

# REX INSURANCE LIMITED

FINANCIAL CONDITION REPORT FOR NON-LIFE  
BUSINESS AS AT 31<sup>ST</sup> DECEMBER 2023



Building a better  
working world

## EXECUTIVE SUMMARY

This report provides an overview of the Financial Condition of the Company. We also understand that this report will form part of the Company's submission to NAICOM. The report has been prepared in accordance with the General Insurance Business Actuarial Reports Guidance Notes (GN12v5.0) published by the Institute and Faculty of Actuaries.

**The following are the key conclusions of the report.**

- ▶ As at 31st December 2023, the business had a Net Book Asset Value of N17.7 billion or 590% of the statutory minimum capital of N3 billion. Hence the business is capitalized from the current regulatory point of view.
- ▶ We estimate the economic/risk-based capital required to support the business at 31st December 2023 as N4.77 billion, a coverage of 371% of the shareholder's Funds of N17.7 billion. The company thus holds a cushion above its economic capital which enhances its ability to meet its obligations to policyholders in adverse scenarios.
- ▶ We noted that the proportion of GWP brought in by the Broker channel is 90%. We advise that the company expands other distributions channels such as digitization and bancassurance to write its business to widen its reach and increase its penetration in the market.
- ▶ The highest contributor to total GWP remains Special Risk line of business which contributed approximately 55% to premiums. We recommend that the company continues to monitor the portfolio to mitigate the pending concentration risk in general accident.
- ▶ Return on equity for the past three years (2021 - 2023) have been below the risk-free rate. We advise that the company targets average returns over a rolling period (e.g., 3 years) to exceed Treasury bill rates with the aim of rewarding shareholders for the risk they have undertaken by investing in the company.

## Table of Contents

EXECUTIVE SUMMARY .....	1
1. Introduction, Purpose and Limitations .....	3
2. Development in Business .....	4
3. Business Overview .....	5
4. PRICING & PREMIUM ADEQUACY .....	7
5. ASSET LIABILITY MANAGEMENT .....	9
6. Capital Management & Adequacy .....	11
6. Economic Capital .....	12
7. Reinsurance Management Strategy .....	15
8. Financial Condition as at 31 <sup>st</sup> December 2023 .....	17
9. Conclusion and Recommendations .....	19

## APPENDICES

1. RELIANCE & LIMITATIONS	
2. REINSURANCE TREATY PROGRAM	
3. REVENUE ACCOUNTS	
4. COMBINED RATIO TABLE	
5. ECONOMIC CAPITAL RESULTS AT 99% CONFIDENCE LEVEL	
6. ECONOMIC CAPITAL RESULTS AT 95% CONFIDENCE LEVEL	
7. ECONOMIC CAPITAL METHODOLOGY & STRESS LEVEL DERIVATION	

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26E Abdulrahman Okene Close  
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Victoria Island  
Lagos.

July 2024

## FINANCIAL CONDITION REPORT FOR NON-LIFE BUSINESS AS AT 31<sup>ST</sup> DECEMBER 2023

Dear Madam,

### Introduction, Purpose, and Limitations

1.1 We are pleased to present our Financial Condition Report (“FCR”) for **Rex Insurance Limited** (“the Company”) as at 31st December 2023.

Purpose:

1.2 This report sets out the outcome of our assessment of the criteria stipulated in the Guidance note (GN12v5.0), issued by the Institute and Faculty of Actuaries, to the extent relevant to Rex Insurance Limited for the year ended 31st December 2023.

1.3 This report is prepared solely for the purpose of providing an overview of the current financial condition of the Company. We understand that this report will form part of your submission to NAICOM. This report is not to be used for any other purpose other than that described above and should not be distributed to any other parties other than NAICOM.

Limitations:

1.4 Management is solely responsible for the contents and submission of the Financial Conditions Report in accordance with Guidance Note GN12V5.0

1.5 Because our assessment does not constitute either an audit or a review made in accordance with International Standards on Auditing or International Standards on Review Engagements (or relevant national standards or practices), we do not express any assurance on the financial statements, the financial conditions or the ability of the entity to continue as a going concern for the foreseeable future.

1.6 Had we performed additional procedures, or had we performed an audit or review of the financial statements in accordance with International Standards on Auditing or International Standards on Review Engagements (or relevant national standards or practices), other matters might have come to our attention that would have been reported to you.

1.7 Our report has been prepared based on certain assumptions and is subject to certain limitations. These have been described in Appendix 1 - Reliance and Limitations.

## 2. Developments in the Business

2.1 We illustrate in the table below how Rex's books have developed over the year 2022 to 2023.

	2022 N'000	2023 N'000	YoY Movement
Insurance Revenue	13,924,368	15,417,643	11%
Insurance Service Expense	(7,651,356)	(10,039,023)	31%
Net expenses from reinsurance contracts held	(5,769,033)	(6,123,556)	6%
Insurance Service Result	503,979	(744,936)	-248%
Investment Return	1,818,148	1,769,948	-3%
Finance Income	39,734	44,843	13%
Net fair value gains/(losses) on financial assets at FVTPL	(37,657)	169,870	-551%
Fair value gains on investment properties	(109,671)	(120,604)	10%
Other operating income	32,884	23,172	-30%
Other Operating Expenses	(1,598,089)	(1,769,322)	11%
Impairment loss	(55,662)	(219,094)	294%
Insurance/Reinsurance Finance Income & Expenses	(5,981)	(42,166)	605%
Foreign Exchange (loss)/gain	290,666	4,996,383	1619%
Unrealized Fair Value Gain/Exchange Gain	4,278	7,053	65%
Profit before Tax	882,629	4,115,147	366%
Income Tax	55,760	(924,799)	-1759%
Profit after Tax	938,390	3,190,348	240%

There was a significant increase in the profit before tax mainly as a result of the notable increase in Foreign exchange gain.

### 3. Business Overview

#### 3.1 Premium History

Gross Written Premium (GWP) has increased with an average of 14.6% over the years under review.

Line of Business	2021		2022		2023	
	₺' 000	%	₺' 000	%	₺' 000	%
Motor	1,533,147	12%	1,865,206	13%	3,032,427	18%
Accident	814,078	6%	894,316	6%	941,102	6%
Bond	7,555	0%	10,878	0%	12,218	0%
Marine	898,593	7%	940,166	7%	1,078,180	6%
Agriculture	255,669	2%	107,914	1%	31,248	0%
Fire	1,085,100	9%	1,413,281	10%	1,680,794	10%
Engineering	419,298	3%	517,972	4%	827,593	5%
Special Risk	7,721,670	61%	8,459,557	60%	9,123,242	55%
<b>Total</b>	<b>12,735,110</b>	<b>100%</b>	<b>14,209,291</b>	<b>100%</b>	<b>16,726,804</b>	<b>100%</b>
<b>% Increase (YoY)</b>			<b>11.58%</b>		<b>18%</b>	

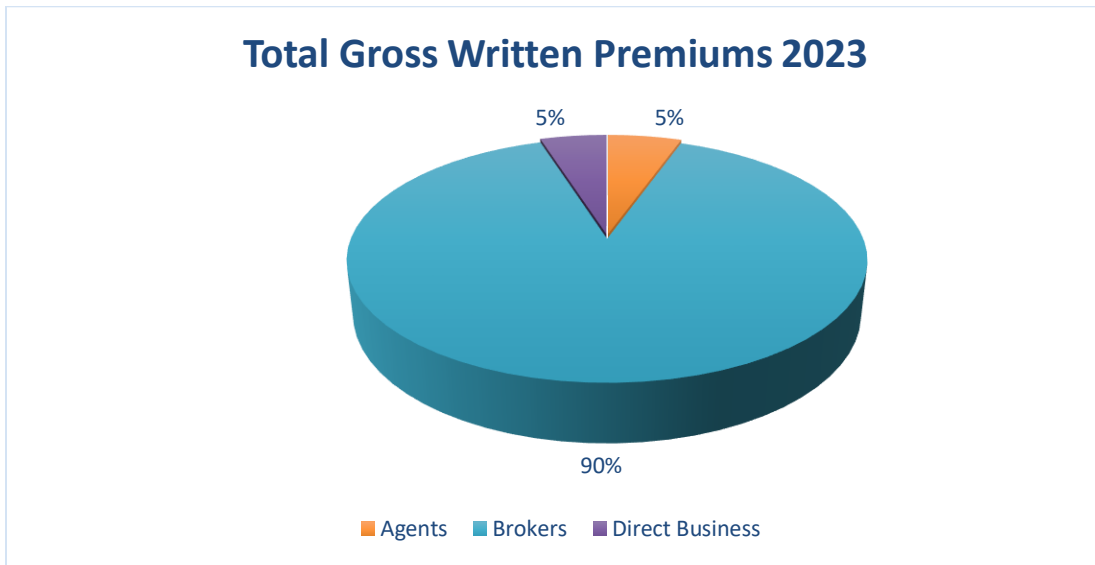
Line of Business	2022	2023	YoY Movement
Motor	1,865,206	3,032,427	63%
Accident	894,316	941,102	5%
Bond	10,878	12,218	12%
Marine	940,166	1,078,180	15%
Agriculture	107,914	31,248	-71%
Fire	1,413,281	1,680,794	19%
Engineering	517,972	827,593	60%
Special Risk	8,459,557	9,123,242	8%
<b>Total</b>	<b>14,209,291</b>	<b>16,726,804</b>	<b>18%</b>

- 3.1.1 The GWP increased for all the lines of business from 2022 to 2023 except for Agriculture portfolio.
- 3.1.2 The main drivers of growth are the Special Risk, and Motor classes of business which led to an 18% increase in 2023.
- 3.1.3 The Special Risk and Motor portfolios have consistently contributed the highest to the GWP in the years under review.
- 3.1.4 We note that there is the concentration risk in the Special Risk portfolio It is recommended that Rex writes more businesses in the other lines to help further diversify its portfolio to mitigate this risk.

### 3.2 Distribution Channel

The chart below indicates three channels through which gross written premiums are channeled in.

Experience data shows that a significant proportion of business written by Rex came through Brokers which contributed 90% of the total Gross Written Premiums, Agents contributed 5% and Marketers brought in 5% Of the total GWP.



### 3.3 Financial Performance

3.3.1 We illustrate below that the company’s return on equity, as published in the Annual Financial Statements, has been consistently lower than the risk-free rate with the three years under review (2021 to 2023) being negative returns except for year 2023. We advise that the company targets average returns over a rolling period (e.g., 3 years) to exceed Treasury bill rates with the aim of rewarding shareholders for the risk they have undertaken by investing in the company.

Year	Shareholders Fund N'000	Return on Equity (as published in the Accounts) %	Risk Free Rate %
2021	13,400,212	2%	12%
2022	14,228,577	5%	14%
2023	17,709,497	17%	20%

## 4. Pricing & Premium Adequacy

We illustrate in the table below how premium income has been utilised from 2021 to 2023.

	2022 Restated N'000	2023 N'000
Net Insurance Revenue	8,155,335	9,294,087
Net Claims Incurred & Attributable expenses	2,474,421	5,053,866
Acquisition Expense (Net)	733,483	2,070,577
Investment Income	1,818,148	1,769,948
<b>Claims &amp; Attributable Ratio</b>	<b>21%</b>	<b>36%</b>
<b>Acquisition Expense Ratio</b>	<b>9%</b>	<b>22%</b>
<b>Combined Ratio</b>	<b>30%</b>	<b>58%</b>
<b>Investment Income (% NPI)</b>	<b>22%</b>	<b>19%</b>

We illustrate in the table above that Claims & Attributable ratio increased from 21% to 36% while the acquisition expense increased from 9% to 22% with the result being an increase in the combined ratio from 30% (2022) to 58% (2023)

Based on the above analysis over a 2-year period, it is noted that Rex has managed to achieve combined ratios below 100% in the last 2 years which demonstrate premium adequacy.

The investment income as a percentage of Net Premium Income decreased to 19% (2023) from 22% (2022).

Metric	Definition
Claims & Attributable Expense Ratio	Net Claims Incurred & Attributable expenses / Net Insurance Revenue
Acquisition Expense Ratio	Acquisition Expense / Net Insurance Revenue
Combined Ratio	Sum of Claims Incurred & Attributable Expense and Acquisition expense ratios
Investment Income (%NPI)	Investment Income / Net Insurance Revenue



## 5. Assets, Liabilities Management

### 5.1 Insurance Liability

We illustrate in the tables below the Gross Reserves of N 6.13 billion, Reinsurance Assets of N1.54 billion giving a Net Reserve of N4.59 billion.

Reserves	Gross Reserve (N'000)	Reinsurance Assets (N'000)	Net Reserve (N'000)
LIC (PVFCF)	2,781,024	(952,659)	1,828,365
RA	187,742	(64,312)	123,430
LRC_EX_Lc	3,164,101	(525,509)	2,638,592
LC	1,655	(1,028)	627
<b>Total</b>	<b>6,134,522</b>	<b>(1,543,508)</b>	<b>4,591,014</b>

### 5.2 Insurance Assets

We illustrate below that the company holds short-term assets i.e. Cash and Cash equivalents with leading banks and financial institutions to back its insurance fund. Rex also has reinsurance assets from which are expected payments from leading reinsurers in respect of the technical reserves stated in section 3.1.

Assets	Insurance Funds			
	2023 (N'000)	%	Regulatory Maximum	Meet Requirement
Cash and cash equivalents	31,213,141	95%	No limit	Yes
Reinsurance Assets	1,543,510	5%	Minimum of 20% of Policy holders funds.	Yes
<b>Total</b>	<b>32,756,651</b>	<b>100%</b>		

## 6. Capital Management & Adequacy

### 6.1.1 Balance Sheet Solvency

We illustrate in the table below that from 2021 to 2023, the company has a more than sufficient balance sheet solvency ratio.

Year	2021	2022	2023
	(N'000)	(N'000)	(N'000)
Technical Liabilities (Net of Reinsurance)	2,876,699	3,261,693	4,591,013
Shareholders Fund (Free Assets)	13,400,212	14,228,577	17,709,497
<b>Balance Sheet Solvency Ratio</b>	<b>466%</b>	<b>436%</b>	<b>386%</b>

The solvency ratios give comfort that liability obligations will be met when they fall due. We highlight the regulatory solvency position below and discuss risk-based solvency in section 8.

### 6.1.2 Regulatory Solvency

We show in the table below that the company's admissible assets fall below the regulatory capital requirement of N3bn except for the year 2023.

Year	2021	2022	2023
	(N'000)	(N'000)	(N'000)
Technical Liabilities (Net of Reinsurance)	2,876,699	3,261,693	4,591,013
Free Assets (allowing for admissible rules)	9,538,316	11,695,398	12,109,118
Minimum Capital Requirement	3,000,000	3,000,000	3,000,000
<b>Capital Adequacy Ratio (CAR)</b>	<b>332%</b>	<b>359%</b>	<b>264%</b>
<b>Regulatory Solvency Ratio</b>	<b>95%</b>	<b>117%</b>	<b>121%</b>

The below table demonstrates how the Capital Adequacy Ratio and Regulatory Solvency ratio would be materially impacted should claim ratio increase by 20%.

Year	2023	2023 - Stressed
	(N'000)	(N'000)
Technical Liabilities (Net of Reinsurance)	4,591,013	5,509,216
Free Assets (allowing for admissible rules)	12,109,118	11,190,915
Minimum Capital Requirement	3,000,000	3,000,000
<b>Capital Adequacy Ratio (CAR)</b>	<b>264%</b>	<b>203%</b>
<b>Regulatory Solvency Ratio</b>	<b>404%</b>	<b>373%</b>

While the regulatory solvency ratio falls to 373%, the Company would still meet its minimum capital requirement in the event of this extreme scenario.

**DEFINITIONS**

<b>Metric</b>	<b>Definition</b>
Capital Adequacy Ratio (CAR)	Free Assets/Minimum Capital Requirement
Balance Sheet Solvency Ratio	Shareholders' Funds/Technical Reserves
*Regulatory Solvency Ratio	Free Assets/Technical Reserves

*\*Free assets include allowance for admissibility rules*

## 6.1 Stress Scenario for 2023 Results

6.1.1 The below table demonstrates that the solvency margin would be materially impacted should the net claim ratio increase by 5%, 10% and 20% respectively.

Year	2023 (N'000)	2023 - Stressed (N'000)
Technical Liabilities (Net of Reinsurance)	4,591,013	4,820,564
Shareholders Fund (Free Assets)	17,709,497	11,879,567
<b>Balance Sheet Solvency Ratio</b>	<b>386%</b>	<b>246%</b>

Year	2023 (N'000)	2023 - Stressed (N'000)
Technical Liabilities (Net of Reinsurance)	4,591,013	5,050,114
Shareholders Fund (Free Assets)	17,709,497	11,420,466
<b>Balance Sheet Solvency Ratio</b>	<b>386%</b>	<b>226%</b>

Year	2023 (N'000)	2023 - Stressed (N'000)
Technical Liabilities (Net of Reinsurance)	4,591,013	5,509,216
Shareholders Fund (Free Assets)	17,709,497	10,502,263
<b>Balance Sheet Solvency Ratio</b>	<b>386%</b>	<b>191%</b>

The above stress tests shows that the Company's Balance Sheet Solvency ratio is above 100% at a 20% net increase in loss ratio across the whole account, which is considered an extreme scenario. This shows the resilience of the Company's Balance Sheet to short-term shocks, demonstrating a strong financial condition.

## 6.2 Economic Capital

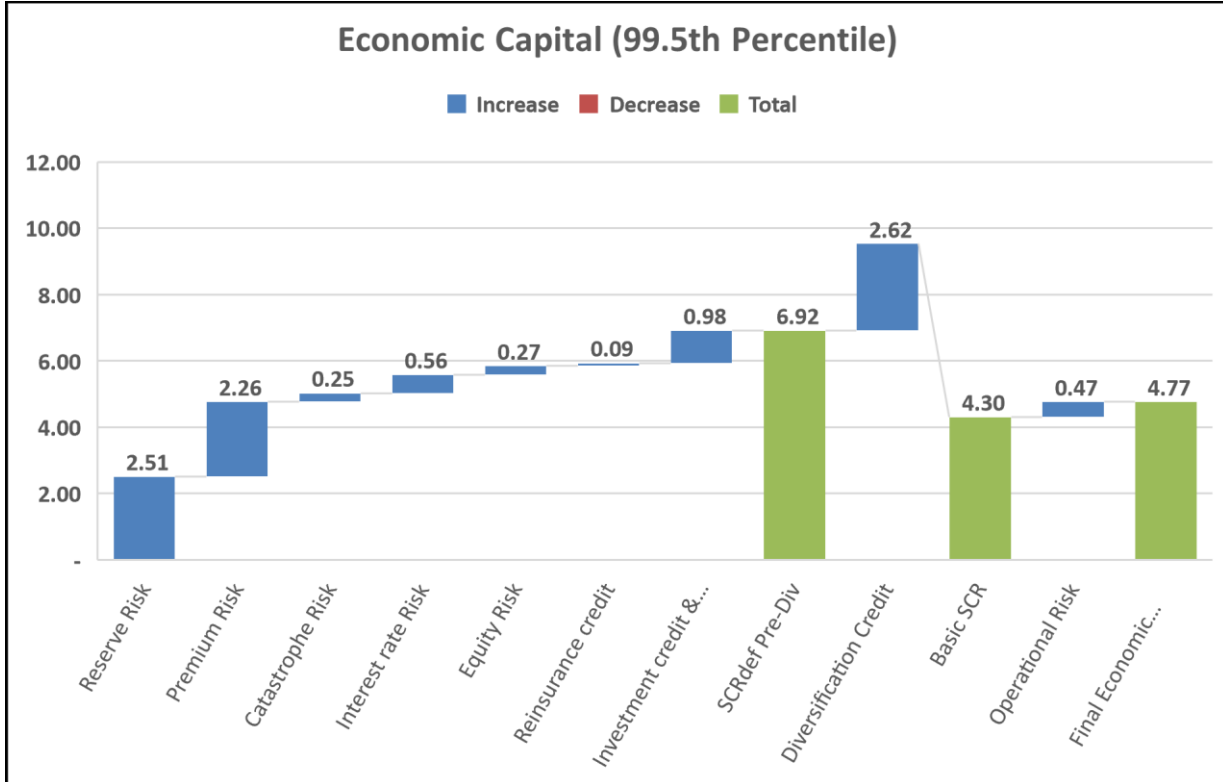
- 6.2.1 The technical figures (technical liabilities, reinsurance assets, etc.) estimated for balance sheet purposes are our 'best' estimate and broadly reflect the 'mean' of possible outcomes. However, in the course of time these estimates may fluctuate adversely as a result of unexpected realities.
- 6.2.2 It is prudent and best practice to estimate the extent to which the best estimate can be exceeded due to possible adverse situations and establish the corresponding risk capital, called economic capital. This is the amount of capital that a financial company requires to stay solvent given the riskiness of its assets and operations.
- 6.2.3 The key risks the company is exposed to are underwriting risk, market risk, counterparty risk and operational risk, they are described and discussed in appendix 6 of the report.
- 6.2.4 We have calculated for each of the risks, the amount of capital required as at year end 2023 at 95%, 99% and 99.5% level of confidence.
- 6.2.5 This report discusses in detail capital requirements at 99.5%, which is equivalent to a 1-in-200 event. Put differently, this is the capital required to sustain the company should extreme events that are expected to occur once every 200 years, occur in 2023. Such events would typically lead to large 'unexpected' losses that could significantly affect the fortunes of the company. The results at 95% (1 in a 20year event) and 99% (1 in a 100year event) are shown in appendix 5 and 6 of the report.
- 6.2.6 We have adopted the following methods in calculating the Economic capital:
- ▶ Value at Risk → this was applied to Market risk and Credit risk
  - ▶ Stochastic approach using Bootstrapping → this was applied to non-Life reserving and premium risks.
  - ▶ Solvency II standard formula approach was adopted for operational risk

Detailed explanation of each of the risks including derivation of the stresses applied are given in appendix 6 of the report.

- 6.2.7 In order to recognize that each individual risk event is unlikely to occur in the same year, aggregation of capital requirements was done. This has the effect of reducing the total required capital - technically called a diversification. The assumed correlation matrix is shown in appendix 7.
- 6.2.8 The calculations were based on same data used to prepare the IFRS valuation as at 31 December 2023 and asset information shown in section 2.3 of this report.

6.2.9 The following results at 99.5% confidence level were obtained.

Risk Type		Capital Requirement (N)
Non-Life Insurance Risk	Reserve Risk	2,508,528,621
	Premium Risk	2,259,076,863
	Catastrophe Risk	250,541,495
	Lapse Risk	-
	SCR <sub>nl</sub> Pre-Div	5,018,146,979
	SCR <sub>nl</sub> Div Credit	1,574,689,102
	SCR <sub>nl</sub> Post Div	3,443,457,876
Market Risk	Interest Rate Risk	559,409,042
	Equity Risk	269,062,943
	Property Risk	-
	Spread Risk	-
	Currency Risk	-
	Concentration Risk	-
	SCR <sub>mkt</sub> Post Div	620,752,240
Counterparty Default Risk	Reinsurance credit	87,619,607
	Investment credit & Debtors	982,858,823
	SCR <sub>def</sub> Pre-Div	1,070,478,431
	SCR <sub>def</sub> Div Credit	-
	SCR <sub>def</sub> Post Div	1,070,478,431
Undiversified BSCR		5,134,688,547
Diversification Credit		836,337,121
Basic SCR		4,298,351,426
Operational Risk		472,453,336
<b>Final Economic capital</b>		<b>4,770,804,762</b>
<b>Shareholders' Funds</b>		<b>17,709,497,000</b>
<b>% of Economic Capital</b>		<b>371%</b>



6.2.10 As shown in the table above, the total Economic Capital required in connection with the business profile at 31st December 2023 was N4.77 billion which is lower than the shareholders' funds of N17.7 billion.

6.2.11 This implies Rex has capital excess which provides the management with capital flexibility to conduct its business plan over the forward-looking period considering inherent material risks (such as catastrophes) and in anticipation of continued difficult operating conditions in insurance, credit, and financial markets.

## 7. Reinsurance Management Strategy

7.1 The Company's reinsurance arrangements are summarized in section 7.2.

For each line of business, we illustrate the 'value for money' being the ratio of total reinsurance inflow (i.e., commission income, reinsurance recoveries) to total reinsurance outflow/cost.

### 2022 Accident Year

₪' 000

Class of Business	Motor	Accident	Bond	Marine	Agric	Fire	Engineering	Special Risk	Total
<b>Outflow</b>									
<b>Cash paid to reinsurers</b>	96,231	181,034	10,455	531,367	52,161	815,935	355,163	6,038,448	8,080,794
<b>Inflow</b>									
<b>Reinsurance Contract Assets</b>	65,886	72,851	9,158	172,582	70,440	479,916	130,704	758,342	1,759,878
<b>Value for Money Ratio</b>	68%	40%	88%	32%	135%	59%	37%	13%	22%

### 2023 Accident Year

₪' 000

Class of Business	Motor	Accident	Bond	Marine	Agric	Fire	Engineering	Special Risk	Total
<b>Outflow</b>									
<b>Cash paid to reinsurers</b>	197,305	240,887	3,955	693,231	19,848	905,902	644,830	6,595,790	9,301,748
<b>Inflow</b>									
<b>Reinsurance Contract Assets</b>	78,778	99,588	6,303	120,238	50,705	488,944	292,538	406,413	1,543,508
<b>Value for Money Ratio</b>	40%	41%	159%	17%	255%	54%	45%	6%	17%

- 7.1.1 Rex experienced decreased in the value for money ratio over the last 2 years from 22% (2022) to 17% (2023) though the treaty arrangement is optimal given that it is positive.
- 7.1.2 The decrease in Motor, Marine and Special Risk, lines of business are the highest contributors to the decrease in the value for money for this year.
- 7.1.3 The value for money ratios, however, does not take cognizance of other benefits reinsurance provides e.g. granting the company capacity to underwrite bigger risks than it would ordinarily have been able to take on due to its limited capital resources.
- 7.1.4 Details of the current reinsurance arrangement are provided in Appendix 3.



## 7.2 Reinsurance Management

### 7.2.1 Basis and Methods of Retention Levels

The retention limit and the associated product lines were established in liaison with the reinsurers. In setting these limits, the following were taken into consider:

- The nature and quality of the business
- Regulations imposed the regulatory body
- Risk appetite of Rex

While Rex reinsures seven (7) reinsurers, majority of its businesses are with Continental Reinsurance and Waica Reinsurance which have stable ratings.

Illustrated in the table below is the list of Reinsurers and their ratings:

Reinsurer	Credit Rating
Swiss Re	A-
African Re	A
WAICA Re	B+
Continental Re	B+
FBS Re	A+
NCA Re	BB
Aveni Re	unrated

## 8. Financial Condition as at 31<sup>st</sup> December 2023

- ▶ We have illustrated above that the company has enough funds to meet its insurance contract liabilities under stressed conditions.
- ▶ The company's return on equity has also been consistently lower than the risk-free rate with the three years under review (2021 to 2023) with negative returns, except for year 2023.
- ▶ We are thus of the opinion that the company would be able to meet policyholder obligations if and when they fall due and is able to withstand stressed scenarios as evidenced by the stress tests.

### 8.1.1 We recommend that the company should:

- ▶ Explore other distributions channels such as digitization and bancassurance to write its business to widen its reach and increase its penetration in the market.
- ▶ Target average returns over a rolling period (e.g., 3 years) to exceed Treasury bill rates with the aim of rewarding shareholders for the risk they have undertaken by investing in the company.
- ▶ Continue to monitor the portfolio to mitigate the concentration risk in Special Risk portfolio.

## 9. New Business Plans

### 9.1 Business Plan Production

The table below indicates the year-on-year growth for the various lines of businesses.

Rex has plans to grow at 24% with a projected decline in growth for Marine and Engineering portfolios% and 42% in 2024 and 2025 respectively. We illustrate the forecast in the table below.

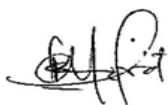
This seems quite ambitious given that the average growth for Rex over the past 3 years is 10.3%. It is recommended that this forecast is monitored as the year progresses.

Line of Business	2023	2024		2025	
	₺' 000	₺' 000	YoY Growth	₺' 000	YoY Growth
Motor	3,032,427	4,496,464	48%	5,395,757	20%
Accident	941,102	1,752,809	86%	2,103,371	20%
Bond	12,218	281,533	2204%	343,470	22%
Marine	1,078,180	984,678	-9%	1,063,452	8%
Agriculture	31,248	149,331	378%	176,211	18%
Fire	1,680,794	1,722,276	2%	1,894,504	10%
Engineering	827,593	790,131	-5%	869,144	10%
Special Risk	9,123,242	10,624,085	16%	17,764,914	67%
<b>Total</b>	<b>16,726,804</b>	<b>20,801,307</b>	<b>24%</b>	<b>29,610,822</b>	<b>42%</b>

## 10. Conclusion and Recommendations

- 10.1 As at 31st December 2023, the business had a Net Book Asset Value of N17.7 billion or 590% of the statutory minimum capital of N3billion. Hence the business is capitalized from the current regulatory point of view.
- 10.2 We estimate the economic/risk-based capital required to support the business at 31st December 2023 as N4.77 billion, a coverage of 371% of the shareholder's Funds of N17.7 billion. The company thus holds a cushion above its economic capital which enhances its ability to meet its obligations to policyholders in adverse scenarios.
- 10.3 We noted that the proportion of GWP brought in by the Broker channel is 90%. We advise that the company expands other distributions channels such as digitization and bancassurance to write its business to widen its reach and increase its penetration in the market.
- 10.4 The highest contributor to total GWP remains Special Risk line of business which contributed approximately 55% to premiums. We recommend that the company continues to monitor the portfolio to mitigate the concentration risk in General Accident.
- 10.5 Return on equity for the past three years (2021 - 2023) have been below the risk-free rate. We advise that the company targets average returns over a rolling period (e.g., 3 years) to exceed Treasury bill rates with the aim of rewarding shareholders for the risk they have undertaken by investing in the company.
- 10.6 We are delighted to have conducted this Financial Conditioning Report for Rex Insurance Limited We hope you find this helpful for preparing and submitting a report to NAICOM.
- 10.7 We will naturally be delighted to discuss it with you and make necessary presentations.

Yours sincerely,



.....  
**Miller Kingsley, FNAS, FSA**  
**Fellow, Nigerian Actuarial Society**  
**Fellow, Society of Actuaries, USA**  
**FRC/2012/NAS/00000002392**

## APPENDIX 1- RELIANCE & LIMITATIONS

### Reliance

In carrying out this work we have relied upon the financial statements, business plans and other information (including discussions with the Management) provided by Rex Insurance Limited. The liability information used was the same as that used in the IFRS actuarial valuations. Where stated in this report we have reviewed this data for reasonableness, but we have not verified the accuracy of the information provided to us.

This report takes into account data made available as at 31 December 2023.

In some instances, we were unable to obtain granular information so had to make approximations in certain instances about the composition given knowledge of certain details during the normal end of year valuation process.

### Limitations

Our understanding is that this is a Board report that could be used to demonstrate regulatory compliance with NAICOM, when requested.

This report must be contained in its entirety, as individual sections, if considered in isolation, may be misleading.

Except with the consent of EY, the report and any written or oral information or advice provided by EY must not be reproduced, distributed or communicated in whole or in part to any other person or relied upon by any other person other than NAICOM.

The report may be distributed to the Senior Management of Rex Insurance Limited for the purpose of discussing its contents.

Actuarial estimates are subject to uncertainty from various sources, including changes in claim reporting patterns, claim settlement patterns, judicial decisions, legislation, and economic conditions. It should therefore be expected that the actual emergence of profits will vary, perhaps materially, from any estimates.

The report is subject to the terms and limitations, including limitation of liability, agreed when commencing this exercise.

## Appendix 2 - Reinsurance Appendix

CLASS	LINES	RETENTION	NLIP	TREATY	GROSS CAPACITY
MATERIAL DAMAGE (LOCATIONAL LIMIT)	22	600,000,000.00	-	13,200,000,000.00	13,800,000,000.00
POLITICAL VIOLENCE & TERRORISM	5	200,000,000.00	-	1,000,000,000.00	1,200,000,000.00
MARINE CARGO	15	300,000,000.00	-	4,500,000,000.00	4,800,000,000.00
MARINE HULL	13	35,000,000.00	-	455,000,000.00	490,000,000.00
ENGINEERING/ CONTRACTORS ALL RISKS/PLANT ALL	20	200,000,000.00	-	4,000,000,000.00	4,200,000,000.00
BONDS	50/50	75,000,000.00	-	75,000,000.00	150,000,000.00
<b>GENERAL ACCIDENTS</b>					
BURGLARY	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
MONEY	5	200,000,000.00	-	1,000,000,000.00	1,200,000,000.00
GOODS IN TRANSIT	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
ALL RISKS	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
FIDELITY GUARANTEE	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
PUBLIC LIABILITY	4	200,000,000.00	500,000,000.00	800,000,000.00	1,500,000,000.00
PRODUCTS LIABILITY	4	200,000,000.00	500,000,000.00	800,000,000.00	1,500,000,000.00
PROFESSIONAL INDEMNITY	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
WORKMEN COMPENSATION	4	200,000,000.00	500,000,000.00	800,000,000.00	1,500,000,000.00
WC/GPA COMBINED	4	200,000,000.00	500,000,000.00	800,000,000.00	1,500,000,000.00
PA/GPA	7	200,000,000.00	-	1,400,000,000.00	1,600,000,000.00
DIRECTORS AND OFFICERS LIABILITY	5	200,000,000.00	500,000,000.00	1,000,000,000.00	1,500,000,000.00
<b>AGRICULTURAL PRODUCTS</b>					
LOCAL GOVT		122,500,000.00	-	117,000,000.00	350,000,000.00
STATE		350,000,000.00	-	468,000,000.00	1,000,000,000.00
<b>NON PROPORTIONAL TREATIES</b>					
PROPERTY WORKING EXCESS OF LOSS	1st Layer	60,000,000.00	-	90,000,000.00	150,000,000.00
	2nd Layer	150,000,000.00	-	300,000,000.00	450,000,000.00
PROPERTY CATASTROPHE EXCESS OF LOSS	3rd Layer	450,000,000.00	-	450,000,000.00	900,000,000.00
MARINE Cargo WORKING		50,000,000.00	-	600,000,000.00	650,000,000.00
<b>AVIATION CLASS</b>					
AVIATION - HULL	1st Layer	\$250,000	-	\$1,250,000	\$1,500,000
	2nd Layer	\$1,500,000	-	\$1,500,000	\$3,000,000
AVIATION - LIABILITY RISK		\$1,000,000	-	\$14,000,000	\$15,000,000
<b>OIL AND GAS</b>	<b>MULT-LINE</b>	\$1,600,000.00	-	-	-
<b>MOTOR</b>	Private Vehicle		100,000,000.00	-	UNLIMITED
	Commercial Vehicle (Others)		75,000,000.00	-	
	Commercial Vehicle(Truck Only)		50,000,000.00	-	

## APPENDIX 3 - PROJECTION ASSUMPTIONS

### a. Commission Rates

Class	AGENTS	BROKER	DIRECT
Motor	6.25%	12.50%	0.00%
Accident	0.00%	20.00%	0.00%
Bond	0.00%	20.00%	0.00%
Marine	10.00%	20.00%	0.00%
Agric	0.00%	0.00%	0.00%
Fire	15.00%	20.00%	0.00%
Engineering	10.00%	20.00%	0.00%
Special Risk	0.00%	20.00%	0.00%

### b. Reinsurance Commission

Year	Motor	Accident	Bond	Marine	Agric	Fire	Engineering	Special Risk
mission Income	60%	49%	28%	22%	23%	27%	28%	10%

## APPENDIX 4 - COMBINED RATIO TABLE

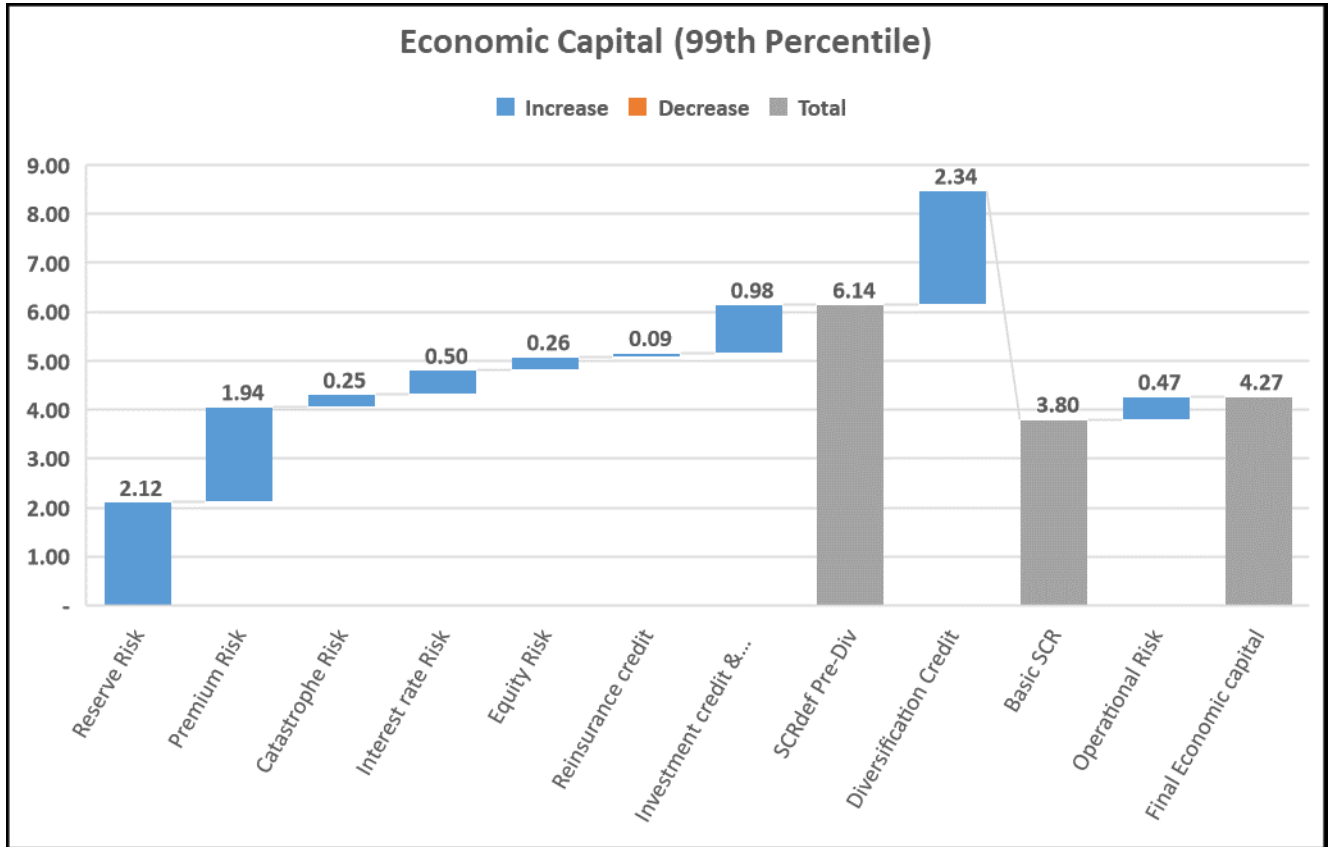
	Year	Motor	Accident	Bond	Marine	Agric	Fire	Engineering	Special Risk	Total
<b>Gross Written Premiums</b>	2017	2,343,557	-	4,222	751,688	-	1,593,776	166,300	4,858,218	9,717,761
	2018	2,040,089	-	4,594	550,749	-	1,297,235	194,732	6,609,170	10,696,568
	2019	1,838,716	-	217	565,494	42,950	1,058,253	129,772	6,948,950	10,584,353
	2020	1,295,423	634,481	853	705,021	183,442	993,298	270,301	7,785,421	11,868,240
	2021	1,533,147	814,078	7,555	898,593	255,669	1,085,100	419,298	7,721,670	12,735,110
	2022	1,865,206	894,316	10,878	940,166	107,914	1,413,281	517,972	8,459,557	14,209,292
	2023	3,032,427	941,102	12,218	1,078,180	31,248	1,680,794	827,593	9,123,242	16,726,805
<b>Reinsurance Cost</b>	2017	(255,196)	-	(2,274)	(266,260)	-	(771,241)	(161,753)	(4,473,319)	(5,930,042)
	2018	(296,345)	-	(1,052)	(163,500)	-	(576,793)	(229,296)	(4,317,544)	(5,584,530)
	2019	(211,040)	-	(1,214)	(97,397)	(7,066)	(411,075)	(226,178)	(4,435,226)	(5,389,197)
	2020	(179,896)	-	(1,017)	(188,833)	(99,964)	(475,178)	(254,157)	(5,065,360)	(6,264,404)
	2021	(82,119)	(190,465)	(3,719)	(220,160)	(149,253)	(547,915)	(271,714)	(5,015,559)	(6,480,904)
	2022	(91,591)	(199,066)	(4,549)	(508,224)	(52,026)	(772,177)	(328,004)	(6,036,215)	(7,991,852)
	2023	(137,149)	(234,301)	(9,826)	(717,337)	(20,359)	(880,153)	(588,967)	(6,346,728)	(8,934,820)
<b>Gross Earned Premium</b>	2017	2,526,120	-	4,164	762,159	-	1,734,144	183,408	5,150,146	10,360,140
	2018	2,211,009	-	2,086	691,576	-	1,374,566	201,993	6,200,033	10,681,264
	2019	1,883,330	-	2,368	522,029	42,950	1,019,215	191,472	6,979,428	10,640,792
	2020	1,870,180	-	2,009	598,069	175,134	1,002,389	218,517	7,705,771	11,572,069
	2021	1,386,643	729,571	7,028	841,839	258,414	909,920	331,797	7,509,181	11,974,393
	2022	1,753,300	874,982	7,715	942,314	110,549	1,381,242	488,293	8,435,485	13,993,881
	2023	1,753,300	874,982	7,715	942,314	110,549	1,381,242	488,293	8,435,485	13,993,881
<b>Net Earned Premium</b>	2017	2,270,924	-	1,890	495,899	-	962,902	21,655	676,827	4,430,097
	2018	1,914,664	-	1,034	528,076	-	797,773	(27,303)	1,882,489	5,096,734
	2019	1,672,290	-	1,154	424,632	35,885	608,140	(34,706)	2,544,203	5,251,596
	2020	1,692,373	-	992	408,736	76,554	513,335	(24,096)	2,607,896	5,275,790
	2021	1,304,524	539,106	3,309	621,679	109,161	362,006	60,082	2,493,621	5,493,489
	2022	1,661,709	675,915	3,167	434,090	58,523	609,065	160,289	2,399,270	6,002,028
	2023	2,359,808	736,929	5,485	299,792	11,409	774,320	113,505	2,334,789	6,636,036
<b>Incurred Claims (Gross)</b>	2017	(527,380)	-	(19)	(60,050)	-	(1,782,152)	(64,538)	(188,500)	(2,622,638)
	2018	(887,301)	-	(18,578)	(196,394)	-	(1,425,449)	(47,179)	(753,526)	(3,328,427)
	2019	(322,461)	-	13,000	(156,034)	(20,630)	(398,803)	(51,262)	(154,859)	(1,091,049)
	2020	(250,759)	-	-	(81,381)	(39,268)	(112,903)	(81,665)	(617,404)	(1,183,379)
	2021	(341,997)	(135,303)	1,809	(235,321)	(122,738)	(388,377)	(55,814)	(287,452)	(1,565,194)
	2022	(538,903)	(250,978)	365	(173,262)	(68,180)	(854,780)	(21,338)	(919,218)	(2,826,293)
	2023	(631,972)	(306,769)	(38,094)	(147,001)	(57,903)	(677,117)	(410,090)	(2,039,763)	(4,308,709)
<b>Incurred Claims (Net)</b>	2017	(412,503)	-	9,739	(24,888)	-	(631,486)	16,779	(24,394)	(1,066,753)
	2018	(771,953)	-	(9,289)	(126,812)	-	(463,632)	39,919	538,660	(793,107)
	2019	(259,630)	-	6,500	(139,013)	(17,528)	(481,950)	(1,652)	(78,010)	(971,283)
	2020	(264,248)	-	173	(49,132)	(32,092)	(246,238)	(51,420)	(46,576)	(689,532)
	2021	(298,068)	(125,529)	904	(166,189)	(71,322)	(325,190)	59,179	(203,813)	(1,130,028)
	2022	(475,485)	(184,769)	183	(141,082)	(22,483)	(281,328)	(9,204)	(858,747)	(1,972,916)
	2023	(557,054)	(264,838)	(38,094)	(128,690)	(25,925)	(316,048)	(43,335)	(818,558)	(2,192,542)
<b>Commission Received</b>	2017	75,344	-	682	65,450	-	147,879	51,731	123,551	464,637
	2018	94,062	-	341	49,414	-	160,325	65,162	125,185	494,488
	2019	69,580	-	364	30,967	1,326	118,830	68,673	128,550	418,290
	2020	56,680	-	286	46,845	18,469	119,118	73,329	247,661	562,390
	2021	27,903	84,457	1,113	59,266	33,649	129,554	78,507	164,483	578,932
	2022	39,125	66,091	1,365	97,754	11,721	185,261	88,921	243,243	733,482
	2023	301,115	165,926	2,323	130,487	4,766	288,777	146,223	1,819,523	2,859,139
<b>Underwriting expenses</b>	2017	(308,640)	-	(557)	(97,630)	-	(210,061)	(21,956)	(641,605)	(1,280,449)
	2018	(390,415)	-	(676)	(155,295)	-	(327,020)	(51,615)	(1,963,421)	(2,888,442)
	2019	(426,113)	-	(476)	(145,860)	(11,485)	(309,255)	(35,570)	(2,437,165)	(3,365,925)
	2020	(402,956)	-	(436)	(179,272)	(38,816)	(329,947)	(46,364)	(2,613,928)	(3,611,719)
	2021	(247,191)	(175,824)	(981)	(183,963)	(51,672)	(212,146)	(69,194)	(2,408,047)	(3,349,018)
	2022	(271,251)	(218,464)	(1,305)	(195,958)	(18,311)	(361,784)	(96,830)	(1,787,946)	(2,951,849)
	2023	(736,696)	(365,446)	(2,129)	(239,443)	(35,087)	(535,128)	(191,071)	(1,309,246)	(3,414,244)
<b>Management expenses</b>	2017	-	-	-	-	-	-	-	-	(1,575,196)
	2018	-	-	-	-	-	-	-	-	(1,914,721)
	2019	-	-	-	-	-	-	-	-	(1,060,585)
	2020	-	-	-	-	-	-	-	-	(1,198,343)
	2021	-	-	-	-	-	-	-	-	(2,304,325)
	2022	-	-	-	-	-	-	-	-	(3,069,969)
	2023	-	-	-	-	-	-	-	-	(1,769,322)
<b>Claims Ratio (Net)</b>	2017	21%	0%	0%	8%	0%	103%	35%	4%	24%
	2018	40%	0%	891%	28%	0%	104%	23%	12%	16%
	2019	16%	0%	563%	33%	49%	79%	5%	3%	18%
	2020	16%	0%	17%	12%	42%	48%	213%	2%	13%
	2021	23%	23%	27%	27%	65%	90%	98%	8%	21%
	2022	29%	27%	6%	33%	38%	46%	6%	36%	33%
	2023	24%	36%	-695%	43%	227%	41%	38%	35%	33%
<b>Expense Ratio</b>	2017	10%	0%	29%	6%	0%	6%	101%	77%	54%
	2018	15%	0%	32%	20%	0%	21%	50%	98%	85%
	2019	21%	0%	10%	27%	28%	31%	95%	91%	76%
	2020	20%	0%	15%	32%	27%	40%	76%	90%	80%
	2021	17%	17%	4%	20%	17%	23%	16%	90%	92%
	2022	14%	23%	41%	23%	11%	29%	5%	64%	88%
	2023	18%	27%	39%	36%	266%	32%	40%	-22%	35%
<b>Combined Ratio</b>	2017	28%	0%	545%	12%	0%	72%	179%	80%	78%
	2018	56%	0%	931%	44%	0%	79%	196%	126%	100%
	2019	37%	0%	554%	60%	77%	111%	91%	94%	95%
	2020	36%	0%	2%	44%	69%	88%	289%	91%	93%
	2021	40%	40%	31%	47%	82%	113%	114%	98%	113%
	2022	43%	50%	47%	55%	50%	75%	11%	100%	121%
	2023	42%	63%	-656%	79%	493%	73%	78%	13%	68%



## APPENDIX 5: ECONOMIC CAPITAL RESULTS AT 99% CONFIDENCE LEVEL

Should the confidence level be lowered our confidence level to 99%, the total economic capital requirement reduces to N4.27 billion which represents about 414% of the shareholder funds as at December 31, 2023.

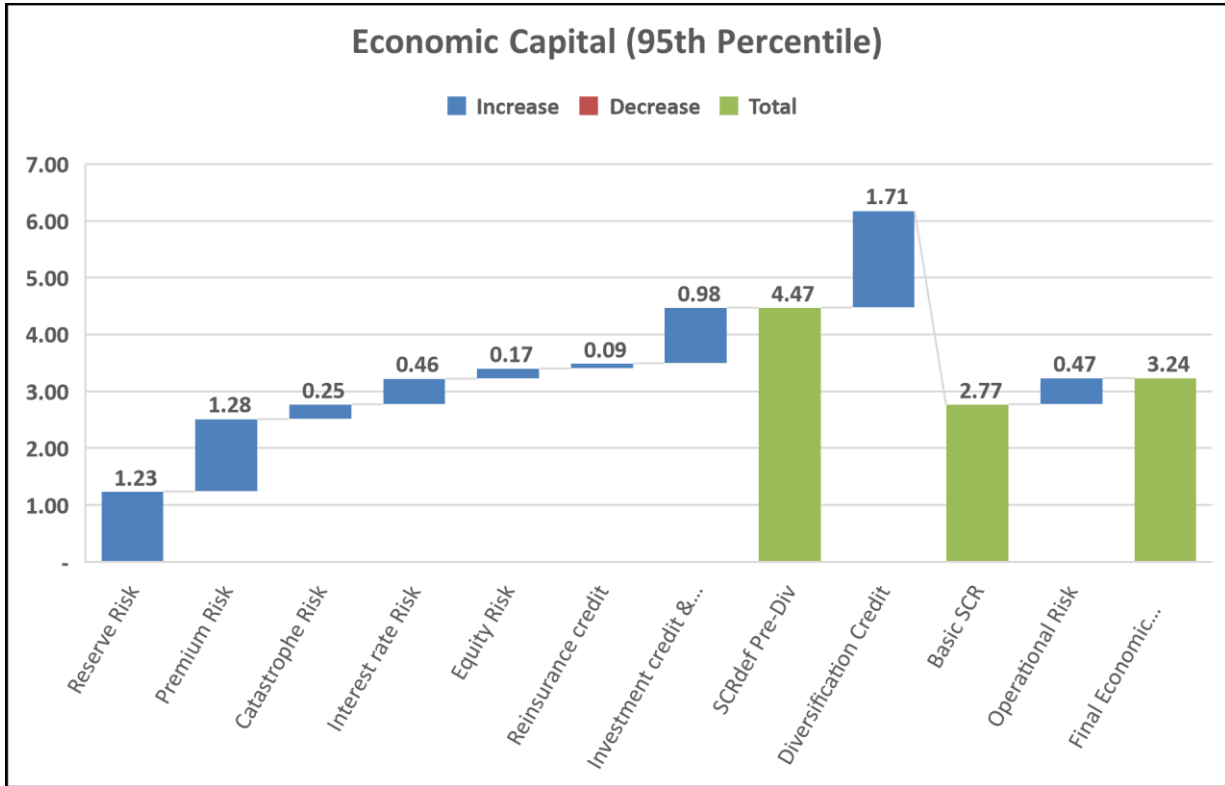
Risk Type		Capital Requirement (N)
Non-Life Insurance Risk	Reserve Risk	2,117,709,078
	Premium Risk	1,939,515,381
	Catastrophe Risk	250,541,495
	Lapse Risk	-
	SCR <sub>nl</sub> Pre-Div	4,307,765,954
	SCR <sub>nl</sub> Div Credit	1,358,202,735
	SCR <sub>nl</sub> Post Div	2,949,563,220
Market Risk	Interest Rate Risk	502,124,647
	Equity Risk	258,415,202
	Property Risk	-
	Spread Risk	-
	Currency Risk	-
	Concentration Risk	-
	SCR <sub>mkt</sub> Post Div	564,719,025
Counterparty Default Risk	Reinsurance credit	87,619,607
	Investment credit & Debtors	982,858,823
	SCR <sub>def</sub> Pre-Div	1,070,478,431
	SCR <sub>def</sub> Div Credit	-
	SCR <sub>def</sub> Post Div	1,070,478,431
Undiversified BSCR		4,584,760,676
Diversification Credit		782,485,614
Basic SCR		3,802,275,061
Operational Risk		472,453,336
<b>Final Economic capital</b>		<b>4,274,728,397</b>
<b>Shareholders' Funds</b>		<b>17,709,497,000</b>
<b>% of Economic Capital</b>		<b>414%</b>



## APPENDIX 6: ECONOMIC CAPITAL RESULTS AT 95% CONFIDENCE LEVEL

Should the confidence level be lowered our confidence level to 95%, the total economic capital requirement reduces to N3.24 billion which represents about 547% of the shareholder funds as at December 31, 2023.

	Risk Type	Capital Requirement (N)
Non-Life Underwriting Risk	Reserve Risk	1,233,503,441
	Premium Risk	1,282,889,408
	Catastrophe Risk	250,541,495
	Lapse Risk	-
	SCR <sub>nl</sub> Pre-Div	2,766,934,344
	SCR <sub>nl</sub> Div Credit	889,595,934
	<b>SCR<sub>nl</sub> Post Div</b>	<b>1,877,338,410</b>
Market Risk	Interest Rate Risk	460,414,888
	Equity Risk	173,233,271
	Property Risk	-
	Spread Risk	-
	Currency Risk	-
	Concentration Risk	-
	<b>SCR<sub>mkt</sub> Post Div</b>	<b>491,926,453</b>
Counterparty Default Risk	Reinsurance credit	87,619,607
	Investment credit & Debtors	982,858,823
	SCR <sub>def</sub> Pre-Div	1,070,478,431
	SCR <sub>def</sub> Div Credit	-
	<b>SCR<sub>def</sub> Post Div</b>	<b>1,070,478,431</b>
	Undiversified BSCR	3,439,743,294
	Diversification Credit	674,418,715
	Basic Economic Capital	2,765,324,579
	Operational Risk	472,453,336
<b>Final Economic Capital</b>		<b>3,237,777,915</b>
<b>Shareholders' Funds</b>		<b>17,709,497,000</b>
<b>Economic Capital as a % of SF</b>		<b>547%</b>



## Appendix 7: Economic Capital Methodology & Stress Level Derivation.

We present below, detailed explanation on how each of the risk were modelled including stress levels derivation.

### A. MARKET RISKS

1.1 Market risk is defined as the potential for adverse change in the net assets (Market Value of assets less Market Value of liabilities) due to movements in market factors such as equity prices, interest rates, property prices and foreign exchange.

1.2 The company's insurance funds are mainly invested in money market instrument and hence have a very low exposure to market risks.

1.3 The market risk capital requirement  $C_{Mkt}$  for each risk was calculated using the following formula:

$$C_{Mkt} = (A_{Mkt} - A_0)$$

Where  $C_{Mkt}$  - capital calculation for market risk

$A_{Mkt}$  - stressed assets value

$A_0$  - base market value of assets

1.4 The stresses applied for the market risk module were as follows:

Asset class	Stress level @ 95%	Stress level @ 99%	Stress level @ 99.5%
Equity	24.06%	35.90%	37.38%
Property	15.72%	21.6400%	22.38%
Interest rate	29.1%	40.12%	41.5%

1.5 The above stresses were obtained by using a combination of fitting historical data of various market indices (were available) to find the appropriate stress level and benchmarking against the Solvency II widely used stress levels.

1.6 The details of the derivation and computation are contained below for each sub-risk module.

## 1.7 Equity risk

- I. This is the sensitivity of assets, liabilities and financial investments to fluctuations in the level or volatility of the market prices for equities.
- II. The company is invested in both quoted and unquoted equities. Both types of equities were stress tested.
- III. The level of stress was derived by considering the historical distribution of the total return Nigerian Stock Exchange (“NSE”) index and fitting a distribution to determine the stress level at the various confidence levels.
- IV. We fitted the NSE historical index values from January 1985 to December 2020. The normal distribution was a good fit for the data. Using the normal distribution, we determined stress levels of 29%, 40% and 41% for confidence levels of 95%, 99% and 99.5% respectively.
- V. We also checked how frequently historical annual returns have fallen or been close to the 29.1%, 40.12% and 41.5% levels. In 2008, the stock index fell by about 46% and in 2011 also fell by about 23%.
- VI. Both the quoted and unquoted equities were assumed to be similarly affected by any declines in stock market. This assumption would need to be revisited in the next assessment.

## 1.8 Interest Rate risk

- I. Interest rate risk is caused by the sensitivity of the value of any assets, liabilities and financial investments to fluctuations in the term structure of interest rates or interest rate volatility, whether valued by mark-to-model or mark-to-market techniques.
- II. Stresses were determined by constructing the term structure of interest rates by referencing the 12-month, 3-year, 5 year, 7 year, 10 year and 20 year yields from the Federal Government Bonds.
- III. The historical returns were fitted to distributions to determine the best fit distribution. The normal distribution was a good fit. The normal distribution was used instead in order to apply some consistency with the other market risk stresses.
- IV. As the local term structure of interest rates show a flat yield curve; a flat stress level was applied to bonds of varying durations.
- V. The stresses used are shown in table 3 above at various confidence levels to all bond yields of varying duration according to the Company bond holdings.
- VI. The stressed yields were applied using the formula: current yield x (1+Upward stress) OR current yield x (1+Downward stress).
- VII. The capital requirement was then determined by adopting the stress level (between the upward and the downward stress) that resulted in a higher capital requirement i.e. Interest

Rate capital requirement = Max {0; Upward stress capital; Downward stress capital}

- 1.9 The overall market risk capital was then derived by combining the equity, property and interest rate risk capital using the suggested correlation matrix below.

$$C_{Mkt} = \sqrt{\sum CorrMkt_{ij} * C_{Mkt_i} * C_{Mkt_j}}$$

Where  $C_{Mkt}$  - overall market risk capital calculation including equity, property and interest rate

$C_{Mkt_i}$  - capital for i-th risk (i could be any of the three risks)

$C_{Mkt_j}$  - capital for j-th risk (j could be any of the three risks)

- 1.10 The correlation matrix used is shown in Appendix 7

### 1.11 Non-Life Insurance risks

The non-life insurance risks modelled were:

- ▶ Reserving risk
- ▶ Premium risk
- ▶ Catastrophe risk

#### I. Reserving risk

This is one of the sources of underwriting risk for general insurance.

Reserve risk results from fluctuations in the timing and amount of claim settlements.

The reserve risk methodology was as follows:

- ▶ We used the bootstrap approach to calculate the mean and standard deviation of losses.
- ▶ We then used the mean and standard deviation to derive the parameters of the lognormal distribution which was used to estimate the 95th, 99th and 99.5th percentiles of the reserve distribution.
- ▶ Reserve capital is the difference between each of the following percentiles; 95th-percentile, 99th-percentile or 99.5th-percentile of the distribution and the 50th -percentile (Best estimate).

## II. Premium risk

This is another source of underwriting risk for general insurance.

Premium risk results from fluctuations in the timing, frequency and severity of insured events. It relates to the unexpired risks on existing contracts. Premium risk includes the risk that premium provisions turn out to be insufficient to compensate claims or need to be increased.

The premium risk methodology was as follows:

- ▶ Average loss ratios were derived from the expected loss ratio in the business plan (pricing)
- ▶ Historical loss ratios were investigated and deviations from the mean studied.
- ▶ The lognormal distribution was fit (which was the best fit) to the deviations

## III. Catastrophe risk

This is Catastrophe for the general insurance business.

It covers mainly high severity and low frequency catastrophic events e.g. floods, hurricanes, large accidents impacting on all general insurance lines of business insured by the Company.

There have been no major catastrophic events in Nigeria recently hence the data to use in determining the risk capital was scarce.

The catastrophe risk methodology was therefore as follows:

- ▶ The 2023 loss ratios were increased by 1000% for all lines of business to resemble a catastrophic-like event
- ▶ A 1% probability of occurrence was applied to determine the final capital requirement.

## B. CREDIT RISK

- I. Credit risk arises as a result of the unexpected default, or deterioration in credit standing, of an insurer's counterparties or debtors.
- II. The scope of the calculation under this risk module covered possible defaults by banks; where cash and cash equivalents are held by the Company, defaults by reinsurers compromising reinsurance recoveries and the inability by debtors to pay their dues.
- III. The following exposures to counterparties were used:
  - ▶ Banks → cash and cash equivalent holdings
  - ▶ Reinsurers → estimated reinsurance recoveries over the next 12 months
  - ▶ Debtor → amounts owed.



- IV. The expected losses given default were calculated using the latest credit ratings and associated probabilities of default for the different counterparties. A combination of local agencies and the S&P default rates were used for the bank holdings as per the following table:

Table 5

Rating Scale	Default Probability
AAA	0.00%
AA+	0.00%
AA	0.02%
AA-	0.03%
A+	0.05%
A	0.05%
A-	0.06%
BBB+	0.09%
BBB	0.15%
BBB-	0.24%
BB+	0.32%
BB	0.48%
BB-	0.96%
B+	1.98%
B	3.13%
B-	6.52%
Unrated	26.53%

- V. The above default rates were applied to both the banks and reinsurers' counterparties to the Company.
- VI. The formula used was: Estimated exposure x Probability of Default x Loss Given Default.
- VII. We assumed a 100% loss given default, which is a conservative assumption.

## C. OPERATIONAL RISK

- I. This is the risk of loss arising from inadequate or failed internal processes, or from personnel and systems, or from external events.
- II. Operational risk is generally a material risk and one of the major causes of organizational failure.
- III. There are several approaches used to assess Operational risk namely;
  - ▶ Basic indicators or some Standard Formula - this is a simpler approach and largely defined by regulatory bodies. It is transparent and a well-known approach.
  - ▶ Scenario approach - qualitative scenario assessments of the operational risks as defined by management through the risk heat map are transformed into quantitative assessments to determine the overall operational risk capital
  - ▶ Statistical or Loss Distribution Approach - this uses a lot of statistics. The amount of possible losses and frequency of losses are modelled separately and then combined to determine the overall capital requirement. This approach relies on the availability of credible historical and forward-looking data.
  - ▶ The Structural or Causal approach - this is the most complex and recently researched approach. It also relies on understanding the interdependencies across risks in addition to the data availability.
- IV. We adopted the standard formula approach due to limited quantity of data available. The approach took into account the earned premium, technical provisions and Base capital calculated before operational risk.
- V. The formula used to compute the capital requirement was as follows:

$$C_{op} = \text{Min} \{0.3 * BSCR, BOp\} + 0.25 \times Exp_{nl}$$

$Exp_{nl}$  is the amount of annual expenses incurred during the previous 12 months in respect of non-linked business

$BSCR$  is the preliminary capital required before allowing operational risk and, for the risk requirements it is defined as:

$$CR_{Op} = \sum(C_{ins} + C_{Mkt} + C_{Credit})$$

$BOp$  is the basic operational risk requirement for all business and is determined as follows:

$$BOp = \text{Max} \{Op_{premiums}; Op_{provisions}\}$$

Where

$$Op_{premiums} = 0.03 \times Earn_{nl} + \text{Max} \{0, 0.03 \times [Earn_{nl} - 1.1 \times pEarn_{nl}]\}$$

$$\text{and } Op_{provisions} = 0.03 \times \text{Max} \{0, Tp_{nl}\}$$

$Earn_{nl}$  are the gross premiums earned during the previous 12 months.

$pEarn_{nt}$  are the gross premiums earned during the 12 months prior to the previous 12 months.

$TP_{nt}$  are the technical provisions

VI. In the future, we recommend the following be recorded at granular level:

- ▶ Frequency of occurrence of all risk scenarios captured in the Risk Heat Map
- ▶ Identification of new exposures and new likelihood percentages after mitigation efforts have been applied.

This would improve how operational risk is quantified.

## APPENDIX 8 - CORRELATION MATRICES

Correlations for Market risks have been derived using actuarial judgement and referencing correlations being used in other jurisdictions for new solvency regimes.

Local market relevance was taken into account before applying these correlations.

As a rule of thumb, the following thought process was applied:

Correlation coefficient	Interpretation
0%	Independent
25%	Weakly correlated
50%	Moderately correlated
75%	Strongly correlated
100%	Dependent

The correlation matrices used for diversification are shown below.

### Market risk correlations

		Parameters					
Corr <sub>ij</sub>	Mkt <sub>int</sub>	Mkt <sub>eq</sub>	Mkt <sub>prop</sub>	Mkt <sub>sp</sub>	Mkt <sub>conc</sub>	Mkt <sub>fx</sub>	
Mkt <sub>int</sub>	100%	0%	0%	0%	0%	25%	
Mkt <sub>eq</sub>	0%	100%	25%	75%	0%	25%	
Mkt <sub>prop</sub>	0%	25%	100%	50%	0%	25%	
Mkt <sub>sp</sub>	0%	75%	50%	100%	0%	25%	
Mkt <sub>conc</sub>	0%	0%	0%	0%	100%	0%	
Mkt <sub>fx</sub>	25%	25%	25%	25%	0%	100%	

### Comments:

- ▶ Equity vs Property - the local stock and property markets have seen low correlations.
- ▶ The drop in equity values seem not to affect the property values, hence a weak correlation assumption.
- ▶ Interest rate vs Equity/Property - no correlation was assumed if under the interest rate stress an increase in interest rates triggered a capital requirement (as opposed to a decrease in interest rates). 50% correlation was assumed if the decrease in interest rates would trigger a capital requirement under the interest rate stress.
- ▶ Spread, concentration and foreign exchange risks were not modelled.

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