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BERMUDA MONETARY AUTHORITY

Bermuda Long-term Insurance Market Analysis and Stress Testing Report

December 2025

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Acronyms

ABS	Asset-backed Securities
BEL	Best Estimate Liability
BMA	Bermuda Monetary Authority
BSCR	Bermuda Solvency Capital Requirement
C&S	Capital and Surplus
CSR	Capital and Solvency Return
DCF	Discounted Cash Flows
EBS	Economic Balance Sheet
ECR	Enhanced Capital Requirement
FX	Foreign Exchange
GWP	Gross Written Premium
LCR	Liquidity Coverage Ratio
MBS	Mortgage-backed Securities
NAIC	National Association of Insurance Commissioners
NWP	Net Written Premium
SBA	Scenario Based Approach
TCL	Target Capital Level
TVaR	Tail Value-at-Risk
US	United States
YoY	year-over-prior-year

Foreword

In 2024, Bermuda's long-term (re)insurance sector continued to demonstrate resilience amid an evolving global economic and regulatory landscape. Global macroeconomic developments, particularly persistent inflation and higher interest rates in advanced economies, continued to influence portfolio yields, credit spreads, and the valuation of long-term liabilities. The higher-interest-rate environment supported investment returns, while demographic trends – especially ageing populations in advanced markets – sustained demand for life and annuity products.

Bermuda's (re)insurance sector plays a pivotal role in addressing the global retirement protection gap by providing access to capital, enabling life insurers to underwrite long-term guarantees and capital-intensive business. Bermuda Life and Annuity (re)insurers provide critical underwriting capacity and have continued to honour their promises, paying out over US$250 billion in claims and benefits since the onset of the COVID-19 pandemic in 2020.

During the year, the Bermuda Monetary Authority (Authority or BMA) advanced important enhancements to the long-term regulatory and supervisory framework in keeping with the sector's evolving nature and unique risk characteristics. These included enhancements to the liability valuation regime, lapse and expense capital charges, and investment and liquidity reporting requirements. These changes to the capital requirements and liability valuation frameworks had a material impact on the solvency positions of Bermuda's long-term insurers, primarily due to increased total asset requirements. Additional amendments were made to the stress-testing framework to enhance the BMA's evaluation of insurers' liquidity and capital adequacy positions under adverse financial-market conditions, ensuring the sector remains resilient. The enhancements support strong governance practices, market discipline and sound risk-management strategies.

The BMA continues to collaborate with peer regulators and international policymakers to monitor emerging trends and contribute to supervisory best practices. The Authority also continues to strive to maintain Bermuda's reputation as a leading, well-regulated jurisdiction with a framework that evolves to meet global standards and sustainable market innovation.

Ricardo Garcia

Managing Director

Bermuda Long-term Insurance Market Analysis and Stress Testing Report

This is the Authority's third publication of the *Bermuda Long-term Insurance Market Analysis and Stress Testing Report*. The report is the result of an internal analysis conducted by BMA staff.

About the BMA

The BMA was established by statute in 1969, and its role has evolved over the years to meet the changing needs in Bermuda's financial services sector. Today, the Authority supervises, regulates and inspects financial institutions operating in the jurisdiction. It also issues Bermuda's national currency, manages exchange control transactions, assists other authorities with detecting and preventing financial crime, and advises the Government of Bermuda on banking and other financial and monetary matters.

The BMA develops risk-based financial regulations that apply to the supervision of Bermuda's banks, trust companies, investment businesses, investment funds, fund administrators, money service businesses, corporate service providers, insurance companies, digital asset businesses and digital asset issuers. It also regulates the Bermuda Stock Exchange and the Bermuda Credit Union.

BMA Contact Information

Bermuda Monetary Authority
BMA House
43 Victoria Street
Hamilton

P.O. Box 2447
Hamilton HMJX
Bermuda

Tel: +1 441.295.5278
Fax: +1 441.292.7471

E-mail: FSRD@bma.bm

This publication is available on the BMA's website: www.bma.bm

1. Executive Summary

Drawing from filings submitted to the BMA, this third edition of the *Bermuda Long-term Insurance Market Analysis and Stress Testing Repor*t aims to provide key market characteristics. The growth of Bermuda's commercial long-term insurance sector (also known as 'the long-term sector') is driven by demand from direct insurers and institutions that use reinsurance for exposure, risk management, and balance-sheet volatility and capital management. This demand is in response to both a challenging economic environment and an ageing population that is living longer. In support of the sector, the Authority applies a risk-based supervisory approach while continuing to target enhancements to its supervisory framework for long-term insurers.

In terms of total assets, the Bermuda long-term sector increased by 19.1% in 2024. The sector recorded US$200.1 billion of Gross Written Premiums (GWP), up 17.8% over the prior year. Approximately two-thirds of the long-term sector reserves are allocated to longevity and financial business. The remaining reserves are related to mortality and critical illness. The United States (US) accounted for more than 70% of Bermuda's long-term insurers' reserves, followed by Asia. European business, including the United Kingdom (UK), continues to represent less than 5% of the allocated reserves.

The largest asset allocation for the sector was in corporate bonds, which represented roughly half of total investments at year-end 2024. Fixed-income securities with an investment-grade rating comprised 72.8% of the asset allocation and more than 75% of total investments for the four years prior to 2024. Securities with sub-investment grade ratings were less than 3.0% of total investments, and only 1.0% of total investments were unrated. Investments in equities, equity-like assets, preferred stock, and mortgage loans rose to 23.6% of the investment allocations, with the allocations to equities and mortgage loans driving the increase.

The sector had a robust solvency position with a median solvency ratio of 286% at year-end 2024. On an individual basis, firms were well-positioned capital-wise to absorb the impacts of the prescribed adverse financial market stress scenarios. Overall, the sector continues to demonstrate resilience to the stress tests.

As part of its ongoing commitment to financial stability, the BMA conducted a Global Financial Crisis (GFC) stress test for long-term commercial insurers in Bermuda. Leveraging relevant work already undertaken by the International Association of Insurance Supervisors

(IAIS), the stress test specifications in this exercise were calibrated using the IAIS Aggregation Method (AM) Data Collection, which included scenario analyses designed to replicate severe economic conditions, such as those experienced during the 2008 financial crisis. The results of the GFC stress test demonstrated the Bermuda long-term reinsurance sector's strong ability to withstand severe economic challenges. The stress test revealed that most insurers maintain capital levels well above regulatory requirements, even under severe stress conditions.

The BMA reports that Bermuda's long-term insurers maintain strong liquidity positions, with about 57% of assets in highly liquid instruments such as cash and bonds. The median Liquidity Coverage Ratio (LCR) rose to 471% under severe stress scenarios, far exceeding the 105% regulatory minimum, indicating robust resilience. Liability profiles have improved, with lapse exposure declining and surrender penalties increasing, reducing liquidity risk. Insurers are required to perform standardised stress tests under moderate and severe conditions, and the BMA continues targeted reviews of firms showing vulnerabilities. Changes in LCR results from 2023 to 2024 reflect reporting adjustments, evolving asset allocations and improved data quality.

2. Introduction

Drawing on long-term insurers' annual Capital and Solvency Return (CSR) and survey data, this report provides an overview of Bermuda's long-term insurance sector and stress testing analysis at a macro level.

Section 3 of this report outlines the methodology used, including data collection, its basis and the periods covered. The methodology also includes the limitations of this report and describes the types of exhibits and metrics used to present the reporting data.

In Section 4, an overview of key characteristics of Bermuda's long-term insurance sector is provided. Section 4 also outlines key market indicators for assets, liabilities, solvency, profitability and liquidity.

An overview of the stress testing analysis is provided in Section 5. Stress testing is used to assess the capacity of individual insurers and the sector's ability to withstand the impact of various severe but plausible events. A valuable supervisory tool for the BMA, stress testing provides supervisors with a forward-looking perspective of the resilience of individual insurance entities and the sector. Furthermore, the stress and scenario testing results help the Authority identify the concentration of risk and new and/or emerging risks, as well as help to assess how insurers are responding to such risks.

Bermuda's long-term insurers are required to conduct stress tests that are rigorous, comprehensive and forward-looking. The aim is to measure the sensitivity of insurers' statutory Capital and Surplus (C&S) under various adverse financial market conditions and stress-test their assets to determine exposure to liquidity constraints. This report provides aggregated market results for the sector's capital and liquidity adequacy under prescribed stress-testing scenarios. This approach assesses their ability to withstand severe but remote losses from various possible events that could adversely impact their Economic Balance Sheets (EBS) (i.e., assets, liabilities, C&S).

The BMA does not use the stress testing exercise to determine required capital levels. Nonetheless, this exercise helps the Authority evaluate whether the risk assumed by Bermuda insurers is commensurate with each insurer's risk appetite. The information gathered ultimately informs the BMA's risk-based supervisory approach, and any capital adequacy concerns identified during the stress testing exercise are addressed as part of the Authority's normal supervisory oversight.

3. Methodology

The figures used in Section 4 of the report utilise data from the unconsolidated statutory financial statement submitted in the Bermuda annual returns (i.e., the Capital and Solvency Return[1]) of insurers with a Class C, Class D or Class E licence for the periods ending 31 December 2020 through 31 December 2024[2].

Section 5 figures used are derived from the stress testing data that firms submit in Schedule V(e) of the annual return. This return includes the loss estimation of prescribed stress tests against insurers' EBSs, as well as qualitative information provided to the Authority by insurers on their stress testing practices.

Please note the following limitations of the figures stated in this report:

- The scope of firms included in this report and the data used are accurate as of November 2025
- All values are converted to USD unless otherwise noted. Insurers submitting in currencies other than USD are converted as at year-end using the currency exchange rate submitted in the Capital and Solvency Return
- Insurers may submit financial statements based on the General Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) methods approved by the Authority. Recent accounting standard amendments to IFRS resulted in several limitations on aggregating data and its comparability YoY. This may result in changes to certain values in future reports.

The BMA continually monitors trends and market developments, including evolving risks and business models. Therefore, the Authority's risk-based supervisory framework is continuously adjusted in accordance with these developments and international standards. As the framework evolves, this often results in changes to the BMA's reporting standards, which can potentially provide more data and greater detail. For this reason, the cohort of firms and/or insurers that provided the underlying data used to generate this report may change after November 2025. Changes to the regime may also sometimes require adjustments to methodologies, thereby

[1] The Capital and Solvency (C&S) return is an annual return relating to an insurer's risk management practices and the information used by an insurer to calculate its Enhanced Capital Requirement (ECR) and Target Capital Level (TCL). Bermuda's EBS framework forms the basis used to determine capital requirements for Bermuda commercial insurers. Specifically with respect to insurance liabilities, 'Technical Provisions' is established as the sum of a BEL and a risk margin.

[2] For each year included in this report, the respective insurers with a financial year falling within the specified calendar year are included in this analysis. For example, an insurer with a 30 June 2024 financial year end is included in the 2024 aggregates. All ECR ratios are presented using the consolidated financial statements and using the EBS basis.

limiting aggregation and year-over-prior-year (YoY) comparability at a macro level. Where there is a material effect, an explanatory footnote will be provided.

Although every effort is made to ensure the accuracy of reported figures, new or resubmitted information may lead to variations in aggregates compared to prior reports. In addition, factors such as conversion rates, base differences, and cohort differences may result in different totals for similar metrics compared to other reports published by the BMA.

The BMA aggregates data only where possible. To supplement aggregated data, boxplots (also called 'box-and-whisker plots') are used in some analyses to describe the distribution of individual results, showing various percentiles and the median.

The stress/scenario impact and effects reported on are instantaneous in that they are observed immediately upon the occurrence of the event (i.e., the stress/scenario) as determined by the insurer's internal and/or vendor model(s), both with and without the effect of reinsurance and/or other loss mitigation instruments. The stress/scenarios were run against the insurers' EBS positions and aggregated in-force exposures as of year-end 2024.

The analysis in this report is based on the original CSR data input. No references were made to other supporting documents required separately for the CSR filing. These additional documents are reviewed by the Authority's supervisory team at the micro-level for individual insurers. As such, this report does not reflect subtle nuances provided by an insurer's full return.

Reported ratios are calculated as the proportion of the respective metric to the population total. The resulting percentage will reflect large insurance groups that may influence the market results. In response to this issue, the median statistic was also included (as it is less susceptible to distortion by outliers), and extreme outliers were occasionally removed from the sample.

Many factors influence the change in a long-term insurer's capital position from one year to the next, such as, but not limited to, new business strain, lapsation of existing business, operating gains/losses, mark-to-market valuations, capital withdrawals/injections, reinsurance strategy, investment performance, taxation and changes in Best Estimate Liability (BEL) assumptions. While we present a comparison of overall results below, it is difficult to draw conclusions about the individual factors that cause observable differences.

The Bermuda Solvency Capital Requirement (BSCR) and its individual components are calibrated to Tail Value-at-Risk (TVaR) at a 99% confidence level over the one-year time horizon and encompass all quantifiable material risks (i.e., market, credit, insurance and

operational risks). Assets and liabilities are measured consistently in accordance with the EBS framework, which serves as the basis for the solvency ratios. Insurance technical provisions are decomposed into a best-estimate liability component and a risk margin component.

4. Bermuda's Commercial Long-term Insurance Sector

4.1 Overview of the Sector

Bermuda has a multi-licence regulatory system that categorises licensees into general insurance company classes, long-term insurance company classes, limited and special-purpose insurer classes, innovative classes, collateralised insurer classes, and intermediaries. For regulatory and supervisory purposes, the Bermuda commercial long-term sector is broadly classified by the following licence classes:

- **Class C:** This class is for long-term insurers and reinsurers with total assets of less than US$250.0 million that are not registrable as a Class A or Class B insurer[3]. Class C insurers are required to maintain eligible C&S equal to, or in excess of, the Enhanced Capital Requirement (ECR), which corresponds to the greater of 1) the BSCR calibrated to TVaR over the one-year time horizon; 2) minimum solvency margin (calculated using an asset-based formula); and 3) a US$500,000 floor
- **Class D:** This class is for long-term insurers and reinsurers with total assets of US$250.0 million or more but less than $500.0 million and not registrable as a Class A, Class B or Class C insurer. Class D insurers are required to maintain eligible C&S equal to, or in excess of, the ECR, which corresponds to the greater of 1) the BSCR calibrated to TVaR over the one-year time horizon; 2) minimum solvency margin (calculated using an asset-based formula); and 3) a US$4.0 million floor
- **Class E:** This class is for long-term insurers and reinsurers with total assets of more than US$500.0 million that are not registrable as a Class A, Class B, Class C, or Class D insurer. Class E insurers are required to maintain eligible C&S equal to, or in excess of, the ECR, which corresponds to the greater of 1) the BSCR calibrated to TVaR over

[3] Please refer to https://www.bma.bm/insurance-licensing for a definition of Class A and Class B insurers.

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the one-year time horizon; 2) minimum solvency margin (calculated using an asset-based formula); and 3) a US$8.0 million floor

Bermuda's long-term insurance sector continues to experience growth that is aligned with global demand for and supply of long-term (re)insurance products and solutions. This is driven by a variety of trends, including the availability of reinsurance, profitability, the investment environment and social and demographic trends.

As of year-end 2024, firms had written GWP of US$200.1 billion for the year and net written premiums of US$152.4 billion, an increase of 17.8% and 21.2%, respectively. Insurers held total assets of US$1,518.2 billion at year-end 2024 against total liabilities of US$1,362.0 billion. Net income for the sector rose 152.9% to US$26.3 billion.

Table 4.1.1 Bermuda Long-term Insurance Sectoral Highlights

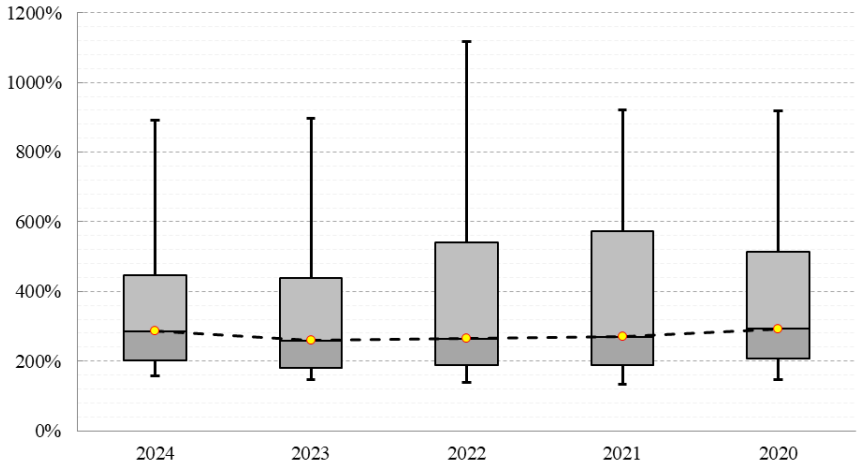
(In US$ billions unless indicated otherwise)	2024	2023	2022	2021	2020	*YoY Change* (%)*
GWP	**200.1**	**169.8**	**137.0**	**135.7**	**171.5**	17.8
NWP	**152.4**	**125.7**	**98.4**	**100.9**	**118.2**	21.2
Net Income	**26.3**	**10.4**	**11.0**	**15.0**	**15.7**	152.9
Total Policyholder Claims and Benefits Paid[4]	**69.0**	**67.2**	**61.5**	**50.4**	**52.8**	2.7
Total Assets	**1,518.2**	**1,274.6**	**1,100.8**	**1,070.6**	**862.8**	19.1
Total Liabilities	**1,362.0**	**1,139.6**	**984.0**	**941.1**	**743.8**	19.5
"AAA-BBB" Assets/Claims (%)	**1,228.5**	**1,117.5**	**999.6**	**1,091.0**	**830.6**	9.9

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

[4] Policyholder Claims and Benefits Paid are life claims, policyholders' dividends, surrenders, maturities, annuities and accident and health benefits.

Summary of YoY movements:

Figure 4.1.2 Boxplot of ECR Ratios at YE2024 - YE2020



- The median ECR Ratio was 286% at year-end 2024, indicating that Bermuda's long-term sector continues to maintain healthy capital positions. The boxplots above provide the 25th, median and 75th percentiles of the distribution of ECR ratios, with the whiskers representing the distance to the 10th (lower whisker) and 90th percentiles (upper whisker). The ECR ratio at the tenth percentile was 158%, indicating that most insurers hold capital well above regulatory minimums

Table 4.1.3 Key Balance Sheet Indicators

(In US$ billions unless indicated otherwise)	2024	2023	2022	2021	2020	*YoY Change* (%)*
C&S	**156.2**	**135.0**	**116.8**	**129.5**	**119.0**	15.7
Total Assets	**1,518.2**	**1,274.6**	**1,100.8**	**1,070.6**	**862.8**	19.1
Total Liabilities	**1,362.0**	**1,139.6**	**984.0**	**941.1**	**743.8**	19.5
NWP/Equity (%)	**97.6**	**93.1**	**84.3**	**77.9**	**99.3**	4.8
Reserve Leverage (%)	**828.7**	**766.7**	**782.3**	**671.3**	**565.7**	8.1

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

Key Highlights:

- Total assets increased by US$243.6 billion in 2024, rising to US$1,518.2 billion from US$1,274.6 billion
- Total liabilities stood at US$1,362.0 billion at year-end 2024, up from US$1,139.6 billion compared to the prior year. This represents a 19.5% increase YoY
- In aggregate, total assets were 111.5% of total liabilities in 2024, similar to 2023

- Capital and surplus increased 15.7% to US$156.2 billion, up from US$135.0 billion YoY
- Reported insurance reserves were 828.7% of corresponding capital and surplus at year-end 2024, up 8.1% from 2023 because of a larger increase in insurance reserves relative to the increase in total capital and surplus

Figure 4.1.4 Total Assets, Liabilities and C&S YE2020 - YE2024

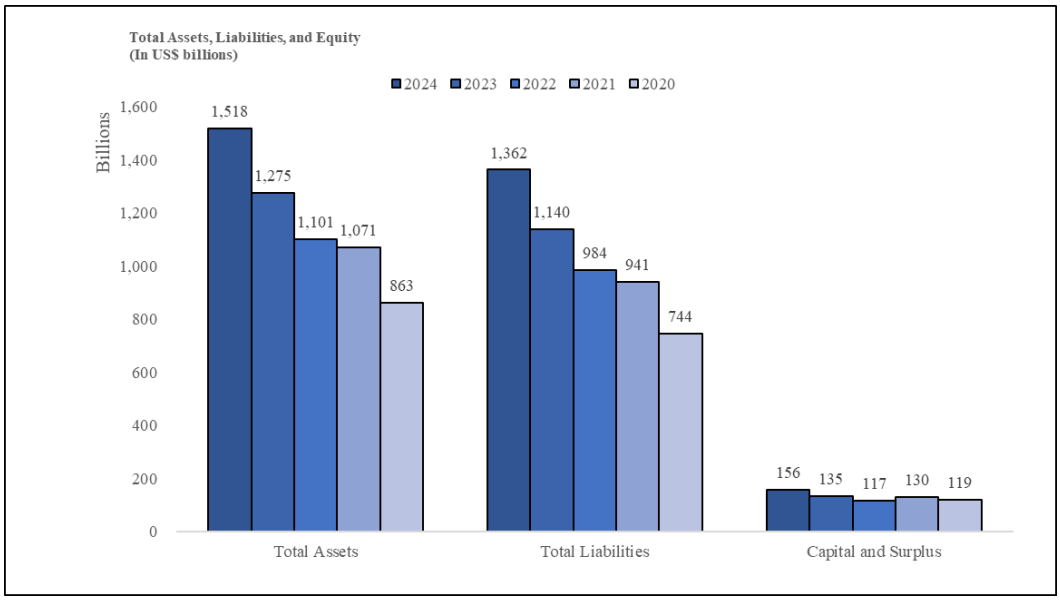


Figure 4.1.4 above shows the progression of assets, liabilities and C&S for the sector over the last five years. Key financial, capital and profitability indicators are captured in the tables below for Bermuda's long-term insurers for the years ending 2020 through 2024.

Table 4.1.5 Key Income Statement Indicators

(In US$ billions)	2024	2023	2022	2021	2020	*YoY Change* (%)*
GWP	**200.1**	**169.8**	**137.0**	**135.7**	**171.5**	17.8
NWP	**152.4**	**125.7**	**98.4**	**100.9**	**118.2**	21.2
Total Expenses	**14.0**	**12.2**	**16.3**	**8.7**	**13.0**	14.8
Total Policyholder Claims and Benefits Paid	**69.0**	**67.2**	**61.5**	**50.4**	**52.8**	2.7
Investment Income	**42.0**	**41.9**	**0.5**	**24.3**	**32.6**	0.3
Net Income	**26.3**	**10.4**	**11.0**	**15.0**	**15.7**	152.9

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

In 2024, firms reported a net income of US$26.3 billion, representing a 152.9% increase compared to US$10.4 billion in 2023. Investment income remained steady at US$42.0 billion, reflecting the continued strength of the investment environment throughout 2023 and 2024, especially when contrasted with conditions during and immediately after the pandemic. Total policyholder claims and benefits paid rose by 2.7%, reaching US$69.0 billion in 2024, up from US$67.2 billion in 2023. Over the past five years, total policyholder claims and benefits paid amounted to US$301.0 billion.

Table 4.1.6 Aggregate Capital Structure

(In US$ billions unless indicated otherwise)	2024	2023	2022	2021	2020	*YoY Change* (%)*
Total Assets	**1,518.2**	**1,274.6**	**1,100.8**	**1,070.6**	**862.8**	19.1
C&S	**156.2**	**135.0**	**116.8**	**129.5**	**119.0**	15.7
Insurance Reserves	**1,294.0**	**1,035.2**	**913.8**	**869.4**	**673.4**	25.0
Total Assets/C&S (%)	**972.2**	**944.0**	**942.4**	**826.6**	**724.8**	3.0
C&S/Total Assets (%)	**10.3**	**10.6**	**10.6**	**12.1**	**13.8**	-2.9
Insurance Reserves/Total Assets (%)	**85.2**	**81.2**	**83.0**	**81.2**	**78.0**	5.0

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

The sector's total C&S increased by 15.7% to US$156.2 billion from US$135.0 billion in the prior year. Aggregate sector assets were 9.72 times (or 972.2% of) C&S, and this proportion increased by 3% YoY. Likewise, total C&S decreased to 10.3% of total assets YoY. Insurance reserves increased 25.0% YoY to US$1,294.0 billion and accounted for 85.2% of assets held by long-term insurers, up from 81.2% in 2023.

4.2 Additional Performance Indicators

Key financial return indicators are given in Table 4.2.1. Return on Assets (RoA) increased 90 basis points to 1.7%, up from 0.8% in 2023. Return on Equity (RoE) more than doubled to 16.8%, driven by the material increase in net income. Return on Investment (RoI) dropped slightly to 3.1% in 2024. The YoY variation in the returns profile of Bermuda’s long-term sector over the five-year period reflects the sector’s increasing size and diversity.

Table 4.2.1 Return on Assets, Equity and Investment[5]

(%)	2024	2023	2022	2021	2020	*YoY Change* (%)*
RoA	**1.7**	**0.8**	**1.0**	**1.4**	**1.8**	112.3
RoE	**16.8**	**7.7**	**9.5**	**11.6**	**13.1**	118.7
RoI	**3.1**	**3.9**	**0.1**	**2.7**	**4.5**	-20.9

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

The figures below compare key performance indicators YoY. Figure 4.2.2 indicates the movement of GWP, NWP, policyholder claims, benefits paid and expenses. Figure 4.2.3 is a boxplot showing the 25th, median and 75th percentiles of total assets to capital and surplus. The median value of total assets as a multiple of C&S in 2024 is 8.9, compared to 8.4 in 2023.

Figure 4.2.2 Gross and Net Premiums, Claims[6] and Expenses

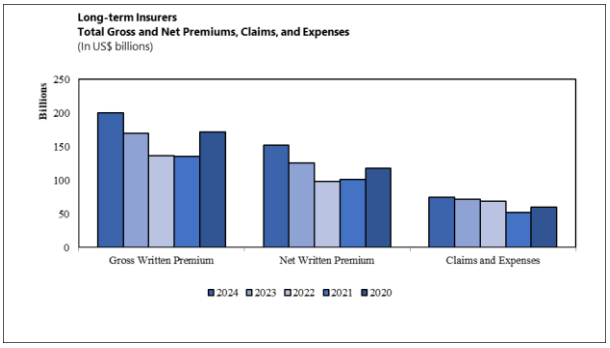
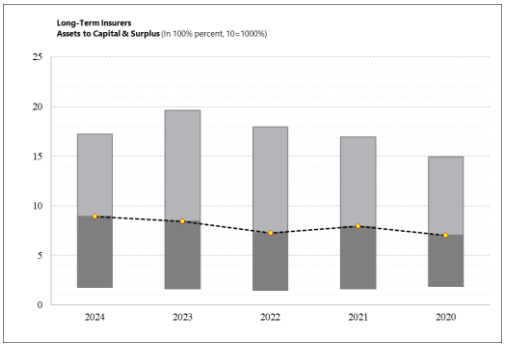


Figure 4.2.3 Assets as a Percentage of C&S



4.3 Lines of Business and Geographical Breakdown of Policyholder Claims and Benefits Paid and Reserves

The long-term sector in Bermuda comprises direct and indirect (re)insurers underwriting a broad range of risks, including mortality, longevity, critical illness, disability and group life, among other products. These risks are primarily managed on a portfolio or cohort basis. Table 4.3.1 illustrates the reserves allocated to key lines of business. The underlying

[5] 'Return on Assets' is net income as a proportion of assets;
'Return on Equity' is net income as a proportion of C&S; and
'Return on Investment' is investment income as a proportion of total investments.
[6] Claims include all policyholder claims and benefits paid.

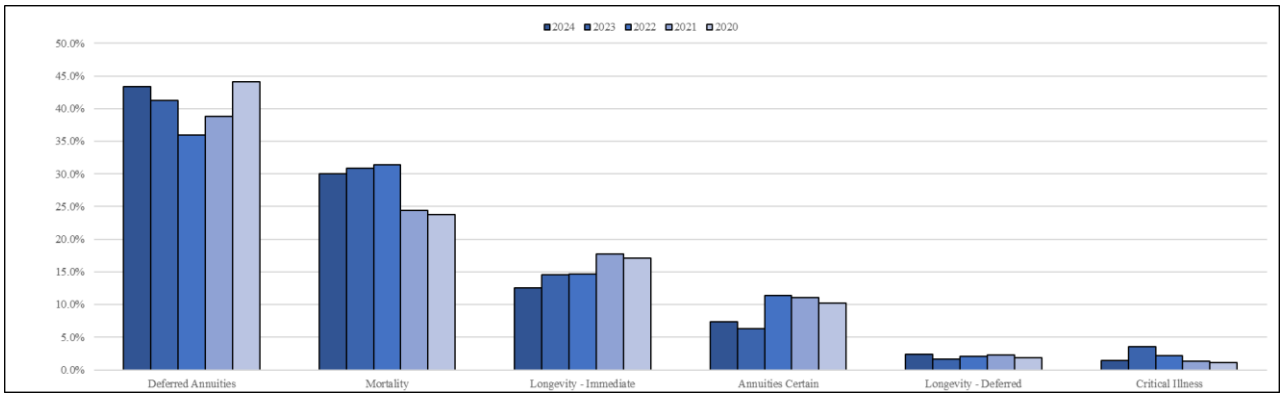
exposures, as reflected by the distribution of reserves, are concentrated predominantly in the US, with a smaller proportion in Asia (see Figure 4.3.3).

Table 4.3.1 Bermuda Long-term Insurance Sector Reserves by Key Lines of Business

(In US$ billions unless indicated otherwise)	2024	2023	2022	2021	2020	*YoY Change* (%)*
Deferred Annuities	**453.8**	**341.2**	**263.5**	**272.6**	**286.7**	33.0
Mortality	**314.3**	**255.3**	**229.8**	**171.8**	**154.3**	23.1
Longevity - Immediate	**131.5**	**120.6**	**107.6**	**124.5**	**111.3**	9.1
Annuities Certain	**77.1**	**52.3**	**83.2**	**77.6**	**66.6**	47.6
Longevity - Deferred	**24.8**	**14.1**	**15.6**	**16.0**	**12.2**	76.3
Critical Illness	**14.5**	**29.6**	**15.9**	**9.2**	**7.2**	-50.8
All other	**30.6**	**23.0**	**24.8**	**24.3**	**16.5**	33.1

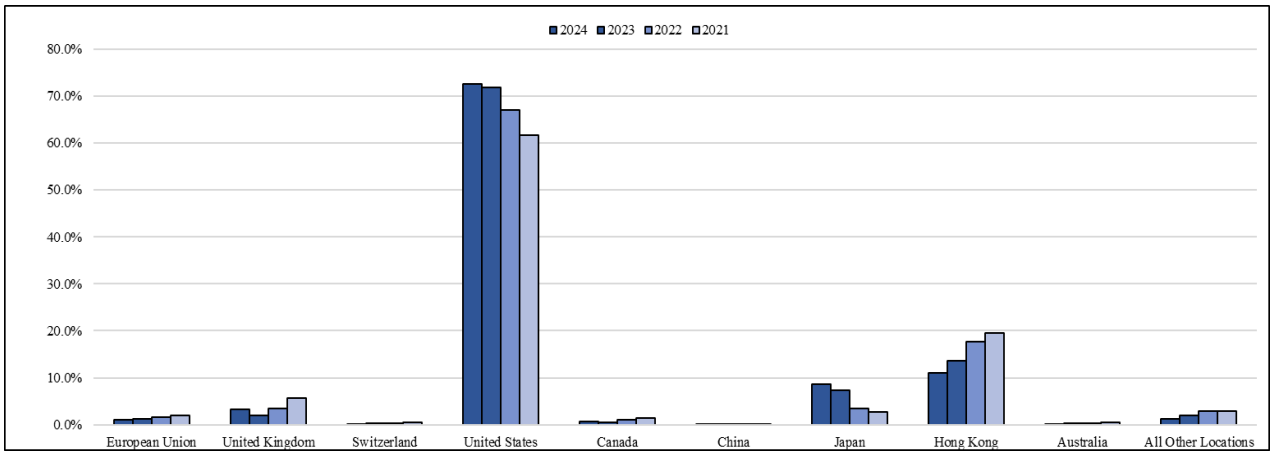
** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

Figure 4.3.2 – Bermuda Long-term Insurance Sector Reserves as a Proportion of Total Reserves by Key Lines of Business



The Bermuda long-term insurance sector reserves are broken down by geographical distribution in Table 4.3.3 below. The US accounted for 72.5% of insurance liabilities in 2024, 71.8% in 2023 and 67.0% in 2022. Please note that the values used in this figure are available only from the year 2021 onwards.

Figure 4.3.3 Geographical Distribution of Reserves for YE2024 to YE2021



4.4 Asset, Reserve and Liquidity Indicators

Firms reported US$176.2 billion of reinsurance assets at year-end 2024, up 36.2% from US$129.4 billion in 2023. The expense-to-assets ratio of 0.9% in 2024 was slightly down from 1.0% in 2023. Total payouts represented 5.3% of total reserves at year-end 2024, down 17.9% from 6.5% in 2023.

Table 4.4.1 Expense Ratio and Payouts as a Percentage of Reserves

(% unless indicated otherwise)	2024	2023	2022	2021	2020	*YoY Change* (%)*
Total Expenses/Total Assets	**0.9**	**1.0**	**1.5**	**0.8**	**1.5**	-3.7
Total Policyholder Claims and Benefits Paid/Reserves	**5.3**	**6.5**	**6.7**	**5.8**	**7.8**	-17.9

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

At the end of 2024, cash holdings, sovereign bonds and corporate bonds constituted 58.1% of the asset allocation for Bermuda's long-term sector. Mortgage-backed Securities (MBS) and Asset-backed Securities (ABS) accounted for 21.1%. In comparison, these holdings were 64.2% and 18.7%, respectively, in 2023. Figure 4.4.2 visually shows the composition of assets over the five-year period from 2020 to 2024.

Figure 4.4.2 Composition of Investments in Percentage

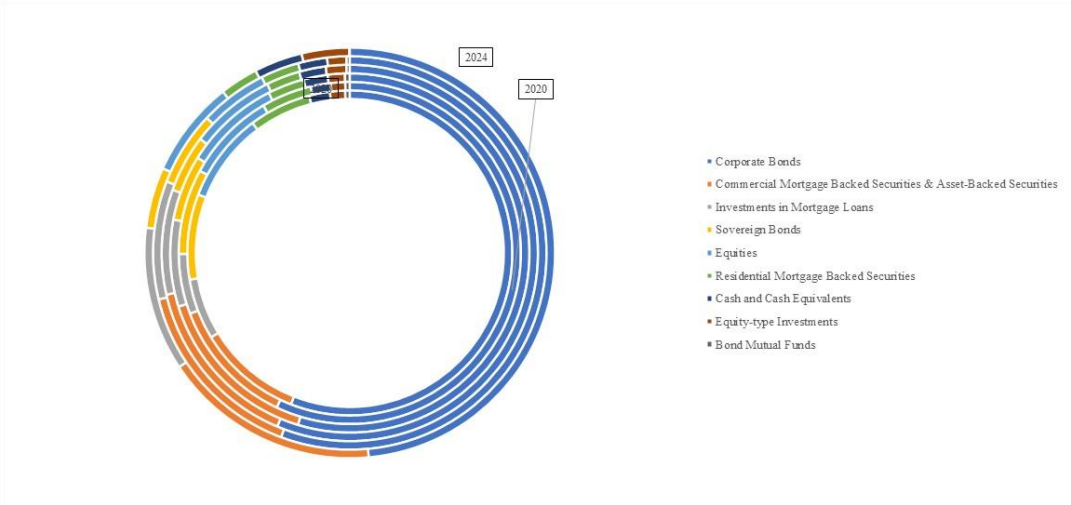


Table 4.4.3 provides the percentage allocation of investments held by Bermuda's long-term insurers by asset type. Table 4.4.4 provides a categorisation of investments held by quality type at year-end for the period 2020 to 2024.

The largest allocation for the sector is in corporate bonds, representing 48.5% of total investments at year-end 2024, down from 55.7% in 2023. Equity holding reverted to its five-year average, increasing to 7.6% of the overall sectoral allocation. The allocation to Sovereign Bonds dropped to 4.8% of the sectoral allocation, down from 6.1% in 2023 but the cash allocation increased to 3.8% up from 2.4% in 2023.

Table 4.4.3 Asset Classes as a Percentage of Total Investments

(In per cent)	2024	2023	2022	2021	2020	*YoY Change* (%)*
Corporate Bonds	**48.5**	**55.7**	**56.3**	**54.7**	**57.0**	-12.8
Commercial MBS/ABS	**17.1**	**15.5**	**15.1**	**15.5**	**12.2**	10.2
Investments in Mortgage Loans	**11.3**	**9.7**	**9.0**	**7.8**	**5.7**	16.7
Sovereign Bonds	**4.8**	**6.1**	**4.9**	**5.9**	**8.1**	-21.8
Equities	**7.6**	**5.6**	**7.4**	**8.6**	**8.6**	37.2
Residential MBS	**3.0**	**3.2**	**2.9**	**3.3**	**4.8**	-4.5
Cash and Cash Equivalents	**3.8**	**2.4**	**2.3**	**2.2**	**1.9**	60.1
Equity-type Investments	**3.8**	**1.6**	**1.8**	**1.5**	**1.4**	138.0
Bond Mutual Funds	**0.0**	**0.3**	**0.3**	**0.4**	**0.4**	-93.6

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

At year-end 2024, investment-grade fixed-income securities accounted for 72.8% of total investments. Below-investment-grade securities represented 2.6%, while unrated securities comprised 1.0%. Equities, equity-like assets, and mortgage loans made up 23.6% of the portfolio. The Bermuda long-term sector increased investment in equities and mortgage loans during 2024, driving an increase in holdings of equities, equity-like investments, and mortgage loans with corresponding reductions across other asset classes.

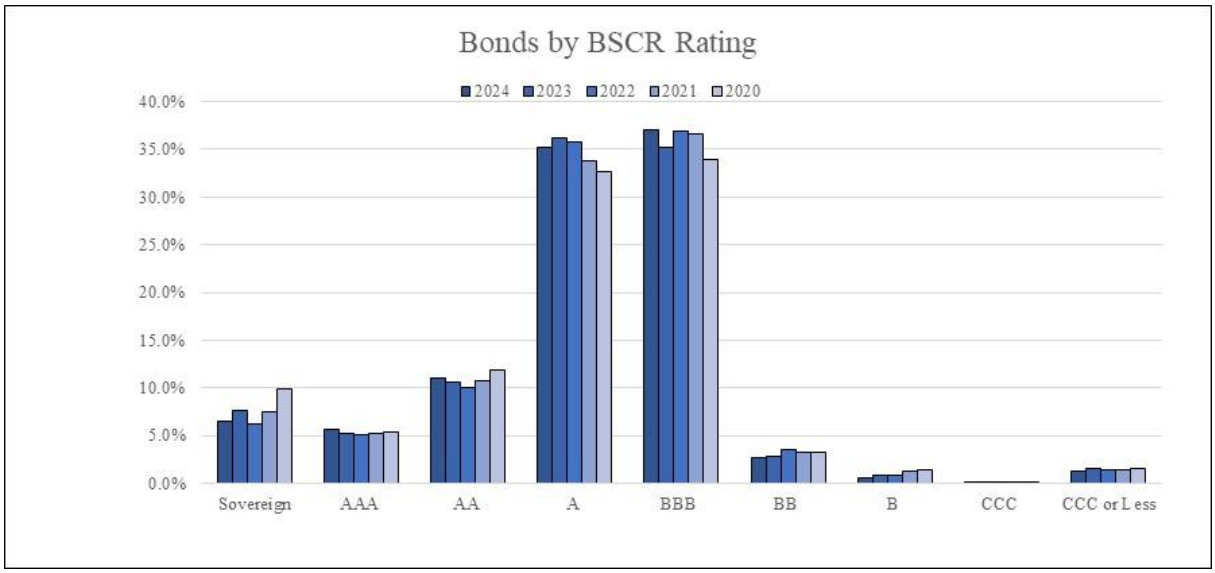
Table 4.4.4 Investment Rating Classes

(In per cent)	2024	2023	2022	2021	2020	*YoY Change* (%)*
Investment Grade Investments/Total Investments	**72.8**	**78.4**	**76.6**	**76.6**	**78.7**	-7.2
Below-Investment Grade Investments/Total Investments	**2.6**	**3.1**	**3.6**	**3.8**	**4.1**	-13.8
Unrated Investments/Total Investments	**1.0**	**1.2**	**1.2**	**1.2**	**1.3**	-22.9
Equity, Equity-like and Mortgage Loans Investments/Total Investments	**23.6**	**17.3**	**18.6**	**18.4**	**15.9**	36.8

** The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

Total bonds held by long-term insurers, categorised by BSCR Rating, are shown in Figure 4.4.5 below. Bond holdings with a rating of BBB or better represent 95.3% of total bonds at YE2024, which was flat YoY.

Figure 4.4.5 Bonds Grouped by BSCR Rating



The boxplots shown in Figure 4.4.6 provide insight into the distribution of asset quality relative to total investments held by firms in Bermuda's long-term insurance sector. The median holding

of corporate and sovereign bonds decreased to 66.3% at year-end 2024, down from 76.5% in 2023. The median of investment-grade assets relative to total investments decreased to 85.5% in 2024, compared with 90.9% in 2023.

Figure 4.4.6 Box and Whisker Plots of Asset Quality

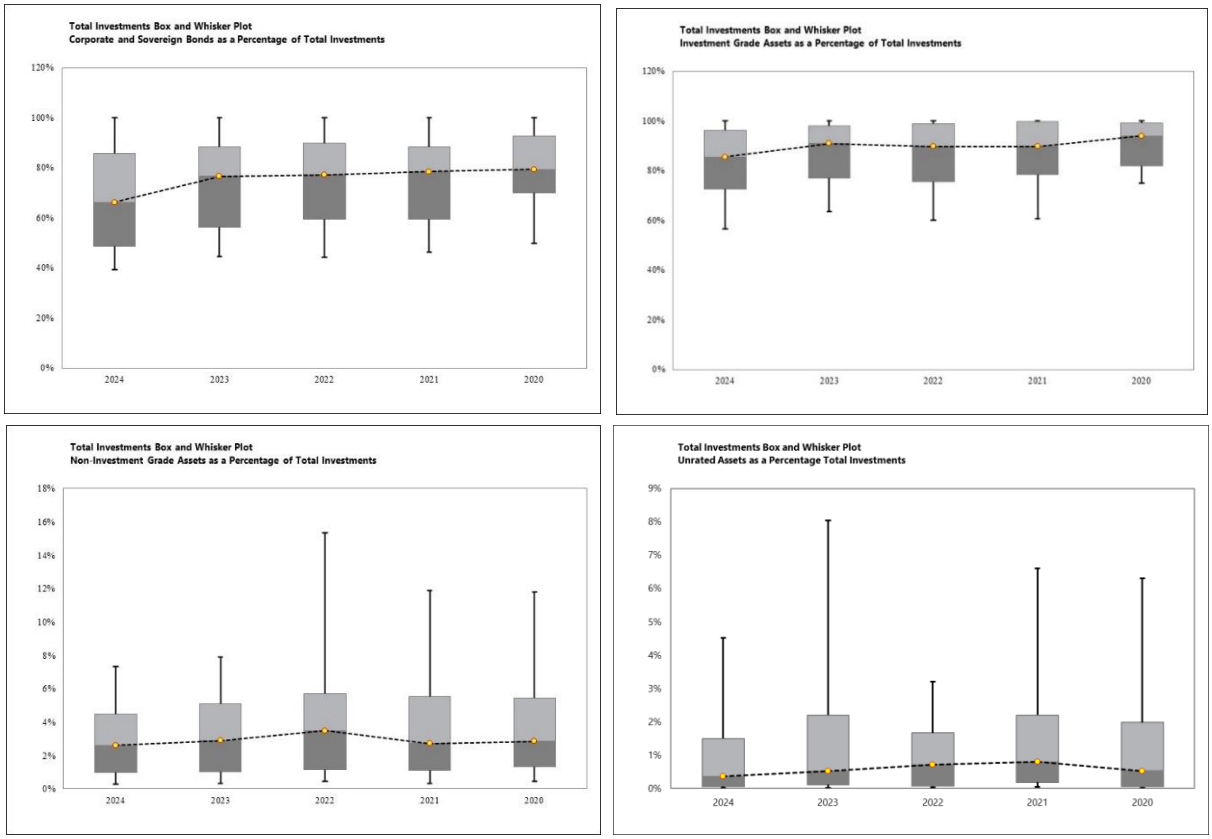


Table 4.4.7 lists liquidity indicators by comparing cash and assets with higher rating levels to assets, liabilities, reserves and policyholder claims and benefits paid. Cash investments are defined as cash, cash equivalents and sovereign bonds. These comprise 7.4% of total assets, 8.2% of total liabilities and 162.0% of payouts. The sum of 'AAA', 'AA', 'A' and 'BBB' securities accounts for 55.9% of assets and covers 62.3% of liabilities and 1,228.5% of payouts in 2024.

Table 4.4.7 Indicators of Asset Liquidity*

(In per cent)	2024	2023	2022	2021	2020	*YoY Change** (%)*
Cash Investments/Total Assets	**7.4**	**7.1**	**5.8**	**6.0**	**7.3**	3.5
Cash Investments/Total Liabilities	**8.2**	**8.0**	**6.5**	**6.9**	**8.5**	3.2
Cash Investments/Reserves	**8.6**	**8.8**	**6.9**	**7.4**	**9.4**	-1.4
Cash Investments/Policyholder Claims and Benefits Paid	**162.0**	**135.0**	**103.2**	**128.1**	**119.8**	20.0
"AAA-BBB" Assets/Total Assets	**55.9**	**58.9**	**55.9**	**51.4**	**50.8**	-5.2
"AAA-BBB" Assets/Total Liabilities	**62.3**	**65.9**	**62.5**	**58.5**	**58.9**	-5.5
"AAA-BBB" Assets/Insurance Reserves	**65.5**	**72.5**	**67.3**	**63.3**	**65.1**	-9.6
"AAA-BBB" Assets/Policyholder Claims and Benefits Paid	**1,228.5**	**1,117.5**	**999.6**	**1,091.0**	**830.6**	-5.4

* *Note:* AAA refers to the rating category of investment assets held by firms. Cash investments include i) sovereign debt issued by a country in its currency that is rated AA- or better, and ii) debt issued by government-owned and related entities that were explicitly guaranteed by that government, except for MBSs.
** *The YoY change denotes the per cent change in value between the current and the previous fiscal year (i.e., FY2024 and FY2023).*

5. Stress Testing Analysis

Stress testing is a critical supervisory tool for the BMA, enabling the assessment of firms' capital adequacy under adverse market conditions and stressed liquidity scenarios. By aggregating results across firms, the Authority can evaluate the long-term insurance sector's vulnerability to specific shocks. These tests measure the impact of severe yet plausible losses on insurers' EBS, providing insight into their capacity to absorb key financial risks. This analysis not only informs the sector's overall financial stability but also supports recovery planning and resolvability assessments through both microprudential and macroprudential perspectives.

Section 5.1 provides a quantitative summary of the aggregated results of R1 to R8 financial market scenarios submitted in Schedule V(e) of the 2024 year-end CSR[7]. The Authority continues to investigate the micro and macroprudential liquidity coverage using the liquidity stress test (R9) and publishes a separate report, which is highlighted in section 5.2.[8]

Financial Market Scenarios

The nine financial market scenarios, labelled R1 to R9, comprise capital market-related single-factor shocks triggered by specific risk factors (i.e., equity returns, credit spreads and defaults, liquidity). The stress scenarios are calibrated to the evolution of interest rates, exchange rates and equity markets, among other historical financial market information. Additionally, the financial market scenarios included the impact of haircuts on sovereign bonds on capital and surplus. These scenarios acknowledge continued stresses to global financial stability and sovereign risk concerns. The ongoing political risk and volatility of capital flows also warrant shocks to foreign currency positions.

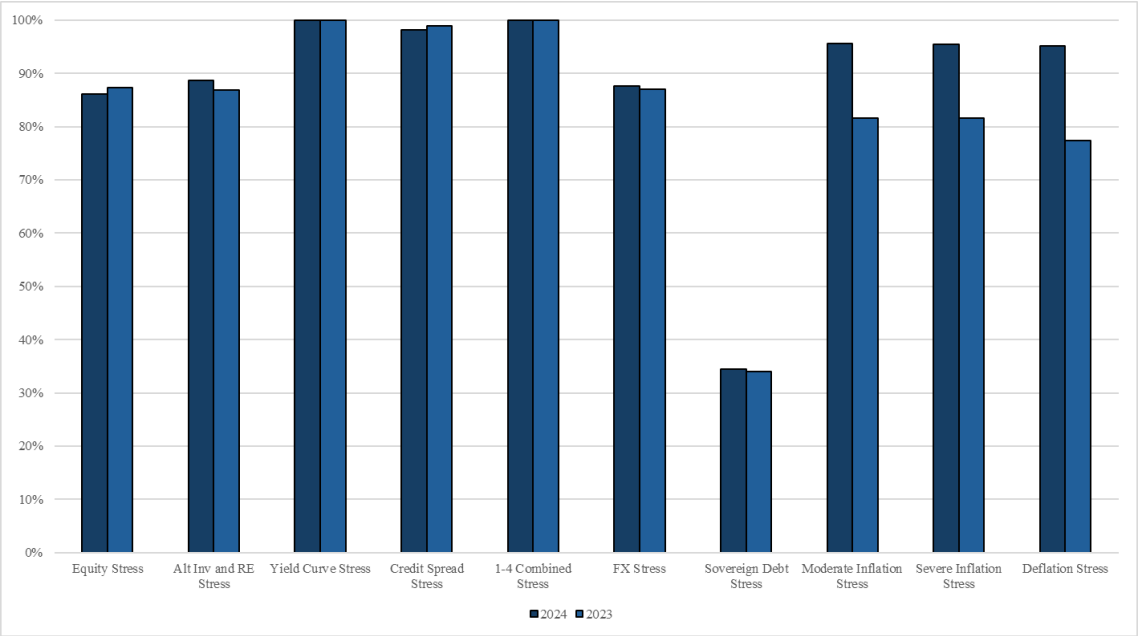
Specifically, depending on the insurer's exposure to capital market-related factors, the insurer was required to quantify the impact on its EBS from nine different financial market scenarios. Figure 5.1 shows the C&S after the impact of the first eight scenarios. The R9 long-term liquidity stress test is a multi-factor stress, allowing for a more detailed analysis of the results.

[7] An overview of the stress/scenarios carried out by long-term insurers can be found in the *2024 Capital and Solvency Return: Stress/Scenario Analysis – Class E, Class D and Class C* published on the Authority's website.
[8] At the time of publication, the Authority's liquidity report for 2024 was not yet available.

Accordingly, the Authority published its initial analysis in the report, *Liquidity Risk in the Bermuda Long-term Insurance Market*, which is available on the BMA's website.[9]

5.1 Summary of Capital and ECR Impact of Financial Market Scenarios (R1 to R8)

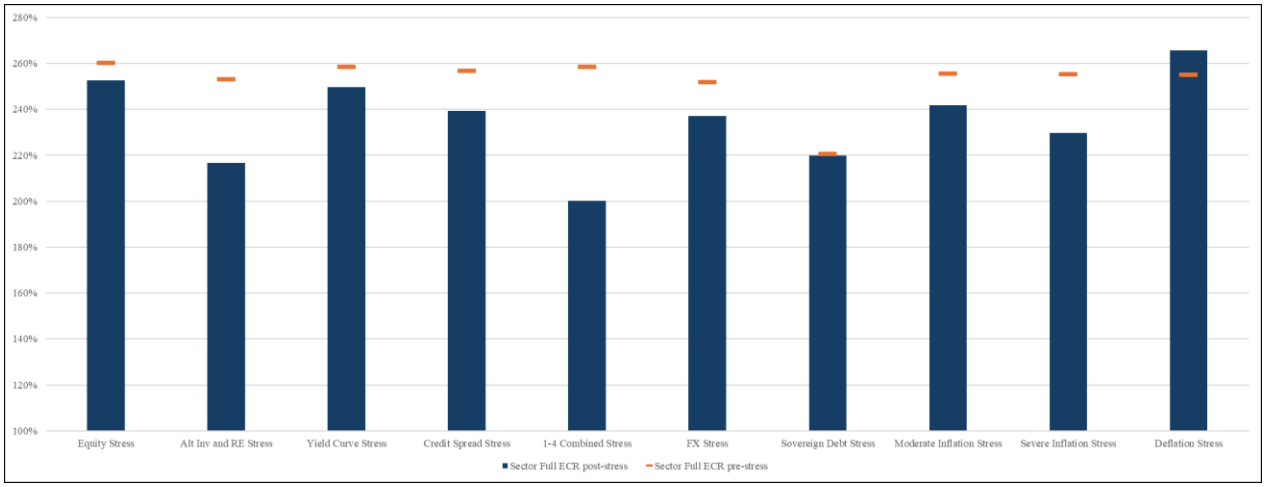
Figure 5.1.1 2024YE and 2023YE Total C&S Exposed by Scenario (R1 - R8)



The modelling rates for financial market scenarios R1 to R8 continue to be high, with roughly 92% of long-term insurers' EBS C&S[10] subjected to at least one of the eight financial market stresses. On an individual scenario basis, over 75% of sector C&S is exposed to all but one scenario, as shown in Figure 5.1.1

[9] Full report is available here: Https://www.bma.bm/pdfview/9648
[10] Data is as at 1 November 2025 and is subject to change after this date.

Figure 5.1.2 Impact of Financial Market Scenarios R1 – R8 on Sectoral ECR Ratio



At year-end 2024, long-term commercial insurers continue to show resilience to capital market stress both at the microprudential and macroprudential levels, as shown in Figure 5.1.2. In aggregate, the two largest C&S losses from a single stress came from the 40% decline in alternative investments and real estate (R2), where the sectoral ECR drops from a pre-stress level of 253% pre-stress to 217% post-stress and then the widening of credit spread across different rating classes, which resulted in an 18% drop in ECR ratio. The new deflation stress scenario indicates that, in aggregate, the capital position of firms improves in a deflationary scenario, with aggregate capital improving with -1% deflation for year-end 2024.

Figure 5.1.3 Impact of Financial Market Scenarios R1 – R8 on Sectoral C&S

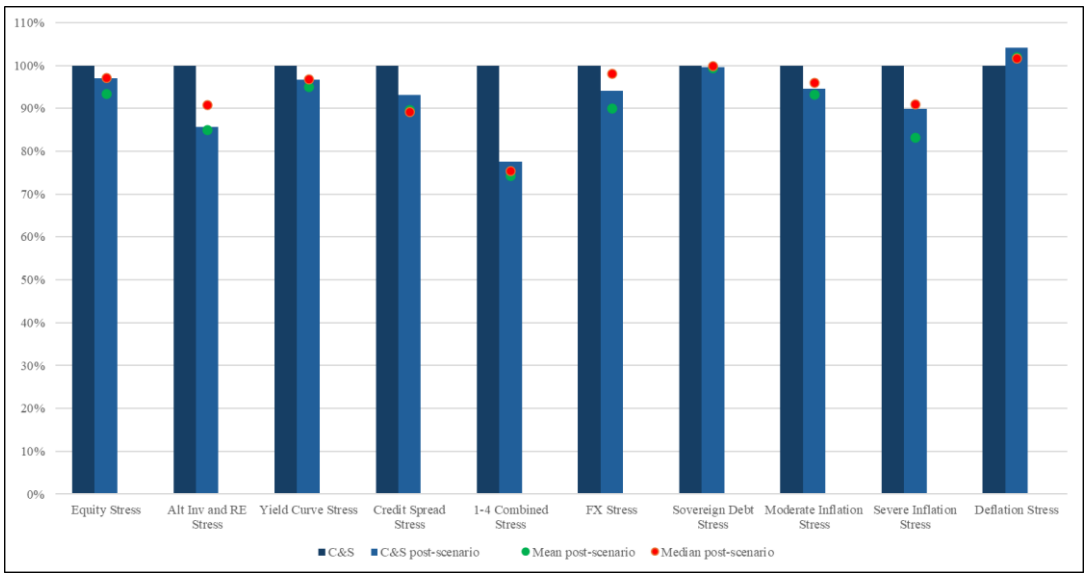
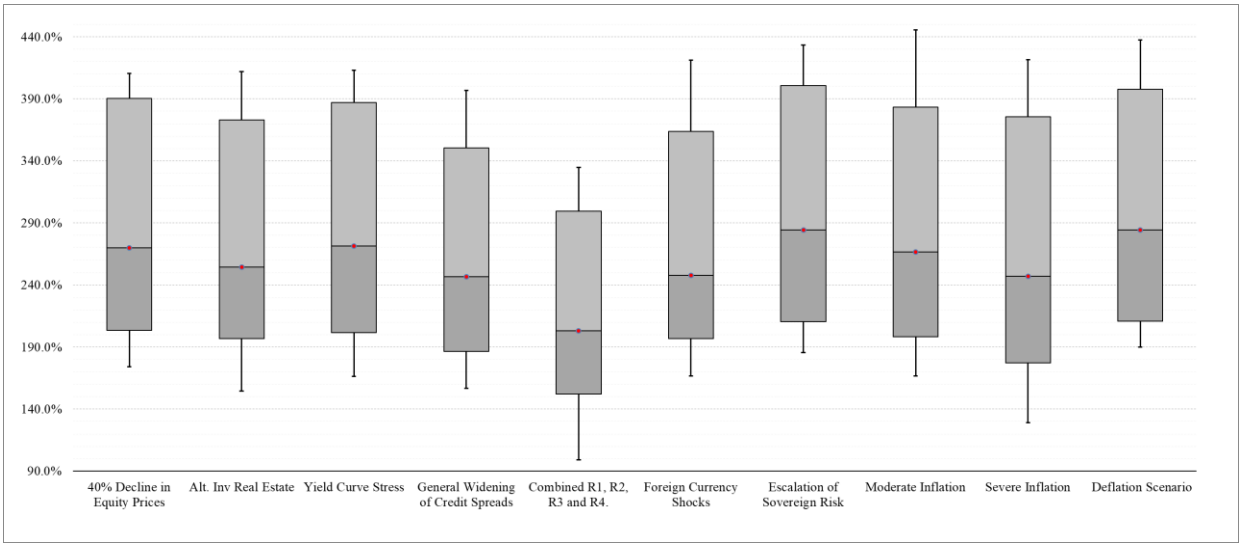


Figure 5.1.3 illustrates the percentage of starting capital (normalised to 100% for each scenario) and the remaining surplus after applying stress scenarios R1 through R8. The metric "C&S post-scenario" represents the sector-wide percentage of C&S remaining following the losses in each scenario. The figure also shows the simple mean and median – depicted as green and red dots – calculated from the percentage losses reported by individual firms. These indicators provide additional insight into how results are distributed across scenarios.

The boxplots in Figure 5.1.4 show the distribution of the impact on ECR ratios across firms by scenario, including the median (red dot). The box plots show the 25th percentile (lower bar), the median (middle bar), and the 75th percentile (upper bar). The upper and lower lines (or whiskers) show the distance to the 90th and 10th percentile, respectively. Considering the single-shock scenarios, the lowest median post-stress ECR ratio of 247% occurs after R4. The multi-factor shock scenario R5 results in a median ECR ratio of 203%.

Figure 5.1.4 Boxplots of ECR Ratios Post-Stress by Scenario



R1 – Severe decline in equity prices[11]: This stress is a decrease of 40% in the value of equities in a portfolio. This stress scenario is consistent with the Black Monday crash of 1987. If there are hedging instruments for equity exposures, their hedging result should be recorded separately. If hedging is achieved through replication or the continuous rollover of assets, this should be mentioned in the stress test result. Short positions are considered hedging positions. Material equity derivative positions should also be included in the test. The result of this

[11] Full instructions, details and exhibits of stress scenarios can be found in the *2023 Capital and Solvency Return: stress/scenario analysis – Class E, Class D and Class C* published on the Authority's website.

scenario shows that the simple mean and median post-stress C&S were 93.4% and 97.1%, respectively.

R2 – Alternative investment and real estate: This stress is related to investment holdings in hedge funds, ILSs, real estate, private placements, venture capital and other types of securities that cannot be characterised as equity, bonds, cash, Foreign Exchange (FX) or mutual funds in typical asset categories or participations in other corporations, excluding venture capital. The typical characteristics of these assets are low correlation with financial markets and lower liquidity than typical financial assets. Such assets should be decreased in value by 40%. For assets such as hedge funds with lockup periods, venture capital, and real estate in illiquid markets, the (re)insurer should report whether sudden decreases in their value could entail an inability to sell rapidly and whether this effect has material consequences. Level three assets should also be stressed by reducing the value by 40%. The result of this scenario shows that the simple mean and median post-stress C&S were 85.0% and 90.9%, respectively.

R3 – Yield curve stress: This stress refers to moderate and severe movements in global yields. The (re)insurer should apply the following absolute stresses to the yield curves used for the valuation of assets and liabilities: the stress will apply to all yield curves used (explicitly or implicitly) in those valuations, including (but not limited to) the published risk-free or standard curves, curves used in the Scenario Based Approach (SBA) calculation, any other curve used for Discounted Cash Flows (DCF)-style calculations and yields used to predict policyholder behaviour. Corporate rates should be revalued assuming constant credit spreads. The resulting yields should not be floored at zero in any scenario. Insurers are to report the Moderate Widening scenario (1% increase in yields across all maturities). The result of this scenario shows that the simple mean and median post-stress C&S were 95.1% and 96.9%, respectively. In the case of the simple mean, several firms report a small improvement in capital under this stress scenario.

R4 – General widening of credit spreads: Credit spreads widen across different rating classes. The widening reflects the increase in the perceived credit risk in the market. Table 2 summarises the shock.

Table 2. Credit Spread Widening
In basis points

Rating Category					
AAA	**AA**	**A**	**BBB**	**BB**	**Below BB**
199.6	249.0	241.5	276.4	947.5	3,113.6

Figure taken from *2023 Capital and Solvency Return: Stress/Scenario Analysis – Class E, Class D and Class C*

All positions, including those available for sale and held to maturity, should be stressed. Structured finance products, ABS, agency and non-agency MBS must be included as well. If there is no rating for an asset, the (re)insurer must assume that the rating is below BB. Cat Bonds are treated as alternative investments rather than as assets susceptible to changes in credit spreads. The result of this scenario shows that the simple mean and median post-stress C&S were 89.7% and 89.2%, respectively.

R5 – Combine R1 to R4: This stress combines the moderate widening stress from R3 with the stresses from R1, R2 and R4. This means that corporate bonds must be revalued using the risk-free curve and prevailing credit spread at the valuation date, plus the moderate widening scenario from R3 and the widening of credit spreads from R4. Sovereign bonds and other assets with DCF-style valuation methods should be valued as in R3. The result of this scenario shows that the simple mean and median post-stress C&S were 74.4% and 75.5%, respectively.

R6 – Foreign currency shocks: This stress applies an equal percentage of depreciation and/or appreciation of FX positions in assets and liabilities when these shocks reduce the value of assets and increase the value of liabilities. When an FX liability is passed on to the party claiming the liability, the shock can be excluded for such positions. The following table provides the percentage depreciations/appreciations. Hedging of FX positions should be reported separately, especially if hedging is done with roll-over strategies. The result of this scenario shows that the simple mean and median post-stress C&S were 90.0% and 98.2%, respectively.

R7 – Escalation of sovereign risk: In this stress, the weakest sovereigns must undergo a haircut in the face value of their debt. Both bonds available for sale and those held-to-maturity should be stressed. The result of this scenario shows that the sample mean and median post-stress C&S were 99.4% and 99.9%, respectively.

R8 – Inflation and monetary policy risk: This stress applies to three inflation-related scenarios: moderate, severe and deflation. Inflation risk stems from the general uncertainty of

prices. Higher-than-expected inflation decreases the real yield on loans and debts, while it may increase the value of indemnities, payouts and expenses. This stress simulates a scenario similar to the 2022 inflationary scenario. The (re)insurer should apply each inflation scenario for three years, assuming no initial action from central banks to curb inflation. In year four, the central bank changed its stance and increased rates to restore the current real interest rate. From year five onwards, inflation and interest rates return to current levels. These stresses should be additively applied to the prevailing annual inflation/interest rate assumption used in valuing assets and liabilities (e.g., if the prevailing assumption is 3% p.a., then the moderately stressed assumption should be 8% p.a. for the first four years before returning to 3% p.a.).

The moderate inflation (+5%) stress scenario result shows that the simple mean and median post-stress C&S were 93.3% and 96.1%, respectively.

The severe inflation (+10%) stress scenario results show that the simple mean and median post-stress C&S were 83.2% and 91.0%, respectively.

The result for the deflation (-1%) stress scenario shows that the simple mean and median post-stress C&S were 102.0% and 101.6%, respectively.

5.2 Summary of Liquidity Stress Test (R9)

As part of its ongoing supervision of liquidity risk, the BMA continues to monitor the liquidity profiles of Bermuda's long-term insurers. The analysis of Year End 2024 data shows the following key findings:

- Bermuda long-term insurers continue to maintain a substantial portion of their assets in liquid forms, with approximately 57% held in cash, sovereign bonds, and corporate bonds. This prudent asset allocation strategy is complemented by measured exposure to alternative investments, creating a diversified portfolio that balances yield generation with liquidity management. The sector's strong liquidity position is reflected in its high LCR, with the median LCR increasing to 471% post 1-200 years stress test (up from 418% in 2023).
- These market averages remain significantly higher than the minimum LCR requirement of 105%, demonstrating that Bermuda's long-term insurers maintain sufficient liquid

assets to meet outgoing liability cashflows even in severe stress scenarios affecting both assets and liabilities.

- The liability profile of Bermuda's long-term insurers has evolved favourably from a liquidity risk perspective, with the percentage of Best Estimate Liabilities exposed to lapse decreasing from 78% to 72%. Additionally, products with medium economic penalties for early surrender now represent 65% of surrender values (up from 52% in 2023), providing stronger disincentives against opportunistic lapses.
- The BMA requires all long-term insurers to conduct standardised liquidity stress tests under both moderate (1-in-20 years) and severe (1-in-200 years) scenarios as part of their regulatory submissions. These tests evaluate insurers' resilience against simultaneous asset and liability stresses, including mass lapse events and asset value deterioration. The Authority continues to engage with companies showing liquidity shortages under these stress scenarios to ensure adequate risk mitigation measures are in place, through company-specific deep dives, targeted sector-wide assessments, and reviews of Commercial Insurer's Solvency Self-Assessment (CISSA) submissions.
- The LCR results for YE2024 reporting are depicted in Figure 5.2.1. The weighted average and median LCR post-stress are shown in Table 5.2.1[12]. LCR from 2023 to 2024 shows changes under both the BMA (weighted average was 527% in 2023) and IAIS (weighted average was 526% in 2023) methodologies. Several factors contributed to these movements: reporting adjustments in the 2024 BSCR template for cash outflow calculations to increase consistency, evolving asset allocations across the sector that are treated differently under the two haircut methodologies, and improved data quality in submissions following feedback from the BMA on prior year filings.

[12] Outliers with very high liquidity ratios were excluded.

Figure 5.2.1 Year End Overall LCR

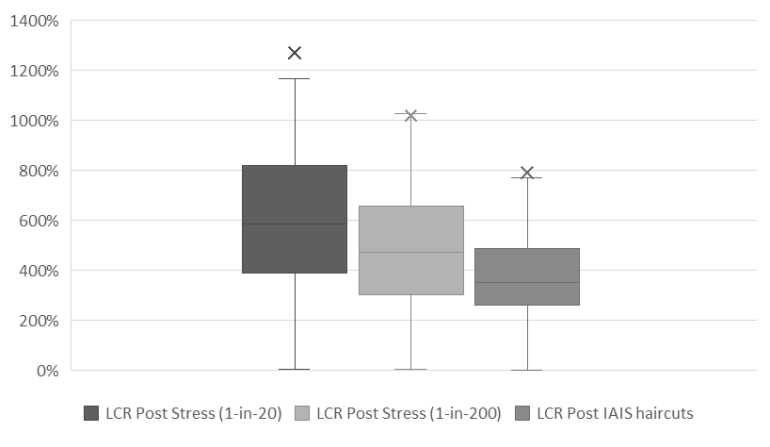


Table 5.2.1 LCR Ratio Year End 2024

LCR Post-stress	1 in 200	IAIS haircuts
Weighted Average	**762%**	**582%**
Median	**471%**	**350%**

BMA Report: *2025 Global Financial Crisis Stress Test – Long-Term Reinsurers*[13]

The BMA conducted a comprehensive stress test in 2025 to assess the resilience of Bermuda's long-term reinsurance sector under severe economic conditions modelled on the 2008 Global Financial Crisis (GFC). The exercise applied simultaneous shocks to interest rates, credit spreads, equity markets and real estate values, using parameters calibrated to international standards. A total of 106 commercial long-term insurers participated, representing US$1,169 billion in assets and a broad geographic distribution of cedents, with the majority exposure to the US, Japan and the UK.

The median ECR coverage ratio declined from 270% to 215%, demonstrating that the majority of entities maintained substantial capital resources even after absorbing the impact of the stress scenario. This resilience is further evidenced by the fact that out of 106 participating entities, 75 entities (71%) maintained coverage above 150% and 103 (97%) either maintained an ECR coverage above 100% following the stress or had in place a highly credible management plan to restore their financial strength following the stress.

The 2025 GFC stress test results provide important insights into the resilience of Bermuda's long-term insurance sector under severe economic conditions. The aggregate results demonstrate that the sector maintains adequate capital buffers overall, with the majority of entities able to withstand the prescribed stresses and are adequately capitalised, without experiencing recapturing events. This demonstrates that the current level of exposures and capitalisation does not present a threat to the financial stability of the Bermuda long-term market or the global life insurance market.

However, the report also identifies several areas that warrant continued attention and monitoring. The stress test identified three entities for which management actions were insufficiently credible to prevent either their ECR coverage from falling below 100% or to prevent an opportunistic recapture of their reinsurance treaties, highlighting the importance of robust recovery planning and capital management frameworks. Although these entities have identified management actions to address capital shortfalls, the feasibility and timing of these actions require careful supervisory assessment. This is particularly true in scenarios where multiple entities within the same group may simultaneously seek additional parental capital

[13] Full report is available here: https://www.bma.bm/pdfview/10943

support. The BMA will review the results together with the recovery plans that were recently received under the *Insurance (Prudential Standards) (Recovery Plan) Rules 2024 (Rules).*

The analysis also revealed varying levels of sensitivity to credit risk, with some entities showing significant exposure to credit downgrades and deterioration. This underscores the need for companies to maintain enhanced credit risk monitoring capabilities and prudent management of credit concentrations, especially given the substantial allocation to BBB-rated assets observed in some portfolios. The detailed asset and liability data obtained through this exercise will enable the BMA to refine its risk-based supervisory approach and focus resources on entities and risk areas that demonstrate greater vulnerability. Additionally, the treaty-level recapture analysis provides unprecedented insight into potential cross-border transmission channels that will inform future supervisory cooperation with international regulatory counterparts.

The BMA will continue to engage with industry participants to address the findings of this exercise while maintaining a regulatory framework that appropriately balances financial stability with the sector's continued development.