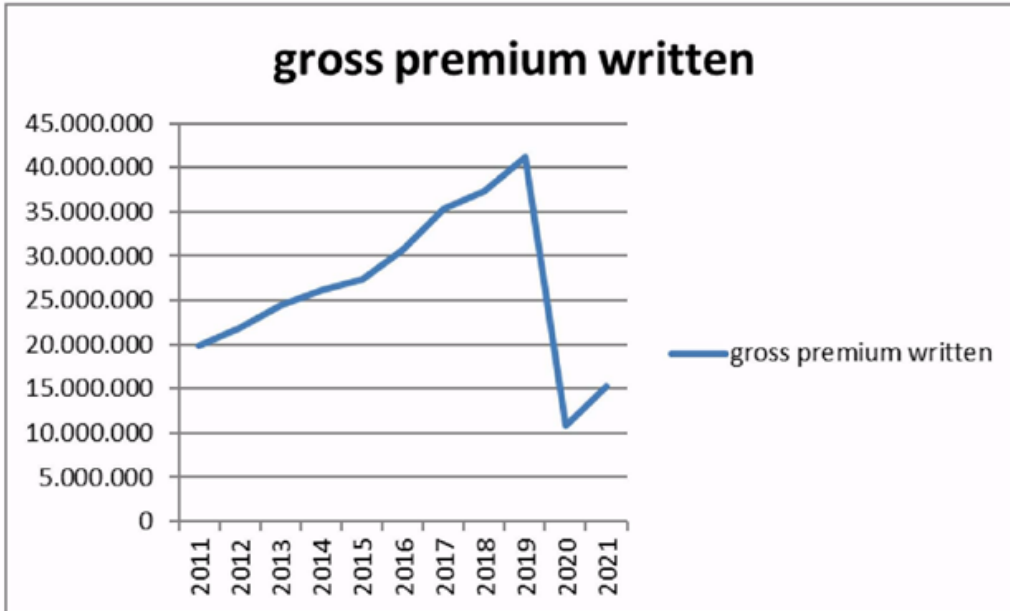
GPI =Gross Premium Income (independent variable)

In a linear function, it is represented as follows:

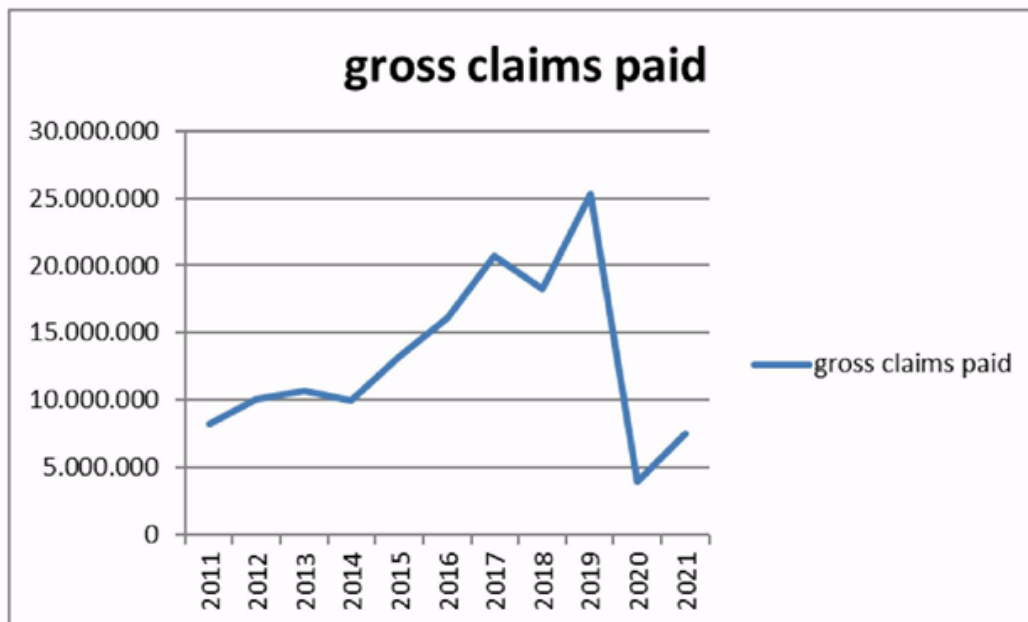
$$GCL = \beta_0 + \beta_1GPR + \mu \dots\dots\dots (2)$$

Where  $\beta_0$  = constant term,  $\beta_1$  = regression co-efficient of GPR and  $\mu$  = error term.

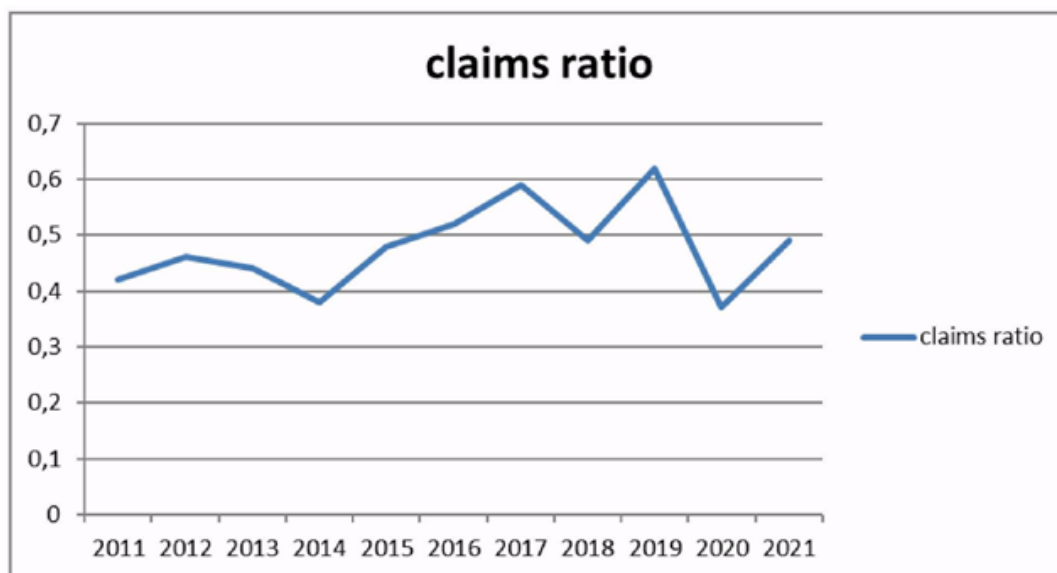
**RESULTS AND DISCUSSIONS**



The figure above shows the analysis of gross premium written for a period of 11 years from 2011 to 2021. The gross premium income includes contributions from insured in Nigeria. From the chart above, it showed an upward movement from 2011 to 2019 before a sharp downward movement in 2020 and a sharp upward movement in 2021.



The figure above shows the trend analysis of gross claims payment from 2011 to 2021. The movement showed an upward and a sharp downward movement in 2020 even though there are fluctuations in the upward movement.



The figure above showed a slight downward linear movement of the claims ratio which shows the relationship between gross premium written and gross claim paid, the graph above shows that there was a sharp downward movement in 2018 and a sharp upward movement in 2019. The relationship between gross premium written and gross claim showed a very sharp downward movement in 2020 and an upward movement in 2021.

Dependent Variable: GCL  
 Method: Least Squares  
 Date: 05/26/22  
 Time: 12:34  
 Sample: 2011 2021 Included  
 observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4202611.	1687837.	-2.489939	0.0344
GPR	0.656079	0.060582	10.82966	0.0000
R-squared	0.928731	Mean dependent var		13112879
Adjusted R-squared	0.920812	S.D. dependent var		6372386.
S.E. of regression	1793214.	Akaike info criterion		31.79988
Sum squared resid	2.89E+13	Schwarz criterion		31.87223
Log likelihood	-172.8994	Hannan-Quinn criter.		31.75428
F-statistic	117.2816	Durbin- Watson stat		1.802040
Prob(F-statistic)	0.000002			

The long run linear regression equation is given by  $GCL = -4202611. + 0.656079$  which shows that the absence of premium will bring about 4202611 times decrease in gross claim, and a unit increase in gross premium will bring about 0.656079 times increase in gross claims. The computed coefficient of determination ( $R^2=0.928731$ ) shows that 92.8731% of the total variation is accounted for by gross premium (GPR), while the remaining 7.1269% is accountable to the influence of other factors which are not included in the multiple regression function. The value of the Durbin Watson (DW) is 1.802040 at 5%

significance level shows that there is no auto correlation. Prob value 0.000002 shows that the slope coefficient is non-zero.

## DISCUSSIONS

The relationship between gross premium income and gross claims paid for vehicle insurance in Nigeria from 2010 to 2021 is investigated in this study. At the 0 level, none of the variables were stationary. This suggests they're all rooted in the same unit. By using ADF, the two variables became stationary after the initial difference. For the period under consideration, there is a positive link between gross premium income and gross claims paid. The equation for long-run linear regression is provided by  $GCP = 2.193197 + 0.777503GPI$  shows that NI increase in gross premium income will bring about (0.777503) increase in gross claims paid which implies that premium and claims have positive relationship. The computed co-efficient of determination ( $R^2 = 0.761494$ ) shows that (76.149%) of the total variation in gross claims paid is accounted for by the gross premium income. The remaining (23.851) of the total variation is attributable to the influence of other factors which are not included in the regression equation function. This result is consistent with the findings of Olusegun (2013) who asserted that prompt claims payment is enhanced by robust premium income. It was arguably considered thus that claim managers ought to focus only on the most significant claim tasks that required their attention, and also optimizing the 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.

## CONCLUSION, RECOMMENDATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The study's findings clearly illustrate that claims settlements and premium income of non-life insurance companies in Nigeria are inextricably linked. If the study's conclusions are implemented, it will result in fair, reasonable, and effective claims settlement for auto insurance policyholders. The findings also revealed that claims settlement was a key element in drawing greater premium income, indicating that motorists are extremely risk cautious. As a result, policymakers and motor insurance practitioners may find the study's findings valuable in developing methods for enhancing claims settlement systems among Nigerian motorists. As a result, improving claims settlement among motorists would help to redeem their opinions of vehicle insurance plans, perhaps ensuring insurers' trust, trustworthiness, and competence in the eyes of the insured.

The study proposed that claims settlement systems be deliberately developed to create a mutually linked ambience between policyholders and insurers in order to fully justify the study's conclusions. Premium revenue generation should be made as seamless as possible by developing an efficient and effective online gateway that can ensure hassle-free payment procedures for motorists. In order to enhance the confidence level of the motoring community, car insurance providers should implement intriguing claims packages. The government should re-establish and empower the motor insurance public complaint commission to deal with concerns connected to vehicle insurance claims made by any party to the contract. Motor insurance authorities should be proactive in monitoring the contractual arrangement for the settlement of motor insurance claims, ensuring that the motorist's decision to purchase insurance is taken into account.

This study adds to the body of knowledge by alerting claims managers to the importance of taking claims settlement seriously and passionately when dealing with motor

insurance policyholders. The construction of a mathematical model that describes the relationship between premium income and claims settlement will assist motor insurers as a result of this research. Further research should be focused on the nexus between asymmetric information concerns in claims settlement, premium rating, and insurance contract wordings, according to the study. Finally, future study may focus on insurance fraud issues arising from the insurance claims settlement manual.

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