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THE NIGERIAN FINANCIAL SYSTEM: THE NEXUS BETWEEN REINSURANCE CEDED AND EQUITY FINANCING IN THE NON-LIFE INSURANCE SECTOR

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Abstract. *In an era marked by increasing regulatory scrutiny and market volatility, insurers' decisions regarding capital acquisition and reinsurance utilization are paramount to their ability to thrive, adapt, safeguard policyholders' interests and maintain a margin of profit. This study examines the relationship between reinsurance utilization and equity financing in the Nigerian insurance industry as part of the Nigerian financial system. It hypothesizes that there is no significant relationship between reinsurance ceded and equity in non-life insurance companies in Nigeria. The study hinges on the bankruptcy cost theory and the renting capital hypothesis. The ex-post facto research design is adopted for the study and the population comprises all the registered insurance companies in Nigeria undertaking non-life insurance from which a sample of thirty-six (36) companies are selected using the purposive sampling technique. Data is drawn from the annual reports of the selected companies and Nigeria Insurers' Digest over a period of 23 years and analyzed using the pooled ordinary least squares regression, fixed effect, random effect regression and generalized method of moments. The results reveal a significant relationship between equity and reinsurance ceded. It is concluded that reinsurance utilization impinges on equity financing in non-life insurance companies. It is recommended that low-capitalized insurers should cede more risks as a buffer to their capital, guard against bankruptcy, and enhance profitability and solvency.*

Key words: *Equity, Reinsurance Utilization, Reinsurance ceded, Solvency, Profitability*

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1.1 INTRODUCTION

In the ever-evolving landscape of global finance and risk management, the source of capital of an insurance company has drawn momentous attention from both academia and industry practitioners. As insurance organizations play a critical role in mitigating risks and providing stability against unforeseen events, decisions on capital structure and reinsurance utilization are pivotal in managing risk exposure and ensuring solvency. The non-life insurance sector fosters economic stability through its risk mitigation and financial intermediation function. Notwithstanding, the sector is plagued by various challenges such as economic volatility, regulatory pressures and the need to maintain solvency in the highly competitive insurance market (Oluwabiyi, Asikhia & Egwuonwu, 2022; Tajudeen, 2022). In addressing these challenges, insurers explore a mix of financial strategies to manage their risk and enhance financial stability, such as reinsurance utilization and equity financing.

Reinsurance is an imperative part of the insurance industry. It is the primary medium through which ceding insurers by paying a premium transfer risks they do not wish to retain to the reinsurer, in return for the assurance of being indemnified when the reinsured risk occurs. This process increases the pecuniary stability of the ceding insurer and is very beneficial to the firm by increasing underwriting capacity, promoting risk-adequate behaviour, alleviating policyholder's apprehension about insurer solvency, increasing earnings and firm value and overall economic growth (Abass & Obalola, 2018; Obalola & Ukpong, 2022).

Reinsurance improves the solvency of insurance companies effectively serving as an off-balance-sheet capital. It is capable of enabling insurance companies attain an ideal mix of capital which reduces agency cost and enhances firm value. Similarly, through the purchase of reinsurance, insurers after meeting up with the statutory reserve, can relinquish capital that would have otherwise been tied up for potential future claims. The recovered capital can then be used for other firm projects, investments or as a means of meeting up with supervisory capital requirements. At the same time, through equity financing an insurance company can have a stable source of capital which strengthens the insurer's ability to write risks and maintain regulatory compliance (Akande, Samuel & Iyodo, 2020). The knowledge of the role of reinsurance and its association with capital structure decisions is essential for insurance companies in the dynamic insurance market and can influence their long-term viability and profitability as well as improve robust and viable insurance industry operations.

The Nigerian insurance industry has experienced varying degrees of dependence on reinsurance. The insurance industry comprises the life and non-life sectors. The life insurance sector covers individual life insurance, group life insurance and pension, and health insurance. All other forms of insurance outside life are covered in non-life insurance. While the non-life sector can boast of a fair participation of reinsurance as a means of managing underwriting risk and complying with statutory requirement, Aduloju and Ajemunighbohun (2017) assert that the life sector is yet to have a full grasp of it. As reinsurance utilization provides financial relief, it generates interest about how it relates with equity financing and the overall capital structure of the insurance company. Kocurek (2024) and Fadun, *et al.*, (2023) hold that the purchase of reinsurance lessens underwriting and solvency risks which motivates insurers to sell more policies. Reinsurance thus serves as a means of creation of value though the transfer of the risk while incurring additional cost on the insurer. Insurers who utilize more reinsurance may build less equity reserves which

might undermine their financial resilience. On the other hand, limited reinsurance utilization may strain equity capital and unduly expose the insurer to solvency risks and reduce their ability to underwrite new policies.

The Insurance Act (2003) stipulates that adequate solvency margins and capital buffers be maintained by insurance companies which is heightened by appropriate equity financing levels and reinsurance participation by insurers. Nevertheless, the interaction between these two financial strategies remains an under-researched area and an area of interest. There is still a need for the comprehensive understanding of the interplay between reinsurance utilization and equity financing in the non-life insurance sector. Addressing this problem is crucial for strategic decision-making among insurers, promoting regulatory compliance and enabling a resilient non-life insurance industry in Nigeria. Therefore, this study shall examine the nexus between reinsurance ceded and equity financing and their implications for their long-term solvency and profitability.

The aim of this study is to examine the relationship between reinsurance utilization proxied by reinsurance ceded, and equity financing in non-life companies of the Nigerian insurance industry. The study tests the hypothesis of no significant relationship between reinsurance ceded and equity of non-life insurance companies. Findings from this study would inform policymakers and regulatory bodies on the development of prudent regulations and policies that promote responsible capital and reinsurance practices. It would guide investors and shareholders in making informed investment decisions by providing valuable insights on understanding how the equity of insurance companies impacts their risk and return profile. In the light of the global financial crises and other systemic events, this study provides insights into how the interaction between capital structure and reinsurance can affect the resilience of the insurance industry.

2.1. Literature review

Literature is reviewed under the conceptual, theoretical and empirical reviews.

2.1.1. Conceptual review

Reinsurance as defined by Mabelwane (2021) is a contractual arrangement among two entities, namely the reinsured or ceding company and the reinsurer. The reinsurer undertakes to assume a predetermined proportion of risks as outlined in the contractual terms of the reinsurance contract with the promise of indemnification on the occurrence of the assumed risk. Reinsurance enables the sharing of the risk of unanticipated loss experience among the insurer and reinsurer, and enhances the relationship between the two contracting groups while decreasing insolvency risk, and at the same time leveraging the business. It also increases loss stabilization, augments underwriting capacity and provides a safety cushion in anticipation of catastrophic loss. (Aduloju & Ajemunigbohun, 2017; Cole, *et al.* 2011; Harrington & Niehaus, 2000; Obalola & Abass, 2016; Obalola & Ukpong, 2022).

Reinsurance utilization is a deliberate choice made by an insurer to procure reinsurance taking into consideration both the immediate and potential future risks (Abass & Obalola, 2018). It is measured by the ratio of ceded reinsurance (RCR) and the ratio of reinsurance recoverable to policyholder's surplus (RRPHS). Reinsurance ceded refers to the portion of risk that is ceded to the reinsurer. It represents the portion of insurance liabilities transferred to the reinsurer as a substitute for a portion of premium income deducted from the gross premium income. Wosti and Pradhan (2023), Comerford, *et al.* (2020) and Fadun, *et al.*

(2023) consider reinsurance cession as an effective tool in which insurance companies shift part of their risk in the insurance process. A lower ratio represents higher risk retention by the company and greater exposure to potential losses whereas a high ratio indicates the cession of a large proportion of risk to the reinsurers, which implies that the insurance company is effectively utilizing reinsurance to manage its risks (Carneiro & Sherris, 2005; Boyer & Dupont-Courtade, 2013; Mabelwane, 2021).

Companies with high ceded ratios which have transferred a large portion of risks may concentrate on increasing their underwriting profitability and risk reduction. Those with lower ceded ratios may indulge in strategies of retaining more risk to generate higher underwriting profits. Kocurek (2024) reiterates that reinsurance enables the stabilization of potential losses, increased capacity and reduced capital costs through the limit on liability on specific risks. In a related argument, Cedar and Thompson (2020) opine that an insurer may cede per-risk reinsurance even to the extent of a large portion of each contract as an internal threshold to guard against exposing the company to outsized, individualized risks. This strategy not only satisfies the market's demand for coverage, but also stabilizes its internal financing thresholds.

2.1.2. Equity financing

Equity involves the issue of shares aimed at raising financial resources for the company's operations. Opoku-Asante (2021) opines that, as a form of capital structure, equity is one of the securities used by a company to fund its investment operations. It enables investors to participate in the dividends from the company and also benefit when the share price rises. It serves as an important source of funding when the firm is at its infant stage. Modugu and Eragbhe (2015) assert that internal equity is an aspect of the distributable reserves in the statement of financial position that is reinvested into the business as internal equity. External equity is gotten from the issue of shares and comprises the ordinary share capital and preference share capital. Equity financing holds tremendous benefits for the firm. For instance, it is particularly useful when a company is at its start-up as there is no need to arrange for loans from banks, etc. Unlike debt, the company is not indebted to its shareholders and investors. This makes it less risky in comparison to debt financing. Steve (2021) opines that equity financing bestows legitimacy on companies by facilitating their access to investor networks thereby bolstering their credibility and solidifying their position within the market.

Equity financing and reinsurance utilization are influenced by various factors such as the solvency of the company, underwriting risk, profitability of the firm, firm size and the different classes of business undertaken by the insurance company (e.g. fire, motor, theft etc).

2.2. Theoretical review

2.2.1. Expected bankruptcy cost argument

This theory states that the probable costs associated with bankruptcy are a major consideration for companies in making capital structure decisions. It is obtained from the collective works of Haugen and Senbet, (1978); Modigliani and Miller, (1963); Myers (1984). It implies that organizations target an ideal capital structure that would reduce the expected bankruptcy costs, lessen the possibility of financial distress and reduce the cost of debt.

The expected bankruptcy cost hypothesis implies that reinsurance utilization can protect the insurer from unforeseen underwriting or investment losses, which diminishes their likelihood of insolvency. With this postulation, insurers engaging high levels of leverage who are already confronted with augmented bankruptcy costs and insolvency have a tendency to acquire reinsurance (Dhaene, *et al.* 2015; Shiu, 2011). The purchase of reinsurance serves to protect the insurer from unpredicted colossal losses, thus lessening the possibility of insolvency.

2.2.2. Renting capital hypothesis

The theory of Rents was first postulated by David Ricardo (1971) as a form of remuneration due to the owners of assets as a result of their ownership of assets and not because they aided any form of productive operation. The Renting Capital Hypothesis as based on the works of Jensen (1972) and Adiel (1996) posits that equity can be considered as a means of "rented" capital whereby shareholders are viewed as temporary investors who rent the firm's assets in exchange for dividends and capital gains. Shiu (2011) and Li and Shiu (2023) assert that when reinsurers 'rent' out capital to insurers through the transfer of risk, it can serve as a partial substitute for equity while covering potential losses and liabilities. Insurers with insufficient capital may decide to rent capital from their reinsurers to manage their risk exposure rather than retain the risks beyond their capacity on their financial accounts.

The utilization of reinsurance in insurance contracts enables the transfer of premiums collected from insurers to the reinsurer who assents to take in the portion of the risk from the insurer. In the case of proportional reinsurance, both premiums and claims are negotiated proportionally according to the contractual agreement. The insurer also receives a ceding commission as compensation for costs associated with the ceded risk, and a profit commission when the reinsurer makes a profit from it. These commissions serve as a way of remunerating the insurer for costs associated with underwriting and ceding the business and influence the insurer's 'rent' of capital. For non-proportional reinsurance, the reinsurer assumes losses that exceed the cedant's retention (Graven & Lamm-Tennant, 2003; Workie, 2018).

2.3. Empirical review of related literature

A couple of studies have been performed on the subject of capital structure and reinsurance utilization over the years. How reinsurance utilization impacts capital structure has been empirically tested and asserted by many researchers such as Escobar-Anel, *et al.* (2022); Li and Shiu (2023); Mankai and Belgacem (2016); Sheikh, *et al.* (2018); Shiu (2011) amongst others. While some researchers find a positive association, it is the reverse with others. Some of the more influential studies pertaining to this concept are discussed in this section. Cole and McCullough (2006) in a re-examination of the corporate demand for reinsurance using the U.S. insurance and reinsurance industry, came to the conclusion that foreign reinsurance is influenced by the functional features of the primary insurer like firm size, group affiliation and organizational form.

Shiu (2011) investigated the relationship between leverage and reinsurance in the UK non-life insurance industry. With an unbalanced panel database consisting of 143 non-life insurers over the years 1985 to 2002, the author used both the two-stage least square regression and the forecast error variance decomposition model (FEVD) to examine the

relationship between reinsurance use and leverage. It was observed that insurers having increased leverage buy greater reinsurance, and leverage has a significant positive association with reinsurance. In line with the bankruptcy cost, agency cost and risk-bearing hypothesis, the author's findings are similar to that of earlier researchers on the topic (see, Shortridge & Avila, 2004; Powell & Sommer, 2007; and Aunon-Nerin & Ehling, 2008).

Li and Shiu (2023) studied how actual relative to target leverage affects reinsurance use. Employing a simultaneous equation model on a sample of U.S. property and liability insurance companies from 2002 to 2022, they found that overleveraged insurers utilized more reinsurance the higher their leverage while vice versa also applies on the underleveraged insurers. Their study showed that reinsurance utilization is influenced by deviations in capital structure and the relationship is moderated by external shocks such as financial crises, catastrophe and endemic happenings. Moreover, both insurer's actual leverage level and capital structure can result in insolvency for the company. Also, Escobar-Anel, *et al.* (2022) explored the prospective of reinsurance in reversing the trend of decreasing capital guarantees in life insurance products. Using a sample of life insurers providing equity-linked products with capital guarantees analyzed with the value-at-risk model, they find that reinsurance, when optimally managed, can yield considerably higher capital guarantees.

Sheikh, *et al.* (2018) studied 27 non-life and six life insurance companies in Pakistan over the period 2002 to 2012. The authors examined the determinants of corporate reinsurance utilization in the life and non-life sectors of the Pakistan insurance industry. It was observed that life insurance companies with increased leverage made greater reinsurance purchases with increased solvency risk than the non-life stock insurance firms. Moreover, inasmuch as solvency risk, underwriting risk and business mix were significant factors in determining reinsurance demand, they had different effects on the reinsurance utilization in the two sectors of the industry. Their findings align with those of Kader, *et al.* (2010) and Carneiro and Sherris (2005).

In a study of the interactions between risk taking, capital and reinsurance for property liability insurance firms, Mankai and Belgacem (2016) used reinsurance usage as an endogenous decision variable and find that risk-taking is positively associated with capital while reinsurance is negatively related with capital. Their results, however, appeared to vary with the insurer's capitalization, group size affiliation and organizational form. Hoerger, *et al.* (1990) studied the effect of financial leverage on the reinsurance consumption of the insurance firm. It was discovered that insurance purchases are influenced by the insurer's surplus, and, a low surplus on premium increased the need for reinsurance in property and liability insurance, where the insurer's surplus to the premium was used as a contrary measurement of financial leverage.

Cedar and Thompson (2020) in a study of reinsurance sessions showed that internal reinsurance may be a better alternative to external reinsurance. In a study of US insurers, they discovered that with a $50 million per risk retention, a $30 million reinsurance was purchased in excess of $20 million per risk which bridged the gap between their enterprise risk appetite and that of their reinsurers. The excess risk was retained in-house and money was saved for the company over time. In this way, internal reinsurance was used in normalizing losses and stabilizing results from the business units. Kocurek (2024) showed that the reinsurer applies corporate credit and structured credit strategies to boost its performance benchmark. The author asserts that the higher the structure credit volatility, the better its risk-adjusted performance and the more improved equity listings.

Soye, *et al.,* (2022) in a study of reinsurance as a tool for profitability in non-life insurance companies in Nigeria, showed that reinsurance reduced the business risk of

insurers, served as a means of sustaining the capital base and enabled insurers manage their assets, capital and underwriting proficiently. In a study of 16 insurance companies in Nepal, Wosti and Pradhan (2023) found a positive effect of the ratio of ceded reinsurance on return on equity, which strengthened the assertion of the positive role of reinsurance cession as a risk mitigation tool. In a related study, Fadun, *et al.*, (2023) found a positive significant effect of reinsurance transactions on the gross premium income of non-life insurance companies in Nigeria.

This study contributes to knowledge as follows: First, the study of equity as a measure of capital structure brings new insight to the study of insurer's capital structure and reinsurance utilization relative to the use of leverage adopted by prior researchers on the subject. Second, to the best of the researcher's knowledge, a study of this nature has scarcely been carried out in the Nigerian insurance industry as previous works on reinsurance utilization and insurers' capital have been carried out majorly in the United States and Pakistan. Thus, a study of this nature carried out on the Nigerian insurance industry which is characterized by low penetration and patronage (Oluwabiyi, Asikhia and Egwuonwu, 2022; Tajudeen, 2022) will add to the existing knowledge on the topic.

3. Research Methodology

The ex post facto research design was adopted. As this study is non-experimental and seeks to establish a connection between the dependent and independent variables, coupled with the fact that within the limits of the research, there is no possibility of manipulating the variables, the usage of the ex post facto research design by the researcher is justified. The population was made up of the 36 companies undertaking non-life insurance business in Nigeria as of December, 2022. These companies were chosen because of the availability of their data as at the time of the study. Using a non-probability sampling method, the purposive sampling technique was used for the study. This sampling method, also known as judgment sampling is grounded on the attributes of the population. Thus, to form part of the study, the insurance company should have existed within the study period as a duly licensed insurance company in Nigeria and must have complete audited financial statements over the period of study. This is to enable the creation of balanced panel data. Companies that did not exist as of the start year of the study or whose licenses were cancelled during the period of the study were excluded.

Balanced panel data was used for the study collected over a 23-year period (2000 to 2022). The 23-year period was chosen to ensure data uniformity, reliability and consistency especially as data for some of the variables was lacking in earlier years as a result of inadequate coverage. Additionally, this period covers multiple phases of economic activity in the country such as the economic boom of the early 2000s, the COVID' 19 economic shock and other periods of expansion and recession. Data was extracted from the yearly publications of the Nigerian Insurers Association (NIA) and the annual reports of the respective companies such as the audited statements of financial position, income statements and revenue statements, as obtained on their websites. The dataset consists of longitudinal data obtained from thirty-six (36) insurance companies over twenty-three (23) time periods giving a total of 828 observations. The dataset comprises variables on equity ratio (dependent variable) ratio of reinsurance ceded (independent variable), and control variables - solvency, underwriting risk, firm size, return on equity and business mix of the insurance companies.

Data was analyzed using panel data regression analysis comprising the pooled ordinary least squares (OLS), fixed effect and random effect regressions, and the generalized method of moment (GMM). The pooled OLS was adopted because of its simplicity and efficiency at estimating regression coefficients. Moreover, it serves as a baseline or starting point in panel data analysis. It is however limited by its tendency to generate biased and inconsistent results especially where the relationships between the variables of study are not constant. This limitation motivated the adoption of the fixed effect and random effect regressions. The fixed effect permits the observation of group-specific dummy variables in explaining the unobserved heterogeneity in the regression model, while at the same time controlling for time-invariant heterogeneity and further reducing the bias in estimating the regression coefficients. The random effect analysis has the added advantage of an ability to include time invariant variables where the effects of the independent variables vary randomly across groups which makes it preferable to the fixed effect. To add to the flexibility and robustness of the analysis, the GMM was introduced as it produces more efficient estimates than the previous regressions and it can effectively handle heteroscedasticity, autocorrelation and measurement errors in the model. These four estimations were used to provide a comprehensive and in-depth analysis of the study variables. Data was also subjected to unit root tests to test for stationarity, and multicollinearity tests to test for the presence of high correlations among the variables.

The functional model formulated for this study is in the form:

$$EQR_{it} = f(RU, CV)_{it} \tag{1}$$

Where
EQR refers to Equity ratio
RU refers to Reinsurance Utilization
CV is the control variables
And *f* shows the functional relationship
i is the number of cross sections 1, 2, ..., 36
t is the period 1, 2, ...,23

However,reinsurance utilization is proxied by Ratio of Reinsurance Ceded (RCR) and the control variables are solvency (SOL), underwriting risk (UR), firm size (FS), return on equity (ROE) and the business mix variables. Thus, the equation can be re-written as:

$$EQR_{it} = f(RCR, SOL, UR, FS. ROE, BMIXI, BMIXII, BMIXIII, BMIXIV)_{it} \tag{2}$$

$$EQR_{it} = \alpha_0 + \alpha_1 RCR_{it} + \alpha_2 SOL_{it} + \alpha_3 UR_{it} + \alpha_4 FS_{it} + \alpha_5 ROE_{it} + \alpha_6 BMIXI + \alpha_7 BMIXII + \alpha_8 BMIXIII + \alpha_9 BMIXIV + \varepsilon_{it} \tag{3}$$

Where,
(*EQR*) is Equity ratio
(*RCR*) is the ratio of Reinsurance Ceded
(*SOL*) is Solvency
(*UR*) is Underwriting Risk
(*FS*) is Firm Size
(*ROE*) is Return on Equity
(*BMIXI*) is Business Mix from Fire and Property insurance
(*BMIXII*) is Business Mix from Motor Insurance
(*BMIXIII*) is Business Mix from Marine and Aviation insurance
(*BMIXIV*) is Business Mix from Oil and Gas Insurance

(ε) is the Error term.

Consistent with the works of Arellano and Bond (1991) and Blundell and Bond (1998), the dynamic GMM model used in the study is as follows

$$EQR_{it} - EQR_{it-1} = (\delta\text{-}1)EQR_{it-1} + \alpha_1 RCR_{it} + \alpha_2 SOL_{it} + \alpha_3 UR_{it} + \alpha_4 FS_{it} + \alpha_5 ROE_{it} + \alpha_6 BMIXI + \alpha_7 BMIXII + \alpha_8 BMIXIII + \alpha_9 BMIXIV + \mu_{it} + \varepsilon_{it} \quad (4)$$

Where,
$(\delta\text{-}1)EQR_{it-1}$ is a one-period lagged operator of equity
μ_{it} is firm-specific effects

3.1. Operationalization of research variables

The research variables for the study are operationalized as follows:

Equity ratio (EQR) is given as: $\frac{shareholder's\ fund}{total\ capitalization}$

Ratio of ceded reinsurance (RCR) = $\frac{ceded\ reinsurance}{net\ written\ premium}$

RRPHS = $\frac{Ceded\ reinsurance\ recoverable\ (CRR) + ceded\ unearned\ premium(CUP) + ceded\ commission(CC)}{policyholder's\ surplus\ (PHS)}$

$SOL = \frac{Net\ assets}{Net\ written\ premium}$

UR = $\frac{net\ claim\ expense}{net\ premium\ revenue}$

FS = Log(total assets)

ROE = $\frac{profit\ after\ tax}{total\ equity}$

Fire and property damage (BMIXI) = $\frac{net\ earned\ premiums\ written\ in\ fire\ and\ property\ damage}{total\ earned\ premiums\ written}$

Motor insurance (BMIXII) = $\frac{net\ earned\ premiums\ written\ in\ motor\ insurance}{total\ earned\ premiums\ written}$

Marine and Aviation insurance (BMIXIII) = net earned premiums written in marine and aviation insurance/total earned premiums written.

BMIXIII = $\frac{net\ earned\ premiums\ written\ in\ marine\ and\ aviation\ insurance}{total\ earned\ premiums\ written}$

Oil and Gas insurance (BMIXIV) = $\frac{net\ earned\ premiums\ written\ in\ oil\ and\ gas\ insurance}{total\ earned\ premiums\ written}$

4. DATA ANALYSIS

4.1. Descriptive statistics

Table 1 shows the descriptive statistics of the 36 non-life insurance companies used for the study for 23 years giving a total of 828 observations. It can be observed that a mean

equity ratio (EQR) of 3.953 was obtained. This implies that on average, the shareholder's equity accounts for approximately four times the amount of the company's total capitalization over the period of the study. This is an indication that the companies rely more on equity as a measure of financing. A mean solvency of 3.14 was observed. This implies that most of the companies have solvency ratios that are above the minimum solvency margin of 1.5 as directed by the National Insurance Commission, NAICOM (2015). Underwriting risk had a mean value of 0.297 which implies that approximately 29% of the premium income of the non-life insurers was spent on claim expense. Although there is no threshold for underwriting risk, an underwriting risk of a low percentage is desirable by the company. The mean value of ROE was 0.053 which implies that the companies on average recorded low returns on equity within the study period. The minimum ROE recorded was -2.03 while the maximum was 0.98. The business mix variables had means ranging between 0.15 and 0.39, a reflection of the premium contribution of the specific classes of businesses.

Table 1 Descriptive statistics

Variable	Mean	Max	Min	Std. Dev.	Skewness	Kurtosis
EQR	3.953563	35.00000	0.020000	3.233904	3.728641	25.63112
RCR	0.490514	2.480000	-0.02000	0.366361	1.187905	5.066999
SOL	3.146519	13.31000	-9.20000	2.638641	1.220006	5.321474
UR	0.296868	1.200000	-0.31000	0.179358	1.182255	6.583541
FS	2.979746	10.32000	0.320000	1.540320	1.540320	5.553872
ROE	0.053013	0.981000	-2.03000	0.179061	-2.696273	36.91489
BMIXI	0.182367	1.150000	0.010000	0.117683	3.988404	25.66949
BMIXII	0.286014	1.750000	0.080000	0.106501	3.343876	44.83856
BMIXIII	0.157935	1.160000	0.020000	0.053229	8.017623	147.6247
BMIXIV	0.396679	1.020000	0.010000	0.184673	0.782222	3.969219

Source: Author's computation using Eviews 12

From the standard deviation, it was observed that Equity with a standard deviation of 3.323 had the largest deviation from the mean. This is an indication of how varied the level of equity was among the companies within the study period. The business mix on marine and aviation insurance (BMIXIII) had the least standard deviation of 0.053, which shows that the premium contribution of marine and aviation insurance in the different companies over the period deviated only slightly from the mean value. All the variables except ROE are positively skewed. The positive skewness implies that they have a tendency for more higher values than the sample mean and a long right-tail distribution. ROE with a negative skewness has more lower values than the sample mean and a long left-tail distribution. All the variables have kurtosis values greater than 3 and are leptokurtic with peaked curves and an inclination for more values higher than the sample mean.

4.2. Unit root test

Unit root tests were carried out to test the stationarity of the variables. It ensures that the series is in an integrated order. Herranz (2017) asserts that where this is not the case, it could imply that the series is null or has a weak stationarity. The unit root test tests the hypothesis that the series is not stationary i.e. has a unit root. The augmented dicker-fuller test (ADF) and the Philip-Perron Fisher test were used in testing for unit root.

Table 2 Unit root test

Variable	ADF – Fisher Chi-square test			PP - Fisher Chi-square test		
	Statistic	Probability	Order of Integration	Statistic	Probability	Order of Integration
EQR	122.232	0.0002	I(0)	178.242	0.0000	I(0)
RCR	111.137	0.0021	I(0)	195.966	0.0000	I(0)
SOL	104.280	0.0077	I(0)	120.650	0.0003	I(0)
UR	125.904	0.0001	I(0)	171.694	0.0000	I(0)
FS	511.473	0.0000	I(1)	120.325	0.0003	I(0)
ROE	260.041	0.0000	I(0)	371.722	0.0000	I(0)
BMIXI	208.875	0.0000	I(0)	240.219	0.0000	I(0)
BMIXII	222.876	0.0000	I(0)	198.439	0.0000	I(0)
BMIXIII	140.502	0.0000	I(0)	213.475	0.0000	I(0)
BMIXIV	96.2008	0.0300	I(0)	118.207	0.0003	I(0)

Source: Researcher's computation from Eviews 12

The unit root analysis indicated that using the ADF test, the variables were stationary at the levels except FS which was stationary at the first difference. With the PP - Fisher Chi-square test all the variables were stationary at the level.

4.3 Test for multicollinearity

As a prerequisite to the regression analysis, correlation analysis was done on the data to test for multicollinearity. Multicollinearity exists where there are inter-correlations among the variables in a regression model. In the event where the objective of the study was aimed at analyzing how well the predictor variables react with the response variable, the presence of multicollinearity can give rise to skewed and misleading results.

Table 3 shows the correlation coefficient matrix for the non-life insurance companies. The correlation coefficient shows the robustness and the direction of the relationship between the variables. From the table it can be observed that equity (EQR) had significant correlations with all the variables of study with positive correlations with return on equity (ROE) and BMIXIII, and negative correlations with the rest of the variables. The independent variables and control variables all had significant relationships with each other. All correlations between the independent variables and control variables were modest and are all less than 0.5. This indicates an absence of inter-correlation among the variables which implies the absence of multicollinearity in the model for non-life insurance companies.

Table 3 Correlation coefficient matrix

	EQR	RCR	SOL	UR	FS	ROE	BMIXI	BMIXII	BMIXIII	BMIXIV
EQR	1.00									
RCR	-0.09	1.00								
SOL	-0.17	0.19	1.00							
UR	-0.01	0.42	0.13	1.00						
FS	-0.11	-0.09	0.04	-0.11	1.00					
ROE	0.06	0.05	0.02	-0.09	0.01	1.00				
BMIXI	-0.01	-0.05	0.06	-0.09	-0.03	0.04	1.00			
BMIXII	-0.06	0.09	0.05	0.05	-0.02	0.06	-0.04	1.00		
BMIXIII	0.07	0.14	-0.01	0.12	-0.03	-0.02	0.03	0.05	1.00	
BMIXIV	-0.03	0.324	0.037	0.285	-0.16	0.018	-0.09	0.07	0.05	1.00

Source: Author's computation (2024)

4.4. Test of hypothesis

There is no significant relationship between reinsurance ceded and equity in non-life insurance companies in Nigeria.

Panel data regression model: $EQR_{it} = \alpha_0 + \alpha_1 RCR_{it} + \alpha_2 SOL_{it} + \alpha_3 UR_{it} + \alpha_4 FS_{it} + \alpha_5 ROE_{it} + \alpha_6 BMIXI + \alpha_7 BMIXII + \alpha_8 BMIXIII + \alpha_9 BMIXIV + \varepsilon_{it}$

GMM model: $EQR_{it} - EQR_{it-1} = (\delta\text{-}1)EQR_{it-1} + \alpha_1 RCR_{it} + \alpha_2 SOL_{it} + \alpha_3 UR_{it} + \alpha_4 FS_{it} + \alpha_5 ROE_{it} + \alpha_6 BMIXI + \alpha_7 BMIXII + \alpha_8 BMIXIII + \alpha_9 BMIXIV + \mu_{it} + \varepsilon_{it}$

Table 4 Dependent Variable: EQR

	Pooled OLS		Fixed effect		Random effect		Dynamic GMM	
	Coe.	p-value	Coe.	p-value	Coe.	p-value	Coe.	p-value
Const	4.9220	**0.0017**	2.9010	**<0.0001**	3.2774	**<0.0001**	3.05371	**<0.0001**
EQR(-1)							0.2518	**<0.0001**
RCR	−0.9456	0.2637	−0.1230	**0.0495**	−0.1373	**0.0518**	−0.1861	**0.0030**
SOL	−0.1846	**0.0553**	−0.1075	**0.0266**	−0.1144	**0.0137**	−0.1230	**<0.0001**
UR	0.6807	0.4562	0.2285	0.6919	0.4487	0.4223	0.7182	**<0.0001**
FS	−0.1831	0.1850	0.0497	0.5281	0.0137	0.8532	−0.0774	**0.0597**
ROE	1.5945	0.3491	0.5837	0.2588	0.5555	0.2723	0.3905	**0.0071**
BMIXI	−0.3917	0.6940	0.9228	0.3493	0.8980	0.3442	−0.2285	0.2676
BMIXII	−1.807	0.5940	0.2496	0.7989	−0.0163	0.9859	−0.7097	**0.0105**
BMIXIII	4.8484	0.2522	−0.2847	0.8846	1.1258	0.4986	2.8180	**<0.0001**
BMIXIV	−0.1452	0.8981	1.5408	**0.0087**	1.4195	**0.0134**	−0.2681	0.6009
dt_2	−0.0665	0.8595	−0.0323	0.9531				
dt_3	−0.0866	0.8222	−0.0631	0.9093				
dt_4	0.1482	0.7174	0.2156	0.6958				
dt_5	0.8456	0.2400	1.0466	0.0578				
dt_6	0.2483	0.4619	0.3165	0.5649				
dt_7	−0.1479	0.7825	0.1193	0.8290				
dt_8	−0.1554	0.7305	0.0235	0.9666				
dt_9	0.1272	0.7579	0.4271	0.4504				
dt_10	0.3138	0.4665	0.5223	0.3512				
dt_11	0.0584	0.8933	0.4862	0.3975				
dt_12	−0.4422	0.4123	0.1994	0.7326				
dt_13	0.1615	0.7172	0.4199	0.4549				
dt_14	1.1604	0.1916	1.3948	**0.0140**				
dt_15	0.0020	0.9966	0.1587	0.7794				
dt_16	−0.1078	0.8357	0.1142	0.8414				
dt_17	0.4637	0.5386	0.6391	0.2670				
dt_18	0.6126	0.3690	0.7551	0.1858				
dt_19	0.3625	0.5815	0.5780	0.3111				
dt_20	0.5472	0.4270	0.5461	0.3426				
dt_21	0.0366	0.9494	0.1946	0.7285				
dt_22	0.4545	0.4841	0.6108	0.2843				
dt_23	0.4018	0.5823	0.4903	0.3936				

	Goodness of fit			
	OLS	Fixed effect	Random effect	Dynamic GMM
Mean dependent var	3.9535	3.953563	3.953563	
R-squared	0.0736			
LSDV R-squared		0.524221		
F(p-value)	2.34e-06	1.12e-84		
Durbin-Watson	0.65869	1.253579	1.263749	
Hannan-Quinn	4350.99	3932.614	4313.649	
Asymptotic test statistic P(value)			0.0547821	
Breusch-Pagan test p(value)			0.0000	
Redundant fixed effect test		0.0000		
Hausman test			0.146825	
Arellano-Bond for serial correlation (AR2)				**0.1360**
Sargan over-identification test				**0.4272**
Wald (joint) test				**0.0000**
Observations	828	828	828	792
Cross sections	36	36	36	36

Source: Researcher's computation (2024)

The result of the analysis of the relationship between equity and reinsurance ceded of is shown in Table 4. The pooled effect shows an insignificant relationship between equity and reinsurance ceded, while the fixed effect, random effect and GMM regressions show significant relationships. Using the goodness of fit test, the pooled effect gives a low R^2 of 7%, and a Durbin-Watson Stat of 0.65 which are below acceptable limits and also indicate the presence of autocorrelations in the model. The fixed effect gives an LSDV R^2 of 52%, which is much better than that of the pooled effect, and a Durbin-Watson stat of 1.25. It is not surprising that the redundant fixed effect showed that the fixed effect is a better model against the pooled effect with a probability value of 0.00. Similar to the fixed effect, the random effect gave a Durbin-Watson statistic of 1.263 which is still below the acceptable limits and a Breusch-Pagan test p(value) of 0.00. The Hausman test with a probability of 0.1468 indicated that the random effect is a better model than the fixed effect.

Proceeding to the GMM model, the Arellano-Bond for serial correlation (AR2) test with a probability of 0.136 showed the unavailability of serial correlations in the model. The Sargan over-identification test of 0.4272 upheld the absence of autocorrelations and the validity of the research instrument. A Wald (Joint) test of 0.000 which is also within acceptable limits endorses the GMM model as a more appropriate model for the study. Thus, with a probability of 0.0030, the hypothesis of an insignificant relationship between equity and reinsurance ceded in non-life insurance companies is rejected. Solvency, underwriting risk and return on equity also have significant relationships with equity. Firm size (FS) is significant at the 10% level of significance; and two of the business mix variables (BMIXII and BMIXIII) representing business mix for motor insurance and marine/aviation insurance respectively are also significant. Reinsurance ceded, solvency and firm size all have negative relationships with equity while underwriting risk and return

on equity display positive relationships. The business mix variables have negative relationships with equity, except marine and aviation insurance.

The variation in the results across the pooled OLS, fixed effect, random effect and GMM models are a reflection of their fundamental assumptions and their treatment of heterogeneity, endogeneity and heteroscedasticity. Even though each model provides some insight into the study, the GMM estimator is preferable because of its ability to generate consistent and efficient estimations especially where endogeniety, heterogeneity and dynamic behavior of the variables exist. This ability produces a more robust result relevant for policy implementation and data-intensive research, hence, the adoption of the GMM as the best statistical model for the study.

Year dummies were introduced into the pooled OLS and fixed effect models in order to compare the effect of the different years on the dependent variable with that of the base year. The coefficients of the dummies reflect the changes in the dependent variable of the particular year, relative to the base year. Positive coefficients are an indication that the dependent variable (Equity) was higher in those years in comparison with the base year, while negative coefficients such as those observed in years 2,3,7,8,11 and 16 suggest lower values compared with the base year. Differences in the coefficients observed in both models such as for years 7,8,12 and 16 where pooled OLS had negative coefficients while the reverse was the case with the fixed effect model, can be attributed to unobserved individual-specific effects, which is a common feature of the pooled OLS regression. This effect is controlled in the fixed effect model which affords a more precise picture of the variations.

The p-value indicates the level of significance of the variation between the particular year and the base year. Values greater than 0.05 indicate statistical insignificance, while those below 0.05 imply that the difference was insignificant. With the pooled OLS, it can be observed that all the p-values were greater than 0.05, which implies that the differences between the years and the base year were not statistically significant, irrespective of the large coefficients recorded in years 5 and 14. For the fixed effect analysis, year 14 with a p-value of 0.0140 was significant which implies that the differences observed in that year from the base year were statistically significant and there was a valid underlying change in variation. Year 5 with a marginal p-value of 0.0578 indicated fairly marginal significance.

The analysis of the year dummies shows that the changes that occurred per year were mostly not statistically different from the base year. The result of statistically insignificant large coefficients implies that the effects may be due to a random variation rather than a fundamental change capable of affecting the dependent variable. Summarily, the mostly insignificant results obtained may imply that year to year changes of the variables were not effective predictors of the dependent variable and that other factors may be more effective in elucidating the behaviour of the dependent variable.

4.5. Discussion of findings

The hypothesis tested for an insignificant relationship between reinsurance ceded and equity in non-life insurance companies. Findings revealed a significant negative relationship between reinsurance ceded and equity which is consistent with the studies of Cole and McCullough (2006), Hoerger, *et al.* (1990) and Shortridge and Avila (2004). Using the surplus-to-premium ratio as a measure of capital structure, the authors discovered that a low surplus-to-premium ratio resulted in higher reinsurance utilization among non-life insurers. Abass and Olubusade (2023) and Sheikh, *et al.* (2018) who adopt leverage as a measure of

capital structure find a significant negative relationship between leverage and reinsurance utilization in the non-life insurance sector. The finding from this study can be attributed to the fact that insurance companies in Nigeria have a capital structure consisting mostly of equity whereby an increase in capital births an increase in risks underwritten as shown by the positive relationship of underwriting risk with both equity and technical provisions. Now, due to the stability of their equity sources, there is no motivation to further purchase reinsurance. Contrarily, Wosti and Pradhan (2023) find a positive effect of reinsurance ceded on return on equity in insurance companies in Nepal.

This finding is in alignment with the bankruptcy cost hypothesis and renting capital hypothesis. From the bankruptcy cost hypothesis, it can be deduced that firms with less equity are more inclined to purchase more reinsurance protection, thereby reducing their exposure to catastrophic loss and guarding against bankruptcy risk and its effect on the policyholders, shareholders and employees. This will ensure greater security for policyholders and strengthen the insurer's stability in the financial market. Since equity acts as a financial buffer against insolvency risk, insurers with low equity are exposed to financial distress risks and have a stronger incentive to purchase more reinsurance to lessen volatility in claims and earnings. In support of the bankruptcy cost hypothesis, the result of this analysis shows that the utilization of reinsurance serves as an external risk financing tool enabling less capitalized firms to stabilize their loss ratios, enhance profitability and attain regulatory solvency requirements especially where it is too expensive to fund via leverage.

Cole and McCullough (2006), Hoerger, *et al.* (1990) and Li and Shiu (2023) remark that the chance of bankruptcy is one of the determining factors of the utilization of reinsurance by insurers. As risk is transferred through reinsurance purchase, the expected cost of bankruptcy is reduced. Insurers with higher equity have stronger financial positions to guard against excessive loss thus reducing their likelihood of insolvency even if they decide to purchase less reinsurance. Contrarily, Shiu (2016) maintains that reinsurance does not necessarily control for bankruptcy but serves as a mechanism of reducing the chances of ruin.

The renting capital hypothesis considers reinsurance as a substitute for capital. Armstrong and Dror (2007) and Kocurek (2024) adjudge that the utilization of reinsurance which serves as capital 'rented' from the reinsurer lessens the insurer's capital requirement to cover for excessive or catastrophic loss. For insurers with low equity levels, sourcing for contingent capital or new equity may be an arduous task, hence they are likely to opt for more reinsurance and retain solvency. This agrees with the findings of this study where low equity gives rise to more reinsurance ceded. By extension, Cummins, *et al.* (2008) and Cummins, *et al.* (2021) uphold that increased usage of reinsurance will eventually positively influence shareholder value, increase equity and increase profits for the insurer. This is evident in the positive effect of ROE on equity and positive correlations between ROE and the reinsurance variables as seen in the study.

Both theories (bankruptcy cost capital and renting hypothesis) accentuate the role of reinsurance in capital management in the insurance sector. The negative relationship between reinsurance ceded and equity financing points that insurers with less capital intently purchase reinsurance to maintain solvency, reduce underwriting risk and manage capital limitations. While the Bankruptcy Cost Hypothesis stresses the stimulus to avoid financial distress, the Renting Capital Hypothesis is more about making available a cost-effective access to external capital capacity via reinsurance. These perceptions are not mutually exclusive as they concurrently explain the insurer's reinsurance decisions. Thus,

the finding from this study reinforces the theoretical expectation of an interdependent relationship between reinsurance ceded and equity financing and that insurers optimize this mix based on their financial position and in consideration of regulatory restrictions and cost of obtaining capital.

In the correlation analysis, a significant positive association was observed between underwriting risk and equity. This implies that an increase in underwriting risk gives a rise in the company's equity. The correlation analysis also gave a positive correlation between underwriting risk and reinsurance ceded. The positive relationship observed with these variables signifies that insurers with greater underwriting risks retain greater levels of equity. This enables them to maintain adequate capital capable of absorbing potential losses and ensuring financial stability. Increased equity in the midst of increasing underwriting risk enhances solvency even in adverse conditions which inadvertently protects the policyholders. The positive correlation between underwriting risk and reinsurance utilization variables is in agreement with the researches of Kader, *et al.* (2010) and Sheikh, et al (2018), Obalola and Ukpong (2022) and Wosti and Pradhan (2023). Sheikh, et al (2018) find a positive relationship between reinsurance utilization and underwriting risk, solvency and expected taxes. Thus, it can be argued that more reinsurance is purchased by insurers with high underwriting risk and more reinsurance purchased would give rise to greater solvency.

Positive modest correlation was observed between ROE and Equity as well as between the proxies of reinsurance utilization which is consistent with the works of Obalola and Ukpong (2022). The authors using return on asset as a proxy for profitability obtained a positive association between profitability and reinsurance ceded in life insurance companies. The positive correlation with equity would suggest that increased equity gives rise to greater returns which is consistent with a priori expectations, implying that companies with greater equity are utilizing it efficiently to generate higher returns. Such companies are considered creditworthy due to their ability to use equity to generate profit. It is also an indication that they are striking a balance between a strong capital base and profit maximization. This will enhance unhindered entree to the capital market and higher stock valuations.

A positive correlation between reinsurance ceded and ROE observed in the non-life segment, is an indication that reinsurance is effectively used in managing risk and generating higher profitability. The utilization of reinsurance enables non-life companies to mitigate large losses, smooth earnings, manage volatility and maintain their capital base, which all lead to an increase in profit. Reinsurance also protects against large unexpected losses which ensures stability for the insurance company. These measures boost investor confidence and make an insurance company more attractive to investors.

The insurance business mix used in this study are: fire and property damage insurance, motor insurance, marine and aviation insurance and oil and gas insurance. They are mostly negatively related with equity. The negative correlation is an indication that an increase in business concentration in the specific class of business is associated with reduced equity. This was exemplified in fire and property damage, motor insurance and oil and gas insurance, which had negative correlations with equity and are high-risk insurances capable of resulting in high claims and high loss volatility for the insurer. A stable and profitable concentration of risk can attract entities willing to invest and build the financial worth of the insurer.

Mayers and Smith (1990) hold that increased business mix by insurers can create an upsurge in the volatility of their cash flows and increase the risk of bankruptcy. This thought is shared by Wosti and Pradhan (2023) as well as Soye, et al., (2022). Thus reinsurance serves as a cushion to guard against this risk. It has also been observed by Mankai and Belgacem (2016)

that inasmuch as reinsurance can shield the insurer from the risk associated with insolvency arising from an increase in its business mix, the economic benefits of specialization in each business mix category can lessen their need for reinsurance. The findings align with the works of Cedar and Thompson (2020) who consider reinsurance as a signal of potential capital inadequacy. The authors maintain that the quality and extent of reinsurance used by less-capitalized firms can be a mask to underlying solvency issues. Similarly, Kocurek (2024) opines that while reinsurance serves as a good risk mitigating tool, excessive reliance may expose insurers to counterparty risk, misaligned incentives or regulatory arbitrage where risk is ceded majorly as a regulatory requirement rather than a risk management device.

4.6. Policy implication

An understanding of the relationship between reinsurance ceded and equity enables policymakers to enforce the optimization of the insurers' capital allocation by allocating more capital to high-risk lines of business while at the same time using reinsurance to manage the risks effectively. It also helps in strategic decision-making whereby the insurer can decide to expand business lines with positive correlations with equity since they contribute a stronger capital base. Similarly, the knowledge of which line of business requires more reinsurance can aid the insurer in negotiating for more favourable terms with their reinsurers and align their reinsurance programs to match their risk profiles. The knowledge of negative correlations with reinsurance would enable the insurer to balance the cost savings of lower insurance utilization with potentially increased risk. Complying with this regulatory requirement would increase the insurer's competitive advantage, maintain market stability and improve regulatory oversight. Moreover, by this measure, policymakers and regulators can build a more robust and reliant non-life insurance arm of the industry that can succinctly fulfill its long-term obligations to policyholders while still maintaining solvency.

To guard against an over reliance on reinsurance, risk based capital frameworks such as solvency II and other risk based capital models can be utilized to set prudent limits on reinsurance cessions relative to equity levels. Where undercapitalized insurers substitute reinsurance for internal capital, there should be transparency in the extent and nature of reinsurance arrangements. When policymakers demand transparent reinsurance reporting standards, it will enhance a better assessment of insurance risk profiles and promote market discipline. Additionally, as excessive reliance on reinsurance may receive a negative perception by rating agencies, as a signal of financial fragility, risk managers and financial officers of insurance companies should ensure that reinsurance ceded serves as a complement to equity financing rather than an entire substitution. This will boost stakeholder confidence and improve their rating among rating agencies. Industry practitioners could intermittently evaluate the creditworthiness and diversification of their reinsurers to avoid excessive exposure to reinsurer default risk during systemic events as a result of increased dependence on reinsurance. Contingency planning can also be embedded into their risk management framework.

The negative relationship between firm size and reinsurance ceded implies that smaller firms may be constrained to hold more equity to cover their high risk exposures. Moreover, their increased reinsurance utilization may be aimed at managing any vulnerability to losses. The differentiated needs in risk profiles and capital requirements of large and small firms may require a need for regulatory considerations to ensure that smaller firms increase their reinsurance protection to guard against insolvency. They may also need to inculcate

certain innovations in optimizing capital and reinsurance options to obtain a competitive advantage in the insurance market. It must also be mentioned that the resilience of the industry to economic shocks and catastrophic events is managed by an overall financial stability, which for the larger firms is enhanced by their internal risk management strategies and for smaller firms increased reinsurance utilization.

Moreover, firms with high solvency may utilize reinsurance as a strategic tool to maintain their solvency ratios in compliance with statutory regulations. On the flip side, insurers with low solvency might resort to holding more equity to guard against potential losses and utilize less reinsurance. Where insurers have high solvency in addition to reinsurance protection, they are better positioned for expansion and growth. Acquisition of new business and expansion of old ones may not pose a threat to their financial stability. Their underwriting risk can be better managed and there may be no need for additional equity.

5. CONCLUSION

The researchers set out to analyze the relationship between reinsurance utilization and equity funding in the non-life sector of the Nigerian insurance industry using the ratio of reinsurance ceded as a proxy for reinsurance utilization. Findings from the study revealed a significant relationship between reinsurance ceded and equity which highlights the interdependence between capital structure decisions and risk management strategies. The findings indicate that low equity insurers depend more on reinsurance as an alternative source of capital, which is consistent with the bankruptcy cost hypothesis and renting capital hypothesis. This result has important implications for both regulators and industry practitioners. For the regulators, it stresses the need for prudent oversight of reinsurance arrangements as part of an inclusive solvency evaluation; while for the industry practitioners, it accentuates the critical role of supporting reinsurance strategies with long-term capital management objectives to guarantee financial stability and regulatory compliance.

5.1 Recommendations

From the findings derived from the study, the following recommendations are made.

i. Low-capitalized insurers should cede more risks as a buffer to their capital and guard against bankruptcy. The increased cessions of risk would enhance their financial stability, improve their solvency and risk management capabilities, foster potential for growth and enable them to comply with regulatory requirements. This will build its overall competitive advantage and enhance its viability in the insurance market.
ii. Insurance companies should purchase more reinsurance cover to increase their ability to write more risks and maintain solvency. This is a strategic activity that will enhance the risk management capacity of the insurer, expand its underwriting capacity and enable it to comply with statutory obligations as well as achieve financial stability. By ceding more risks to the reinsurer, insurers can avoid significant losses, free up more capital to aid their capital adequacy, and ensure their continued existence and enable their growth and competitive edge in the insurance market.
iii. Policymakers and regulators in addition to prudent monitoring of reinsurance arrangements, could also provide tax incentives for insurers actively utilizing reinsurance to stabilize their capital structure and improve risk management culture. This incentive would motivate non-

life insurers who already utilize reinsurance to optimize their utilization and improve their capital structure. An optimal utilization would reduce risk and enhance financial stability.

iv. As the study underscores the essence of disciplined equity management and prudent reinsurance program design, industry practitioners should recognize that reinsurance decisions are pivotal to broader financial stability and adopt it in their risk management framework for more enhanced risk governance in the insurance sector.

v. Adequately capitalized insurers can diversify their product mix with subsequent reinsurance cover to increase their returns. Product diversification will stabilize their revenue streams and reduce the dependency on particular lines of business. Increased product diversification and increased reinsurance cover would generate greater premiums which can be channeled towards capital adequacy and financial stability. This strategy will promote effective risk management, capital efficiency, competitive advantage and enhanced financial performance. It will also enhance shareholder value and improve the long-term business survival.

vi. Insurers should strive to maintain high equity levels to make up for low cessions of risk. High equity levels would bolster the capital base and reserves of the insurers increasing their capacity to contain significant losses, perform their obligations to policyholders, comply with regulatory requirements, and enhance their profitability and overall performance. It would also serve as a robust risk buffer, promote competitive advantage, and keep the insurer in a position to thrive in the competitive and dynamic insurance market.

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NIGERIJSKI FINANSIJSKI SISTEM: VEZA IZMEĐU CEDIRANJA REOSIGURANJA I FINANSIRANJA KAPITALOM U SEKTORU NEŽIVOTNOG OSIGURANJA

U eri koju obeležava sve veći regulatorni nadzor i nestabilnost tržišta, odluke osiguravača u vezi sa sticanjem kapitala i korišćenjem reosiguranja su od najveće važnosti za njihovu sposobnost da napreduju, prilagođavaju se, štite interese osiguranika i održavaju maržu profita. Ova studija ispituje vezu između korišćenja reosiguranja i finansiranja kapitalom u nigerijskoj osiguravajućoj industriji kao delu nigerijskog finansijskog sistema. Pretpostavlja se da ne postoji značajna veza između cediranog reosiguranja i kapitala u kompanijama za neživotno osiguranje u Nigeriji. Studija se zasniva na teoriji troškova bankrota i hipotezi o iznajmljivanju kapitala. Za studiju je usvojen dizajn istraživanja ex-post facto, a populacija obuhvata sve registrovane osiguravajuće kompanije u Nigeriji koje se bave neživotnim osiguranjem, iz kojih je uzorak od trideset šest (36) kompanija izabran tehnikom namernog uzorkovanja. Podaci su prikupljeni iz godišnjih izveštaja odabranih kompanija i publikacije Nigeria Insurers' Digest tokom 23 godine, a analiza je sprovedena korišćenjem metodologija: pooled ordinary least squares (POLS), regresije sa fiksnim efektom, regresije sa slučajnim efektom i generalized method of moments (GMM). Rezultati otkrivaju značajnu vezu između kapitala i cediranog reosiguranja. Zaključeno je da korišćenje reosiguranja utiče na finansiranje kapitalom u kompanijama za neživotno osiguranje. Preporučuje se da osiguravači sa niskom kapitalizacijom cediraju više rizika kao zaštitu svog kapitala, zaštite od bankrota i poboljšaju profitabilnost i solventnost.

Ključne reči: *Kapital, Korišćenje reosiguranja, Cedirano reosiguranje, Solventnost, Profitabilnost*