IMPACT OF INSURANCE PREMIUMS ON CLAIMS EXPENDITURE OF OIL AND GAS INSURANCE FIRMS IN NIGERIA.

Taiwo Olarinre Oluwaleye
Department of Finance (Insurance Unit), Ekiti State University, Ado-Ekiti, Nigeria
Email: taiwo.oluwaleye@eksu.edu.ng
ORCID ID: 0000-0001-8335-5584

Oluwaseun Michael Afuye
Meristem Registrars and Probate Services Limited, 213 Herbert Macaulay Way, Adekunle Yaba, Lagos State, Nigeria
Email: oluwaseunmichael0224@gmail.com

Olufunmilayo Omobosola Adenipekun
Risk Management Unit, Coronation Life Assurance Limited, 119, Awolowo Road, Ikoyi, Lagos, Nigeria
Email: fun252003@gmail.com

ABSTRACT

The study examines the impact of gross premium written, gross premium income, and net premium income on claim expenditures of oil and gas insurance companies in Nigeria. Secondary data collected for 2017-2022 was analysed through descriptive statistics and multicollinearity tests, pooled OLS estimation, fixed and random effect analysis. The most reliable and optimal estimation analysis result is the random effect and it indicated that gross premium written and gross premium income impact positively and significantly on claims payment; net premium income exerts a negative substantial influence on claims settlement of oil and gas insurance firms. The study suggests that Nigerian insurance firms should explore ways to increase their customer base for oil and gas insurance and boost insurance premiums to ensure increased claim payment.

Keywords: *Insurance premiums; claim expenses; oil and gas insurance firms, Nigeria.*

1. INTRODUCTION

Insurance businesses essentially offer promises to customers via policies aimed at giving corporations leverage to deal with the numerous uncertainties that exist in the business environment, especially in Nigeria (Ogunlami, 2021). This is made much more urgent given the height of loss events that exist in the oil and gas sector, thus giving relatively higher significance to the essence of insurance in that sector. Hence, as against the usual trend, players in the oil and gas sector would accord significant importance to insurance coverage towards sharing the heightened risk in the sector (Yusuf & Ajemunigbohun, 2015).

This necessitates a potent promise by insurance companies to indemnify or ensure that the insured is returned to their financial position after they stumble on the loss event. Although claim settlement has often been a challenge, this is not envisaged for oil and gas insurance given the peculiarity of the sector and the relatively huge insurance premium that is obtainable for oil and gas insurance contracts (Owolabi, Oloyede, Iriyemi & Akinola, 2017).

Even though insurance premiums received across insurance products have been on the rise globally, in Nigeria, the settlement of claims, particularly in the oil and gas industry, has remained unimpressive

(Onuoha, 2018). Expectedly, the oil and gas industry is understood by insurance firms as a precarious business, thus requiring that insurance specialists with high technical skills be on the ground to underwrite the business profitably. Thus, generating premium rates that should encourage claim settlement as and when due; this, which is lacking amongst insurance firms, has translated to poor underwriting methods over time (Ikponmwosa & Izedomi, 2020). The consequence of this is a poorly structured oil and gas insurance product that inevitably exposes oil and gas firms to calamity despite indemnifying their operations and also causes huge losses triggered by poor oil and gas underwriting methods (Baker, 2019).

Surprisingly, the insurance sector has lost over N1 trillion in a decade. This has been associated with the poor practice approach and low technical capacity resulting in premium leakages, which are enhanced by the connivance of insurance practitioners with foreign firms (Ogbeide, Adu, Fapohunda & Obadeyi, 2022).

The implication of such arrangements is a premium deficit and the inability of insurance firms to deploy the capacity needed to domesticate and make more effective oil and gas insurance in Nigeria (Ebong, 2021). Insurance companies depend on gross premium income to operate sustainably while guaranteeing claim settlement to the insured; in fact, the written premium is equally explored to bolster inflow for insurance firms and increase the quality of insurance services provided, particularly for clients in a dynamic business such as oil and gas, which suggests that the risk undertaken by the insured is significantly huge.

The oil and gas industry, despite being at the center of the growth of most developing economies, has not received an adequate response from oil and gas insurance firms in the instance of uncertainties in their operation; this is notwithstanding the sector being a key input supplier to various industries in Nigeria (Onwe, 2012). The oil and gas industry contributes over 90% of Nigeria's exports and about 80% of the inflow obtained by the Federal Inland Revenue Service (Polycarp, 2019). Considering the unmatched performance and prosperity recorded in this industry, it is therefore likely that the spillover effect of the micro and macroeconomic uncertainties in Nigeria would disrupt the activities of this industry, which presents itself as the engine of the economy (Ikponmwosa & Izedomi, 2020).

Despite the urgency of this discourse in the insurance space as well as the performance of the oil and gas sector and its ultimate implications for the prosperity of the Nigerian economy, there is currently fewer studies in the literature that direct attention to the insurance premium and claims settlement of oil and gas insurance. Hence, this study would assess the insurance premiums and claims expenditure of oil and gas insurance using fixed (time and firm-specific) and random effect estimations to evaluate the dynamic relationship between the variables.

2.1 Literature Review

Insurance

Insurance is a method that protects against potential losses by shifting the associated risks to another party. Insurance coverage is a contractual arrangement in which an insurer undertakes to compensate an insured individual, in exchange for a premium, for any loss, damage, or loss of anticipated profit that may arise as a result of an unspecified event (Reschiwati & Solikhah, 2018).

This indemnification may be provided in the event of loss, damage, loss of expected profit, or legal liability to a third party, which may arise from an uncertain event. Additionally, an insurance policy may also involve the provision of a payment contingent upon the death or life of an insured individual.

The entities involved in the insurance industry encompass four main categories: (1) the insured, referring to individuals or organisations seeking insurance coverage; (2) insurers, which are the entities providing insurance policies; (3) unforeseeable occurrences occurring in the future, which are the basis for insurance claims; and (4) the stakeholders with potential future losses, including reinsurance firms, reinsurance brokers, and reinsurance accountants. There are two main categories of insurance: (1) insurance losses, which include ship, fire, motor, marine and aviation insurance; and (2) life assurance, which provides financial protection against unforeseen losses resulting from premature death or extended lifespan (Wondabio, 2006).

Premium Income

The insurance premium refers to the monetary compensation provided by the insured party to the insurer in exchange for the provision of services related to the transfer of risk. The payment encompasses the compensation for a security guarantee offered by the insurer to ascertain potential losses and the value of the protection service's advantages supplied by the insured, involving the provision of a monetary sum to mitigate risks (Fadun, Aduloju & Oluwaleye, 2023). Insurance premium income is derived from the selling of insurance goods to individuals or entities participating in insurance programs. Premium income refers to the official amount of income generated through the selling of insurance policies, which is measured over a one-year time frame. Income is the primary determinant influencing the success of insurance businesses (Reschiwati & Solikhah, 2018). Hence, the assessment of premium holds a significant position within the realm of business strategy.

Insurance premiums as used in this study are categorised into three distinct classifications, namely gross premium written, gross premium income, and net premium income which are briefly explained thus:

Gross Premium Income

Gross premium income (GPI) refers to the total revenue an insurance company generates from its policies during a specific period. It includes all the premiums collected from policyholders before accounting for expenses such as reinsurance costs, claims payments, or commissions. GPI is a key indicator of an insurer's overall sales performance and market shares (Reschiwati & Solikhah, 2018). GPI is used to assess the size and growth of an insurance business. Nigerian non-life insurance firms' gross premium revenue mirrors their financial strength and development potential. It is majorly influenced by factors such as insurance market size, purchase of insurance products, and economic condition among others (Fadun, Aduloju, & Oluwaleye, 2023). Gross premium income represents the total premium generated from the sales of insurance policies that reduce the policyholder's risk throughout the coverage. To increase gross premium income, the government needs to provide a conducive business environment that will aid smooth business operations and encourage many viable insurance companies (Negash, Venugopal & Asmare, 2018).

Gross Premium Written

Gross Premium Written (GPW) is the total amount of premium recorded on an insurer's books for policies issued within a certain accounting period, regardless of whether the premium is paid upfront or subsequently. It includes all premiums related to policies launched during the term, regardless of their actual collection status. Written premium include premium from new insurance agreements, renewal of insurance agreements, revisions to existing agreements, and received reinsurance premiums. According to Jumaa (2020), an increase in (GWP) has a substantial impact on the profitability of the insurance market.

Net Premium Income

Net Premium Income (NPI) is the total income an insurance company receives from premiums after deducting the cost of reinsurance. It is the amount of gross premiums retained by the insurer to cover underwriting risks and operational expenditures. NPI is an important indicator of the real income available to an insurer after shifting some of its risk to reinsurers. Tarsono, Ardheta and Amriyani (2020) asserted that an increase in net premium income does not affect the financial performance of insurance companies but forms part of reserves used to meet future claims obligations.

The net premium income that the insurance business receives is a component of the company's future commitments in addition to its profit. It is necessary for the business to set aside a part of the premium as a reserve so that it will be easy to pay for any future claims (Negash, Venugopal & Asmare, 2018).

Insurance Claim Expenses

The term "insurance claim expense" refers to the financial burden borne by the insurance company when they pursue the benefits of protection outlined in the agreement (Reschiwati & Solikhah, 2018). Claims expense refers to the remuneration disbursed or obligations assumed by the insured party in response to a loss, encompassing gross claims, reinsurance claims, and claim evaluations. Gross claims refer to claims in which the agreed-upon amount, including the settlement fee, is specified in the initial agreement between the insurer and the insured. To initiate a claim transaction utilising the fundamental principle of accrual accounting. Claims are documented after receiving authorization, and a predetermined sum of remuneration is established, contingent upon the claim settlement report or the associated claim note. Reinsurance claims constitute a component of the overall gross claims, contingent upon the reinsurer. This claim refers to the sum of claims that the reinsurer is obligated to pay based on the claims that have been incurred, as specified in the reinsurance agreement. According to Reschiwati and Solikhah (2018), estimated retention claims refer to a count of claims representing the insurer's responsibility during an ongoing fiscal year, but are still unresolved until the conclusion of the present financial year.

Oil and Gas Insurance

The term oil and gas is synonymous with petroleum and hydrocarbon. The industry began operation in Nigeria in 1956 after the product was discovered at Oloibiri in Bayelsa by Shell & British Petroleum (BP). There are two classes of gas namely: associated and non-associated gas. Gas cannot be stored in its nature because it is like air or steam but processed into liquid forms like petroleum gas or natural gas (Efiom-Ekaha, 2009). Oil and gas insurance is an insurance policy that protects financial loss against accidents to life, property, liability, environments, and other firms' activities (Umunnakwe, Okeke & Okeume, 2022).

Oil and gas activity is a difficult task, beginning from production (crude oil extraction) through the delivery of the final product (supply chain value) and marketing. The policy is designed to cover onshore risk including refineries, petrochemical plants, depots, power stations; product pipelines; storage units (tank farms and underground storage caverns; jetties (loading and breakwaters) and terminals and stations, the group consists of multinational and independent lease operators who collaborate with oil service firms that specialise in Engineering & Construction Services, seismic operations, drilling equipment operations, and various well delivery services. (NCRIB, 2014). Major properties covered by the policy include pipelines; fire-well controlling cost; re-drilling cost; clean-up costs and third-party liabilities arising from oil seepage and pollution; and cryogenic Vessels (Umunnakwe, Okeke & Okeume, 2022).

Claim and Insurance Business

A claim refers to a formal communication that notifies an insurer of an outstanding financial obligation as stipulated by the provisions of an insurance policy (Al-Tamimi, 2021). According to Hussein and Faris (2019), a claim is an assertion that can be characterised as a pivotal event in the interaction between an insurance provider and its clientele. In a similar vein, the establishment of a healthy relationship between insurers can be facilitated by effectively addressing five crucial factors: assuming a more prominent role in the claims process, comprehending the needs and preferences of their clientele, selecting an appropriate claims model tailored to their specific business requirements, fostering a mutually advantageous association with other service providers, and attaining a competitive edge through access to valuable information.

According to Santomero (2019), insurers have the potential to enhance claims processing through the utilisation of contemporary claim systems that are in line with strong business intelligence, as well as document and content management systems. These advancements are expected to enhance the efficiency and efficacy of claims processing. Insurers have come to acknowledge the importance of transitioning from claims processing to effective claims management (Wetmore, 2019). This move is deemed crucial for ensuring the profitability and enduring viability of the organisation, as it directly impacts customer satisfaction, policy renewal rates, and customer retention.

2.2 Theoretical Review

2.2.1 Theory of Reasoned Action (TRA)

This theory was proposed in 1967 by Martin Fishbein. This theory is grounded in the widespread belief that attitude and behavior are closely related. Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB) introduce the notion of intention, which is then associated with the constructs of behavioural control, volitional control, attitude, and subjective standards. Behavioral control refers to an individual's perception of the level of ease or difficulty associated with doing a particular behaviour. Volitional control refers to the degree to which an individual possesses the ability to make deliberate decisions and take intentional actions. The updated TRA emerges because of its inadequacy in elucidating behaviours that are not within the realm of volitional control.

Nevertheless, the Theory of Reasoned Action (TRA) has garnered significant recognition due to its assertion that there exists a robust association between an individual's attitude and subjective norms with their aim. The use of the Theory of Reasoned Action (TRA) is an appropriate method for assessing an individual's inclination to engage in oil and gas insurance offerings. According to Mustafa, Busry, Abdul Majid, and Tahir (2020), there exists a positive correlation between an individual's attitude and their inclination to participate in behavioural intention, specifically in relation to their willingness to consistently pay insurance premiums.

TRA has been used in various studies to analyze insurance products. These studies include Amin (2012), Razak and Taib (2008), Amin, Abdul Rahman, and Abdul Razak (2009), and Rahim and Amin (2011). Key factors such as attitude and subjective norms have been identified as significant in an individual's decision to select insurance products. Amin (2012) asserts that these factors contribute to an individual's inclination toward insurance, while Razak and Taib (2008) found that perception of oil and gas insurance significantly influences the intention to accept insurance. These studies validate the application of TRA by assessing the influence of these factors on insurance decisions.

2.2.2 Expected Utility Theory

This Theory, first proposed by Daniel Bernoulli in 1738, is a method used to determine the effectiveness of a course of action in uncertain situations. It suggests that making decisions based on anticipated advantages is a logical and reasoned choice. This theory is particularly useful in situations of ambiguity, where individuals must make choices without complete knowledge of potential outcomes. They choose the course of action that maximizes the expected utility, calculated as the aggregate of utility and probability over all possible outcomes. The decision-making process is influenced by an individual's risk aversion and utility compared to others.

The argument contends that the value of money is different from its utility, leading to people seeking insurance to protect themselves against various threats. Remitting insurance payments can negatively impact one's financial situation, as the diminishing marginal utility of wealth may lead to a significant reduction in utility when major losses occur. This theory is useful in assessing scenarios without explicit payoffs, such as insurance acquisition decisions. Insurance is often considered a more advantageous option than retaining premium payments for alternative opportunities or goods or paying insurance premiums for certain income or compensation in case of an covered eventuality (Isimoya & Akindipe, 2022).

2.3 Empirical Review

Oladunni and Olaoluwa (2024) investigated the claims settlement impact on Nigeria's life insurance business via secondary data covering the years 2012 -2022. Data collected from the Nigeria Insurance Association (NIA) Digest report and the National Insurance Commission (NAICOM) was evaluated through regression analysis. The study findings explained that claims paid have a statistically significant effect on the profitability of insurance business in Nigeria.

Fadun, Aduloju and Oluwaleye (2023) investigated the relationship between ceded reinsurance premiums and gross premium revenue, as well as the impact of accepted reinsurance premiums on the gross premium income of Nigerian non-life insurance providers. Secondary data were gathered from the Nigeria Insurance Association's (NIA) Digest report for 2007-2021 and analyzed using descriptive statistics and auto-regressive distributed lag (ARDL). The study found reinsurance premiums ceded and accepted significantly impact Nigerian non-life insurance providers' gross premium income.

An investigation was carried out by Isimoya and Akindipe (2022) on the gross premium income and claims payments of marine and aviation insurance. The study used secondary panel data from 2011- 2021 and employed trend analysis and pooled OLS regression. The findings established weak relationship existed between premium income and claims payments of Nigerian’s marine and aviation insurance.

Salaudeen, Salam, and Ogunlami (2021) explored the impact of claim settlement on insurance sector profits optimization. Using a survey research design and questionnaire, the study found that claim handling significantly impacts a company's profit maximization.

Jamaa (2020) examined the influence of gross written premium and inflation rate on the profitability of insurance sector in United Arabs Emirate (UAE) using secondary data collated from 2010 to 2019. Data was analysed and the results revealed that gross written premium has a significant impact on the profitability of insurance sector in UAE.

Tarsono, Ardheta, and Amriyani (2020) investigated the influence of net premium revenue, claim ratio, and risk-based capital on the financial performance of Indonesian life insurance businesses. Secondary data was analyzed using panel data; the results demonstrated that net premium income did not have a major influence on the financial performance of life insurance firms.

The study conducted by Ikponmwosa and Izedomi (2020) examined the insurance revenue and financial performance of oil and gas businesses. Secondary data was collated for seven oil firms from 2013-2018 and analysed with panel data techniques. The results established that insurance premium income has a substantial connection with the performance of Nigeria's oil and gas companies.

Oluwaleye, Shoyemi, and Edewusi (2020) examined the influence of claims management on the financial performance of Nigerian insurance companies. The analysis relied on secondary panel data from 2010 to 2018, which included five firms. The findings indicated that net loss has a direct influence on return on assets, while expense ratio has a positive but minor effect.

3 METHODOLOGIES

3.1 Model Specification

Isimoya and Akindipe's (2022) model which explored gross premium income and claims payment of marine and aviation insurance in Nigeria was modified for this study. The authors considered a block gross premium income and its implication on gross claim payment; although the study considered a distinct area in literature and explored it indeed. Again, the focus on oil and gas insurance is yet another distinct insurance that has not received any attention over the years both in discourse of claim payment and premium income in Nigeria. For simplicity, the model of Isimoya and Akindipe (2022) is shown below:

GCP = *f* (GPI)…..3.1

Where:

GCP = Gross claims payment

GPI = Gross premium income

The following is an example of its linear function or equation:

$GCP = \beta_0 + \beta_1 GPI + \mu_t$ 3.2

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

The issue of premium payment and particularly claim payment is a broad issue requiring more than a simple regression model to tackle the dynamics of the issue. The use of a block variable for premium in the model of Isimoya and Akindipe (2022) presented in 3.2 does not take a holistic approach to investigating the issue; besides, the use of a pooled OLS regression does not take into consideration the firm and time specific effect which could be a major factor that drives claim payment and encourage the buyers of oil and gas insurance to steadily commit their premium. Howbeit, the issue of premiums is quite complex as gross premium written may not be completely realized by the insurance firm; and expenses such as reinsurance may limit firm's ability to record adequate net premium income which should ideally guarantee claim payment. It is based on this argument that this paper introduces a revised model as follows:

Functional representation:

CEX = *f* (GPW, GPI, NPI, FSI, U).....3.2

Linear representation:

$$CEX_{it} = \delta_0 + \delta_1 GPW_{it} + \delta_2 GPI_{it} + \delta_3 NPI_{it} + \delta_4 FSI_{it} + \mu_{it} \quad \text{..... 3.3}$$

Where:

CEX = claim expenses

GPW = gross premium written

GPI = gross premium income
NPI = net premium income
FSI = firm size
μ = error term

3.2 Sources of Data and Method of Data Analysis

The study selected five Nigerian insurance firms for the oil and gas sector using a random sampling technique. Data from their annual reports was collected from 2017-2022. The research used descriptive and panel statistical analyses to assess central tendency, variability, normality, skewness, and kurtosis. The pooled OLS method was used to estimate the ideal association among variables.

4.0 Results and Discussion

Table 1: Descriptive Statistic

Sources: Stata 13.0 Output, (2024).

Table 1 revealed the descriptive statistics result that the mean claim expenses, gross premium written, gross premium income, net premium income and firm size for 2017-2022 across five oil and gas insurance firms sampled in the study stood at: 21.065 billion naira, 22.133 billion naira, 22.123 billion naira, 21.881 billion naira and 22.877 billion naira respectively. Reported minimum and maximum values stood at: 16.85 billion naira and 23.71 billion naira for claim expense, 17.28 billion naira and 24.46 billion naira for gross premium written, 17.27 billion naira and 24.45 billion naira for gross premium income, 17.15 billion naira and 24.44 billion naira for net premium income, 18.34 billion naira and 25.82 billion naira for firm size respectively.

4.2 Correlation Analysis

Table 2 Correlation Matrix

	CEX	GPW	GPI	NPI	FSI
CEX	1.0000				
GPW	0.9847	1.0000			
GPI	0.9849	0.9995	1.0000		

Variable	Obs	Mean	Std. Dev.	Min	Max
CEX	30	21.065	21.110	16.85	23.71
GPW	30	22.133	2.369	17.28	24.46
GPI	30	22.123	2.370	17.27	24.45
NPI	30	21.881	2.356	17.15	24.44
FSI	30	22.877	2.286	18.34	25.82

NPI	0.9796	0.9955	0.9962	1.0000	
FSI	0.9579	0.9740	-0.9734	0.9737	1.0000

Sources: Stata 13.0 Output, (2024).

Table 2 displays the correlation result among explanatory variables in a paired format. A maximum of two variables may have a complete direct relationship. However, it was found that there is a substantial positive correlation between pairs of variables including claim expense and gross premium written, claim expense and gross premium income, claim expense and net premium income, and claim expense and firm size have a coefficient estimate of 0.9847, 0.9849, 0.9796 and 0.9579 for the respective pairs. Observably, the results suggest that all the pairs of variables are strongly related.

4.3 Analysis of the Impact of Gross Premium Written, Gross Premium Income, Net Premium Income, and Firm Size on Claim Expense of Oil and Gas Insurance Firms in Nigeria

The pooled OLS, random, and fixed effect models were used in estimating the study's model, the Hausman Test was leveraged in comparing results obtained for the mentioned models. According to the results, the random effect estimation is accepted because the p-value is greater than 0.05; hence estimates obtained for the random effect tests were used for pooled regression analysis and hypothesis testing. The estimation findings are reported in the tables below and interpreted appropriately.

4.3.1 Hausman Test

Table 3 Hausman Test

Null hypothesis	Chi-square stat	Probability
Difference in coefficient not systematic	3.41	0.4913

Source: *Stata 13.0 Output, (2024)*

Table 3 shows a chi-square value of 3.41 and a probability of 0.4913. Findings indicate there is sufficient indication to discard the null hypothesis that the variations in coefficients of fixed effect estimator and random effect estimate are not systematic. Given the negligible difference between the two estimates, the random effect cross-section estimate reported in the table below is the most consistent and competent estimation for this study.

4.3.2 *Panel Estimation Result*

Table 4 Panel Estimation Result

Coefficient	Pooled	Prob	Random	Prob
C	1.6643	0.035	1.6643	0.025**
GPW	.2448	0.806	.2448	0.004**
GPI	.8089	0.450	.8089	0.042**
NPI	-.1743	0.633	-.1743	0.029**
FSI	-.0044	0.976	-.0044	0.075***
	R^2 0.9704 Adj R^2 0.8657 F-stat. 5.16 Prob(F-stat) 0.0000		R-square 0.6172 Wald chi2(5) 2.64 Prob> chi2 = 0.0000*	
Hausman Test = 3.41 (P=0.4913 > 0.05)				

NOTE: **, **, and *** represent statistical significance at 1%, 5%, and 10% levels, respectively.*
Source*: *Stata 13.0 Output, (2024).

The random effect result is the most consistent and efficient estimate for this inquiry. Table 4 demonstrates that, when the heterogeneity impact is taken into account, the effect of gross premium written on total claim expenditures is positive and substantial. Also, gross premium revenue has a significant impact on claim expenditures. However, the effect of net premium income on claim expenses is negative and large when heterogeneity is factored into the error term. Additionally, firm size affects claim expense negatively and insignificantly. Specifically, coefficient estimates reported for GPW, GPI, NPI, and FSI stood at .2448, .8089, -.1743, and -.0044 with probability values of 0.004, 0.042, 0.029, and 0.075 respectively. The R^2 statistics indicate a value of 0.6172. This suggests that approximately 61% of the systematic variation in claim expense for oil and gas insurance firms, as measured by total claim expense in the study, can be attributed to the combined influence of variations in GPW, GPI, NPI, and FSI.

The results of the pooled ordinary least squares estimation as obtainable in table 4 reveal coefficient estimates of 0.2448, 0.8089, -0.1743, and -0.0044 for the three independent variables and firm size (control variable) respectively. The associated probability values for these coefficients are reported as 0.806, 0.450, 0.633, and 0.976, respectively. The analysis output indicated that gross premium written exerts positive insignificant impact on claim expenses of the sampled oil and gas insurance firms, gross premium income exerts an insignificant negative impact on claim expenses, net premium income affected claim expenses negatively and insignificantly while firm size exerts a negative significant impact on claim expenses of oil and gas insurance firms in Nigeria. The reported f-statistics value of 5.16 and the probability value of 0.0000 validate the fact that all of the explanatory variables of insurance premiums collectively influence the claim expenditures of the oil and gas insurance firms sampled in the study. According to the R-square value in Table 4, GPW, GPI, NPI, and FSI can account for approximately 86% of the systematic variance in the value of oil and gas insurance companies assessed in terms of claim expenditures.

4.3.3 Fixed Effect Panel Analysis

Table 5 Fixed Effects Estimates (Cross-Sectional and Period Specific)

FIRM-SPECIFIC EFFECT			TIME-SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
C	3.0836	0.285	C	1.6921	0.055
GPW	1.0687	0.212	GPW	.0608	0.961
GPI	-1.2405	0.310	GPI	.9688	0.450
NPI	.9122	0.228	NPI	-.1328	0.762
FSI	.0566	0.756	FSI	-.0225	0.903
Effects			Effects		
CHI	1.234	0.244	2018	.0330	0.911
GNI	.4463	0.548	2019	-0295	0.921
NEM	.3755	0.730	2020	-.0632	0.837
SALAM-FBN	.5124	0.611	2021	.0518	0.862
			2022	.0943	0.774
R^2=0.9841			R^2=0. 9710		
Adj. R^2=0.8780			Adj. R^2 =0.8579		
F-stat =2.14			F-stat =4.37		
P(F-stat) = 0.0000			P(F-stat) = 0.0000		

Source: Stata 13.0 Output, (2024).

The fixed effect estimation results for (firm and period-specific effects) are shown in Table 5. The finding shows that when firm-specific effects are considered, gross premium written exact a positive and insignificant impact, gross premium income has a negative and insignificant impact while net premium income exact a positive and insignificant impact, and the impact of firm size is positive and insignificant to claim expenses for Nigerian oil and gas insurance firms. Contrarily, when the period- specific effect was taken into account, the explanatory variables gross premium written and gross premium income had a positive but insignificant impact on the claim expenses of Nigerian oil and gas insurance firms, while net premium income and firm size had a negative but insignificant impact.

The deviation intercept terms for Consolidated Hallmark Insurance (CHI), Great Nigeria Insurance (GNI), NEM Insurance, and FBN Insurance, as reported in Table 4.7, were found to be 1.234 (p=0.244>0.05), 0.4463 (p=0.548>0.05), 0.3755 (p=0.730>0.05), and 0.5124 (p=0.611>0.05) respectively. The intercept term for the reference firm, AIICO Insurance, was recorded as 3.0836 (p=0.285). The deviation intercept terms for period effects were observed to be .0330 (p=0.911>0.05), -0295 (p=0.921>0.05), -.0632 (p=0.837>0.05), .0518 (p=0.862>0.05), and .0943 (p=0.774>0.05) for the

years 2018, 2019, 2020, 2021, and 2022, respectively. The intercept term for the reference year, 2017, was recorded as 1.6921 (p=0.055=0.05). When heterogeneity effects across firms are included in the model, the variables of GPW, GPI, NPI, and FSI account for 87% of the systematic variation in claim expense, while period heterogeneity effects account for 85% of the systematic variation.

4.3.4. Post Estimation Test

Table 6 Restricted F Test of Heterogeneity (Cross-Sectional and Time Specific)

	F-statistics	Probability
Cross-sectional	4.49	0.0089
Time specific	0.08	0.9953

Source: Stata 13.0 Output, (2024).

Table 6 presents the outcomes of the heterogeneity test undertaken to examine the presence of both cross-sectional and period-specific effects. The f-statistics values of 4.49 and 0.08, accompanied by corresponding p-values of 0.0089 and 0.9953 for the company and period-specific effect, respectively, are sufficient evidence to reject the null hypothesis that all differential intercepts associated with the cross-sectional specifics are equal to zero. However, this is not the case for the period- specific intercepts. Hence, it can be inferred that there exists a distinct cross-sectional heterogeneity effect among the chosen oil and gas firms. This effect is accounted for by the random effect model and demonstrates a significant presence that cannot be disregarded.

Table 7 Other Post Estimation Test

Test	Statistics	Probability
Wald test: Panel homoscedasticity	20.64	0.0000
Pesaran test: No cross-sectional dependence	1.277	0.2018
Breusch-Pagan Lagrange Multiplier test: Panel Normality	4.47	0.0344

Source: Stata 13.0 Output, (2024).

Table 7 presents the outcomes of a post-estimation test that was undertaken to verify whether the stated model aligns with the fundamental norms underscoring the panel estimation carried out in this study. Results suggest that there is insufficient evidence to reject both the null hypothesis of panel homoscedasticity and the null hypothesis of no cross-sectional dependency. However, the idea of panel normality has been substantiated. As a result, the post-estimation test results shown in Table 7 satisfy the model's assumptions of equal variance of residual components, cross-sectional independence, and normality. This finding shows that the model is appropriate for doing inferential analysis.

Discussion of Findings

The most attainable and precise estimate conducted in this investigation in table 4 revealed that gross premium written affects claims expenses of oil and gas insurance firms positively and significantly; this implies that as gross premium written increases, claim expenses also scale up. Kaya (2015) established that premium growth is critical to a non-life insurance firm’s profitability; the oil and gas sector prides itself as the largest and the most valued insurance niche and the largest sector in the Nigerian economy. Given the lucrativeness of the oil and gas business and the huge risk that comes with it, insurance coverage of such business appears risky thus implying that the acceptance of the risk by insurance firms implies huge sales from insurance premiums. The riskiness of the oil and gas insurance contract suggests that claim expenses would be at a relatively increased level; in this case, the ratio of costs to

insurance premiums may be on the increase. Most insurance firms especially the relatively smaller ones may in their bid to maximize profit resist the adoption of reinsurance towards reduced risk, this may ultimately cause these firms to default in paying claims thereby contributing to the reduced confidence of the public in the services of oil and gas insurance companies in Nigeria.

Again, results evidenced that gross premium income impacts positively and significantly on claims payment of oil and gas insurance firms in Nigeria thus suggesting that as gross premium income increases, claim expenses would also increase. Although in an entirely different insurance niche, an insignificant relationship was obtained between premium revenue and claims payment (Isimoya & Akindipe, 2022). Insurance firms maintain diverse streams of premium income, yet the oil and gas stream take a substantial portion of the gross premium income of the company. By default, as the gross income of oil and gas insurance shoots up, risk increases and claim payment also heightens; however, the transfer of absorbed risk by the insurer to a reinsurance company serves as a hedge against the risk of payment of compensation which may be at an increased amount. No doubt the capacity of the cedent- insurance company to engage a reinsurance company is a big factor and it determines the ability of the insurance firm to obtain or sustain insurance contracts with oil and gas firms (Fadun, Aduloju & Oluwaleye, 2023). The security of an insurance brand is highly difficult, particularly in the oil and gas space where business activities are largely unpredictable; the reinsurance option of risk hedging and steady claim payment may not guarantee adequate net profit thus the need for investment in numerous industries.

Lastly, findings further suggested that net premium income exerts a negative significant impact on claims settlement of oil and gas insurance firms in Nigeria which implies that as claim expenses increase amongst firms, the chance to record reduced net profit also increases. As established in Oluwaleye, Shoyemi and Edewusi (2020) net loss has a noticeable effect on an insurance firm's profitability, it becomes clear that insurance firms have to strive towards massive net premium income towards ensuring unhindered claim settlement which provokes increased profitability.

Conclusion and Recommendation

In the business of insurance, the premium is critical as it does not only count for the profitability of the company but is also leveraged to offset the obligation of the company which is primarily claim settlement; the adequacy of insurance premium guarantees the adoption of risk measures and consequent steady payment of oil and gas insurance claims. Grounded on the results derived from the study analysis, there is strong evidence that gross premium written affects claims settlement of oil and gas insurance firms positively and significantly; gross premium income impacts positively and significantly on claims payment of oil and gas insurance firms in Nigeria and net premium income exerts negative substantial impact on claims expenditure of oil and gas insurance firms in Nigeria. Hence, this study established that insurance premium exerts a noticeable effect on claims expenditure of oil and gas insurance in Nigeria.

Based on the aforementioned findings, the subsequent recommendations must be put out:

Management of oil and gas insurance firms in Nigeria should explore alternative ways to increase the customer base for oil and gas insurance towards harnessing the lucrativeness of the insurance business in the sector to boost insurance premiums and guarantee increased claim payment. Consideration should be given to the massive diversification of income into other business sectors alongside adopting reinsurance to ensure oil and gas insurance firms' ability to pay insurance claims and sustain insurance contracts with oil and gas firms. Management of oil and gas insurance firms should seek quality reinsurance service over reinsurance firm's remittance or commission to the company, this would guarantee claim settlement and ultimately enhance the integrity of the oil and gas insurance sector in Nigeria.

REFERENCES

Ab. Rahim, F., & Amin, H. (2011). Determinants of Islamic insurance acceptance. *International Journal of Business and Society.* 12(2), 37–54.

Al-Tamimi, H. (2021). Risk management and performance of manufacturing firms in UAE. *Journal of Financial Regulation and Compliance, 16*(1), 173 - 187.

Amin, H. (2012). An analysis on Islamic insurance participation. *Jurnal Pengurusan UKM, 34*, 11-20.

Ayuba, B. & Isyaka. M.S. (2020). Impact of claim settlement on performance of general insurance businesses: Evidence from federal capital territory, Abuja. *International Journal of Managerial Studies and Research, 4*(1), 329-347.

Baker. D. (2019). Service quality and customer satisfaction in the airline industry: a comparison between legacy airlines and low-cost airlines. *American Journal of Tourism Research, Business & Economics Review, 20*(2), 9-22.

Ebong, C. (2021). Insurance sector losses ₦1trn to oil & gas underwriting. Independent Newspaper. Accessed on 19th June 2023. https://independent.ng/insurance-sector-loses-n1trn-to-oil-gas-underwriting /

Efiom-Ekaha, I.E. (2009). Oil and gas industry operation and loss control in Nigeria. *Stephen Adesean Printing Press.*

Ehiogu, C.P. & Nduka, J.U. (2019). Contribution of non-life claims to insurance penetration in Nigeria. *Crawford Journal of Business & Social Sciences, 9*(2), 34-35.

Fadun, O. S., Aduloju, S. A. & Oluwaleye, T.O. (2023). Analysis of reinsurance transactions and gross premium income of non-life insurance companies in Nigeria: An ARDL approach. *Journal of Accounting and Management,13*(3), 75-89.

Hussein, A. H., & Faris, M. A. (2019). Industry's risk management: A comparison study of UAE national and manufacturing firms. *Journal of Risk Finance, 8*(4), 394 - 409.

Ikponmwosa, N. & Izedomi, I.M. (2020). Insurance and financial performance of selected oil and gas companies in Nigeria. *The Nigerian Journal of Risk and Insurance. 10*(1), 59-76.

Isimoya, O.A. & Akindipe, O.E. (2022). Gross premium income and claims settlement of marine and aviation insurance in Nigeria: A Panel Approach. *Acta Universitatis Danubius, 18*(6), 108-118.

Jumaa, M. A. A. M. S. (2020). Inflation rate and gross written premium (GWP) influence on the profitability of UAE insurance sector. A post financial crises analysis. *Journal Global Policy and Governance, 9*(2), 117-137.

Kaya, E.O. (2015). The effects of firm-specific factors on the profitability of non-life insurance companies in Turkey. *Int. J. Financial Study, 3*(4), 510-529.

Mustafa, M.N., Busry, L.H., Abdul Majid, N.H. & Tahir, A.M. (2020). Islamic banking, accounting and finance International Conference - The 9th iBAF 2020. *Islamic Banking, Accounting and Finance International Conference,* 126-132.

NCRIB, (2014). Energy exploration and development: A collaboration between the Nigerian council of registered brokers and eastern regional oil and gas training for insurance practitioners.

Nwite, S.C., Okparaka, V.C. & Okeke, D.C (2020). Impact of claims settlement on the development of Nigerian insurance industry. *International Journal of Research in Management Fields, 4*(1), 1-16.

Negash, M., Venugopal, K., & Asmare, S. (2018). Identifying and analyzing of factors contributing for growth of non–life insurance gross premium a developing country perspective: Case of insurance industry in Ethiopia. *Journal of Exclusive Management Science, 7*(01).

Ogunlami, K. (2021). The effect of claim settlement on profit maximization in the insurance industry. *International Journal of Social Relevance & Concern, 9*(9), 15-27.

Ogbeide, S. O., Adu, T. O., Fapohunda, F. M., & Obadeyi, J. (2022). Insurance sector development and economic growth: Empirical analysis from Nigeria. *Asian Journal of Economics, Business and Accounting, 22*(17), 55-72.

Oladunni, O. E. & Olaolu, E. D. (2024). Effect of claims settlement on profitability of insurance business in Nigeria. *Journal of Quantitative Finance and Economics. 6(*1), 27- 46. https://DOI:10.47509/JQFE.2024.v06i01.02

Oluwaleye, T.O., Shoyemi, S.O. & Edewusi, D.G. (2020). Effects of claims management on profitability of insurance companies in Nigeria. *British Journal of Management and Marketing Studies, 3*(4), 106-114.

Onuoha, R. (2018). Economic slowdown: Insurers worry as income from premiums nosedives. Vanguard. http://www.vanguardngr.com/2015/10/economic-slowdown-insurers-worry-as- income-from-premiums-nosedives/

Onwe, O. J (2012). Economic implications of petroleum policies in Nigeria: An overview. *American International Journal of Contemporary Research, 2*(5), 1-15.

Owolabi, O. A., Oloyede, F. A., Iriyemi, A. B., & Akinola, A. T. (2017). The impact of risk management on the profitability of insurance companies in Nigeria. *International Journal of Marketing and Technology, 7*(6), 1-26

Oyedokun, G.E. & Gabriel, F.G. (2018). Effects of claims management on profitability of listed insurance companies in Nigeria. American Journal of Management. 18(5), 37-45.

Polycarp, S. U. (2019). Environmental accounting and financial performance of oil and gas companies in Nigeria. *Research Journal of Finance and Accounting, 10*(10), 192-202

Razak, D. & Taib A. (2008). Consumers' acceptance on Islamic home financing: Empirical evidence on Bai Bithaman Ajil (BBA) in Malaysia. *IIUM International Accounting Conference IV*, 1-22.

Reschiwati, I. & Solikhah, R.P. (2018). Random effect model: Influence of income premium, claim cost and underwriting results on net income in insurance company in Indonesia: Case study of insurance company listed on Indonesia Stock Exchange. *International Journal of Modern Trends in Business Research, 1*(3), 1-17.

Riwayati, H. E., & Natalia, S. (2022). Analysis of the effect of premium income, underwriting ratio, return on investment and return on equity on profit of insurance company. *Management Research Studies Journal, 3*(2), 49-57.

Salaudeen, T.O., Salam, R.A. & Mudashiru, G.A. (2021). Impact of net claim ratio and net retention ratio on financial performance of insurance companies in Nigeria. *Global Journal of Education, Humanities and Management Sciences, 3*(1), 115-124.

Santomero, A. (2019). Industry risk management: An analysis of process. *Wharton Financial Institutions Center Conference on Risk Management in Banking.* Chicago: ADF Press. 741-762.

Tarsono, O., Ardheta, P. A., & Amriyani, R. (2020, March). The influence of net premium growth, claim ratio and risk-based capital on the financial performance of life insurance companies. In *Annual International Conference on Accounting Research (AICAR 2019)* (pp. 65-68). Atlantis Press.

Umunnakwe, A.I., Okeke, D.C. & Okeume, A. (2022). Effect of general insurance cost of claims on the gross claims of insurance business, Nigeria perspective. *Afropolitan Journals, 3*(5), 73-93.

Yusuf, O.T. & Ajemunigbohun, S.S. (2015). Effectiveness, efficiency, and promptness of claims handling process in the Nigerian insurance industry. *CBU International Conference,* 1-10.

Yusuf, O.T., Ajemunigbohun, S.S., & Alli, G.N. (2017). A critical review of insurance claims management: a study of selected insurance companies in Nigeria. *SPOUDAI Journal of Economics and Business, 67*(2), 69-84.