

FINANCIAL STABILITY REPORT

2022



Central Bank of Barbados
Financial Services Commission



FINANCIAL SERVICES
COMMISSION

Table of Contents

Preface	iv
Abbreviations.....	v
Foreward.....	1
1. Executive Summary	2
2. Macroeconomic Conditions.....	4
3. Key Risks to Financial Stability.....	8
3.1 Elevated Non-Performing Loan (NPL) Ratios of Deposit-Taking Institutions (DTIs).....	9
3.2 The Widening US-Barbados Interest Rate Spread.....	10
3.3 Climate Change.....	11
3.4 Deposit Insurance and Safety Net Arrangements for Credit Unions.....	12
3.5 Cyber-Attacks.....	12
3.6 The 15 Percent Global Corporate Minimum Tax Rate	14
4. Stress Testing.....	15
4.1 Deposit-Taking Institutions.....	15
4.1.1 Credit Risk	15
4.1.2 Liquidity Risk.....	20
4.1.3 Funding Costs Risk.....	22
4.2 Insurance	23
4.2.1 Underwriting Risks.....	23
4.2.2 Macroeconomic and Catastrophic Risks.....	25
5. Analysis of the Financial System.....	27
5.1 Structure of the Financial System	27
5.2 Deposit-Taking Institutions.....	28
5.2.1 DTI Investments	29
5.2.2 Loans.....	31
5.2.3 Deposits	34
5.2.4 Foreign-Currency Exposure.....	38
5.2.5 Credit Quality	42
5.2.6 Liquidity	47
5.2.7 Interest Rates	49
5.2.8 Profitability	51
5.2.9 Capital Adequacy.....	53

5.3 Insurance Sector	55
5.3.1 General Insurance Industry.....	55
5.3.2 Life Insurance Industry	59
5.4 Mutual Funds	63
5.5 Occupational Pensions	67
6. Payments Systems Developments.....	70
7. Conclusion	73
Appendix A: Macro-Prudential Indicators	74
Banking Stability Index (BSI)	74
Aggregate Financial Stability Index (AFSI).....	75
Appendix B: Financial Development Indicators	76
Appendix C: Key Financial Soundness Indicators.....	78
Appendix D: Financial Sector Interconnectedness.....	84
Cross-Sectoral Analysis.....	84
Appendix E: Cross-Border Assets of DTIs and Bank Holding Companies by Geographical Location.....	85

Preface

Oversight of the financial system is shared by the Central Bank of Barbados (the Bank), the Financial Services Commission (FSC) and the Barbados Deposit Insurance Corporation (BDIC), in the form of a Financial Oversight Management Committee (FOMC). The Bank regulates commercial banks and finance companies, the FSC regulates credit unions, insurance companies, mutual funds, and occupational pension plans, while the BDIC provides a safety net for depositors at commercial banks and finance companies. The FOMC maintains financial stability by overseeing the financial system, identifying and assessing of vulnerabilities, and prescribing policies to increase the system's resilience to possible adverse events.

Financial stability refers to the condition where a country's financial system operates effectively, efficiently, and resiliently, facilitating economic processes, mitigating risks, and absorbing shocks. This stability is characterised by solvent, well-capitalised, and well-managed financial institutions, efficient and reliable financial markets, and a robust financial infrastructure. Ensuring financial stability is crucial for promoting confidence among consumers, investors, and financial institutions, which in turn supports economic growth and development. Central banks and other financial regulators play a pivotal role in maintaining financial stability through various policy tools, regulations, and supervisory practices. As such, the Central Bank Act passed in December 2020 explicitly establishes financial stability as a core mandate of the Bank and recognises the need for macroprudential considerations in policymaking. The Act notes **that “where there is a perceived threat to the financial system, the Bank shall manage and control that risk by taking any steps it deems necessary.”**

This twelfth **issue of Barbados' Financial Stability Report (FSR)** is a collaboration between the Bank and the FSC, and provides an assessment of the risk exposures of domestic deposit-taking institutions, insurance companies, mutual funds, and pension funds. The FSR serves as an instrument to hold the financial sector regulators accountable for the surveillance, risk management and the smooth functioning of the financial system. The current report analyses the trends in financial stability indicators for financial institutions, as well as their balance sheets and income statements, with emphasis on the year 2022 and the first quarter of 2023.

Abbreviations

Abbreviation Meaning

ACH	Automated Clearing House
AFSI	Aggregate Financial Stability Index
ATM	Automated Teller Machine
BACHSI	Barbados Automated Clearing House Services Incorporated
BDIC	Barbados Deposit Insurance Corporation
BSI	Banking Stability Index
CAR	Capital Adequacy Ratio
CBOE	Chicago Board Options Exchange
DTIs	Deposit Taking Institutions
FOMC	Financial Oversight Management Committee
FSC	Financial Services Commission
FSR	Financial Stability Report
FSI	Financial Soundness Indicators
GDP	Gross Domestic Product
GOB	Government of Barbados
GPW	Gross Premiums Written
IMF	International Monetary Fund
NIR	Net International Reserves
NPL	Non-Performing Loan
POS	Point of Sale
ROA	Return on Assets
ROAA	Return on Average Assets
RTGS	Real Time Gross Settlement
RWA	Risk Weighted Asset

Foreword



Dr. Kevin Greenidge
Governor
Central Bank of Barbados



Mr. Warrick Ward
Chief Executive Officer
Financial Services Commission

Since its establishment, the Financial Stability Report (FSR) has served as an indispensable conduit for conveying insights on risk assessments pertaining to the Barbadian financial sector, benefiting both local and global stakeholders. The 2022 FSR upholds this essential function, and it is with considerable satisfaction that we declare the sustained health and stability of our financial ecosystem.

The financial year of 2022 and the initial quarter of 2023 have been characterised by geopolitical unrest, pronounced global inflationary pressures, escalating international interest rates, and notable disruptions within the banking sector worldwide. Nevertheless, Barbados' financial institutions have demonstrated commendable resilience. This fortitude can be attributed to vigorous economic growth, strategic governmental measures to curtail inflationary pressures, and the relative insulation of our domestic interest rates from international volatility. These factors have collectively contributed to a mitigated impact of the challenging international economic climate on the Barbadian populace and business sector.

In an era marked by geopolitical polarisation, digitisation, and heightened climate vulnerability, the risk landscape is inherently dynamic. Regulatory bodies are vigilant in identifying and managing emerging risks within the prevailing regulatory infrastructure. The current economic and technological milieu necessitates regulatory incursions into novel domains, such as the assessment of climate-related financial risks and cybersecurity contingencies. In response, we are crafting innovative datasets and analytical constructs to enhance regulatory oversight in these critical areas. As guardians of financial sector integrity, we pledge to exert all necessary efforts to shield our financial system from the potential repercussions of these evolving risks.

The Central Bank of Barbados and the Financial Services Commission (FSC) stand unwavering in our dedication to the implementation of prudent measures essential for the perpetuation of systemic stability. This steadfast approach may result in the extension of regulatory supervision to a broader spectrum of financial entities. Looking ahead, the impending finalisation of regulatory guidelines for the evaluation and licensing of payment service providers, along

with the progress towards enabling deposit insurance for credit unions, will fortify our regulatory framework and effectively diminish risks to financial stability.

1. Executive Summary

Barbados' financial system remained stable throughout 2022 and remained so up to the end of the third quarter of 2023, despite global economic and political turmoil. The domestic financial sector retained its capability to serve as a conduit between savers and investors while also providing clients with a range of credit, investment and payment options. This stability was supported by steady and broad-based economic growth, improved labour market conditions, and a robust payments system in which electronic payment methods are playing an ever-greater role.

Financial stability was largely sustained by improved domestic economic conditions. The **majority of the sector's financial stability metrics improved, including asset growth, credit quality, liquidity, and capital adequacy.** Profitability picked up for banks and finance companies in 2022, but was virtually unchanged for credit unions over 2022, but dipped for the year ended March 2023.

In particular, the credit quality of deposit-taking institutions (DTIs) improved over the review period, albeit at varying rates. Non-performing loans as a percent of total loans declined for each of the three DTI segments. However, bad debt provisioning as at March 2023 was lower for banks, but increased for credit unions and finance companies, as each DTI adjusted its provisioning to reflect its perceived credit risk.

Stress test results were not markedly different from the 2021 Financial Stability Report. **The credit risk stress tests showed that the DTIs' resilience to delinquency and provisioning shocks was largely on par with the results produced one year ago, with the DTT's generally well positioned to absorb significant shocks.** Similarly, the stress tests proved that the capital levels were adequate, and in the case of commercial banks, extremely robust up to the end of March 2023. However, based on stress test results, the resilience of the general insurance industry was slightly lower, as greater underwriting expenses and higher claims provisioning resulted in a loss and reduced **capital in 2022. The life insurance industry's stability** indicators improved and resilience to shocks remained similar to that of 2021.

Other metrics of financial health remained mainly positive. Exchange rate risk appears to **be minimal given the currency composition of the aggregate banking and finance companies'** net foreign currency open positions, and the level of these positions as a percent of their respective regulatory capital bases. There was a general improvement in the liquidity positions of DTIs, as liquidity remained in abundance for the financial system as a whole. For both banks and finance companies, profitability as measured by the annual return on average assets **increased in 2022 and held steady into the first quarter of 2023. Credit unions' annual return on average assets in 2022 was virtually unchanged relative to the prior period, but declined slightly during the year ended March 2023.** The capital adequacy ratios of each segment of DTIs grew.

The domestic financial system, while largely insulated from international interest rates, was not totally immune from the impact of rising global interest rates. By the end of March 2023, **the Federal Reserve's policy rate reached levels last seen in 2007, triggering** corresponding sharp rises in emerging and developing country interest rates. With significant

exposure to international markets, the value of Barbadian-based mutual and pension fund assets weakened modestly in 2022, due to these policy-driven hikes in global interest rates. Even with these reductions however, portfolio losses remained fairly well contained.

Gross financial sector assets expanded on the strength of asset growth at deposit-taking institutions (DTIs). The commercial banking sector dominated the financial landscape, and increased its share of the sector by roughly 1 percent in 2022. Other DTIs also experienced asset growth. Conversely, mutual funds, occupational pension plans and the insurance sector had a collectively smaller share of assets. While there were slight changes in the relative share of assets in the domestic financial sector, system-wide stability was maintained.

The structural shift to electronic payments accelerated in 2022 and the first quarter of 2023 due to the surging demand for convenient payment methods. The value of domestic credit card payments jumped by around **a third, as households' demand for dining and services** improved. At the same time, electronic transfers exceeded cheque clearances for the first time at the Barbados Automated Clearing House (BACHI), a stark reversal of the 2015 position when nearly 90 percent of the value of transactions being cleared were cheque-based.

The local financial system was largely unimpaired by the challenging international macro-financial environment. The failures of three mid-sized US banks and one large Swiss-based bank **in early 2023 did not have a detectable impact on Barbados' financial system**. U.S. and Swiss regulators moved quickly to contain any further fallout, limiting the impact of this episode and addressing contagion fears. Furthermore, during the review period, the local deposit-taking financial sector as a whole did not experience a severe shock from the rising international interest rates caused by monetary tightening in advanced economies

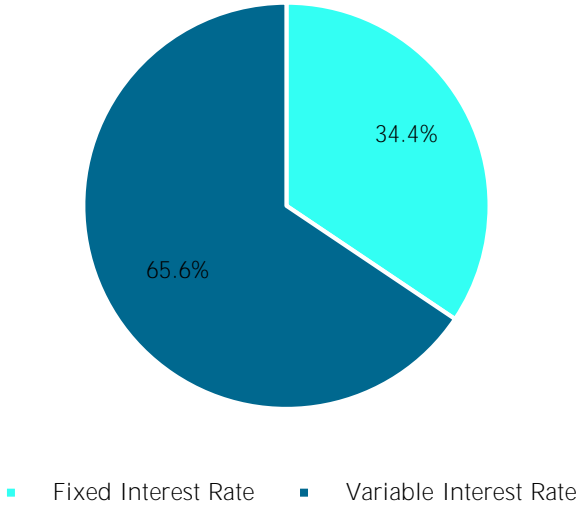
Enhanced risk identification featured prominently in this report. The Financial Oversight **Management Committee (FOMC) identified the following areas as key risks to Barbados'** financial stability: (1) cyber-attacks; (2) the widening US-Barbados interest rate spread; (3) the absence of deposit insurance for credit unions; (4) elevated non-performing loan (NPL) ratios of deposit-taking institutions; (5) the introduction of the 15 percent global corporate minimum tax rate in 2024; and (6) climate change and its transitional and physical risks to the financial system.

The above risks differ in terms of immediacy, intensity and persistence and require differing policy responses. Some, such as climate-shocks of a more medium to long-term nature; Others such as cyber-risk, are difficult to quantify but are every present in any connected modern financial system. Based on quantitative simulations, global experiences, international guidelines and knowledge of exposures in the areas the FOMC will work towards deepening our understanding over these identified risk areas. Furthermore, the FOMC will be seeking to counter these risks where possible, or put safeguards in place to withstand the materialisation of risks that cannot be avoided.

2. Macroeconomic Conditions¹

The Russia-Ukraine conflict significantly exacerbated global inflation, which triggered interest rate hikes in advanced economies as well as in some emerging-market economies in 2022. Interest rates in Barbados edged-down on account of growing excess liquidity in the deposit-taking financial sector. The Government of Barbados (GOB) faced higher foreign interest payments since the majority of its foreign debt carries variable interest rates that rose as central banks around the world hiked their policy rates to contain inflationary pressures (Figure 1). However, concessional loans from multilateral financial institutions account for almost all of the variable-rate debt. On the domestic side, all Government debt is based on fixed-interest-rate contracts. Over the FY2022/23, the stock of gross public sector debt grew by \$904.7 million to \$14,260.9 million at the end of March 2023, with the majority of the new financing comprising policy-based loans from multilateral financial institutions. However, the debt as a percent of GDP fell by 11.4 percentage points to 116.5 percent, as the size of the economy expanded.

Figure 1: Composition of Government’s External Debt – Variable Interest Rate vs. Fixed Interest Rate, March 2023



Source: Central Bank of Barbados

Government’s fiscal outturn for 2022/23 was favourable. Despite increased expenditure on wages, capital projects, interest payments, and social welfare, the 2022/23 fiscal deficit narrowed to 2 percent of GDP, relative to 4.7 percent of GDP recorded during the preceding fiscal year. This improvement was due to increases in almost all revenue categories, particularly Value Added Tax (VAT), which benefitted significantly from the rise in prices.

¹ The local macroeconomic indicators referenced in this report are consistent with figures that underpin the [Central Bank of Barbados Review of the Barbados Economy: January-September 2023](#).

Given Barbados' heavy reliance on imports, the island was not spared from the increase in commodity prices that adversely affected households and firms across the world in 2022. In an effort to dampen domestic inflation and safeguard financial stability, the GOB implemented the following price reduction measures:²

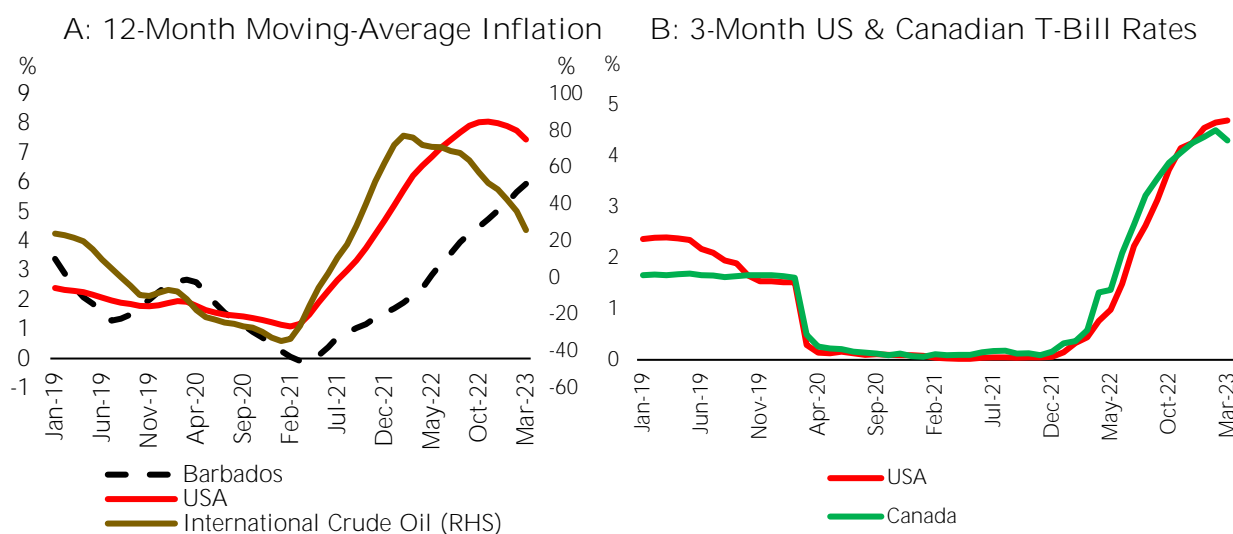
(1) effective March 14, 2022 until March 31, 2023, freight costs were capped at 2019 levels for the purpose of calculating the customs duties and VAT charged on imports

(2) a cap on gasoline and diesel prices for the calculation of VAT charges at the pump from March 16, 2022 until January 31, 2023;

(3) effective July 21, 2022, for a period of 12 months, the GOB and the private sector maintained a social compact that utilised VAT exemptions to reduce the prices of 47 household items, with the assurance from some merchants that the mark-ups on most of the selected items would not exceed 15 percent and 18 percent during the first and second phases of the compact, respectively; and

(4) an electricity bill tax discount for households where the first 250 kilowatt-hours would be charged at a VAT rate of 7.5 percent, instead of the usual 17.5 percent for the period August 1, 2022 to March 31, 2024.

Figure 2: Inflation and International Interest Rates



Sources: IMF, Central Bank of Barbados, OECD, U.S Department of the Treasury, Bank of Canada

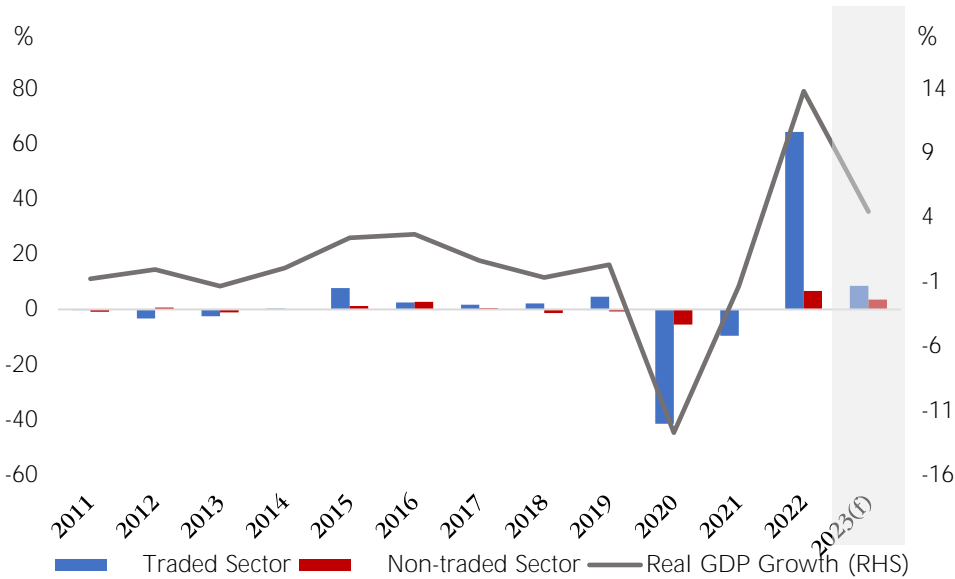
These fiscal measures helped to contain local inflation during 2022 and the first three months of 2023. In the face of soaring international prices, Barbados registered an inflation rate of 5 percent in 2022, compared to 1.5 percent one year prior (Figure 2A). Though global inflation eased, the domestic inflation rate accelerated to 5.9 percent during the first quarter of

² Except for the capping of freight costs for tax calculation purposes, each of these measures were initially implemented for a shorter period but were subsequently extended to the dates identified.

2023, due to drought conditions that led to higher food crop prices, coupled with increased charges for entertainment and recreational services.

Economic conditions continued to improve over the year, as financial firms benefitted from the growth in output and an increase in employment. Real GDP expanded by 13.8 percent in 2022 and by 4.9 percent during the first quarter of 2023 (Figure 3). These outturns reflected broad-based sectoral growth, with tourism being the main driver for both periods. In line with the strengthening of economic activity, labour market conditions improved notably. The unemployment rate fell from 10.9 percent in the prior year to 7.2 percent at the end of 2022, while the rate at the end of March 2023 was marginally lower than that of the corresponding period one year earlier.

Figure 3: Barbados Real Economic Growth



Sources: Central Bank of Barbados and Barbados Statistical Service

(f) - Forecast

The level of international reserves fell in 2022, but rebounded during the first quarter of 2023. The value of imports and foreign interest payments expanded in 2022, mainly due to the surge in global inflation. These greater outlays ultimately led to a current account deficit that could not be financed by net capital inflows, thus resulting in a decline in international reserves. Additionally, the higher interest rates in the US adversely affected the market value of the US treasuries held by the monetary authorities as part of the international reserves. Overall, gross international reserves in 2022 contracted by \$288.5 million to \$2.8 billion (equivalent to 29.2 weeks of import cover). For the first three months of 2023, international reserves recovered on the strength of tourism receipts and loan disbursements from multilateral development banks.

Output and domestic labour market trends suggest that further improvements in key financial soundness indicators should occur by the end of 2023. Economic growth is

forecasted to moderate at around 4.5 percent in 2023, following the rebound from two consecutive years of COVID-19 induced recessions. With continued economic growth in 2023, asset quality, profitability and capital adequacy of local financial institutions are expected to strengthen as 2023 progresses. However, the potential threat of higher inflation and climate-related shocks to financial stability tempers this positive outlook. The combined effect of the domestic climate shocks in Barbados and the decision of OPEC+ countries to prop up crude oil prices by reducing oil production presents downside risks to the inflation outlook, with potential negative implications for the credit quality and profitability of lending institutions. It is therefore vital that the financial sector in Barbados maintain healthy capital buffers and prudent risk management practices in order to build resilience to climate change risks.

Table 1: Select Economic Indicators

	2018	2019	2020	2021	2022	March 2022	March 2023
	Percent						
Real Sector							
Real GDP Growth	(0.7)	(0.3)	(12.7)	(1.3)	13.8	28.3	4.9
Inflation (12-Moving Average) *	3.8	2.3	0.5	1.6	4.9	2.1	5.9
Unemployment Rate [†]	11.6	8.9	13.6	10.9	7.2	9.0	8.9
	Percent of GDP						
Public Sector							
Central Government Balance (Fiscal Year)	(0.3)	3.5	(4.8)	(4.7)	(2.0)	(9.7)	(8.8)
Primary Fiscal Balance (Fiscal Year)	3.4	5.8	(1.0)	(0.9)	2.5	(5.0)	(3.8)
Central Government Debt	124.4	115.87	133.5	134.6	120.0	127.5	116.2
Gross Public Sector Debt	125630	116.4	134.1	135.1	120.3	127.9	116.5
External Sector							
Current Account	(4.4)	(2.7)	(5.9)	(11.0)	(10.7)	(7.3)	(2.7)
Financial Account	8.4	7.2	17.0	12.2	8.0	6.7	17.8
	BDS\$ Mil, unless otherwise stated						
Monetary							
Net Domestic Assets	1,788.8	1,761.6	1,296.2	1,479.0	1,978.4	1,885.0	1,632.6
NIR	832.5	1,139.4	2,195.0	2,594.6	2,354.5	2,535.7	2,788.5
GIR	999.6	1,481.0	2,660.7	3,058.8	2,770.3	3,019.3	3,216.6
Import Reserve Cover (Goods & Services) (Weeks)	12.8	18.6	40.7	40.6	29.2	36.4	34.1

Sources: Barbados Statistical Service and Central Bank of Barbados

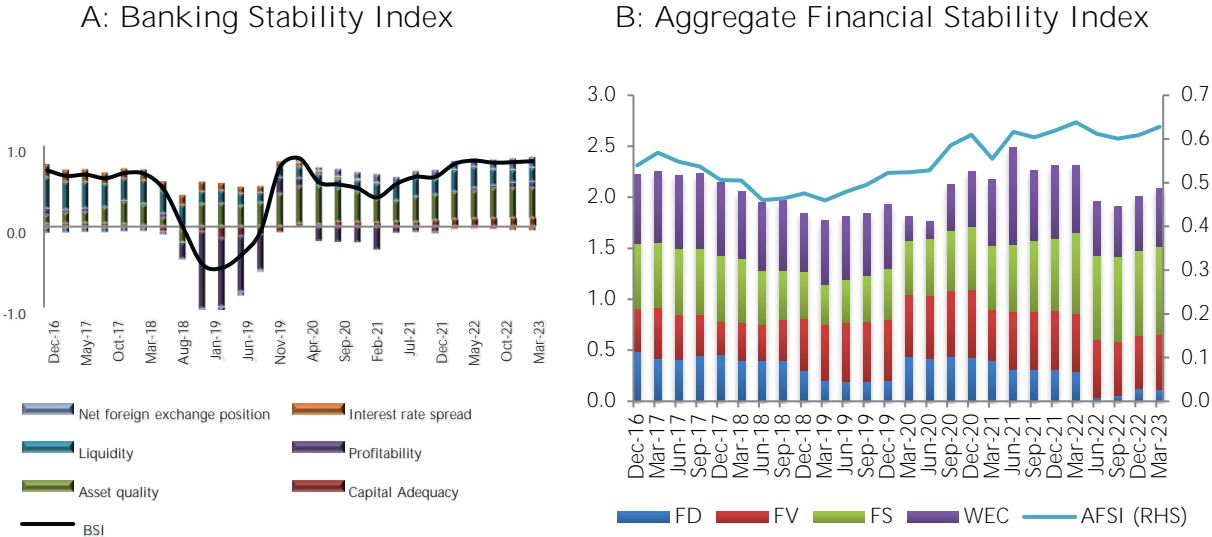
*Subsequent to the last financial stability report, the Barbados Statistical Service rebased the retail price index, which led to a change in the historical inflation rates.

[†]End-of-period rate

3. Key Risks to Financial Stability

Improvements in domestic economic growth and employment supported the stability of the banking sector and system-wide financial stability. The banking stability index (BSI) for 2022 and the first quarter of 2023 increased relative to the respective comparable periods one year earlier, suggesting an improvement in **the local banking sector’s stability** (Figure 4A). This outcome resulted from **increases in commercial banks’ profitability**, asset quality, capital adequacy and the net foreign exchange position. On the other hand, due to the inclusion of international and domestic macro-financial indicators, the Aggregate Financial Stability Index (AFSI) worsened a bit in 2022 and the first quarter of 2023, compared to the corresponding periods one year earlier (Figure 4B). The deterioration was driven by declines in the financial development (FD), financial vulnerability (FV) and world economic climate (WEC) sub-indices, which reflected dips in the bank credit-to-GDP ratio, higher domestic inflation, a rise in **Barbados’ real effective exchange rate and slower world economic growth**.

Figure 4: Composite Financial Stability Indicators



Source: Central Bank of Barbados

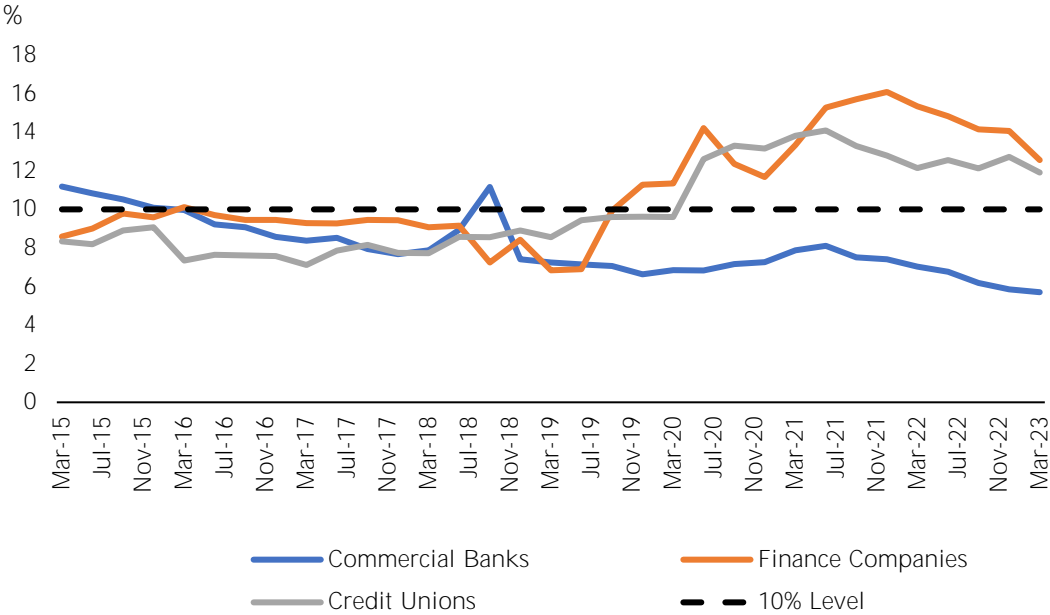
The early 2023 failures of Silicon Valley Bank, Signature Bank of New York, First Republic Bank, and Credit Suisse, a globally systemically important Swiss-based bank, did not impact the local financial sector. The three mid-sized U.S. banks failed as a result of depositor flight exacerbated by interest rate hikes and maturity mismatches. Credit Suisse, on the other hand, faltered due to a loss of market confidence triggered by scandals. The threat of these failures to the wider international financial system was stymied as the U.S. and Swiss regulators moved quickly to resolve the banking crises.

In assessing the key risks to the stability of the local financial sector, six key themes emerged. The identified risk areas are as follows: (1) cyber-attacks; (2) the widening US-Barbados interest rate spread; (3) the absence of deposit insurance for credit union members; (4) elevated non-performing loans (NPL) ratios of deposit-taking institutions; (5) the introduction of the 15 percent global corporate minimum tax rate in 2024; and (6) climate change.

3.1 Elevated Non-Performing Loan (NPL) Ratios of Deposit-Taking Institutions (DTIs)

Non-performing loans of finance companies and credit unions as a share of their respective total outstanding loans, have been in the double-digit region for over the past three years (Figure 5). With the easing of COVID-19 cases and restrictions, the NPL ratios of all three DTI sub-sectors were trending downward by the beginning of 2022. As at the end of March 2023, the NPL ratios of finance companies, credit unions and commercial banks were 12.5, 11.9 and 5.7 percent, respectively, indicating that the credit impairment of finance and trust companies and credit unions is more than twice that of the banking sector. Furthermore, the share of loans to total assets for finance companies and credit unions are 65 percent and 70 percent, correspondingly, compared to 43 percent in the case of banks. As such, the credit default risk is much higher for finance companies and credit unions than it is for the banking industry. However, the NPL ratios of finance companies and credit unions are improving, but will require some time to fall below the 10 percent level.

Figure 5: NPL Ratios of DTIs and the 10 Percent Threshold



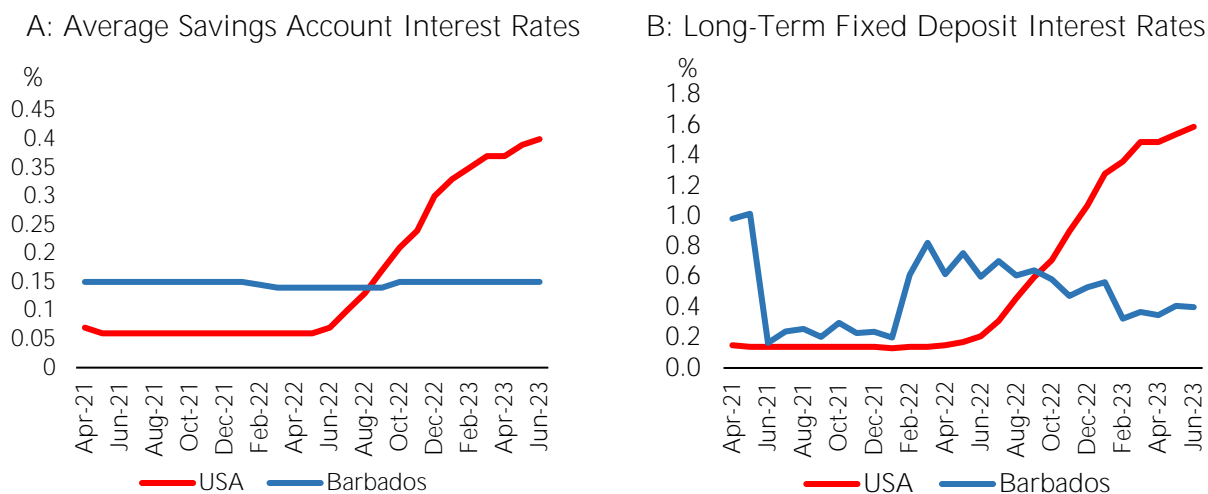
Source: Central Bank of Barbados

3.2 The Widening US-Barbados Interest Rate Spread

As interest rates in the US continue to rise in response to inflation, the interest rate differential between the US and Barbados has widened notably (Figure 6). The phenomenon increased the incentive for entities to invest funds abroad. For Barbados, the average savings deposit interest rate of commercial banks, has been approximately 0.15 percent from July 2017, while the average long-term (over 12-months original maturity) fixed deposit interest rate started to trend downwards after March 2022 to 0.4 percent in June 2023. For the same period, the average US national savings deposit interest rate was 25 basis points higher than the comparable rate for Barbados, whereas the average 12-month US fixed deposit rate stood 119 basis points above the average long-term fixed deposit interest rate offered by local banks. As for fixed-income government securities, the three-month treasury bill rate has remained unchanged at 0.5 percent since January 2019, due to the 2018 Government debt restructuring. On the other hand, the US three-month treasury bill rate averaged 5.16 percent during June 2023. With respect to longer-term debt instruments, however, the five-year Barbados Optional Savings Scheme (BOSS+) Bonds bears an interest rate of 4.5 percent, compared to 4.13 percent interest on a similar five-year government security issued by the US Government at the end of June 2023. The lower interest rate on US five-year securities reflects the expectation of slower inflation in the future and higher sovereign credit ratings.

These stark differences in the deposit and treasury bill interest rates indicate that the return on financial investments is significantly higher in the US than in Barbados. Given **Barbados' exchange rate peg to the US dollar, the interest disparity raises** the risk of capital reallocation, as investors in Barbados seek to shift funds into the US market to earn greater investment income. The withdrawal of funds from the domestic financial system, although difficult due to capital controls, would raise liquidity risk, while the loss of international reserves would increase the susceptibility of Barbados to external shocks. It is against this backdrop that the Central Bank of Barbados is currently in the process of developing a monetary policy framework that will narrow the said interest rate differential and reduce the incentive for capital flight.

Figure 6: US-Barbados Interest Rate Spread, April 2021 – June 2023



Sources: Central Bank of Barbados and Federal Reserve Bank of St. Louis

3.3 Climate Change

Climate change, specifically long-term shifts in temperatures and weather patterns, can **induce substantial risks in Barbados' financial system**. Climate change is manifested in varied ways, such as higher temperatures, longer periods of drought, increased wind velocity and extreme rainfall, rising sea levels, more frequent wildfires, stronger and more frequent tropical cyclones, and severe flooding. The principal drivers of climate change are the burning of fossil fuels, deforestation, and farming livestock.

The natural disasters induced by climate change create immense direct challenges for the financial system. They damage assets used by lending institutions as security/collateral. They cause credit risks when borrowers suffer substantial loss as a result of a climate event. Disasters increase the liquidity risk due to the significant drawdown of deposits to restore loss and damaged property. They also threaten the solvency of insurance companies due to higher claims triggered by more frequent and severe climate events and damage the physical infrastructure of financial institutions. These risks can disrupt the financial services sector.

In addition to the risk of damaged property, there is the transition risk of climate change. Transition risks is the cost incurred as an entity moves to more sustainable consumption and production practices. The transition involves switching to new technologies that emit lower or **no greenhouse gases**. As governments increase their efforts to achieve the **United Nations' target** of net zero man-made greenhouse gas emissions by 2050, transition risks will intensify. For example, if governments impose higher taxes or production limits on companies that utilise carbon-intensive technologies, the financial institutions that lend to such firms can face greater liquidity and/or default risk.

The Government of Barbados has indicated its commitment to reducing climate risk and **improving the country's resilience to natural disasters**. As such, incentives are provided for individuals and corporations to invest in renewable energy, water conservation, select hurricane

preparedness items, and has invested in the construction of climate-resistant housing. These investments would over time mitigate against the effect the physical risk of climate change.

3.4 Deposit Insurance and Safety Net Arrangements for Credit Unions

Currently, there is no deposit insurance coverage for credit union members. The Barbados Deposit Insurance Corporation (BDIC) guarantees insurance coverage of up to \$25,000 for each depositor per commercial bank and other deposit-taking financial institutions licensed under the Financial Institutions Act (FIA). Despite holding deposits of more than \$2.6 billion from about 235,000 depositors, the credit union sector does not yet have access to a deposit insurance scheme for its members. This lack of investor protection exposes credit union members to potential loss of savings in the event of a credit union becoming insolvent, and raises the possibility of substantial financial instability in the event of a loss of confidence in any of the larger credit unions.

On the upside, the sector possesses growing levels of liquidity. Furthermore, the Financial Services Commission (the regulator of credit unions) is currently in discussions with the BDIC and other relevant entities, to secure deposit insurance coverage for credit union members.

3.5 Cyber-Attacks

Cybercrime is a growing risk to financial sector stability. The frequency of cyber-attacks increased dramatically in 2021, amid a surge in the number of workers accessing their **companies' networks remotely during** the COVID-19 lockdown. **These "work-from-home"** arrangements, which in some cases were hastily implemented, exposed organisations to greater **cyber risk, as staff conducted key functions outside the organisations' standard firewall** protection.

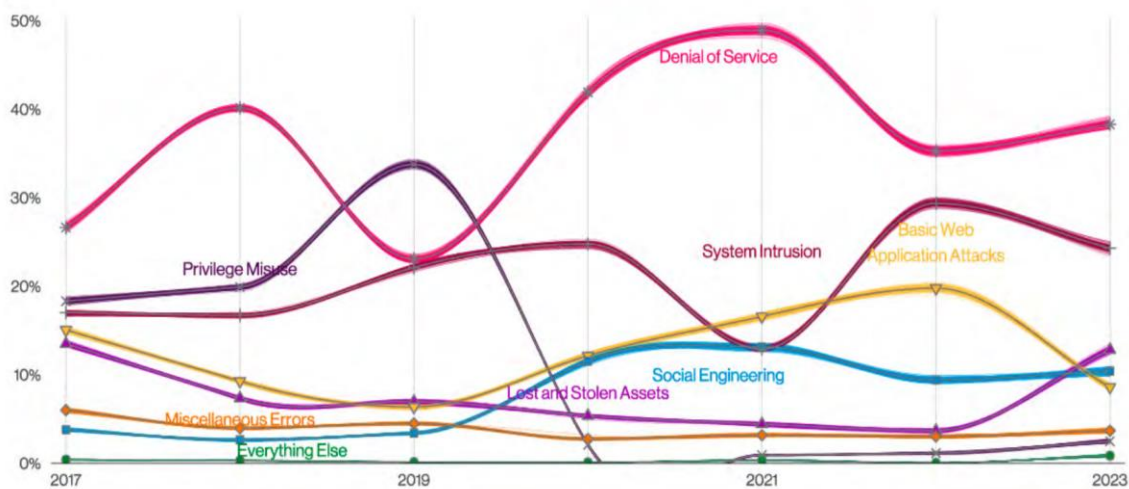
In 2022, there was an observed threat that compromised some locally issued credit cards. A data breach at a provider of international services to local consumers caused credit card information to be at risk. In response, the affected financial institutions cancelled and reissued new credit cards to those customers impacted, while **the entity's access to the central payments** systems was terminated until the breach was effectively resolved and confirmed by a qualified third party. These quick responses limited the potential losses from this cybersecurity breach, and allowed payment methods to remain efficient and available to facilitate consumer needs.

The potentially high cost of cyber-attacks, warrants regular reviews and updates of cybersecurity systems by enterprises. If a business becomes compromised by a cyber attacker, it can suffer direct financial losses due to ransomware or outright theft of money; loss of productivity from business disruption; reputational damage; and legal liability for failure to protect client data. The rising popularity of artificial intelligence (AI) applications poses both new opportunities and threats for cybersecurity. Therefore, cybersecurity systems must be frequently updated with the most modern technology to avoid being breached by AI-backed attacks. Figures 7 and 8 are from the Verizon 2023 Data Breach Investigations Report (DBIR), which places attacks in one of two broad categories: (i) **incidents** ("A security event that **compromises the integrity, confidentiality or availability of an information asset.**") or (ii) - **+breaches** ("An incident that results in confirmed disclosure – not just potential exposure – of

data to an unauthorized party.”). For the period November 1, 2021- October 31, 2022, denial-of-service accounted for the majority of incidents in Verizon’s global database, while system intrusion was the most common pattern for data breaches.

A successful cyber-attack on a systemically-important financial institution can destabilise the entire financial system and, by extension, the economy. A cyber breach of any component of the payments and settlement system can also be very detrimental to financial stability and overall economic activity, since the payments system is the financial infrastructure of an economy. According to the Verizon 2023 DBIR, the financial and insurance industry suffered the third highest number of data breaches among all industries worldwide during the period November 1, 2021-October 31, 2022, with basic web application attacks being top pattern. As for data incidents, the financial and insurance industry recorded the fourth highest number of incidents and, like the overall trend, the majority of the incidents resulted in the denial of services.

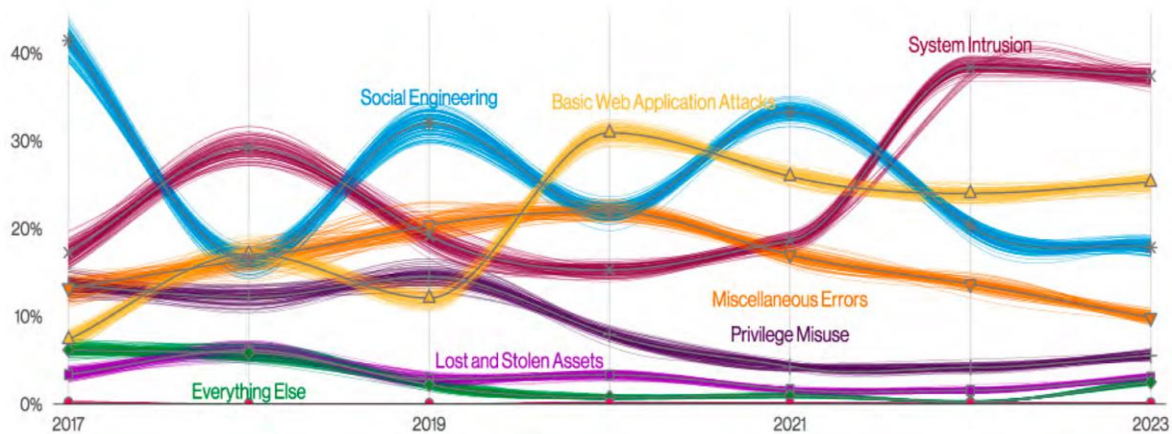
Figure 7: Data Incidents Over Time



Source: Verizon 2023 Data Breach Investigations Report

Note: The spaghetti-like strands around the trend line represent the possible values that exist within the confidence interval. The loosely-packed strands indicate a wider confidence interval and smaller sample.

Figure 8: Data Breaches Over Time



Source: Verizon 2023 Data Breach Investigations Report

Note: The spaghetti-like strands around the trend line represent the possible values that exist within the confidence interval. The loosely-packed strands indicate a wider confidence interval and smaller sample.

The Bank and the FSC maintains a firm stance against cyber risks. In recognition of the growing danger of cyber-attacks, the Bank created the Technology and Cyber Risk Management Guideline (TRM) for its licensees and issued it in May 2023.³ The TCRM sets out risk management principles and a cyber incident reporting framework based on international best practices documented by industry standard-setting bodies. Similarly, the FSC issued an Information Technology and Cybersecurity Questionnaire to the Credit Union sector in March 2023 and a Technology and Cyber Risk Management Guideline to all licensees for consultation in June 2023.⁴ Additionally, due to the critical role of cybersecurity in financial stability and regulation, all staff at the Central Bank of Barbados have to undertake mandatory cybersecurity awareness training on an ongoing basis.

3.6 The 15 Percent Global Corporate Minimum Tax Rate

The Organisation for Economic Co-operation and Development (OECD)/G20 has proposed a global minimum corporate tax of 15 percent to address the issue of base erosion and profit shifting. As at end-December 2022, a total of 137 jurisdictions, including Barbados agreed to the proposal. Initially, this international tax agreement was to take effect in 2023, but has been delayed to 2024.

With Barbados' corporate tax rates ranging from a low of 1 percent to a maximum of 5.5 percent, the island may be adversely impacted by the proposed global corporate tax rate. **While Barbados' workforce is highly educated and the financial system is well regulated,** one major potential repercussion of the tax rule is the relocation of locally-registered subsidiaries

³ See: <https://www.centralbank.org.bb/news/financial-advisory/introduction-of-the-technology-and-cyber-risk-management-guideline-tcrm>

⁴ See [2329-the-financial-services-commission-cyber-risk-management-guideline-draft \(fsc.gov.bb\)](https://www.fsc.gov.bb/2329-the-financial-services-commission-cyber-risk-management-guideline-draft)

and associates of large MNCs to less expensive jurisdictions. If this materialises, employment, economic activity, government revenue, and international reserves would be negatively affected, resulting in higher credit default risk throughout the financial system.

4. Stress Testing

4.1 Deposit-Taking Institutions

This section explores the potential impact on the financial system from macroeconomic and other adverse shocks. The simulations seek to determine the degree to which existing capital buffers can adequately absorb potential losses and are focused particularly on credit, large exposure, liquidity and interest rate risks. The impact of the shocks is directly transmitted **either via the provisions buffer or directly to the institutions' capital**. The results are assessed both on an institution-specific and system-wide basis.

For 2022, banks, finance companies and credit unions were tested under a comparable stress-testing model⁵ and the traditional tests performed under a regulatory specific framework. In prior years, the capital adequacy measures employed were the risk-weighted capital adequacy ratio (CAR) for the banks and finance companies, and the total capital as a percent of total unweighted assets (capital-to-assets ratio) for the credit unions. Given that the **CAR is not the official regulatory measure for credit unions' capital adequacy, and** using different capital adequacy measures make comparisons difficult between the two classes of deposit-taking institutions, the report analyses traditional CAR-related results for banks and finance companies, and the capital-to-assets ratio findings. This will facilitate the comparability of the stress testing results for banks and finance companies and the credit union sector.

The CAR is found by dividing regulatory capital by risk-weighted assets (RWAs). RWAs of commercial banks are approximately 50 percent of total assets for four of the five banks and 89 percent for the fifth bank, while RWAs of the finance companies are approximately 75 percent of their total assets. These differences between total assets and RWAs are due to the zero regulatory risk-weights attached to some elements of the banks' and finance companies' balance sheets. Therefore, the starting or pre-shock CAR for the banks and finance companies is significantly better than the pre-shock capital-to-assets ratio of the credit unions. Under the Capital-to-Assets method, we have also adopted a 10 percent threshold for regulatory intervention for all deposit takers.

All DTIs except the new digital commercial bank were included in the stress testing exercise. As such, the stress test covered five banks, four finance companies and 28 credit unions as at end-March 2023. The eight largest credit unions were tested individually, and the 20 smaller credit unions were grouped as one entity. The eight largest credit unions in the sector account for approximately 95 percent of total industry assets.

4.1.1 Credit Risk

The credit exposure of banks, finance companies and credit unions, is heavily concentrated in the household sector. This sector **accounts for 56 and 76 percent of the banks' and finance**

⁵ An examination of the impact on the ratio of capital to unweighted assets.

companies' loan portfolios, respectively, and almost 100 percent of most of the credit unions' lending book.

Provisioning Shocks

Individually, all banks, finance companies and all but one of the eight largest credit unions, had adequate provisions for NPLs. As at March 2023, the pre-shock provisions-to-NPL ratio stood at 51.2, 26.1 and 31.8 percent for the banks, finance companies and credit unions, respectively. **These ratios mean that slightly more than half of the banks' impaired loans** and less than one-third of those of the finance companies and credit unions are provided for. On the basis of the provisioning methodology, where provisions are required for loans classified as substandard, doubtful and loss at 10 percent, 50 percent and 100 percent, respectively, banks and finance companies carried adequate levels of provisions for classified loans.

The provision shock assumes no increase in existing NPLs, but higher provisioning on the existing stock of NPLs to 100 percent. The stress tests indicated that, using the traditional CAR, the aggregate post-shock capital ratios declined from 17.6 to 16.0 percent for the banks, and from 20.4 to 12.4 percent for the finance companies. Under the unweighted Capital-to-Assets method, aggregate post-shock capital ratios declined from 10.9 to 9.9 percent for the banks, from 15.0 to 8.9 percent for the finance companies, and from 11.2 to 6.2 percent for the credit unions.

Lower provisioning buffers relative to the commercial banking industry, eroded the finance companies' CARs. **At the institutional level, the capital ratios of two banks, one finance company** and four credit unions, fell below the regulatory requirement, **with that finance company's** capital being totally wiped out.

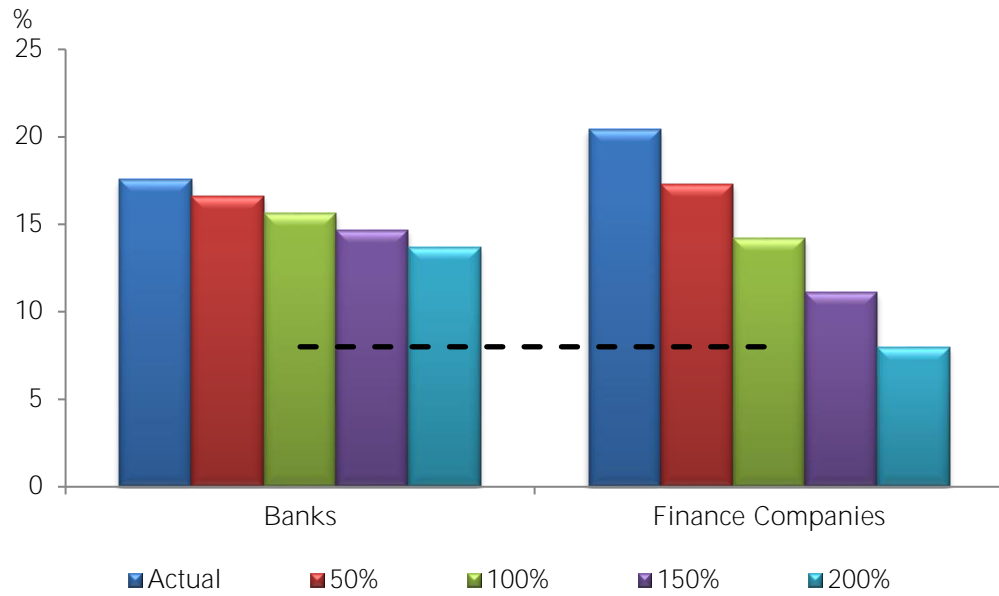
For the combined smaller credit unions, this shock resulted in an aggregate decline from 20.2 to 17.5 percent.

NPL Shocks

The second category of shocks in the stress test assessed the impact of 50 percent incremental increases in NPLs on the capital buffers of commercial banks, finance companies and credit unions.

Under the traditional CAR method, assuming 50 percent provisions for the new NPLs, commercial banks and finance companies can withstand up to a 200 percent increase in NPLs. At the same time, they maintain an adequate aggregate CAR. With a lower existing provisioning **coverage of 26 percent, the finance companies' subsector** declined to the minimum required (8 percent) with the 200 percent increase in NPLs (Figure 9). This result is marginally better than the results from March 2022.

Figure 9: CAR Outcomes from Increasing NPLs



Source: Central Bank of Barbados

At the institutional level, still under the CAR method, with a 100 percent increase in NPLs, one **finance company's CAR fell below the 8 percent prudential standard. This increases to two** finance companies for NPL increases of 150 and 200 percent. These results are similar to the outturn reported last year (Table 2).

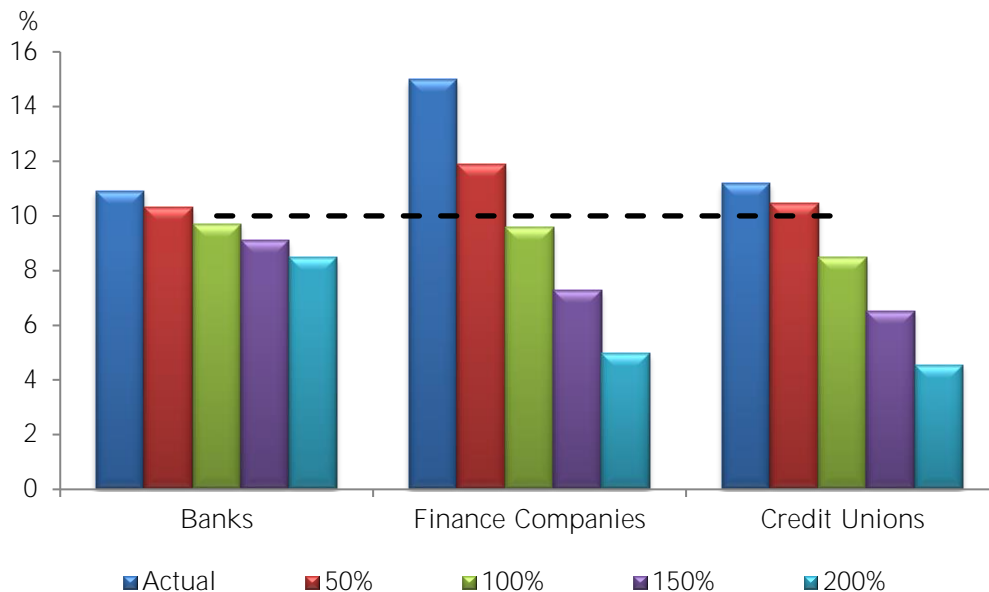
Table 2: CAR Outcomes from Increasing NPLs

Scenario	CAR < 8%	
	No. of Banks	No. of Finance Companies
50% NPL Increase	0	0
100% NPL Increase	0	1
150% NPL Increase	1	2
200% NPL Increase	1	2

Source: Central Bank of Barbados

Under the unweighted capital-to-assets method, we applied NPL shocks to the credit union sector with the average pre-shock provisions-to-NPL ratio of 31.8 percent. Banks, finance companies, and credit unions could withstand a 50 percent increase in NPLs, with their capital-to-assets remaining above 10 percent. All three subsectors fell below 10 percent with an increase of 100 percent in NPLs (Figure 10).

Figure 10: Capital to Assets Outcomes from Increasing NPLs



Source: Central Bank of Barbados & Financial Services Commission

At the institutional level, three commercial banks would fall below the required 10 percent from the first 50 percent increase in NPLs, while the other two banks remained above 10 percent throughout all four rounds of this test. Similarly, under this method, one finance company fell below 10 percent after a 50 percent increase in NPLs, while another fell below 10 percent with a 100 percent increase. The other two finance companies remained above 10 percent even after a 200 percent increase in NPLs. For the individual credit unions, five of the largest eight fell below 10 percent from the first increase of 50 percent in NPLs. All others recorded capital-to-assets ratios above 10 percent, even with a 200 percent increase (Table 3).

Table 3: Capital to Assets Outcomes from Increasing NPLs

Scenario	Capital-to-Asset Ratio < 10%		
	No. of Banks	No. of Finance Companies	No. of Credit Unions
50% NPL Increase	3	1	5
100% NPL Increase	3	2	5
150% NPL Increase	3	2	5
200% NPL Increase	3	2	5

Sources: Central Bank of Barbados & Financial Services Commission

Large Exposures

The inclusion of Government in this year's large exposure stress test significantly changed the outcome relative to last year. The test assumes that the five largest borrowers in each institution will sequentially default on their debts, starting with the largest borrower. Each round represents a default by one of the borrowers. **Under the CAR method, in last year's large exposures stress test, the capital of commercial banks and finance companies could withstand defaults from their five largest debtors, with provisioning requirements up to 50 percent. They also maintained capital above prudential standards. In this year's test, three banks' CAR fell below the prudential requirement from the first round with 50 percent provisioning, while one finance company failed at the fifth round.** (Table 4).

Table 4: CAR Outcomes of Large Exposure Shocks to Banks and Finance Companies

Scenario	CAR < 8%					
	10% Provisioning		50% Provisioning		100% Provisioning	
	No. of Banks	No. of Finance & Trust	No. of Banks	No. of Finance & Trust	No. of Banks	No. of Finance & Trust
Round 1	0	0	3	0	3	1
Round 2	0	0	3	0	3	1
Round 3	0	0	3	0	3	1
Round 4	0	0	3	0	4	2
Round 5	0	0	3	1	4	2

Source: Central Bank of Barbados

Under the capital-to-assets method, with 10 percent provisioning, three banks failed from round one, while four failed from round two; one finance company failed in all the rounds at 10 percent provisioning. At 50 percent provisioning, the same four banks and one finance company failed from round one, while another finance company failed in round four. At 100 percent provisioning, four banks and two finance companies failed at round one, while all five banks failed from round two and three finance companies failed from round 3 (Table 5).

Table 5: Capital-to-Asset Outcomes of Large Exposure Shocks to Banks and Finance Companies

Scenario	Capital-to-Asset Ratio < 10%					
	10% Provisioning		50% Provisioning		100% Provisioning	
	No. of Banks	No. of Finance & Trust	No. of Banks	No. of Finance & Trust	No. of Banks	No. of Finance & Trust
Round 1	3	1	4	1	4	2
Round 2	4	1	4	1	5	2
Round 3	4	1	4	1	5	3
Round 4	4	1	4	2	5	3
Round 5	4	1	4	2	5	3

Source: Central Bank of Barbados

The same three credit unions that started the stress test exercise with capital-to-assets ratios below the 10 percent threshold, underperformed throughout all five rounds. One other credit union fell marginally below 10 percent in rounds four and five. Apart from those three credit unions, the others performed reasonably well in the large exposure stress test (Table 6).

Table 6: Capital-to-Asset Outcomes of Large Exposure Shocks to Credit Unions

Scenario	Capital-to-Assets Ratio < 10%		
	10% Provisioning	50% Provisioning	100% Provisioning
	No. of Credit Unions	No. of Credit Unions	No. of Credit Unions
Round 1	3	3	3
Round 2	3	3	3
Round 3	3	3	3
Round 4	3	3	4
Round 5	3	3	4

Source: Financial Services Commission

4.1.2 Liquidity Risk

The low deposit rates have eroded the distinction between time and demand deposits. Given the current interest rate dynamics, this liquidity test stresses all categories of deposits equally. Assuming that 95 percent of all liquid assets at banks, finance companies and credit unions were fully convertible to cash on a given day, 5, 10 and 15 percent runs on all domestic-currency deposits (demand and time deposits) accounts were examined. Additionally, for the credit unions, since members can withdraw their shares without prior notice, these shares were treated as 95 percent fully convertible to cash on a given day.

With 5 percent runs on deposits daily, no banks required liquidity support for the five days reviewed, while two finance companies required liquidity support on days four and five. This represents a slight deterioration for the finance companies, one of which required liquidity

support from day two in last year's liquidity stress test. However, two now require support on day four compared to one finance company last year. Again, at the 5 percent run level, only one credit union required liquidity support on days four and five (Table 7). This is on par with last year's results.

Table 7: Results of Deposit Runs: No. of Banks and Finance Companies Requiring Liquidity Support

	At 5%		At 10%		At 15%	
	<i>Banks</i>	<i>Finance and Trusts</i>	<i>Banks</i>	<i>Finance and Trusts</i>	<i>Banks</i>	<i>Finance and Trusts</i>
Day 1	0	0	0	0	0	2
Day 2	0	0	0	2	0	2
Day 3	0	0	0	2	2	2
Day 4	0	2	2	2	3	2
Day 5	0	2	2	2	5	2

Source: Central Bank of Barbados

Using daily 10 percent runs on deposit, two banks required liquidity support from day four, compared to two banks from day five last year. Meanwhile, two finance companies required support from day two onwards compared to one from the first day, and two from the third day, **in last year's test. Six credit unions required liquidity support on day two, followed by eight,** and then nine on the following days (Table 8). This outcome was weaker compared to last year, where only one credit union needed support on days one and two, followed by five thereafter.

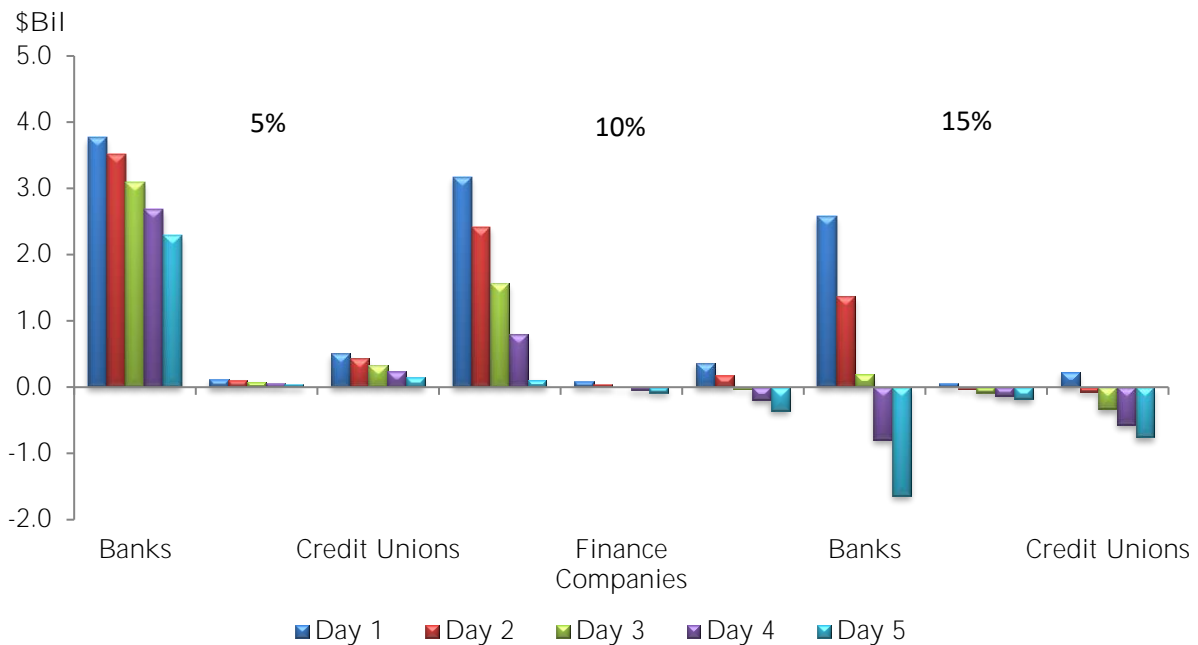
Table 8: Results of Deposit Runs: No. of Credit Unions Requiring Liquidity Support

	At 5%	At 10%	At 15%
	<i>Credit Unions</i>	<i>Credit Unions</i>	<i>Credit Unions</i>
Day 1	0	0	1
Day 2	0	6	6
Day 3	0	8	8
Day 4	1	9	9
Day 5	1	9	9

Source: Financial Services Commission

With daily 15 percent runs, two banks required liquidity support from day three, three banks from day four and five banks from day five. One finance and trust company needed support from day one and two from days two to five (Figure 11).

Figure 11: Results of Deposit Runs (Net Cash Flow) March 2023



Sources: Central Bank of Barbados & Financial Services Commission

4.1.3 Funding Costs Risk

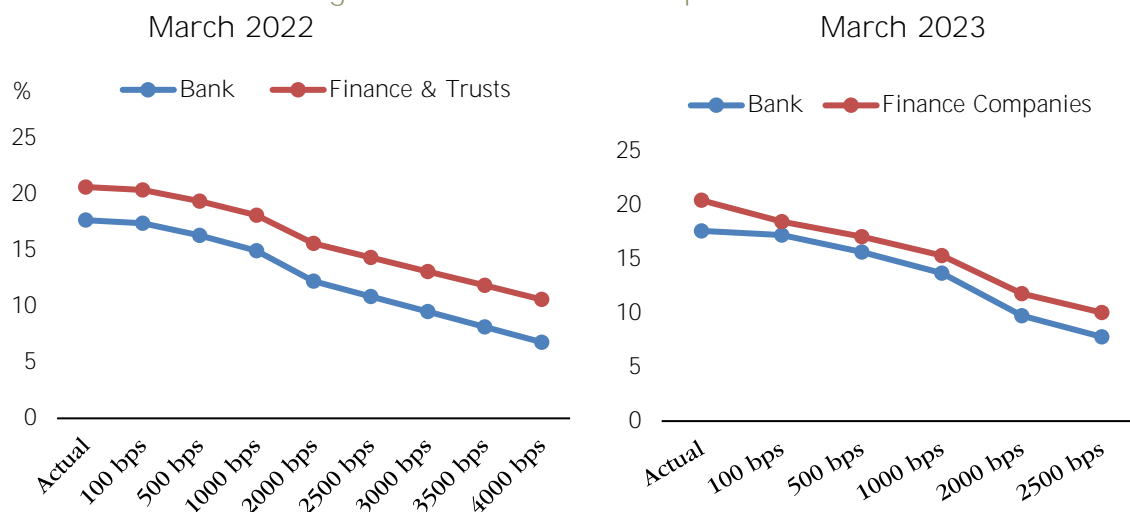
The short-term maturity gap⁶ of banks and finance companies was used to examine the vulnerabilities to funding costs and profitability given rising interest rates. This analysis is important given the funding structure of depository institutions is mismatched in terms of the relative maturities of deposits and loans.

At March 2023, the aggregate CAR of banks was 17.6 percent compared to 17.7 percent one year earlier. For the finance companies it also decreased marginally from 20.6 percent to 20.4 percent. This means that for both sectors, the capital buffers remained relatively stable and sufficient to withstand interest rate shocks in excess of 20 percent (2000 basis points), before interest rate related losses could lead to capital adequacy breaches.

At an institutional level, we note that while it would require a more than 15 percent increase in interest rates to erode the CAR of all but one institution to levels below the prudential requirement, there was one institution whose CAR fell below 8 percent after a 7 percent increase in interest rates. This is down from 10 percent last year. (Figure 12).

⁶ The maturity gap is the difference between the total market values of interest rate sensitive assets versus interest rate sensitive liabilities that will mature or be repriced over a given range of future dates.

Figure 12: Interest Rate Impact on CAR



Source: Central Bank of Barbados

4.2 Insurance

4.2.1 Underwriting Risks

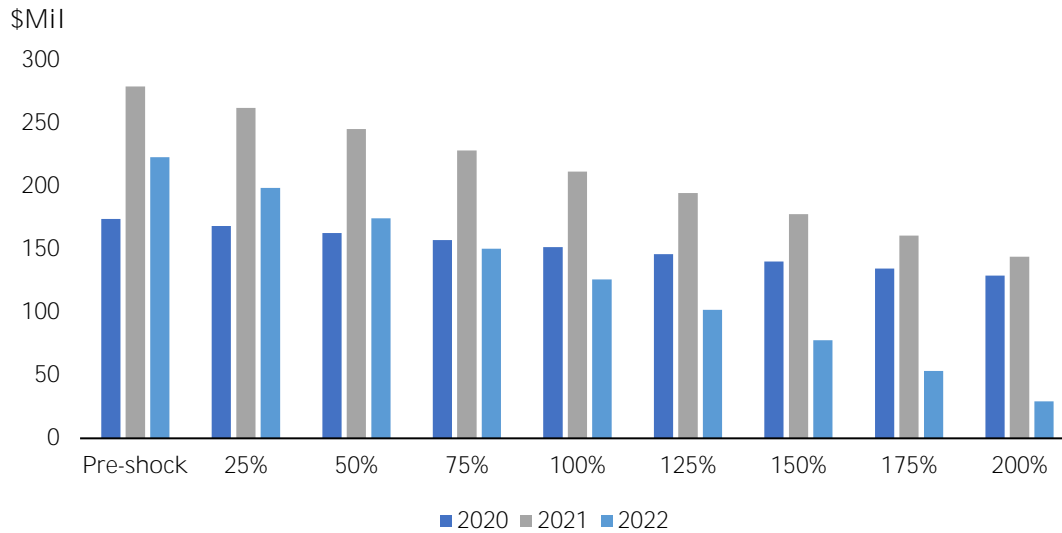
This test assesses the insurance sector's resilience to increased claims on all lines of business and does not account for reinsurance recoveries. Here, claims in all lines of business are increased simultaneously by predetermined percentages and the impacts on capital and solvency positions are examined. This is especially important, as this sector is likely to play **a significant role in the private sector's efforts to recover from and become more resilient to the effects of climate change.**

General Insurance

The general insurance industry remained resilient to underwriting shocks. However, the magnitude of the declining capital position presents a point of concern. Before shocks were applied, all general insurance companies were deemed solvent as per the legislative requirements⁷. However, following a 25 percent increase in claims, the industry's capital fell to \$198.5 million, and one insurer was found to be insolvent. As claims increased gradually, the industry's capital position showed signs of further deterioration, and more entities were found to be below the solvency requirement (Figure 13 and Table 9). Based on this test, it was determined that an increase in claims of approximately 230 percent would exhaust the industry's capital completely. At this point, eight entities were found to be insolvent. Results from the previous year show that the industry's post-shock capital position was much stronger, and fewer entities were found to be insolvent.

⁷ Barbados Insurance Act CAP 310, S.58

Figure 13: Capital Outcome after Underwriting Shock



Source: Financial Services Commission

Table 9: No. of Insolvent Entities after Underwriting Shock

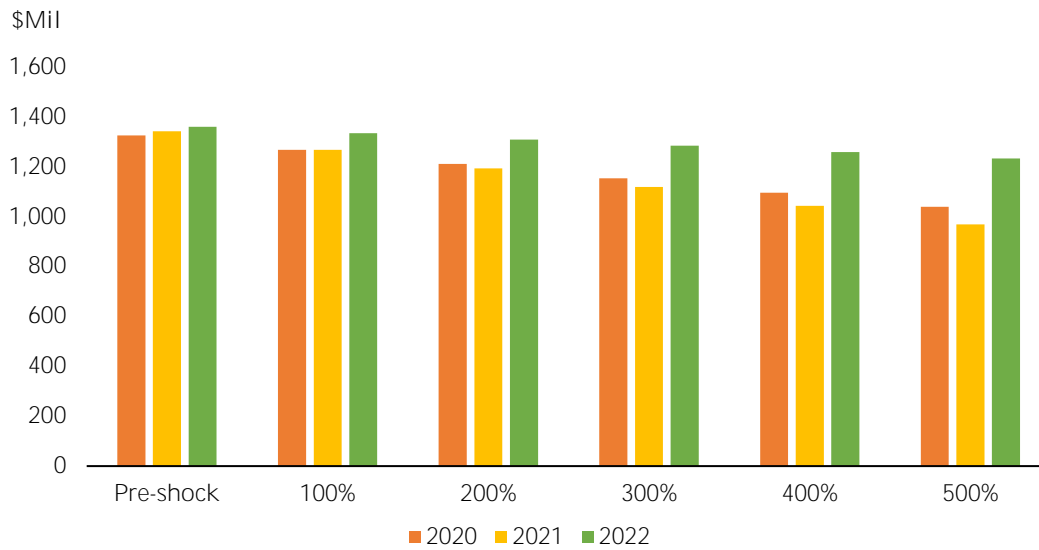
Percentage Increase in Claims	No. of Insolvent Entities
Pre-Shock	0
25%	1
50%	3
75%	5
100%	5
125%	5
150%	6
175%	7
200%	8

Source: Financial Services Commission

Life Insurance

The life insurance industry is proven to be highly resilient to underwriting shocks. All life insurance companies were found to be solvent at the baseline and remained so even with a 500 percent increase in claims across all lines of business, where capital levels were approximated at \$1,234.2 million (Figure 14 and Table 10). Given the nature of the life insurance business, the results of this test show that the industry is significantly more resilient to increased claims, as it would require claims of an **enormous magnitude to erode the industry’s capital**.

Figure 14: Capital Outcome after Underwriting Shock



Source: Financial Services Commission

Table 10: No. of Insolvent Entities after Underwriting Shock

Percentage Increase in Claims	No. of Insolvent Entities
Pre-Shock	0
100%	0
200%	0
300%	0
400%	0
500%	0

Source: Financial Services Commission

4.2.2 Macroeconomic and Catastrophic Risks

Economic Downturn Scenario

This test assesses the resilience of the insurance sector to a possible economic downturn and how it impedes insurance business. The assumptions here include a downward shift in the yield curve of 300 basis points, a 25 percent decline in real estate values and mortgages, and a 30 percent fall in the value of equity instruments.

Following the application of this scenario, the general insurance industry’s capital fell to \$154.8 million, reflecting a \$67.9 million (30.5 percent) fall from the baseline value (Table 11). Here, only one general insurance company was found to be below the solvency requirement. The impact on capital was greater for the life insurance industry, as capital levels fell by \$329.2 million (24.2 percent) to reach \$1,031.3 million post-shock (Table 11). Results however, indicate that all life insurance entities remained solvent.

Multiple-Shock Scenario: Pandemic, Economic Downturn and Hurricane

This test evaluates the resilience of the insurance sector to multiple shocks occurring simultaneously. The scenario employs the assumptions assessed in both the underwriting and economic downturn tests. Here, it is assumed that property claims will increase by 150 percent, whilst claims in all other lines of business will rise by 100 percent.

For the general insurance industry, results from this multi-shock scenario show capital levels were significantly impacted, falling to \$14.3 million, reflecting a decline of \$208.3 million (93.6 percent) from the baseline value (Table 11). As a result of this test, five entities within the industry were deemed insolvent. As for the life insurance industry, total capital fell by \$741.0 million (54.5 percent) to reach \$619.5 million post-shock, where only two entities were found to be insolvent (Table 11).

Table 11: Summary Results for Economic Downturn and Multiple-Shock Scenarios

	Baseline Scenario	Economic Downturn Scenario	Multi-Shock Scenario
General Insurance			
Total Assets (\$Mil)	1,023.9	993.0	888.9
Total Capital (\$Mil)	222.7	154.8	14.3
Capital Adequacy Ratio	21.7%	15.6%	1.6%
Net Income/(Loss) (\$Mil)	-11.1	-67.7	-191.2
No. Insolvent Entities	0	1	5
Life Insurance			
Total Assets (\$Mil)	2,771.1	2,751.7	2,324.6
Total Capital (\$Mil)	1,360.5	1,031.3	619.5
Capital Adequacy Ratio	49.1%	37.5%	26.7%
Net Income/(Loss) (\$Mil)	91.3	-277.5	-744.5
No. Insolvent Entities	0	0	2

Source: Financial Services Commission

5. Analysis of the Financial System

5.1 Structure of the Financial System

Aggregated assets in the financial system grew by 2.2 percent during 2022. This growth was driven by higher assets held by the DTIs, whereas the combined assets of non-deposit taking financial institutions fell by 1.7 percent. With the strong growth in banks' assets relative to the other subsectors, commercial banks accounted for an additional 1 percent share of the system, while insurance companies' portion fell by a similar magnitude. The asset share of all other subsectors remained unchanged (Figure 15).

In the first quarter of 2023, a digital bank entered the commercial banking sector, bringing the count to six commercial banks. It is anticipated that the enhanced competition will improve operational efficiency and bring additional benefits to consumers.

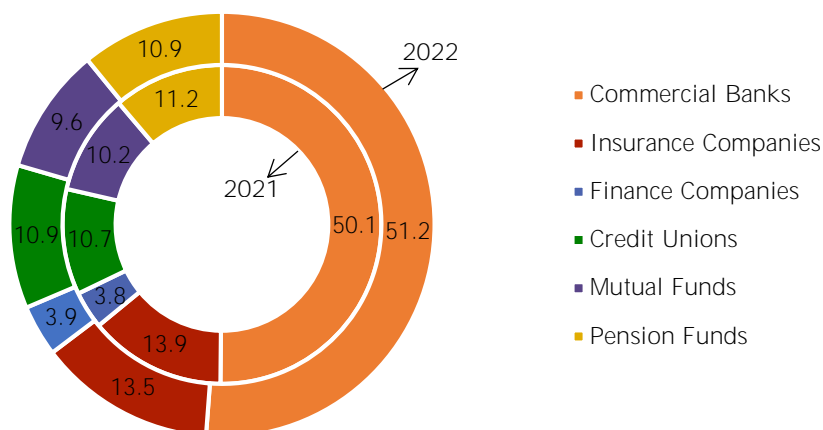
Table 12: Assets of Financial Services Sector*

\$Mil	2016	2017	2018	2019	2020	2021	2022
Commercial Banks	13,280	13,469	12,770	12,825	13,223	13,760	14,357
Insurance Companies	3,424	3,577	3,468	3,647	3,780	3,817	3,795
Finance & Trust Companies	1,535	1,569	1,016	995	991	1,031	1,087
Credit Unions	2,035	2,213	2,424	2,606	2,797	2,946	3,063
Mutual Funds	1,795	2,247	2,155	2,437	2,494	2,811	2,702
Pension Funds	2,160	2,319	2,471	2,654	2,690	3,084	3,055 [#]
Total	24,229	25,393	24,305	25,165	25,976	27,449	28,058

Sources: Central Bank of Barbados and Financial Services Commission

Notes: *Includes data revisions to prior periods
#Estimated Value

Figure 15: Distribution of Assets in the Financial System (%)



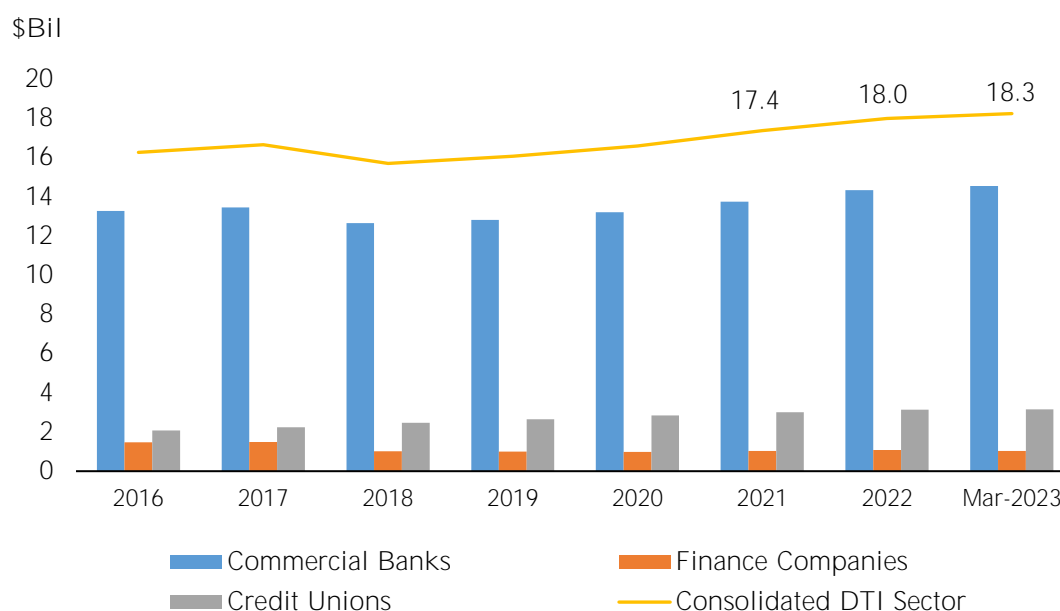
Sources: Central Bank of Barbados and Financial Services Commission

5.2 Deposit-Taking Institutions

Asset growth continued in the DTI sector during 2022, **with the sector's consolidated** assets totalling \$621.3 million, 3.6 percent above the level in 2021 (Figure 16). For banks and credit unions, the majority of the asset growth came from increased lending, while for finance companies, asset growth reflected increases in deposits in other DTIs and loans to customers.

The movements in the first quarter of 2023 were predominantly influenced by liquid assets. Commercial **banks' and credit unions'** assets increased, while finance companies recorded a contraction. **Banks' holdings** of currency and deposits continued to increase, reaching a peak of \$4,679.5 million at March 2023, while finance companies recorded a 23.6 percent reduction in their holdings of currency and deposits.

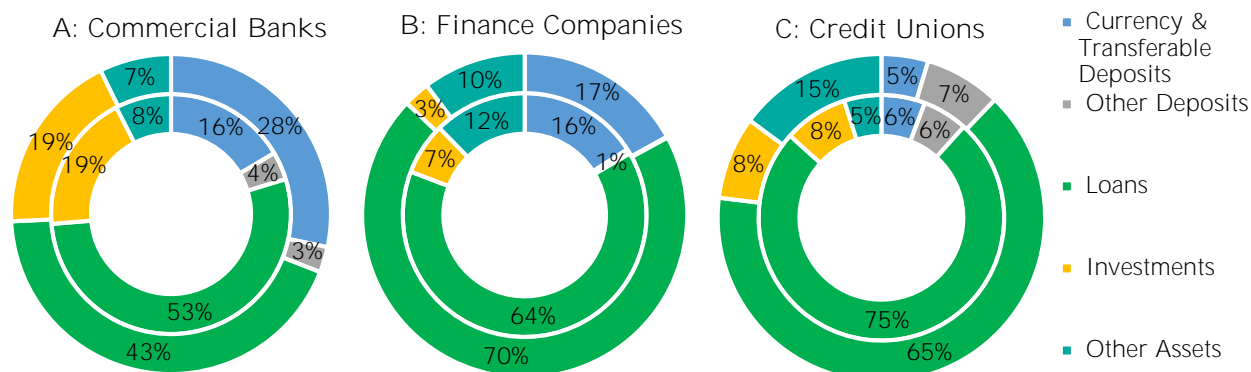
Figure 16: Assets of DTIs



Sources: Central Bank of Barbados and Financial Services Commission

The composition of assets remained largely unchanged for DTIs over the past five years. Loans remained **the principal asset category, accounting for 49 percent of the DTIs'** consolidated assets. The share of loans is more dominant in the asset portfolio of finance companies and credit unions compared to commercial banks, therefore amplifying their vulnerability to credit shocks. Additionally, the share of currency and deposits increased modestly for finance companies, as some institutions increased their holdings at the Central Bank and other depository corporations (Figure 17).

Figure 17: Composition of Assets by DTI Sector - 2017 (Inner Circle) and 2022 (Outer Circle)



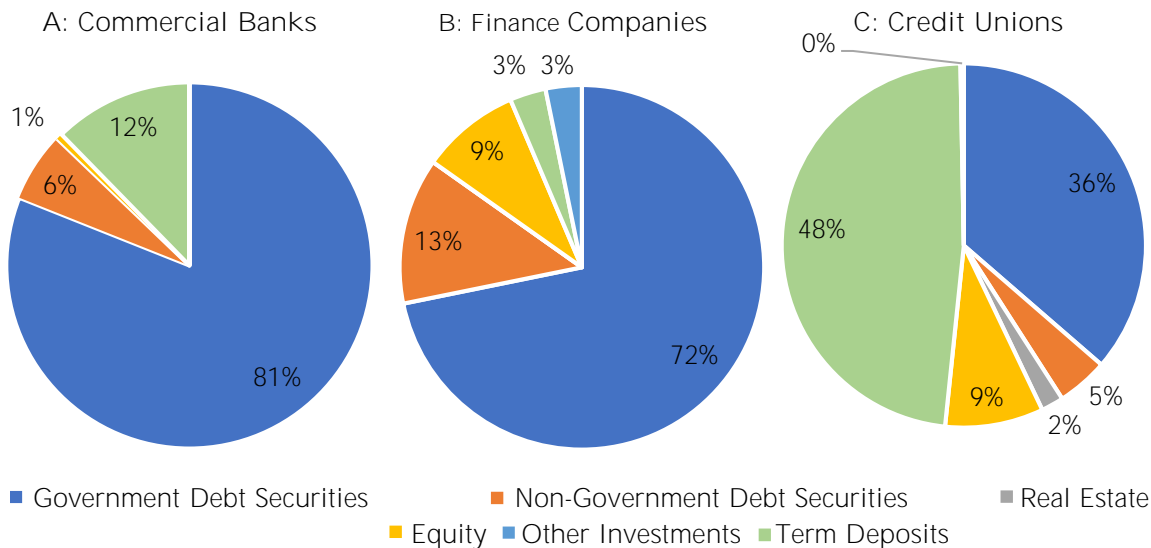
Sources: Central Bank of Barbados and Financial Services Commission

5.2.1 DTI Investments

The DTI sector’s investment portfolio expanded by 6.5 percent (\$217 million) in 2022 and by 3.2 percent (\$112.7 million) during the first quarter of 2023. The majority of the growth during 2022 came from the commercial bank sector whose investments grew by \$149.1 million, to reach \$3,023.8 million at the end of 2022, mainly due to increased holdings of government debt securities. **Commercial banks’** term deposits, which are exclusively held in banks abroad, also registered strong growth. **Credit unions’** investments increased by 13.6 percent on account of greater holdings of term deposits, long-term government debt securities, non-government debt securities and equities. On the other hand, finance companies recorded a decline of \$2.3 million (7.1 percent) during the same time period, owing to reductions in their holdings of non-government debt securities, which surpassed their pick-up of government treasury notes. For the first quarter of 2023, the investment portfolios of all DTI segments grew, due primarily to investments in equity and debt securities.

Despite the still modest recovery in the domestic debt market following the 2018 restructuring, debt securities continued to dominate the investment portfolios of DTIs. They **account for virtually all of banks’ investment portfolio**, while the allocations in finance companies and credit unions totalled approximately 85 percent and 41 percent, respectively (Figures 18A, 18B and 18C). While the interest payments of debt securities are unaffected by current interest rate volatility, their values can depreciate quickly in a rising interest rate environment, thus exposing DTIs to interest rate risk.

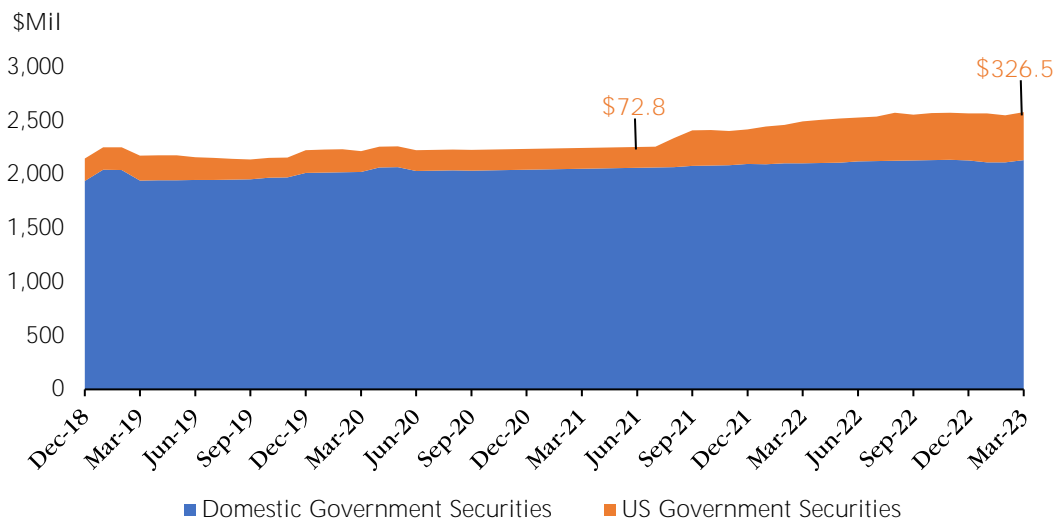
Figure 18: Composition of Investment Portfolio 2022



Sources: Central Bank of Barbados and Financial Services Commission

Commercial banks increased their sovereign exposure by investing more in domestic and foreign government securities. Up to March 2023, their holdings of domestic government securities increased by \$34.6 million, due to increased investments in BOSS+ and other bonds. **A larger increase was recorded in banks’ holdings of US government securities**, which grew by \$118 million at the end of 2022 and further increased by \$10 million for the first quarter of 2023 (Figure 19). Investments in US government treasury bills have grown from 66.3 percent of investments in foreign debt securities to 88.8 percent at the end of 2022. This increase arose as banks ramped-up their holdings of these shorter-term securities benefitting from rising interest rates in the US.

Figure 19: Sovereign Exposure of Commercial Banks



Source: Central Bank of Barbados

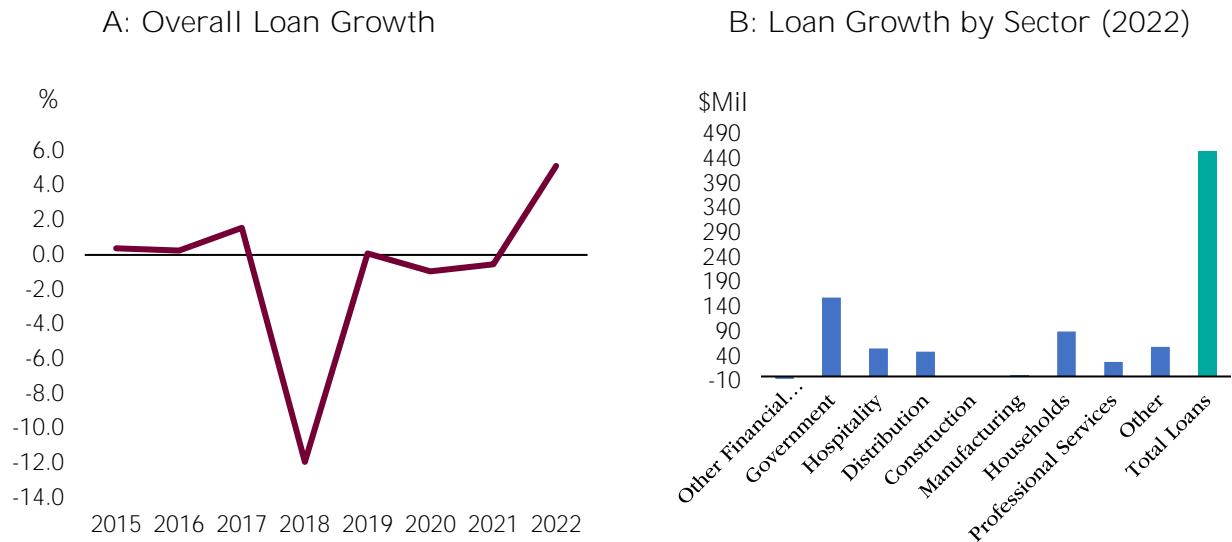
Sovereign default risk remains low in Barbados with a stable outlook. Multiple credit rating agencies have **upgraded Barbados'** short- and long-term local currency sovereign ratings since the debt restructuring in 2018, reflecting the improvements in fiscal conditions. On the other hand, Fitch lowered the long-term issuer debt rating for the U.S. in August 2023 by one notch to AA+.

5.2.2 Loans

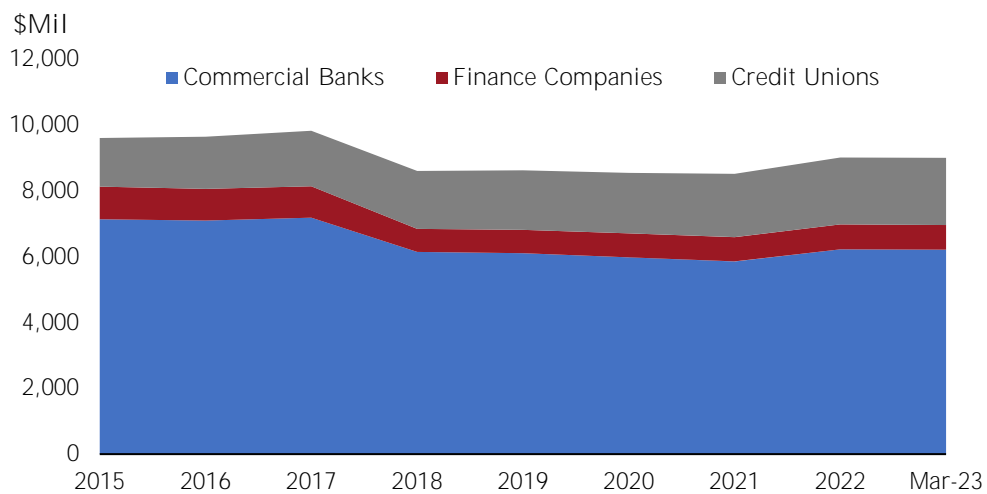
Outstanding loans from DTIs expanded by 5.1 percent during 2022 (Figure 20A). Lending to Government was the chief driver of this increase, as one commercial bank extended a \$146.5 million **“blue” loan to Government as part of a debt-for-nature swap**, where Government used the loan proceeds to retire more costly debt, and redirect the interest rate savings towards marine conservation. Loans to households also expanded, due to increased lending to individuals by credit unions and finance companies. The continued expansion in tourism and economic activity fuelled greater borrowing from banks and finance companies by the hospitality, distribution, utilities, and professional services sectors, primarily in the latter half of 2022 (Figure 20B). These funds were used to facilitate renovations, increase working capital and to purchase property and equipment. Since the rebound in lending to the private sector was triggered by increased domestic activity, there is no indication that this will lead to an unsustainable credit boom. Hence, there is no heightened risk anticipated from these activities.

For the first three months of 2023, total loan growth for DTIs was relatively flat, as marginally higher lending by credit unions and finance companies was eroded by increased loan repayments in the banking sector. Over the review period, commercial banks, credit unions, and finance companies accounted for approximately 70, 22 and 8 percent of the DTI loan market, respectively.

Figure 20: Loan Portfolio



C: Stock of Loans by DTIs



Sources: Central Bank of Barbados and Financial Services Commission

The sectoral concentration of DTIs' loan portfolio, as measured by the Herfindahl-Hirschman Index (HHI)⁸, decreased during 2022 and the first quarter of 2023 (Figure 21A). This decline suggests reduced loan concentration risk. The 2022 outcome largely reflects smaller percentage shares of the two largest sectoral exposures (households and other professional & technical service providers⁹) in total outstanding loans and increased lending to

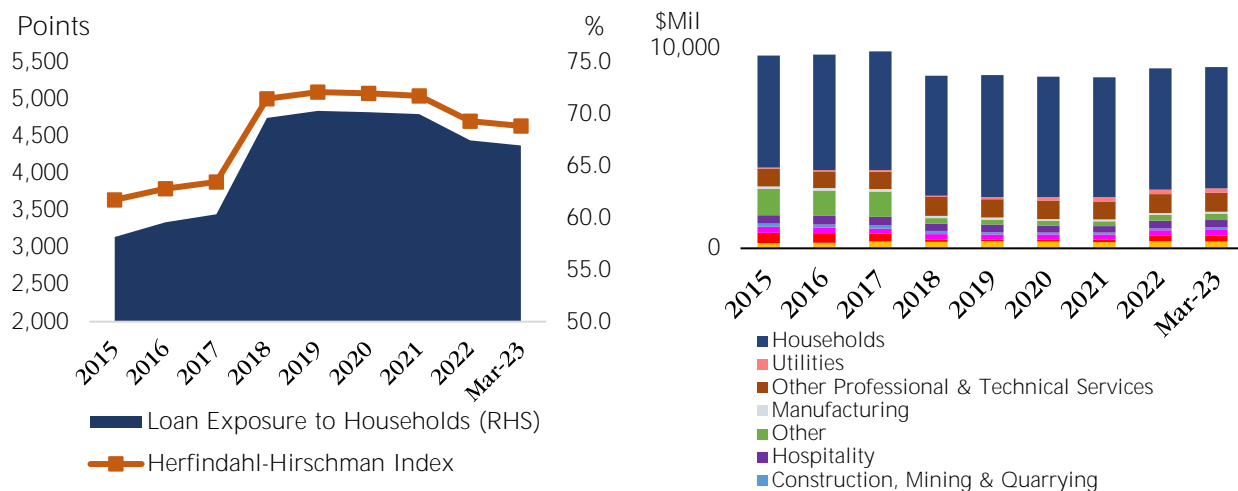
⁸ HHI is a measure of market concentration, where a rise (decline) in the metric indicates greater (less) concentration.

⁹ This category includes real estate, legal, accounting, engineering, health, and machinery rental firms.

Government (Figure 21B). Over the first quarter of 2023, the HHI registered a modest contraction, as the share of household loans (loans to individuals) in total loans edged down to 67.0 percent at end-March 2023, from 67.4 percent at the end of 2022.

Figure 21: Loan Concentration and Outstanding Loans by Sector

A: Concentration of DTIs' Loan Portfolio **B: Outstanding Consolidated Loans from DTIs**



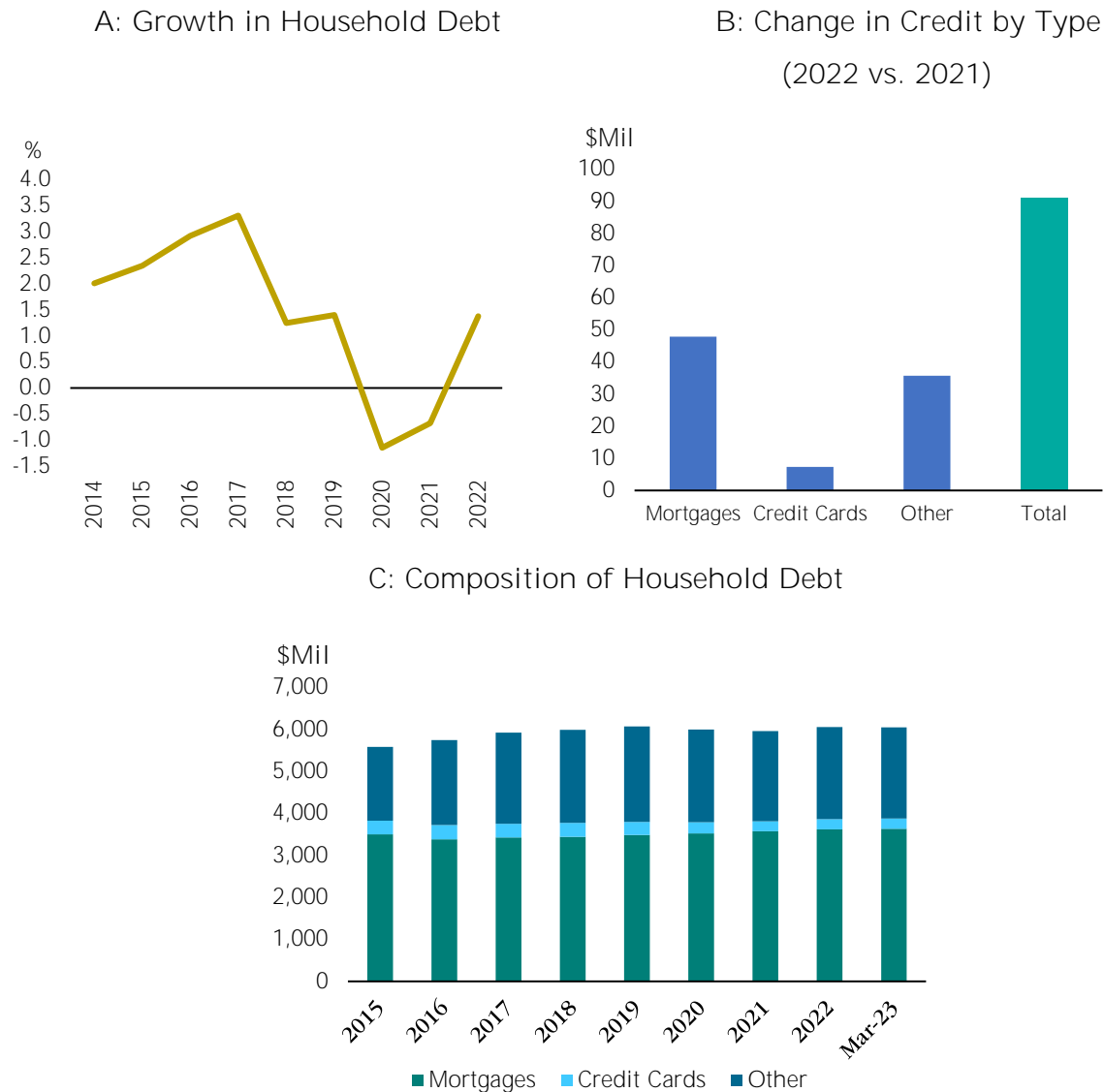
Sources: Central Bank of Barbados and Financial Services Commission

At the level of DTI segments, exposures to household loans vary considerably. Of the \$6.0 billion dollars in household loans from DTIs at the end of the review period, 57.5 percent were owed to the commercial bank sector, representing 56 percent of the sector's loan portfolio. For the credit union sector, finance to individuals occupies just over 97 percent of the loan book, accounting for 32.9 percent of total outstanding DTI loans to households as at the end of March 2023. As for the smallest DTI segment, about 76 percent of finance companies' loan portfolio consists of credit to households, which equates to a contribution of 9.6 percent to the stock of total outstanding household loans at the end of the review period. While it is clear that credit to households represents the majority of outstanding loans from DTIs, information on loans to individuals by the industry of employment would greatly enhance the assessment of concentration risk.

For the first time since the onset of the pandemic, household debt to DTIs grew in 2022, but fell very marginally during first quarter of 2023 (Figure 22). The year 2022 saw an expansion in loans to households at a rate of 1.5 percent, driven by mortgages and borrowing for vehicles, solar panels, and other consumer loans. By the end of March 2023, credit to individuals was just 0.06 percent lower than at the end of 2022, due to a dip in credit card debt and retail loans. Household mortgages grew by 1.3 percent in 2022 and 0.5 percent over the first quarter of 2023, reflecting increased mortgages for personal dwellings from credit unions and finance companies. At the end of March 2023, mortgages represented 69.2, 49 and 38.4 percent of outstanding household loans from commercial banks, credit unions, and finance companies, respectively. Thus, mortgages are a significant portion of household indebtedness to DTIs. With the rising threat of adverse climate events, the sizeable mortgage portfolios held

by DTIs presents a direct channel for substantial credit impairment in the medium to long term. As such, the Government of Barbados and the financial sector regulators are working to build stronger resilience to climate shocks and develop robust frameworks for financial sector climate risk mitigation.

Figure 22: Household Debt to DTIs



Sources: Central Bank of Barbados and Financial Services Commission

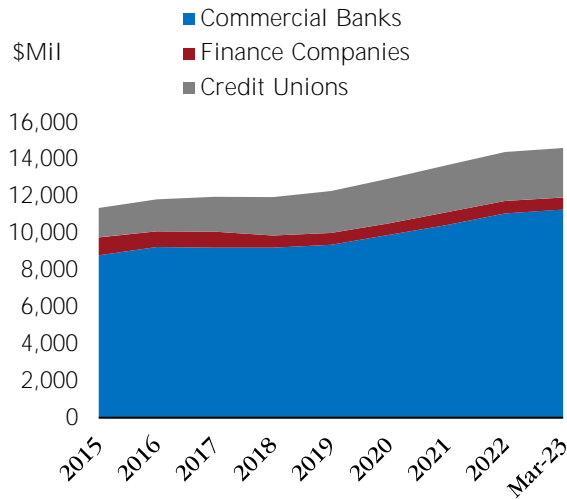
5.2.3 Deposits

Consolidated deposit liabilities of the DTIs grew by 5.2 percent, to reach \$14.4 billion at the end of 2022 (Figure 23). This expansion was driven by growth of 6.1 percent and 4.1 percent in deposits held in the banking and credit union sectors, respectively, while deposits

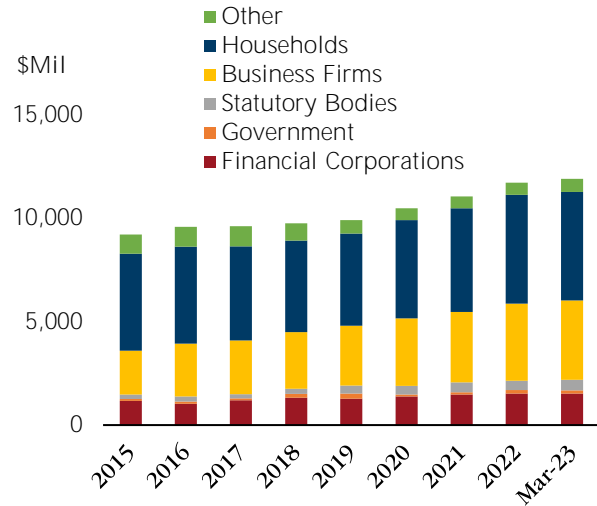
of finance companies fell by 3.7 percent. For the first quarter of 2023, there was a further 1.5 percent build-up in deposits, as the economic expansion continued.

Figure 23: Total Deposits

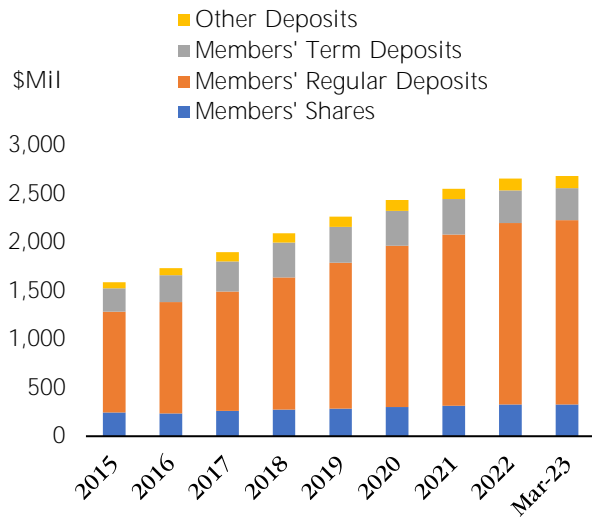
A: Consolidated Deposits by DTI



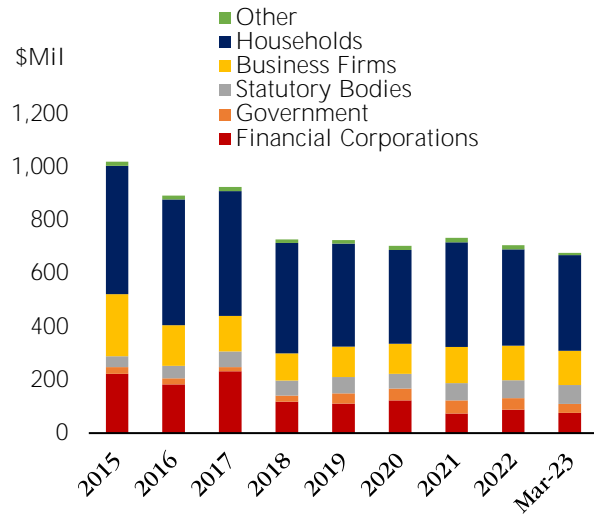
B: Commercial Banks' Deposits by Sector



C: Credit Union's Deposits by Type



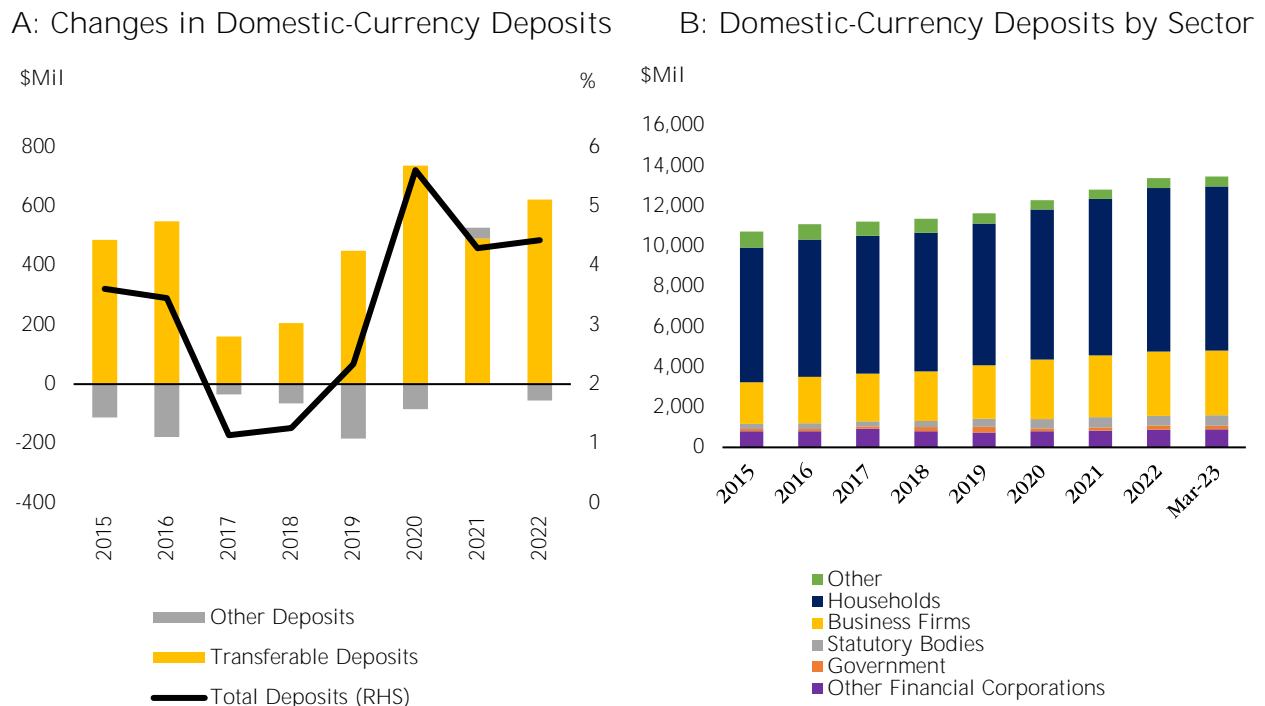
D: Finance Companies' Deposits by Sector



Sources: Central Bank of Barbados and Financial Services Commission

The stock of domestic-currency deposits expanded by 4.4 percent in 2022 (Figure 24). Transferable deposits rose by 5.6 percent as households, business firms, Government and financial corporations increased their holdings of cash in savings and chequing accounts at local deposit-taking institutions. Total long-term deposits fell by 3.1 percent, with depositors continuing to switch to more liquid accounts, as inflation outpaced the relatively low interest rates on term deposits.

Figure 24: Domestic-Currency Deposits

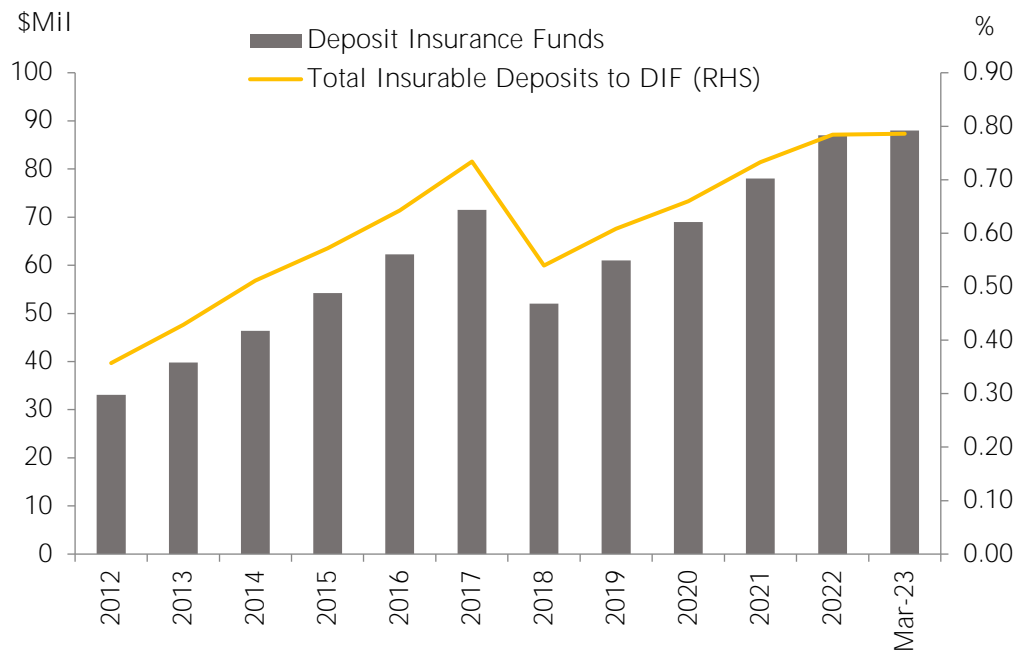


Sources: Central Bank of Barbados and Financial Services Commission

The Barbados Deposit Insurance Fund¹⁰ (DIF) rose (Figure 25). The value of the DIF increased by 11.5 percent in 2022, as interest earned on investments and premiums continued to outweigh operational costs. At the same time, the growth in domestic-currency deposits resulted in a modest uptick in the total insurable deposits to DIF ratio. The position at the end of March 2023 was virtually on par with December 2022.

¹⁰ The Barbados Deposit Insurance Corporation (BDIC) guarantees each depositor at commercial banks and finance companies up to \$25,000 on domestic-currency accounts.

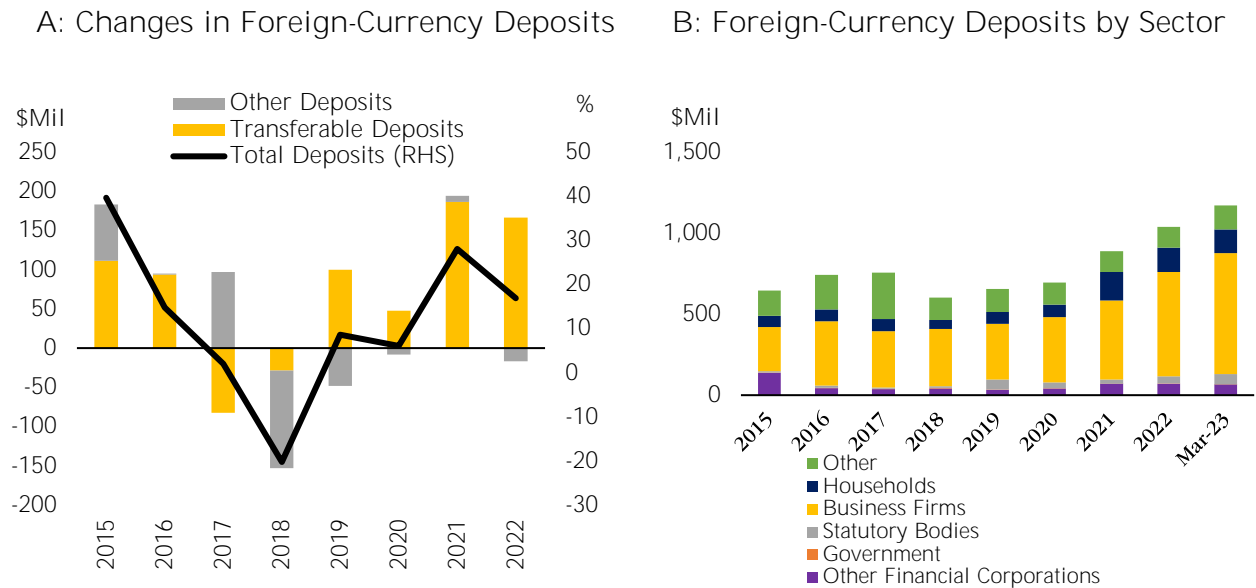
Figure 25: Deposit Insurance Fund



Source: Barbados Deposit Insurance Corporation

Foreign-currency deposits continue to expand since the exchange control liberalisation in August 2019, which allowed all Barbadians to hold foreign-currency accounts (Figure 26). Foreign-currency deposits grew by 16.9 percent during 2022 to account for 7.2 of total balances, compared to 5.3 percent at the end of 2019. The foreign balances of the transportation, distribution, and hospitality sectors were boosted by the increased activity in the foreign exchange earning sectors during 2022, while foreign financing and real estate purchases involving non-residents led to the further build-up in deposit holdings of the utilities, telecommunications, and legal services sectors.

Figure 26: Foreign-Currency Deposits



Sources: Central Bank of Barbados and Financial Services Commission

5.2.4 Foreign-Currency Exposure¹¹

Commercial banks' balance sheets are more exposed to exchange rate movements than finance companies. The banking sector transacts more with non-residents and foreign-currency earning sectors and, hence, their balance-sheets carry a greater proportion of foreign-currency assets and liabilities than finance companies (Figures 27 and 28).¹²

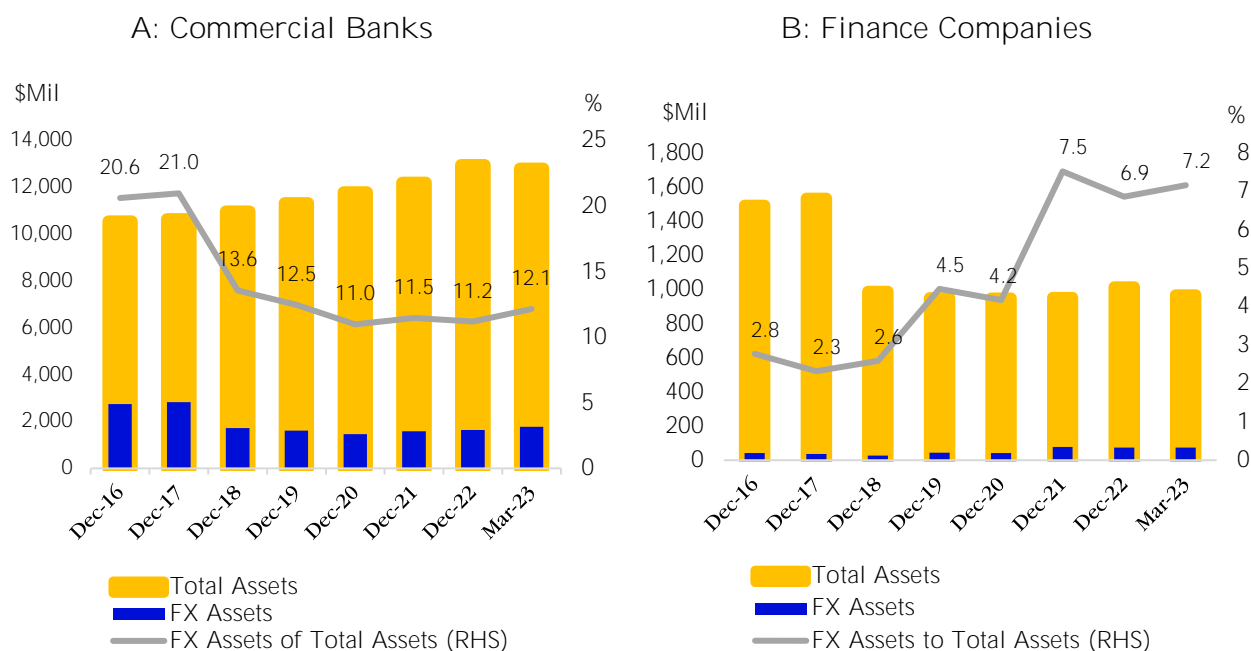
The principal foreign asset category is similar for banks and finance companies, but commercial banks carry higher foreign-currency loans¹³. The largest foreign-currency asset category for both sectors is transferable deposits. Over the previous five years, foreign-currency **loans accounted for an average of 13 percent of commercial banks' foreign-currency assets** and less than 5 percent of that of finance companies. For the banking sector, hotels and restaurants, the largest foreign-exchange-earning sector in Barbados, along with non-residents accounted for the majority of foreign-currency loans.

¹¹ The trend analyses presented in this section excludes institutions that have exited the subsector and is based strictly on the institutions that are currently active.

¹² See Appendix E for an analysis of claims on non-residents by geographical location.

¹³ It should be noted that credit unions do not currently hold assets or liabilities in foreign currency.

Figure 27: Foreign-Currency Assets



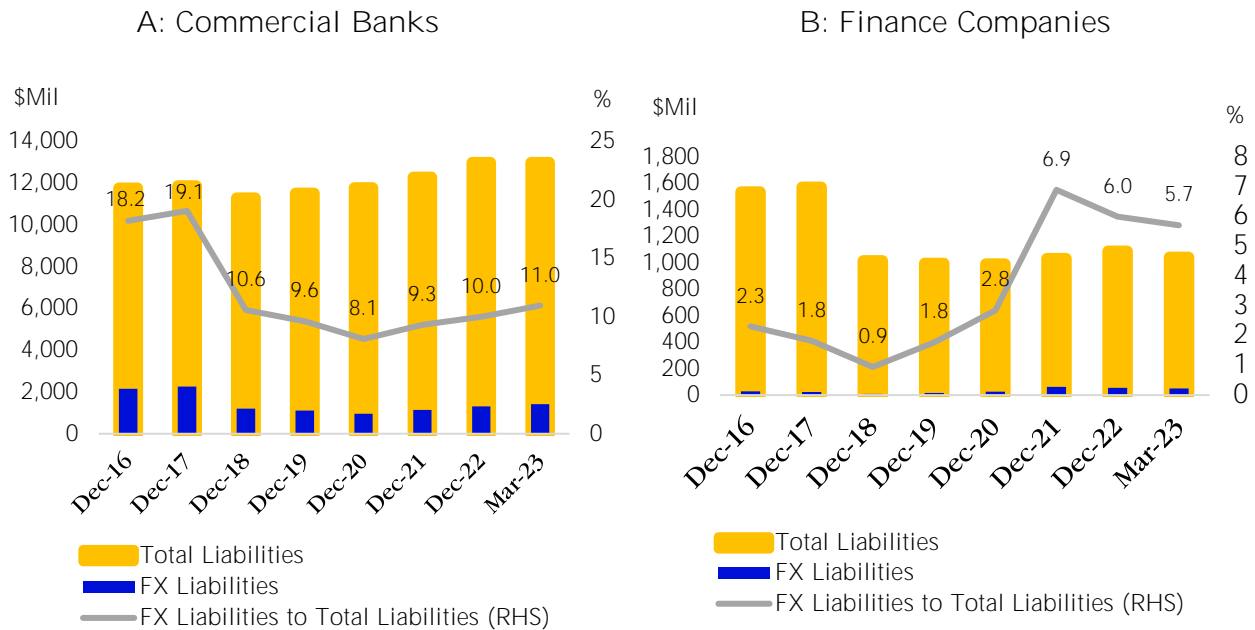
Source: Central Bank of Barbados

Up to March 2023, commercial banks' foreign-currency liabilities had exceeded that of end-2022. This is due to increased inflows to foreign-currency accounts of private sector businesses, mainly transportation, retail, and hospitality firms. The proportion of foreign-currency liabilities to total liabilities rose for commercial banks, from 8.1 percent to 9.3 percent at the end of 2022 and then to 10 percent at the end of March 2023 (Figure 28A). The build-up of these foreign-currency deposits caused the net open position in foreign currency for on-balance-sheet items (foreign-currency assets minus foreign-currency liabilities) to shrink by \$128.6 million, or 19.7 percent, at the end of 2022 (Figure 29A).

For finance companies, the proportion of foreign-currency liabilities to total liabilities has declined since 2022 (Figure 28B). This reduction is due to significant withdrawals from foreign-currency accounts by private sector firms and reductions in payables denominated in foreign currency. **With lower foreign-currency liabilities, the sector's net open position improved** during 2022 and over the first quarter of 2023 (Figure 29B).

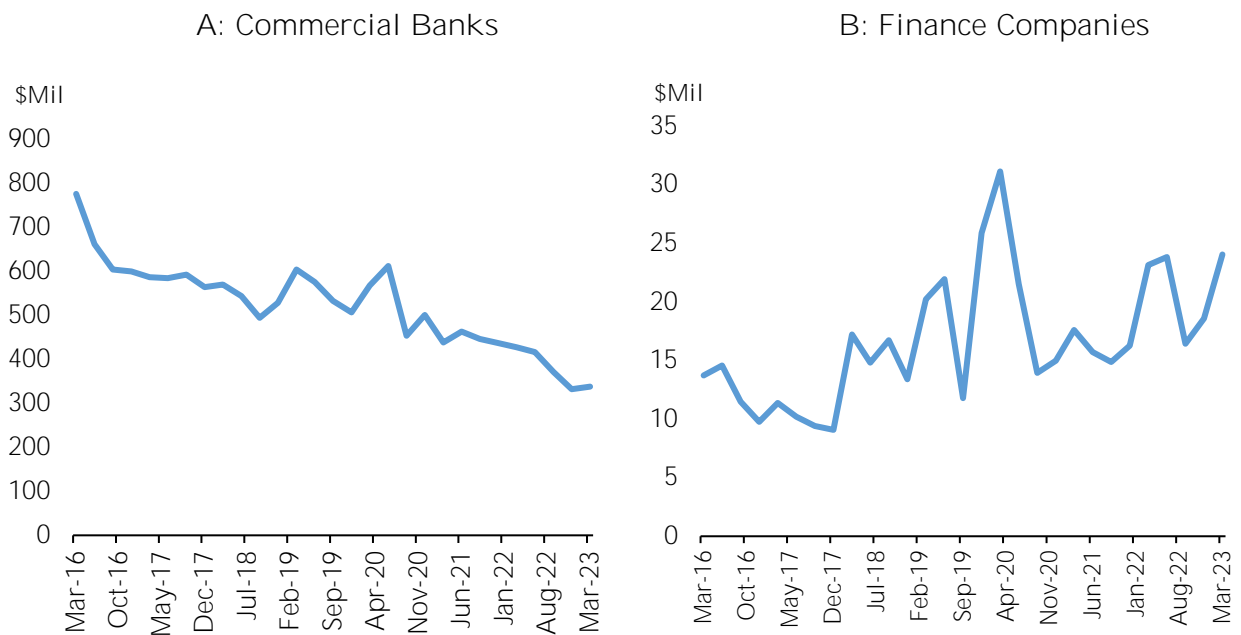
Both commercial banks and finance companies hold a substantial positive net open position in United States Dollars (USD) (Figure 30). This is due to the majority of their foreign-currency assets being denominated in the United States dollar. The vulnerability arising from this is minimal, as Barbados maintains a peg to the U.S. currency.

Figure 28: Foreign-Currency Liabilities



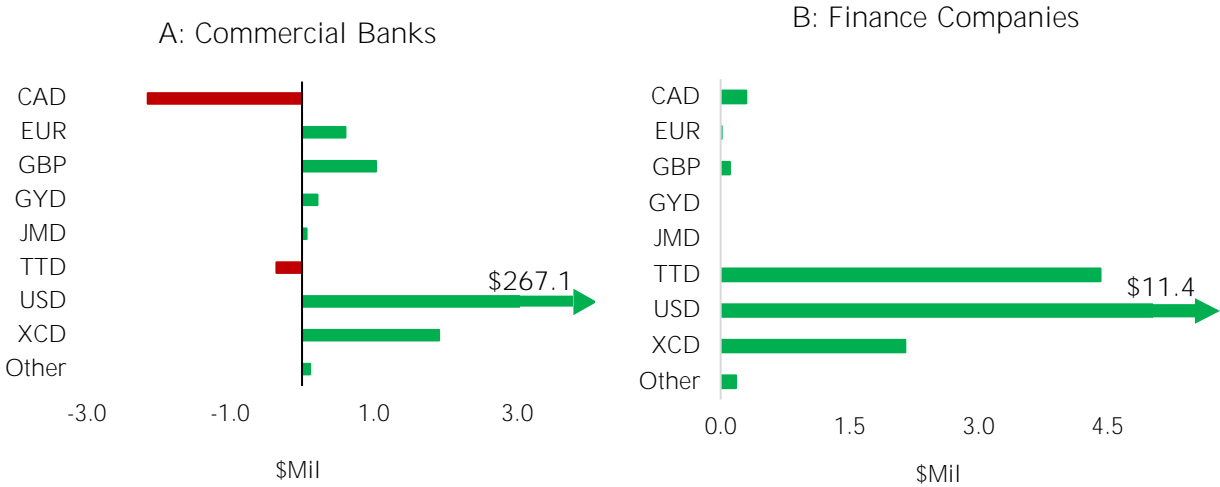
Source: Central Bank of Barbados

Figure 29: Net Open Position in Foreign Exchange (On-Balance-Sheet Items)



Source: Central Bank of Barbados

Figure 30: Net Open Position in Foreign Exchange by Currency at End-December 2022



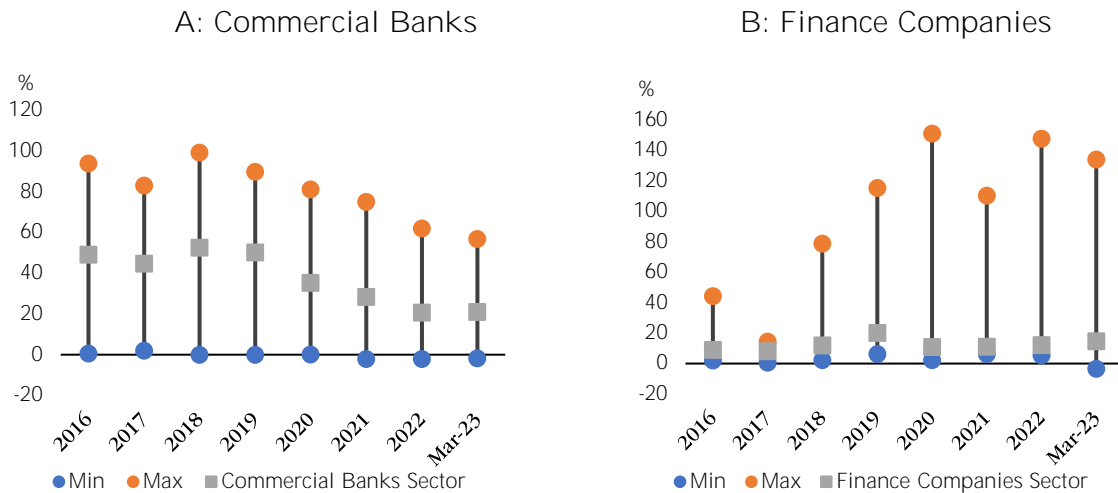
Source: Central Bank of Barbados

The exposure of the commercial banking sector to exchange rate risk¹⁴ increased during 2022 but declined slightly in the first quarter of 2023 (Figure 31A). The aggregate net open position ratio of banks remained positive throughout the review period but moved downward from 28.4 percent of regulatory capital at the end of 2021 to 21 percent by the end of March 2023. However, the decline in this ratio is not alarming given the currency composition of the net open position. As it relates to the liquidity matching of the foreign-currency assets and liabilities of the banks with smaller net open positions, the risks are manageable.

Finance companies' exposure moved in opposite directions over the same time period, rising during 2022 and decreasing for the first quarter of 2023 (Figure 31B).

¹⁴ Here, exchange rate risk is measured by the net open position ratio, the net open position in foreign currency for on-balance-sheet items as a percent of regulatory capital.

Figure 31: Net Open Position in Foreign Currency to Regulatory Capital



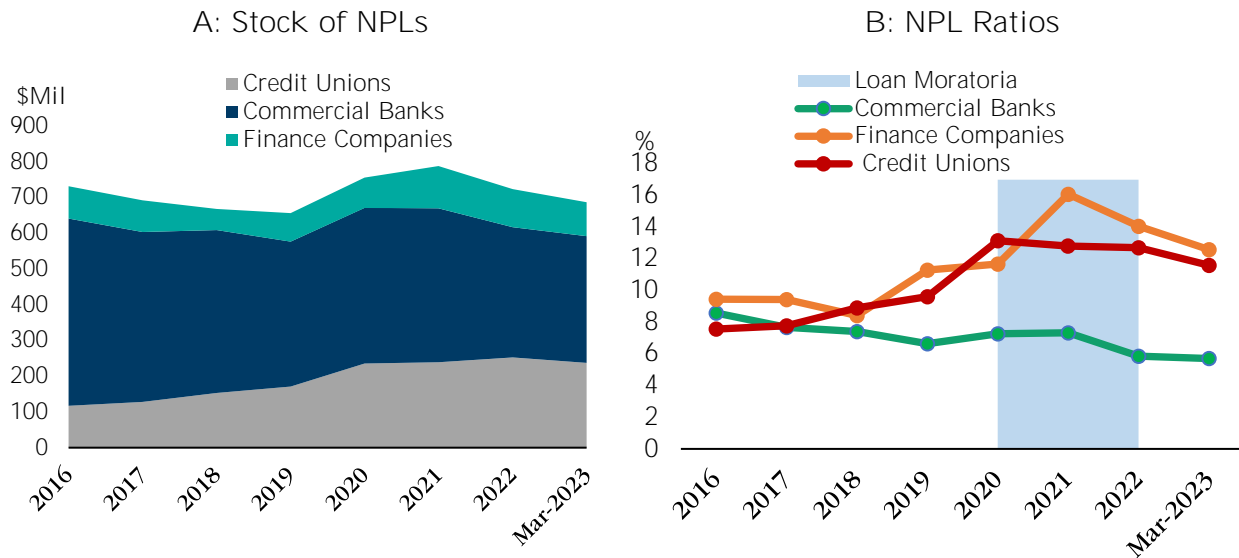
Source: Central Bank of Barbados

5.2.5 Credit Quality

Credit quality improved during 2022, despite an increase in the stock of NPLs at credit unions. The expansion in economic activity allowed households and businesses to rebuild their financial capacity and in turn, repay their debt obligations in a timely manner. Overall, the stock of NPLs for deposit-taking institutions declined by \$64.9 million to reach \$722.8 million at the end of 2022 (Figure 32A). In terms of the DTI segments, the NPL ratio of commercial banks decreased from 7.3 percent in 2021 to 5.9 percent in 2022, while the NPL ratio of finance companies decreased from 16.1 percent to 14.1 percent over the same period. In contrast, the stock of NPLs in the credit union sector grew by \$12.9 million, but increased lending kept the NPL ratio virtually unchanged relative to that of 2021 (Figure 32B).

During the first quarter of 2023, loan delinquency continued on its downward trajectory. Finance companies and credit unions registered declines in their NPL ratios, falling by 1.6 percentage points to 12.5 percent and by 0.8 of a percentage point to 11.9 percent, respectively. The NPL ratio for the commercial bank sector ended March 2023 at 5.7 percent; the lowest ratio for the sector since 2008.

Figure 32: Non-Performing Loans



Sources: Central Bank of Barbados and Financial Services Commission

The improvement in NPLs was broad based. NPLs improved across all sectors during 2022 for commercial banks (Figure 33). In contrast to the prior year, NPLs in the real estate and other professional services sector declined by \$33.2 million (38.9 percent) in 2022. For finance companies, there were slight increases in the construction and distribution sectors. Up until March 2023, **households' and business' NPLs as a proportion of loans to those sectors**, improved relative to 2021 for both banks and finance companies (Figures 34A and 34B). Nonetheless, the risk categorisation¹⁵ of NPLs remains similar to that of the prior year, with the majority being in the “Substandard” category for banks and finance companies, and the “Over 12 Months in Arrears” category for credit unions (Figure 35).

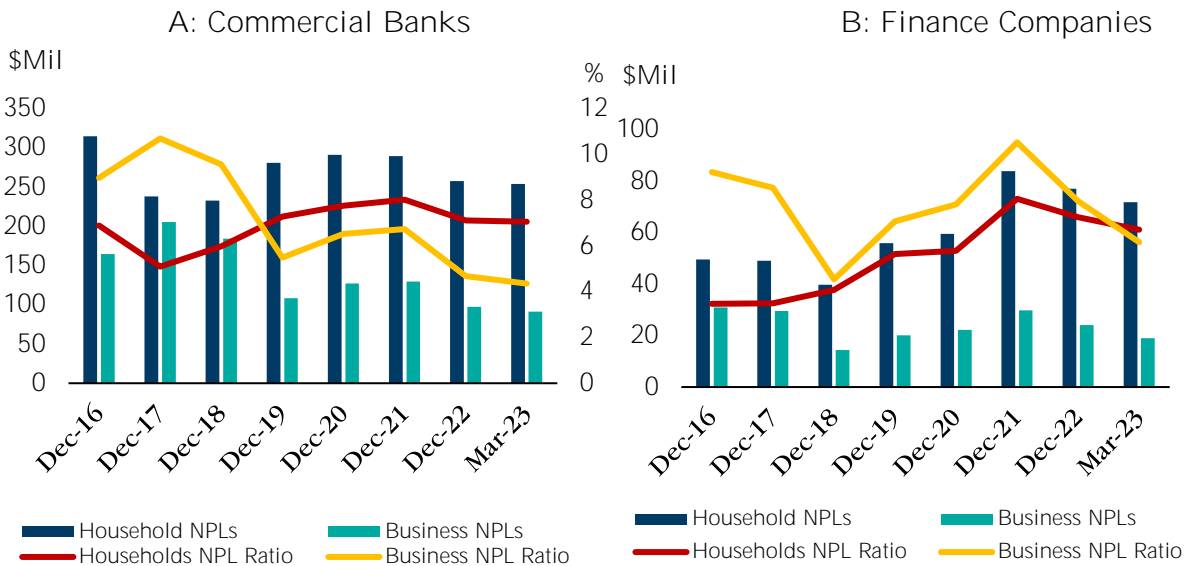
¹⁵ Non-performing mortgages are classified as “Substandard” for banks and finance companies irrespective of the number of months in arrears. On the other hand, for credit unions, all NPLs are strictly classified by the number of months in arrears.

Figure 33: NPL Movements by Sector (December 2018 – March 2023, \$Mil)

	Commercial Banks		Finance Companies	
	Dec 2018- March 2023	2022 vs 2021	Dec 2018- March 2023	2022 vs 2021
Households		▼ -\$31.9		▼ -\$6.8
Construction		▼ -\$1.3		▲ \$0.1
Distribution		▼ -\$1.7		▲ \$0.2
Real Estate & Other Professional Services		▼ -\$26.9		▼ -\$2.9
Hospitality		▼ -\$0.6		▼ -\$1.4
Other		▼ -\$3.2		▼ -\$1.4

Source: Central Bank of Barbados

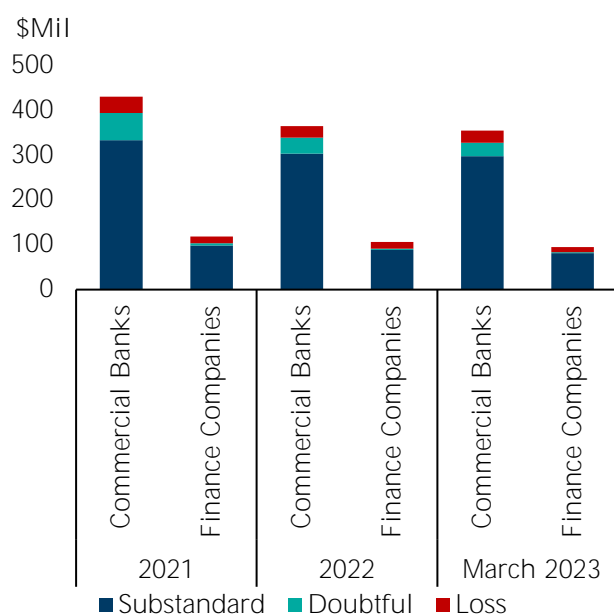
Figure 34: Household and Business NPLs



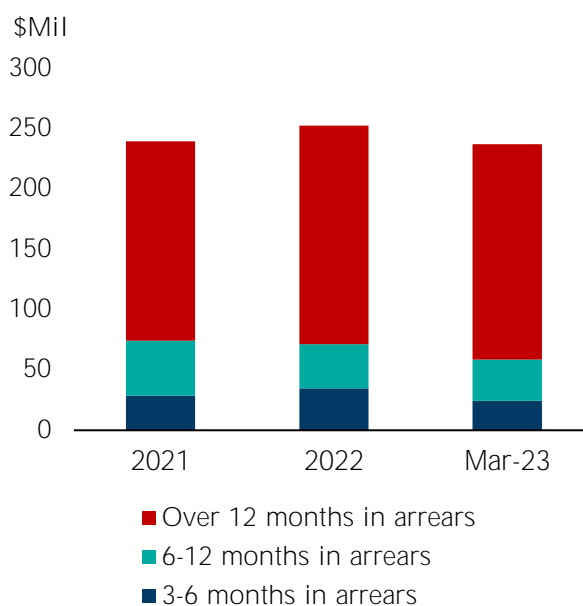
Source: Central Bank of Barbados

Figure 35: Composition of NPLs

A: Commercial Banks and Finance Companies



B: Credit Unions



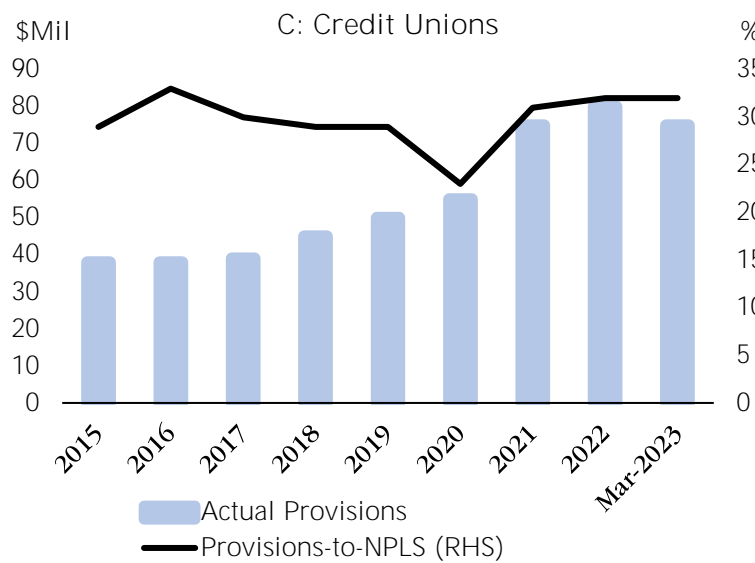
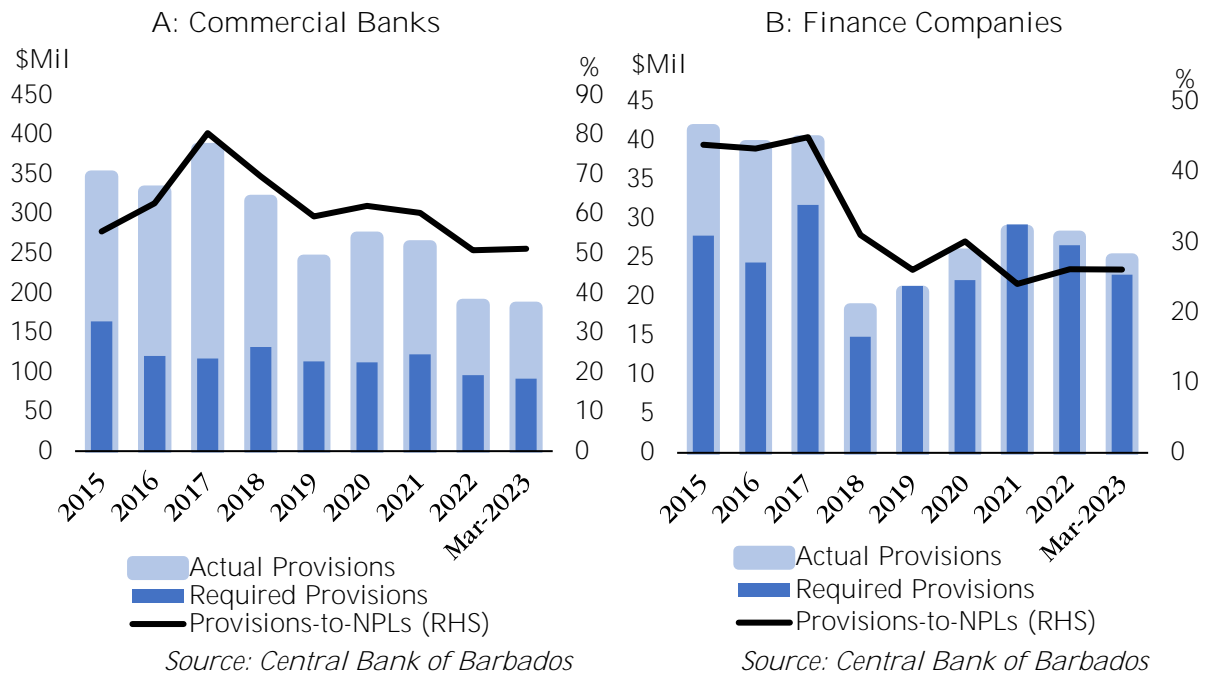
Sources: Central Bank of Barbados and Financial Services Commission

Commercial banks and finance companies reduced their provisioning levels in accordance with their perception of a reduction in expected loan losses (Figures 36A and 36B¹⁶). In the commercial banking sector, the provisions-to-NPLs ratio fell significantly from 59.6 percent at the end of 2021 to 50.8 percent at the end of 2022, although actual provisions were 1.9 times above the required provisioning levels. The provisioning levels of finance companies declined by \$0.7 million to reach \$27.7 million. Despite this development, **the sector's provisions to NPLs** increased by 2.1 percentage points, due to a greater decline in NPLs. Overall, the finance companies held provisioning only marginally above the required levels, due to a low provisioning surplus at a single institution.

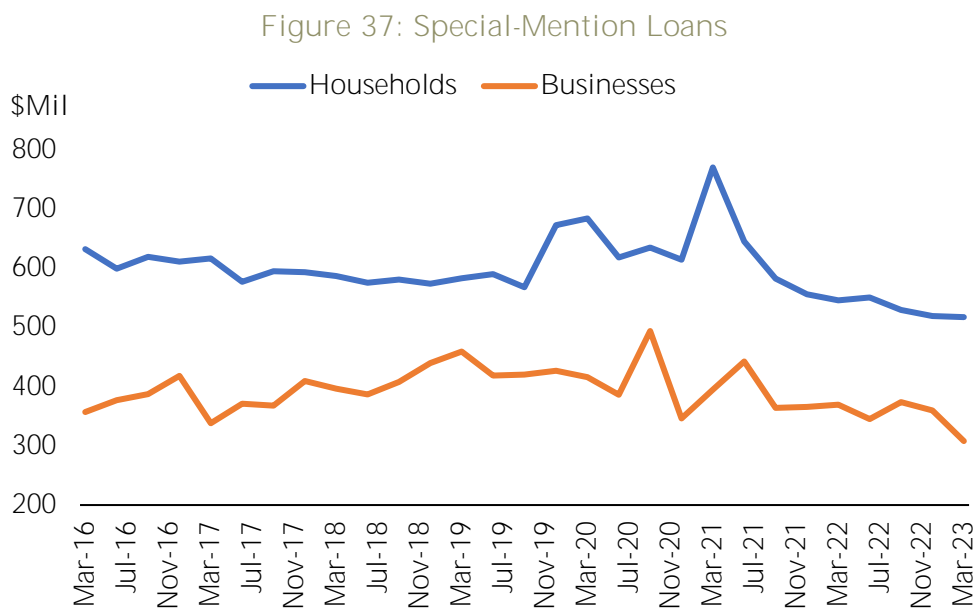
For the year ended December 2022, the credit unions' provisioning level grew by approximately \$4.8 million (6.3 percent). During this time, the provisions to NPL ratio increased to 31.7 percent from 31.4 percent in 2021. The ratio further increased to 31.8 percent at the end of March 2023, as the stock of NPLs declined (Figure 36C).

¹⁶ The decline in 2018 is attributed to the exit of an entity from the finance companies sector.

Figure 36: Provisions-to-NPLs



Credit risk is anticipated to remain low in the near term, based on the expected economic growth path. This expectation reflects that loans for both business s and household loans in the special mention¹⁷ category, are showing general signs of recovery for banks and finance companies (Figure 37).



Source: Central Bank of Barbados

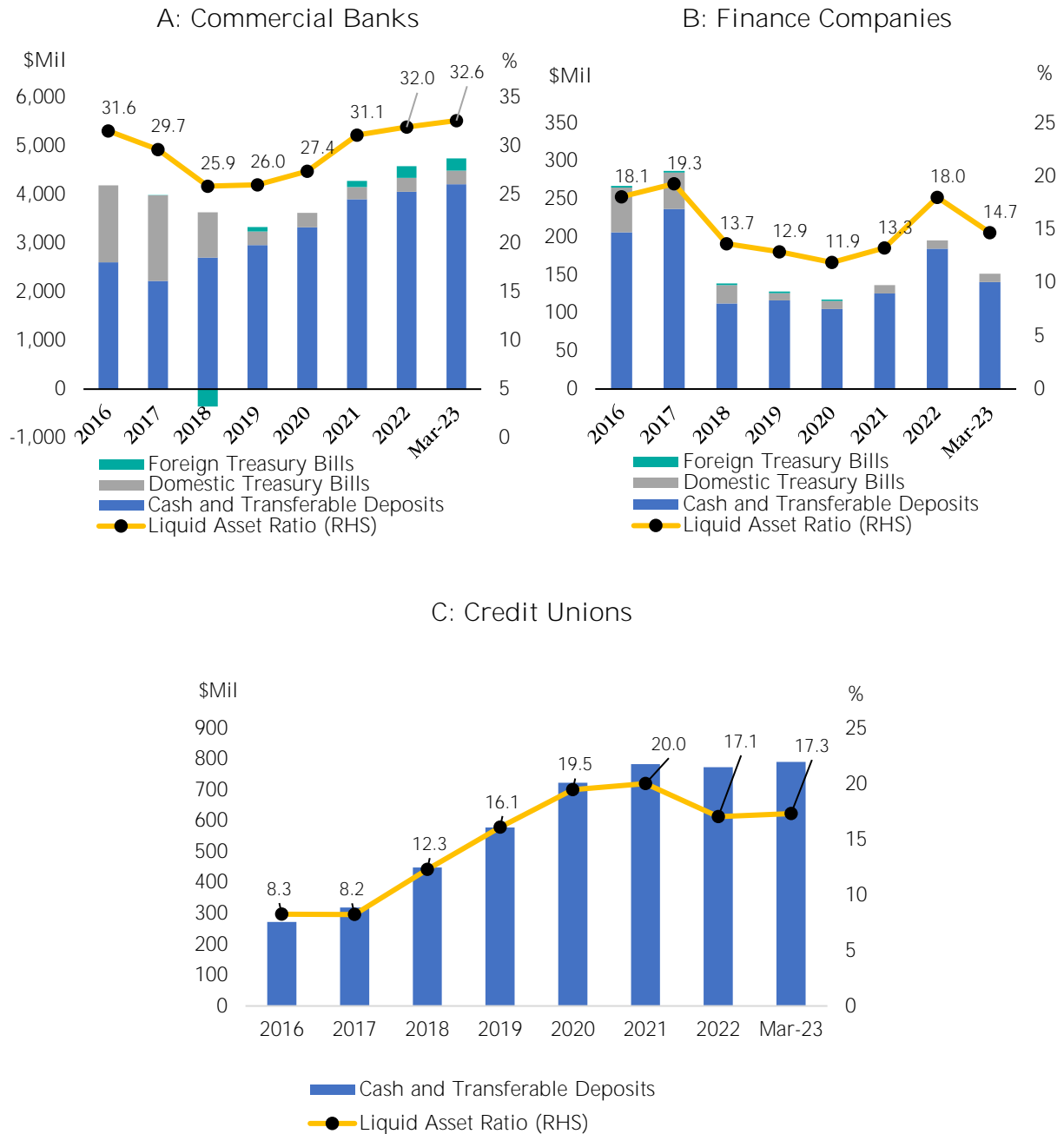
5.2.6 Liquidity

The DTI sector possesses sufficient liquidity to finance greening and other investment activities across various sectors, that are expected to support economic growth in the medium term. Overall liquidity continued to build during 2022, but at a slower pace than in the prior year. Total liquid assets grew by 5 percent to reach \$5,025.9 million at end-December 2022 and resulted in a consolidated liquid asset ratio of 27.9 percent.

Changes in liquidity varied across DTI subsectors. Liquidity in the banking sector continued to expand over the review period, as their holdings of cash and transferable deposits rose (Figures 38A). **Finance companies' liquid assets also** increased during 2022, but declined in the first quarter of 2023 due to deposit withdrawals (Figures 38B). In contrast, the liquid asset ratio for credit unions decreased in 2022, then edged up marginally over the first three months of 2023.

¹⁷ Special mention loans are performing loans that are 30 to 90 days past due.

Figure 38: Liquid Asset Ratio

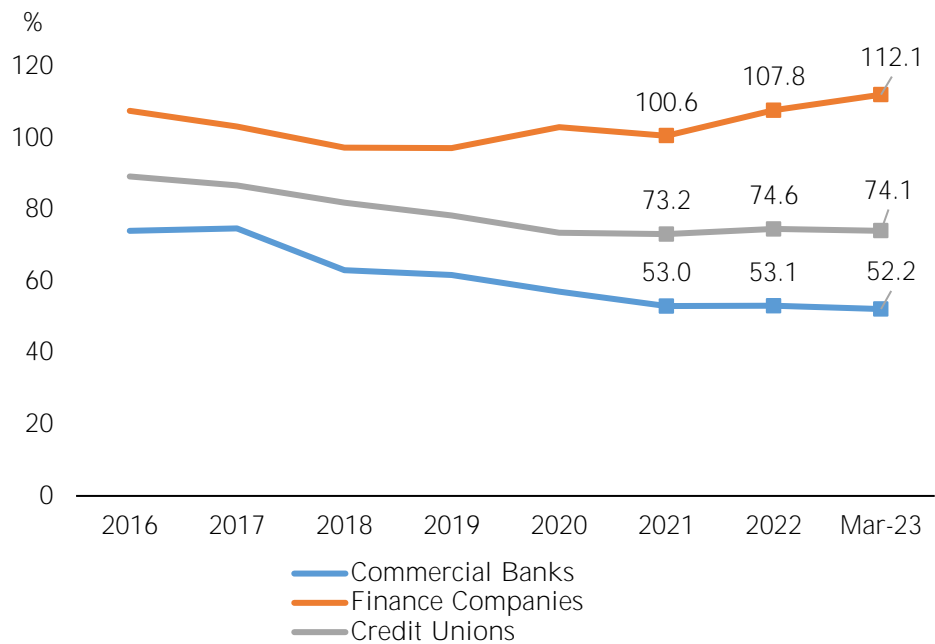


Sources: Central Bank of Barbados and Financial Services Commission

The loans-to-deposits ratios of commercial banks and credit unions held steady, while that of finance companies edged upwards (Figure 39). Despite increased lending by commercial banks and credit unions, changes in their loans-to-deposits ratio were marginal, due to higher deposits in the sectors. However, for finance companies, increased lending to

households, alongside lower deposits, pushed the ratio further upwards to 107.8 percent at the end of 2022 and 112.1 percent at end-March 2023.

Figure 39: Loans-to-Deposits Ratio

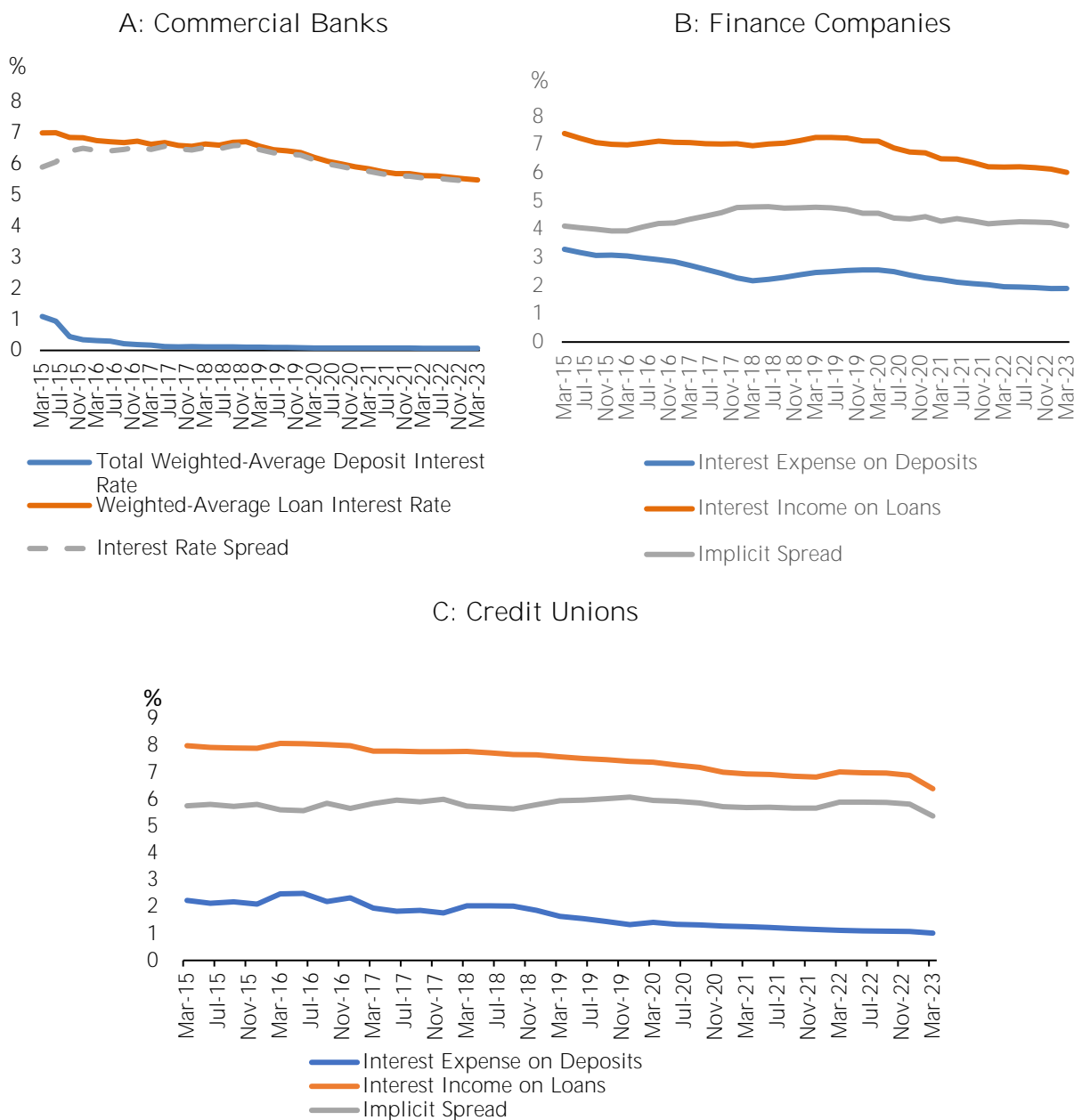


Sources: Central Bank of Barbados and Financial Services Commission

5.2.7 Interest Rates

Aside from the Barbados Government incurring higher interest costs on its international debt, the financial system remained largely unaffected by global interest rate trends. Since the elimination of the minimum deposit rate in 2015, average interest rates on commercial bank deposits have been gradually declining and remained at around 0.07 percent for the past five years. Loan interest rates also continued to decline, moving from 5.7 percent in December 2021 to 5.5 percent in March 2023. As a result, the average interest rate spread of banks narrowed to 5.4 percentage points at the end of March 2023 from 5.6 percentage points at the end of 2021 (Figure 40A). Based on the implicit interest rates, the spreads of finance companies and credit unions since end-2021 followed a similar trajectory to that of commercial banks.

Figure 40: Interest Rates of DTIs



Sources: Central Bank of Barbados and Financial Services Commission

For finance companies, the effective loan rate continued its gradual decline to 6.0 percent at March 2023, down from 6.1 percent a year earlier. Meanwhile, the effective deposit rate also declined slightly to 1.9 percent at March 2023, down from 2.0 percent one year earlier, in the face of continued high levels of system-wide liquidity (Figure 40B).

On the other hand, a sharp decline was seen in the effective loan rate at the credit unions, from 7.0 percent to 6.4 percent at March 2023, year-on-year (Figure 40C). Meanwhile, the effective deposit rate remained stable at 1.1 percent during 2022 and fell slightly to 1.0 percent in the first quarter of 2023. These trends in deposit and loan interest rates squeezed the profit margins of the credit unions slightly, with the implicit spread declining from 5.9 percentage points in March 2022 to 5.4 percentage points at March 2023.

5.2.8 Profitability

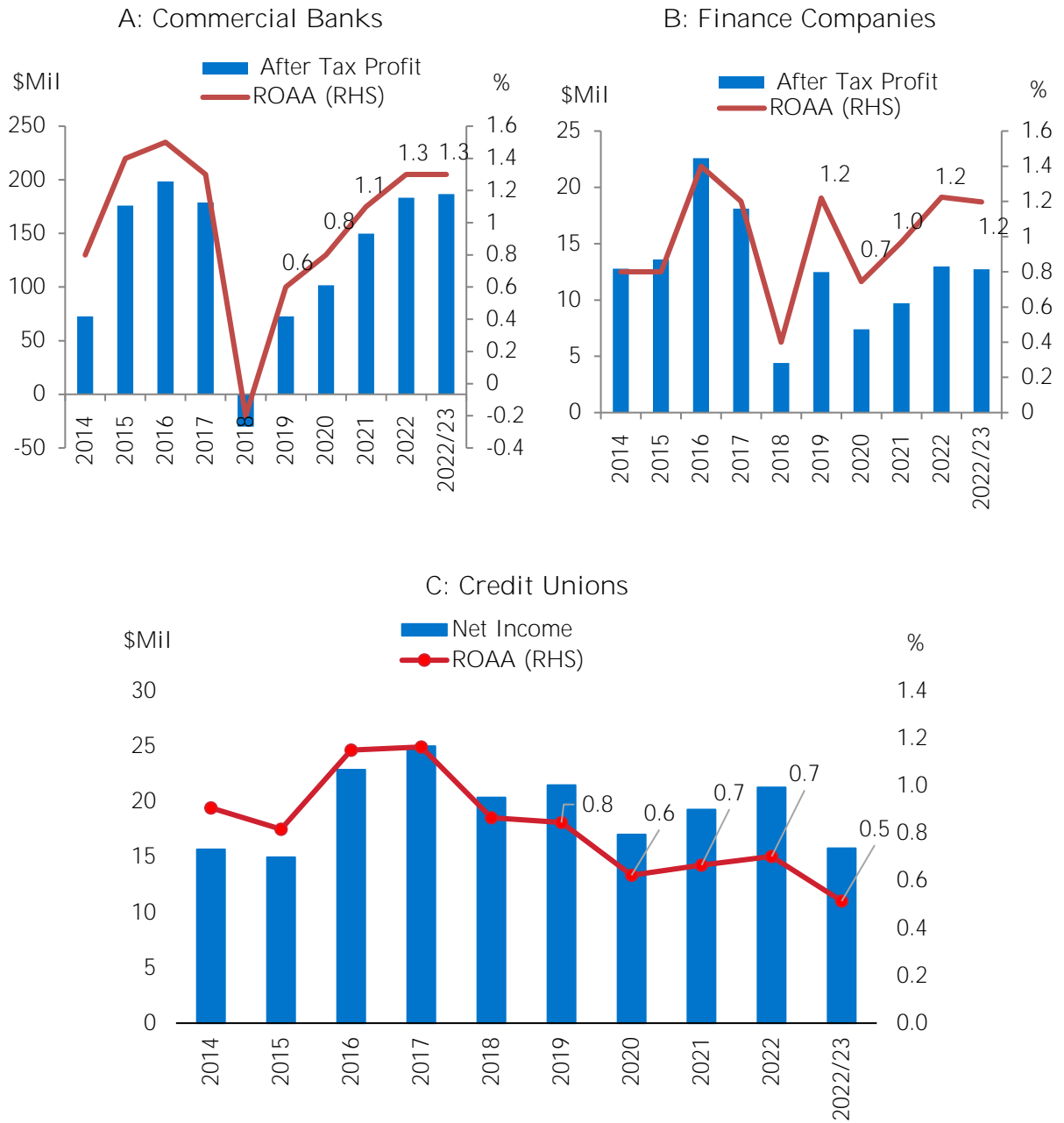
As the local economy continued to rebound from the restrictions associated with the pandemic, profitability improved for the commercial banks (Figure 41A). After-tax profits of commercial banks increased by \$33.4 million in 2022. This was mainly the result of a \$65.7 million decline in provisions for bad and doubtful debt as well as a \$27.8 million increase in non-interest income that stemmed from exchange rate gains and fees associated with investments and lending. Higher international interest rates led to a noteworthy pick-up in interest earned on deposits held abroad. However, the low domestic interest rate environment and weak loan growth in the first half of 2022, resulted in a small decline in interest income. On the expense side, the largest increases were recorded in taxes (\$42 million) and non-staff administrative costs (\$37.3 million). Interest expense, which accounted for less than 2 percent of total expenses since 2020, fell by \$1.4 million, due to lower interest payments to savings and demand deposit account holders. The return on average assets (ROAA) moved up slightly from 1.1 percent in 2021 to 1.3 percent for the years ended December 2022 and March 2023.

Since 2020, the Central Bank of Barbados has been working with the commercial banking industry to have a number of banking service fees removed or reduced on certain categories of retail accounts. The Bank took an additional step by issuing a directive in December 2022, eliminating all fees charged on large deposits. This was followed by further engagement that resulted in all commercial banks committing to offer at least one savings account that does not attract any fees, effective June 1, 2023. These efforts are expected to provide varying degrees of relief to customers. However, the overall effect on commercial bank profitability is expected to be minimal. From 2009 to present, fee income from customer accounts has been below 8 percent of total commercial bank revenue.

For finance companies, the ROAA grew from 1.1 percent in the prior period to 1.2 percent at December 2022 and remained at 1.2 percent again at end-March 2023. The after-tax profits strengthened from \$9.7 million in 2021 to \$13 million in 2022 (Figure 41B). This improvement in profit was due mainly to small increases in both interest and non-interest income, along with a slight decline in interest expense.

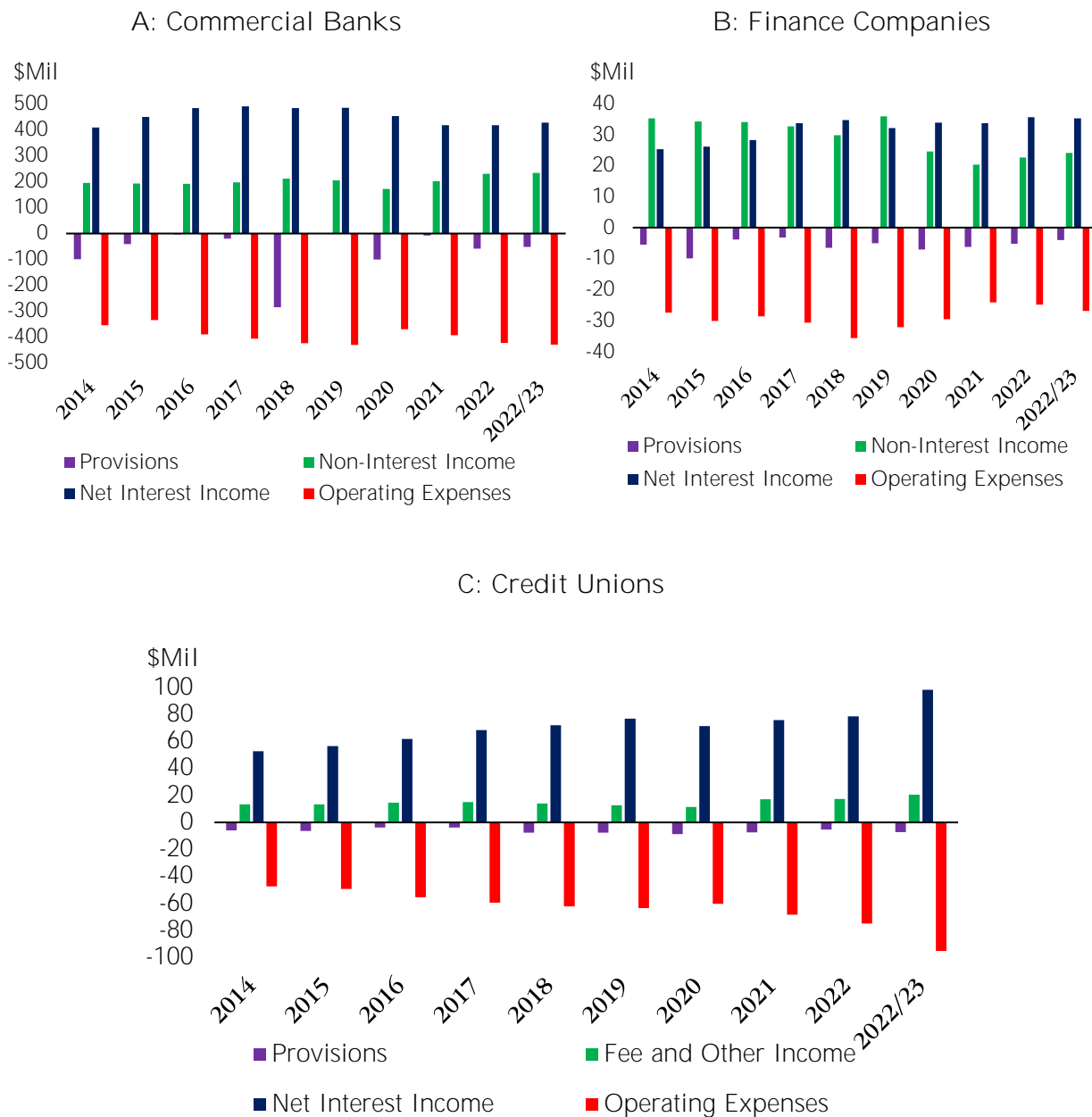
Net income of the credit unions also increased to \$21.3 million during 2022, up from \$19.3 million in the prior period. Despite the slight increase in profits, the ROAA remained relatively flat at 0.5 percent, compared to the prior year (Figure 41C). However, there was a marginal decline in profitability for the year ended March 2023, as total income grew by 5 percent in 2022, led by a 7 percent increase in interest income from loans, while earnings from investments declined by 12 percent compared to 2021/22. NPL expenses revealed a possible stabilisation in loan quality, as they declined from \$13.2 million to \$8.2 million in 2022.

Figure 41: Profitability



Sources: Central Bank of Barbados and The Financial Services Commission

Figure 42: Income and Expenses

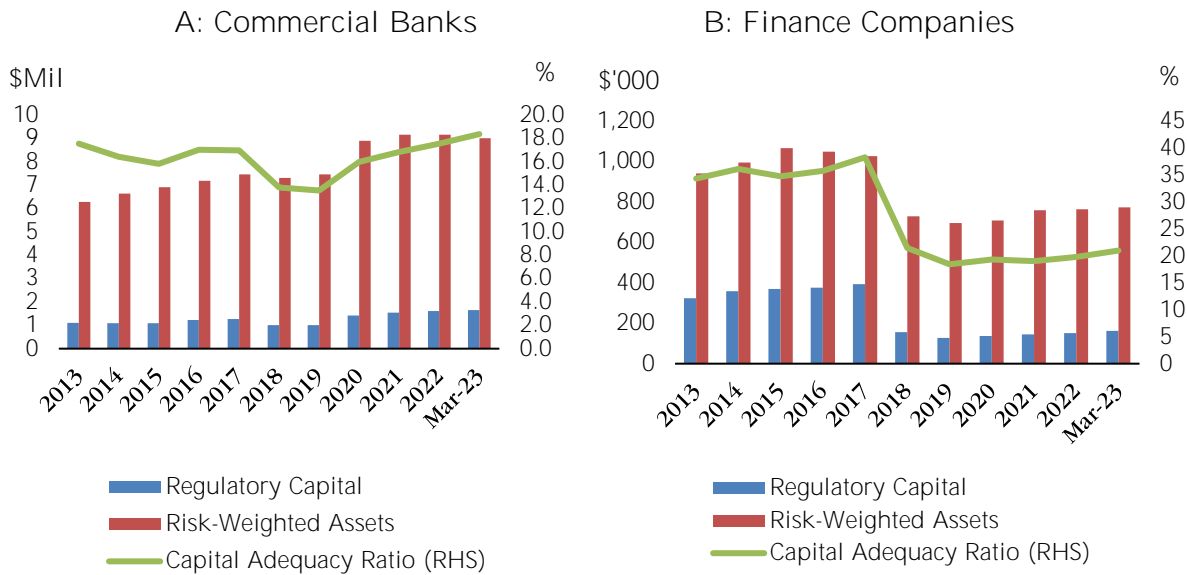


Sources: Central Bank of Barbados and The Financial Services Commission

5.2.9 Capital Adequacy

Capital of DTIs grew during the period under review. In the year ended March 2023, the capital of DTIs rose, with the banks and finance companies recording growth of 2.1 and 5.8 percent in their regulatory capital, respectively. These increases in regulatory capital were driven solely by higher Tier 1 capital.

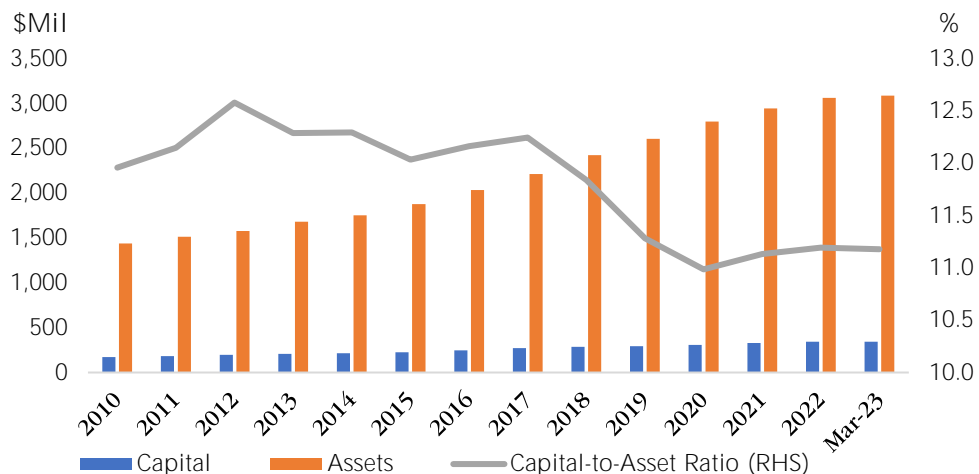
Figure 43: Capital Adequacy Ratios



Source: Central Bank of Barbados

At the subsector level, capital adequacy was not a problem for banks, finance companies or credit unions. **The rise in banks' capital levels raised the capital adequacy ratio (CAR) to 16.8 percent from 16 percent a year earlier, well above the prescribed 8 percent benchmark (Figure 43A).** All banks maintained a CAR above the benchmark, ranging from 11.3 percent to 30.5 percent. The CAR of the finance companies increased marginally to 21 percent. All finance companies maintained CARs above the benchmark, ranging from 12.3 percent to 34 percent throughout the year (Figure 43B). In the credit union sector, the slight increase in profits during 2022 led to a marginal uptick in the capital-to-asset ratio by 0.1 percentage points to reach 11.2 percent at the end of the period. As at March 2023, the capital-to-asset ratio remained unchanged (Figure 44).

Figure 44: Credit Unions' Capital-to-Asset Ratio



Source: Financial Services Commission

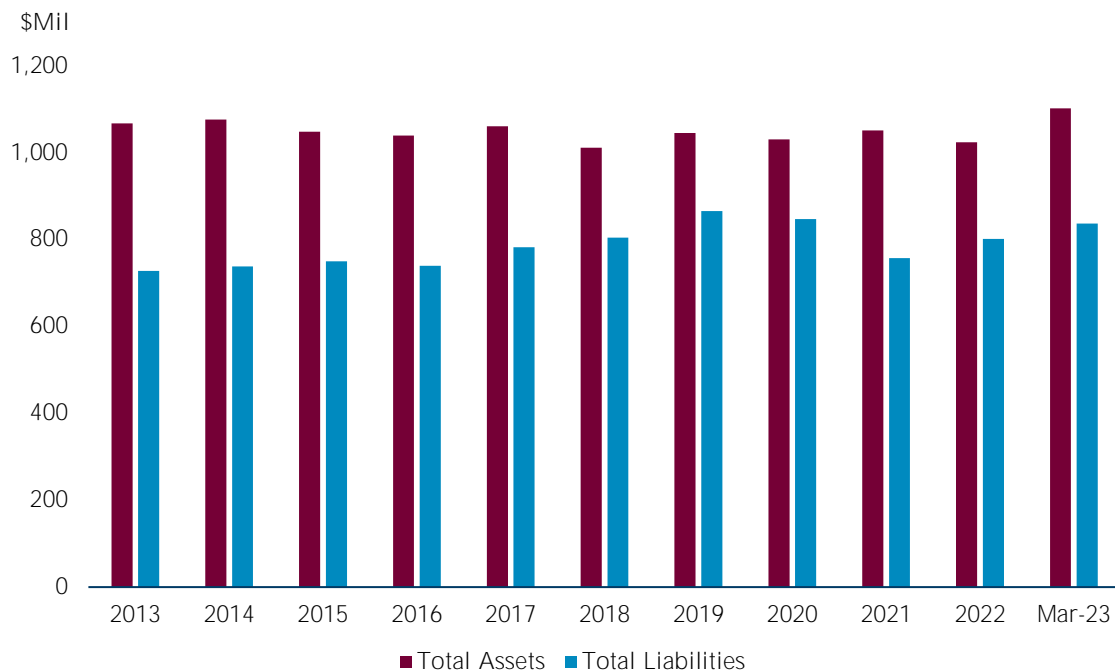
5.3 Insurance Sector

5.3.1 General Insurance Industry

The general insurance industry, reduced its holdings of cash and increased its government securities to hedge against rising inflation. Total assets for the general insurance industry were estimated at \$1,023.9 million as at December 2022, reflecting a decline of \$26.8 million (2.6 percent) from the previous year (Figure 45). The contraction in the asset base was primarily driven by a decline in cash holdings of approximately \$19.0 million (8.2 percent). **This decline can be attributed to the industry's efforts to hedge against expected high inflation, to generate income, and maintain purchasing power.** As such, there was a near proportional increase in government securities and unit trust and mutual funds by \$7.4 million and \$7.2 million, respectively. Despite the fall in assets in December 2022, the industry's asset base grew in the first quarter of 2023 to reach \$1,101.4 million as total investments grew by \$13.4 million (2.3 percent) to reach \$603.1 million (Figure 46).

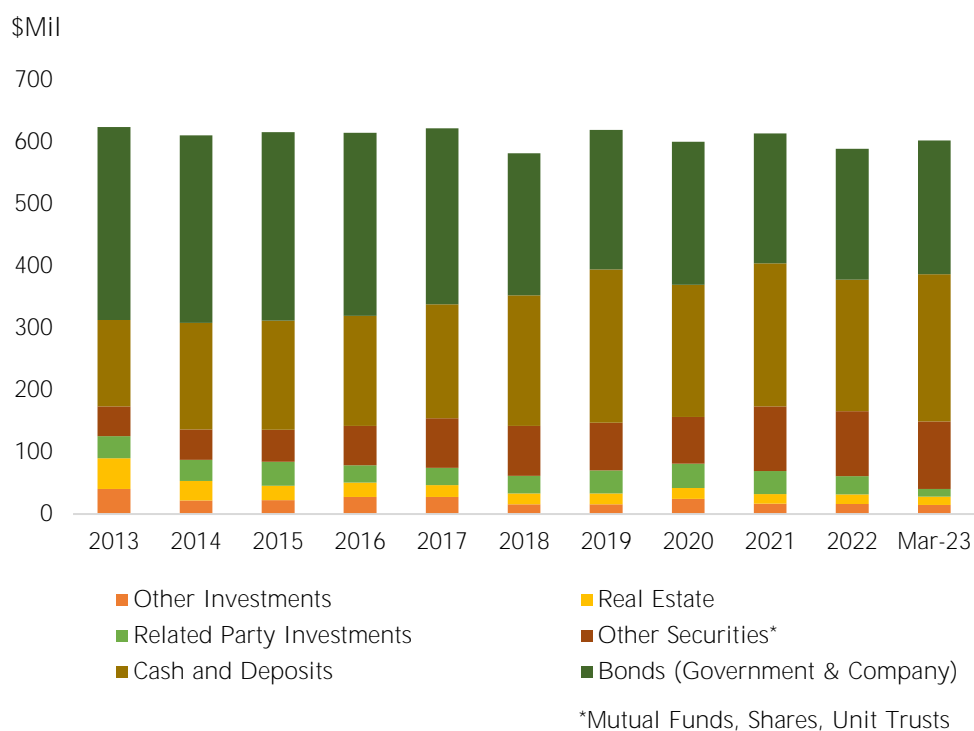
High rates of inflation raised the cost of claims. **The industry's liabilities increased by \$44.0 million (5.8 percent) to reach an estimated \$801.2 million at the end of 2022 (Figure 45).** This resulted from increased claims' provisions of \$16.1 million (5.2 percent) during 2022, particularly in motor insurance and property business. The growing claims in these lines of businesses coupled with rising inflation have forced the industry to increase their provisioning levels in anticipation of greater claims costs. Liabilities continued to increase in March 2023, reaching an estimated \$836.7 million at the end of the quarter.

Figure 45: Total Assets vs. Total Liabilities



Source: Financial Services Commission

Figure 46: Classes of Investment



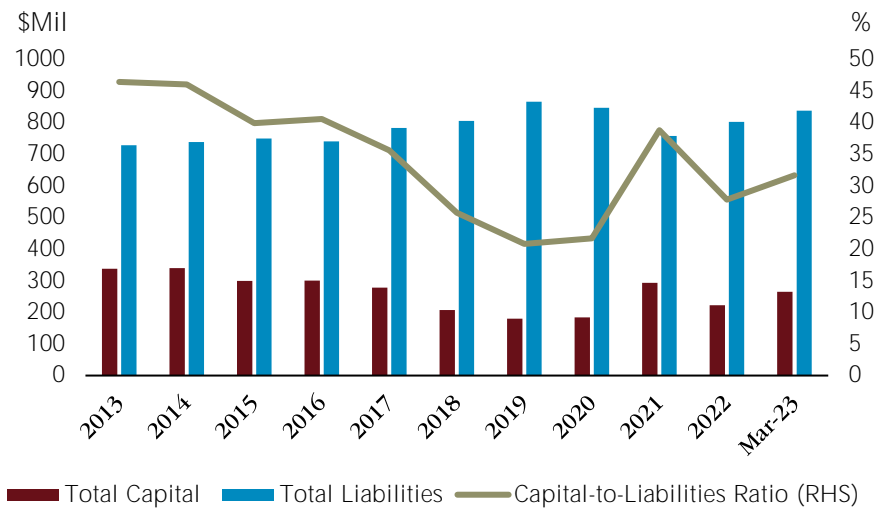
Source: Financial Services Commission

The solvency margin for the general insurance industry exceeded legislative requirements by more than 3 times at year-end. The insurance sector, though in transition towards a risk-based capital framework, currently relies on a flat measure of solvency. As at December 2022, all general insurance companies met the solvency threshold as stipulated in section 58 of the Insurance Act CAP. 310.¹⁸ **The industry’s capital-to-liabilities ratio** was estimated at 27.8 percent in December 2022, 11 percentage points lower than in 2021. However, the ratio increased during the first quarter of 2023 to reach 31.6 percent (Figure 45). In the event that inflation persists at current levels and actual claims exceed the expected provisions, there is likely to be added pressure **on the industry’s capital position and, thereby, solvency**. Overall, the current capital-to-liabilities **ratio highlights the industry’s ability to cover its obligations to policyholders** without compromising stability.¹⁹

¹⁸ Solvency requirements stipulate that a general insurance company must maintain assets exceeding its liabilities by the greater of \$500,000, or 25 percent of premium income from the preceding year.

¹⁹ The capital-to-liabilities ratio is a key financial metric used in the insurance industry that measures the extent to which insurers maintain appropriate levels of capital to cover their insurance liabilities. Given that the majority of the risk faced by insurers lies in the technical provisions portion of the liabilities, this metric serves as a more useful indicator of the financial stability and solvency of the insurance industry.

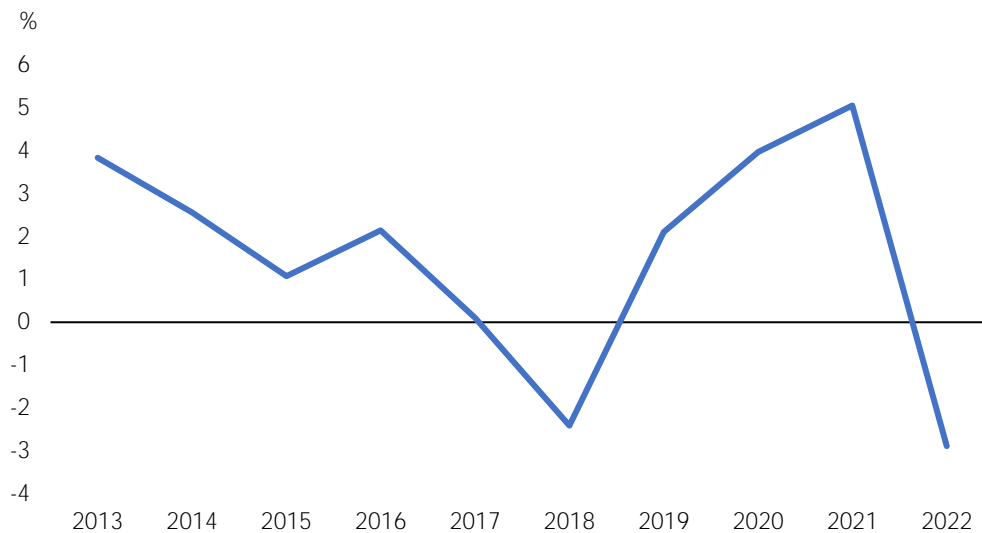
Figure 47: Capital-to-Liabilities Ratio



Source: Financial Services Commission

The industry's profitability was reversed over the review period, given unfavourable underwriting and financial performance. The industry recorded a return on assets (ROA) of -2.9 percent, compared to the 5.1 percent recorded in December 2021, following a net loss of \$29.6 million at year-end (Figure 48). A fourfold increase in motor insurance claims and the intense competition, led to underwriting losses of \$37.5 million compared to the previous year. The industry also recorded investment losses of \$3.6 million and other expenses amounting to \$4.0 million.

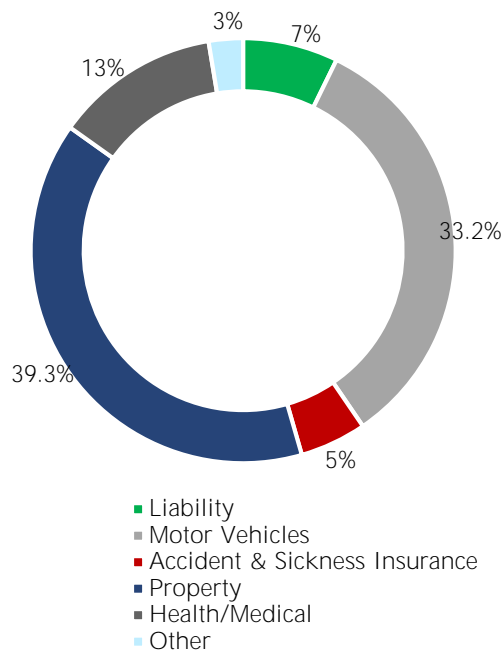
Figure 48: Return on Assets (ROA)



Source: Financial Services Commission

Property and motor vehicle insurance continued to be the largest segments of the general insurance business (Figure 49). Property insurance accounted for 39.3 percent of total premiums, followed by the motor vehicle business at 33.2 percent. Gross written premiums increased in 2022 to an estimated \$536.9 million, compared to \$495.4 million in the prior year. This expansion of \$41.5 million (8.4 percent) relative to the previous period, was due to increases in property and motor business, which grew by \$28.9 million (15.8 percent) and \$9.0 million (5.3 percent), respectively. There were also comparable gains in the number of policies in-force for these two lines of businesses during the year.

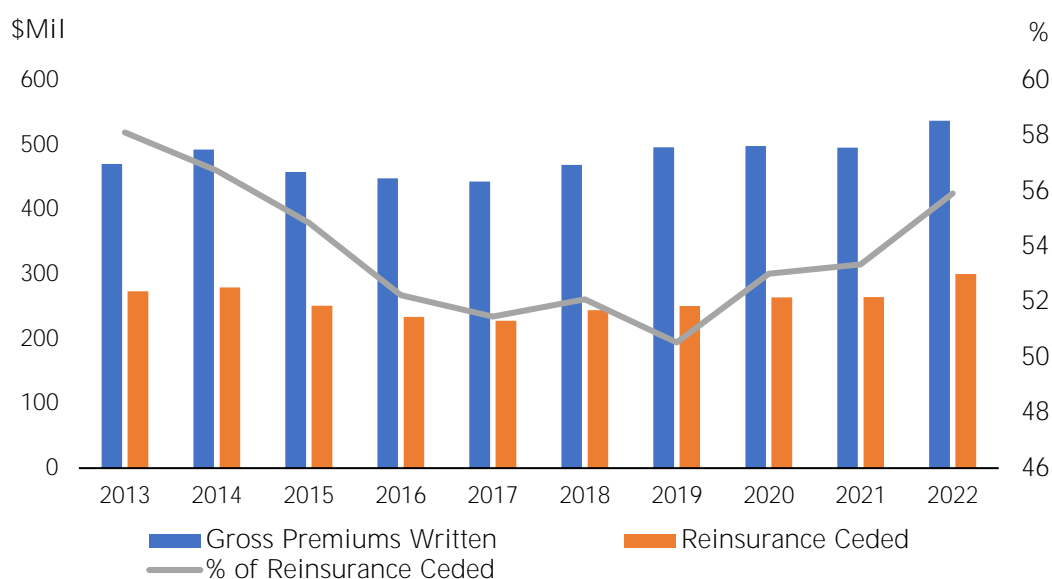
Figure 49: Gross Premiums Written 2022



Source: Financial Services Commission

The general insurance industry ceded 55.9 percent of gross premiums written for 2022 to reinsurers. (Figure 50). The ratio represents the portion of risk transferred to other jurisdictions. The growing trend since 2019 signals the **industry's proactive approach in using** reinsurance to mitigate risk in light of the increased frequency of climate-related events. Properties continued to be the most heavily reinsured business, and the increase in reinsurance coincides with the rise in property premiums.

Figure 50: Gross Premiums Written vs. Reinsurance Ceded



Source: Financial Services Commission

5.3.2 Life Insurance Industry

The life insurance industry continued to experience marginal asset growth over the period despite contractions in several asset classes. The industry's asset base was approximately \$2,771.2 million as of December 2022, reflecting an increase of \$4.7 million (0.2 percent) from the previous year. Other accounts receivables drove this increase (Figure 51). However, an \$80.2 million decline (3.4 percent) in the investment portfolio dampened growth (Figure 52). This contraction was because of significant reductions in company bonds and debentures (\$41.6 million), cash and deposits (\$24.5 million), and investments in related parties (\$18.3 million). At the end of March 2023, the asset base of the life insurance industry expanded to reach \$2,789.1 million, following a rise in the investment portfolio of \$12.6 million (0.5 percent), given significant increases in holdings of government securities.

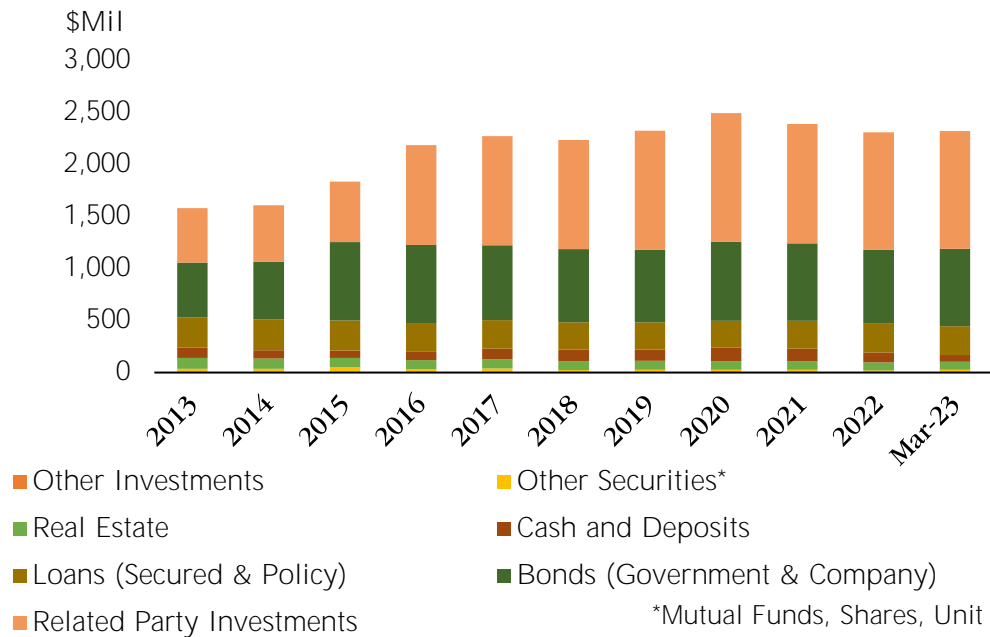
Changing market conditions created a favourable environment to allow life insurance companies to reduce required actuarial provisioning. These provisions represent the amount needed for companies to meet the expected obligations to policyholders and beneficiaries over the lifetime of the portfolio. Liabilities are actuarially determined based on several assumptions, including mortality, morbidity, interest rates and lapse rates. Insurance liabilities generally change when market conditions deviate from these assumptions. Total liabilities declined by \$14.0 million (1.0 percent) to reach \$1,410.7 million over the period (Figure 51). The decrease in life insurance and annuity provisions of \$17.9 million (1.6 percent) from the previously reported value, primarily drove the fall in liabilities.

Figure 51: Total Assets vs. Total Liabilities



Source: Financial Services Commission

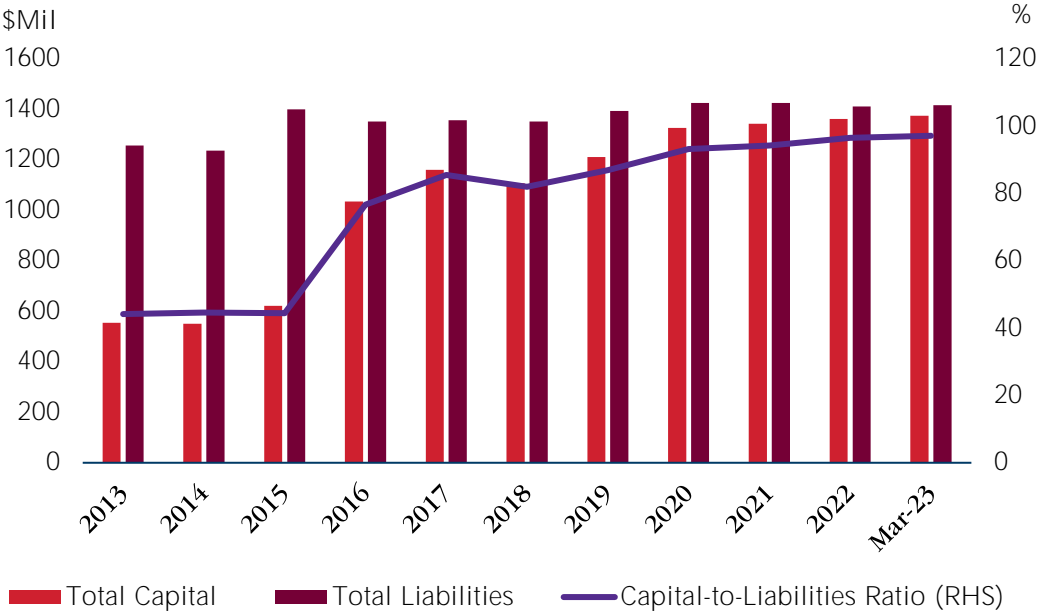
Figure 52: Classes of Investments



Source: Financial Services Commission

As at December 2022, all life insurance companies remained solvent. Assets held by the life insurance industry exceeded total liabilities by approximately 96.4 percent at year-end. This metric also represents the **industry's capital-to-liabilities** ratio and reflects an increase of 2.3 percentage points from the previous year (Figure 53). In March 2023, the ratio increased to a further 97.1 percent due to an \$18.6 million rise in capital primarily driven by increased reserves and retained earnings.

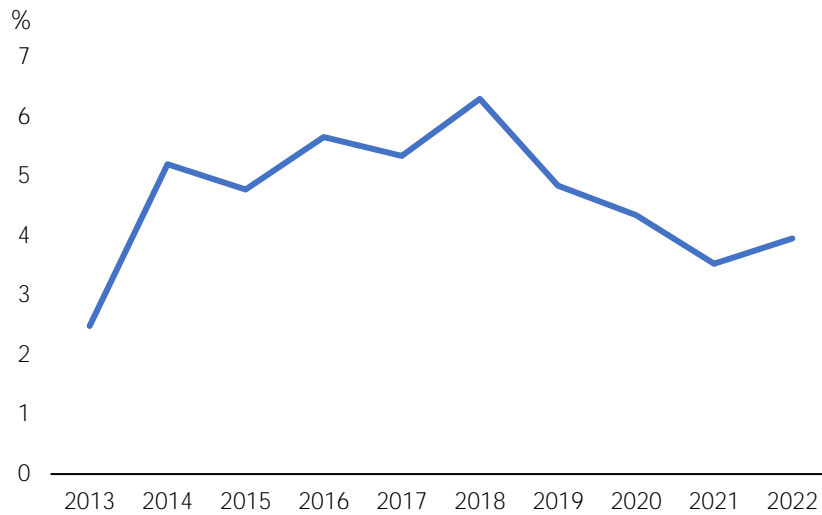
Figure 53: Capital-to-Liabilities Ratio



Source: Financial Services Commission

The profitability of the life insurance industry increased due to falling expenses. Industry profitability increased in 2022, as shown by the return on assets which grew by 0.4 percentage points to reach 4.0 percent (Figure 54). This was largely driven by a \$12.0 million (12.3 percent) increase in net income, as the industry experienced a significant decline in total expenses, in particular changes in life insurance and annuity provisions, which fell by \$29.5 million (88.5 percent) over the period.

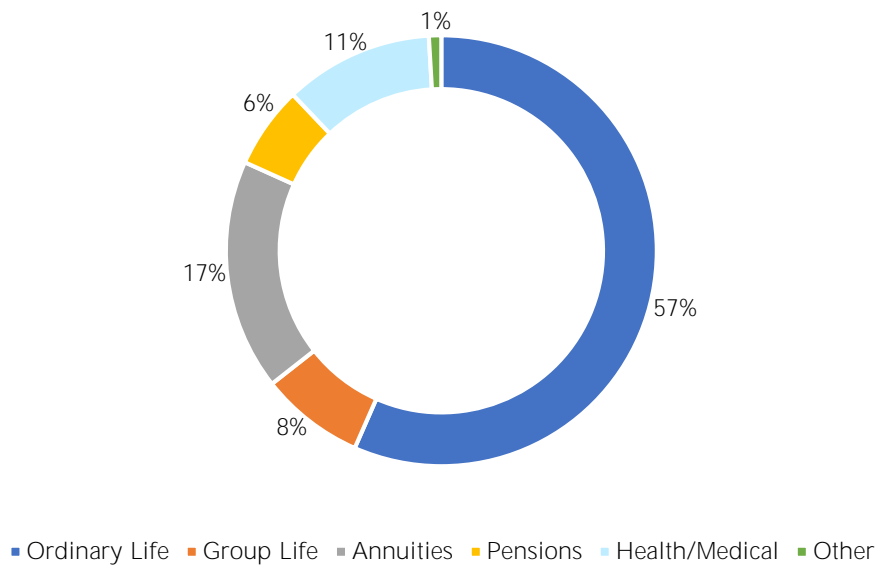
Figure 54: Return on Assets (ROA)



Source: Financial Services Commission

Ordinary life insurance business accounted for more than half of all transactions recorded. The gross premiums for the life insurance industry were approximately \$264.0 million, reflecting increases of \$9.0 million (3.5 percent), relative to the prior year. Much of this growth was driven by business in the ordinary life and annuities segments, which gained \$4.5 million (3.1 percent) and \$3.8 million (9.0 percent), respectively. Quite notably, the ordinary life insurance business accounts for almost 60 percent of the total business in the industry (Figure 55).

Figure 55: Gross Premiums Written 2022



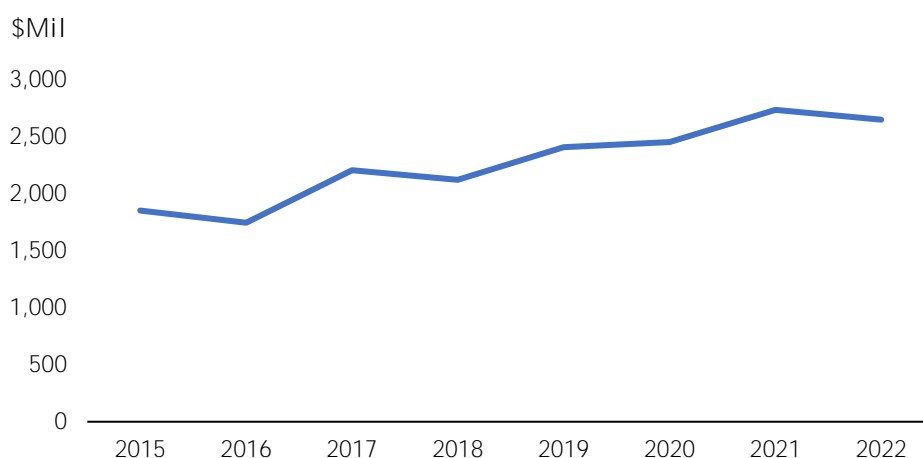
Source: Financial Services Commission

5.4 Mutual Funds

As at December 31, 2022, there were 19 mutual funds licensed to conduct business directly with the Barbadian public, comprising seven growth funds, six income funds, three property funds, three balanced and multi-strategy funds.

Rising global interest rates caused net assets to fall and impaired the performance of the mutual fund sector. As at December 2022, **the sector's net assets under management (NAUM)**²⁰ were \$2,654.2 million, a contraction of 3.1 percent (\$86.1 million) from what was reported in 2021 (Figure 56). Even though the sector recovered somewhat in the final quarter of 2022, overall performance remained depressed, as interest rates continued to rise. Practitioners in the sector usually invest in other mutual funds (fund-of-funds strategy) to achieve diversification; however, the impact of this strategy is limited, given the relatively small pool of investment instruments available.

Figure 56: Net Assets Under Management



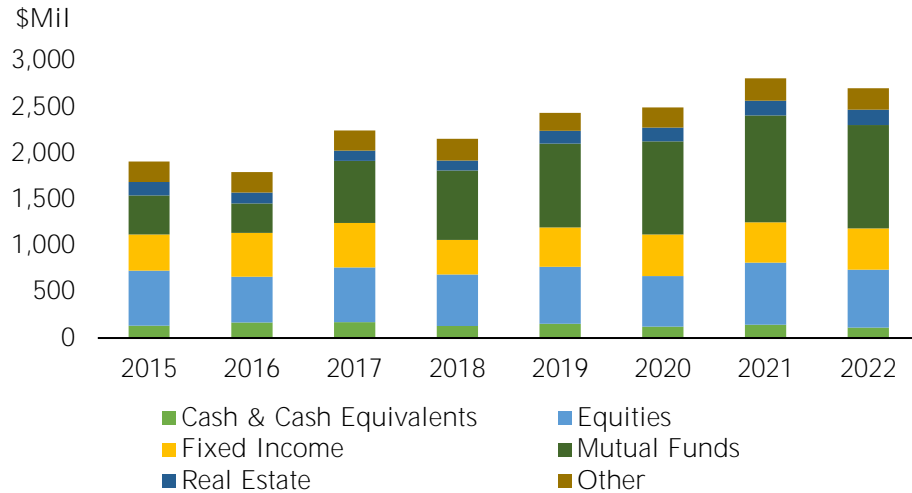
Source: Financial Services Commission

Much of the deterioration of the NAUM was driven by declines in investments in equities and other mutual funds. Investments declined by \$44.5 million (6.6 percent) and equities decreased by \$41.2 million (3.2 percent). Investments in fixed-income securities; however, increased by \$14.1 million (3.2 percent) to reach \$449.2 million at year-end (Figure 57). Activity within the sector continued to be dominated by growth funds, which accounted for 50.7 percent **of the sector's NAUM, followed by income funds at 25.7 percent. Growth funds were more** impacted by the volatility in the financial markets, as NAUM declined by 5 percent compared

²⁰ Net Assets Under Management refer to the overall market value of investments managed by the fund on behalf of investors.

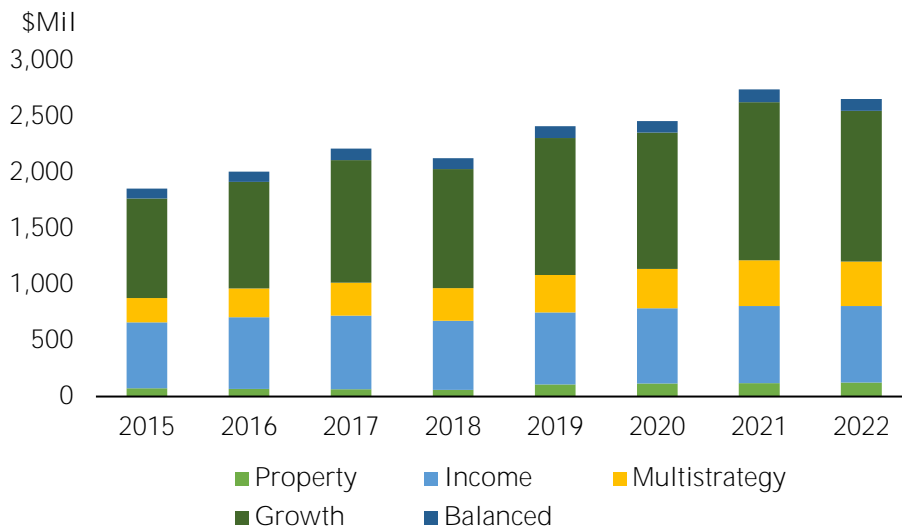
to income funds, which fell by 1 percent²¹. Property funds were the most resilient during the period, as NAUM for this category reported growth of 4 percent (Figure 58).

Figure 57: Asset Allocation of Mutual Funds



Source: Financial Services Commission

Figure 58: Net Assets by Fund Type



Source: Financial Services Commission

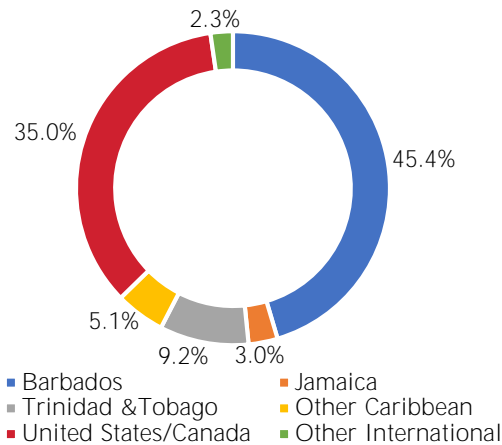
The mutual funds sector continued to invest substantially in the Barbados market. They invested \$1,226.3 million (45.4 percent) locally. This represents an increase of \$49.9 million (4.2 percent) over the previous year. The main external markets were the United States of America

²¹ Growth funds exhibit more volatility, given that much of the investments held are in equities. Conversely, property funds are less sensitive to short-term financial market fluctuations, given that the majority of the investments are held in real estate.

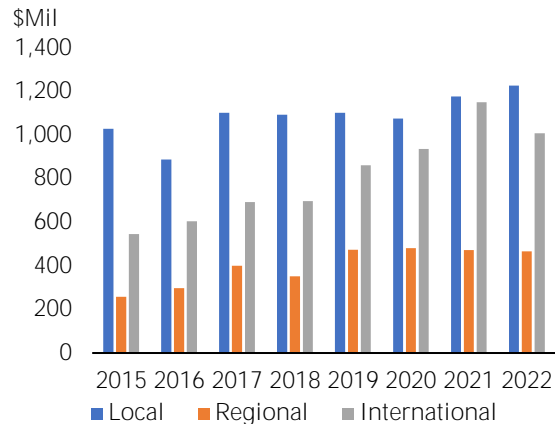
and Canada, accounting for a combined \$945.2 million (35.0 percent) of total assets (Figure 59A). These two jurisdictions, along with Barbados, accounted for just over 80 percent of the total investment portfolio of the mutual funds sector. The remaining assets were concentrated in Trinidad & Tobago and Jamaica. Figure 59B shows that this trend remains unchanged over time.

Figure 59: Jurisdictional Exposure

A: Composition of Exposure, 2022



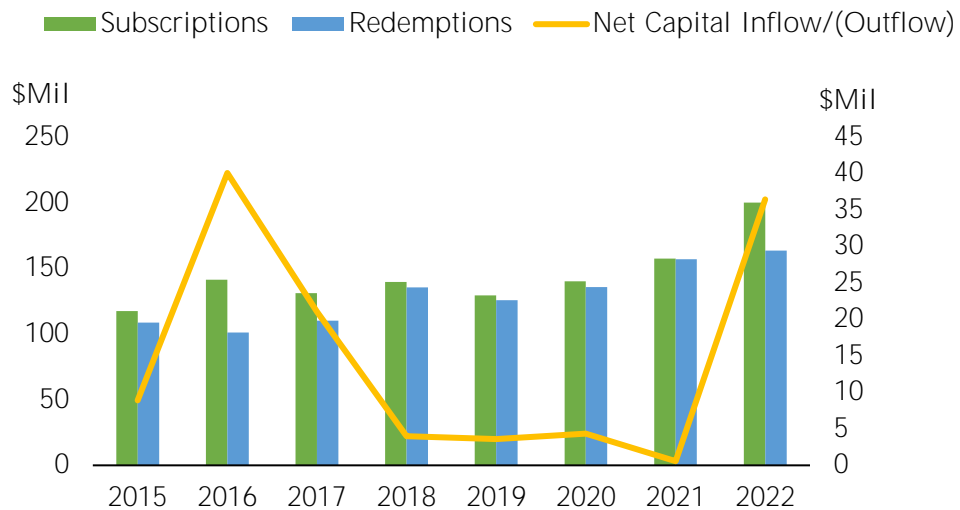
B: Broad Jurisdictional Exposure Over Time



Source: Financial Services Commission

The decline in net asset values created favourable investment opportunities for mutual fund investors. Increased subscriptions suggest greater confidence and renewed interest in **mutual funds following the country's debt restructuring and the COVID-19 pandemic**. During the year, mutual fund subscriptions amounted to \$200.1 million, a \$42.7 million (27.1 percent) increase from the previous year. At the same time, redemptions grew by \$6.7 million (4.3 percent) to \$163.6 million. As a result, the sector recorded a net capital inflow of \$36.5 million, compared to the marginal change (\$0.6 million) a year prior (Figure 60). The majority of the subscription/redemption activity was concentrated within growth funds.

Figure 60: Subscriptions/Redemptions for Mutual Funds



5.5 Occupational Pensions

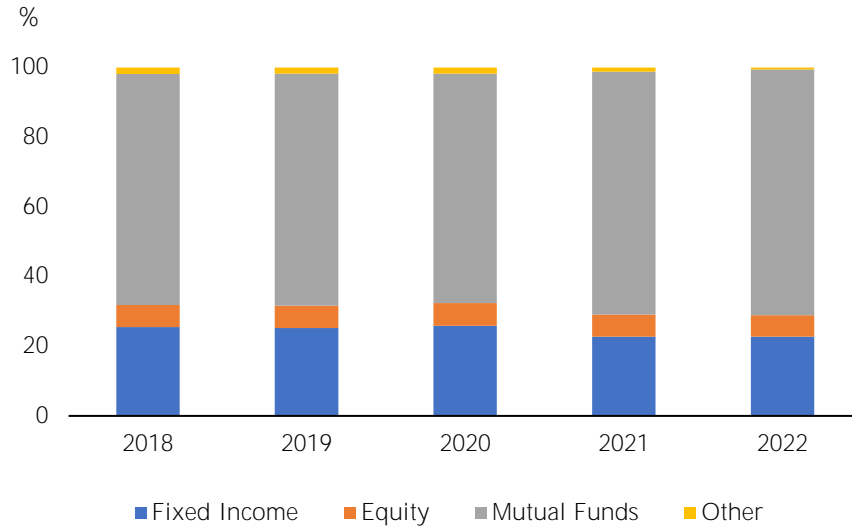
The size of the occupational pensions sector relative to the economy declined over the reporting period. The penetration rate of the occupational pensions sector, measured as the value of total pensions assets relative to GDP, declined by 5.1 percentage points to reach 26.1 percent at the end of 2022. As the economy continued to recover from the COVID-19 pandemic, the change in assets held by the sector was outpaced by the growth in GDP. Total assets under management for the sector were estimated at \$5,054.4 million, a decrease of 1.0 percent (\$29.9 million) from the previous period. This represents a reversal of the 14.7 percent (\$394.0 million) growth experienced in 2021.

The sector's assets were primarily held in defined benefit plans. In 2022, assets held in defined benefit pension plans amounted to \$1,575.1 million, reflecting 51.6 percent of the sector's total assets. This was followed by hybrid pension plans at \$955.8 million (31.3 percent) and defined contribution pension plans at \$523.7 million (17.1 percent). Historically, most pension plans were defined benefit, where the employee's benefit at retirement was defined upfront and the contribution rate determined by the plan actuary. Given the low-domestic interest rate environment and increasing longevity risk²², it has been difficult to reach the expected returns needed to ensure the promised annuity payments. As such, with the added burden to some companies, it had been determined that more cost-effective options were ideal. Hence, over time, there has been a gradual migration from defined benefit structures to hybrid (defined benefit and defined contribution combined) and purely defined contribution plans.

The asset portfolio of the occupational pensions sector contracted in 2022. This falloff was due to waning investment performance amid high inflation globally and limited local opportunities. Total investments of the sector were \$2,823.9 million, a 2.2 percent (\$64.3 million) decrease from the previous year. The overall fall in the portfolio can be attributed to declines in investments held in mutual funds, which decreased by 1.1 percent (\$21.6 million), following high volatility in the financial markets. Nevertheless, investments in mutual funds of 70.6 percent continued to account for the largest segment of the portfolio. at of total investments. Fixed-income securities at 22.8 percent and equities at and 6.1 percent followed (Figure 61). While the investment portfolios of pension plans are subject to short-term volatility, in the long run, investment returns are expected to stabilise.

²² Longevity Risk: The risk that plan members will live longer than expected by the actuarial assumption.

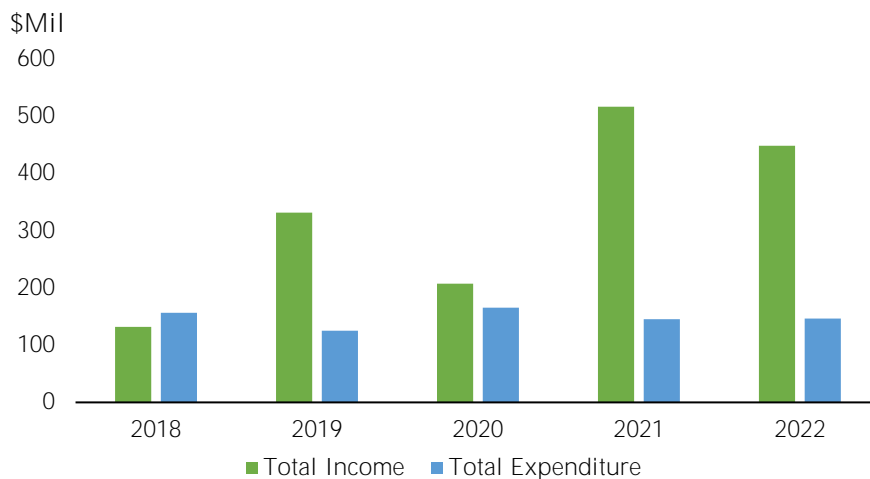
Figure 61: Percentage Distribution of Pension Plans Investment Portfolio



Source: Financial Services Commission

The occupational pensions sector experienced a decline in total income in 2022, given declining stock returns and volatility in financial markets, due to high inflation and rising global interest rates. The sector's total income fell to an estimated \$448.2 million at the end of the review period, compared to \$516.8 million at the end of 2021 (**Figure 62**). This decline in total income was primarily due to lower gains on the fair value of investments. These net fair value gains on investments fell from \$411.7 million in 2021 to \$336.0 million in 2022; this represented a decline in this investment category of approximately 18.4 percent (\$75.7 million). Total expenditure over the same period was estimated at \$146.3 million, reflecting a marginal increase of 0.7 percent (\$1.0 million) from 2021. Similar to prior years, pensions paid out was the main contributor to pension plan expenses, increasing by 0.6 percent (\$1.0 million) in 2022.

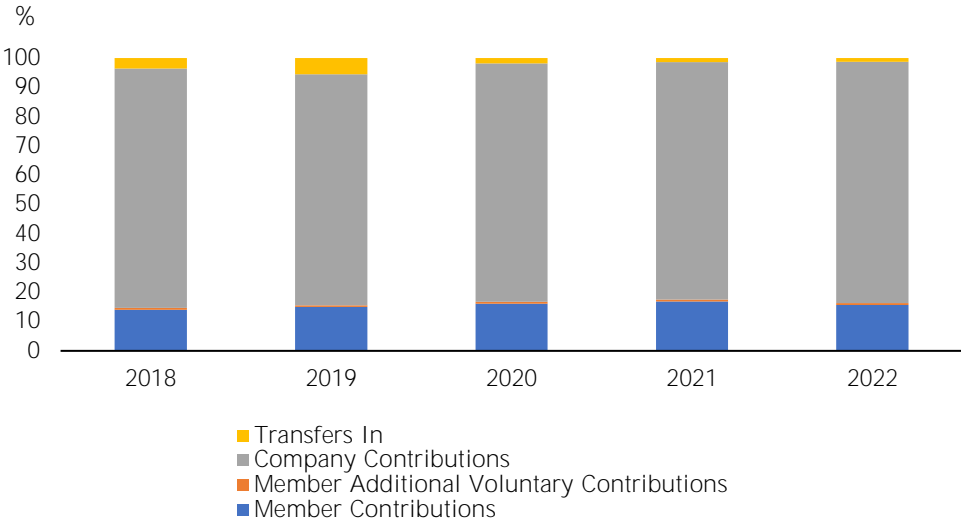
Figure 62: Pension Sector Income and Expenditure



Source: Financial Services Commission

As total pension contributions increased over the period, company contributions remained the largest component of total contributions. At year-end, the total contributions were estimated to be \$100.7 million, reflecting an increase of 7.3 percent (\$6.9 million) from 2021. This increase was driven primarily by growth in company contributions which constitutes the largest share of the total contributions at \$82.9 million (82.3 percent). Member contributions accounted for the second-largest share of total contributions at \$15.8 million or 15.7 percent (Figure 63).

Figure 63: Relative Share of Pension Plan Contributions



Source: Financial Services Commission

Of the 248 registered occupational pension plans, approximately one-quarter were underfunded on both a going concern and solvency basis. As at December 2022, there were 61 underfunded pension plans on the going concern basis²³, with a combined deficit of approximately \$137.8 million. The largest proportion of the underfunded pension plans (by assets) were defined benefit pension plans, with an estimated deficit of \$118.9 million, followed by hybrid and defined contribution pension plans with \$16.3 million and \$2.5 million, respectively. Most underfunded pension plans on the going concern basis are non-government/private sector pension plans. The deficits may be due to insufficient contributions towards benefits (and expenses) and investment losses. 65 pension plans were similarly underfunded on a solvency basis²⁴ at December 2022, with a combined deficit of approximately \$181.7 million. It would be important to fund these gaps given the falling birth rates and increasing longevity risk. To address this issue, the FSC began engaging the administrators of underfunded plans with funded ratios below 80 percent. The administrators have been asked

²³ Going Concern Basis: Going Concern valuation means a valuation of assets and liabilities of a pension plan using methods and actuarial assumptions considered by the actuary to be in accordance with generally accepted actuarial principles and practices for the valuation of a continuing pension plan.

²⁴ Solvency Basis: This valuation basis assumes that the pension fund will be wound up or terminated as of the date of valuation. All assets and liabilities are at market value.

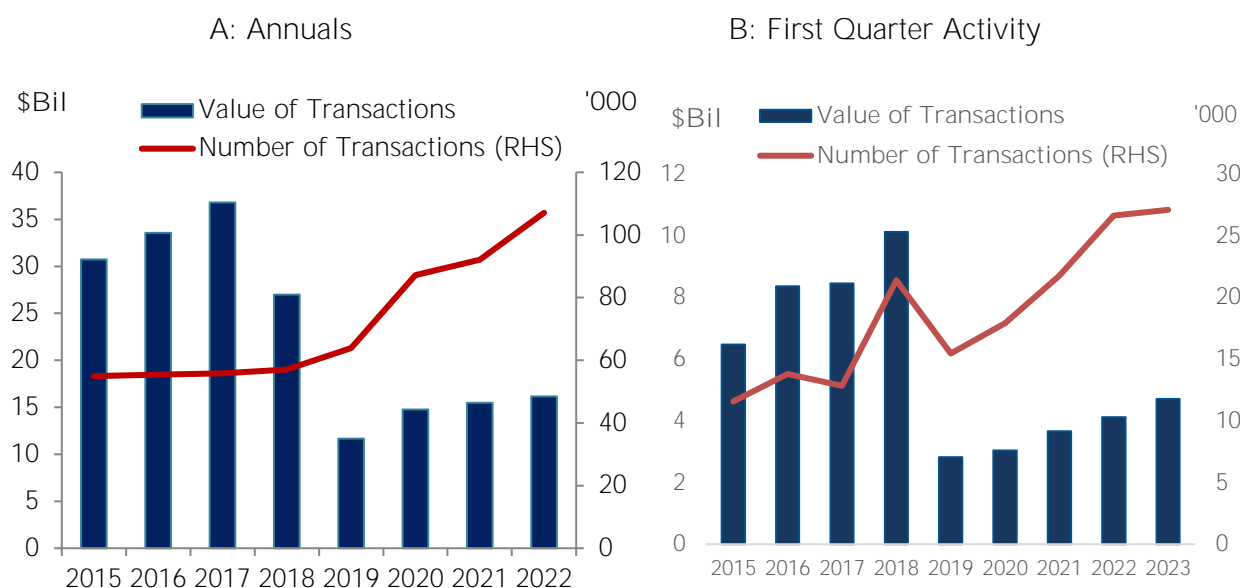
to provide confirmation that the actuaries' recommendations have been understood and accepted, and they must provide evidence that the special payments are being made.

6. Payments Systems Developments

Barbados' domestic payments systems and infrastructure remained robust and resilient in 2022 and first quarter of 2023. Total non-cash payments²⁵ were higher in both 2022 and the first three months of 2023, largely driven by increased economic activity, which boosted both electronic and paper-based payments. Improvements to the payments infrastructure also led to the greater use of electronic payments. The value and volume of non-cash payments recorded during the first three month of 2023 were also above that of the corresponding period one year earlier.

The volume and value of transactions processed through the Real Time Gross Settlement (RTGS)²⁶ system increased (Figure 64). In 2022, the total number of transactions completed grew by 16.3 percent, while the value of these transactions increased by 4.4 percent. This resulted in the average value per transaction falling by 10.3 percent to \$150,900.00. RTGS payments and transaction volumes registered during the first quarter of 2023 followed a similar trend as they were higher than those of the same period in 2022. The growth in transactions through the RTGS system was driven by greater activity in the securities market and economic growth, which boosted tax payments to Government and payments for goods and services.

Figure 64: RTGS Transactions



Source: Central Bank of Barbados

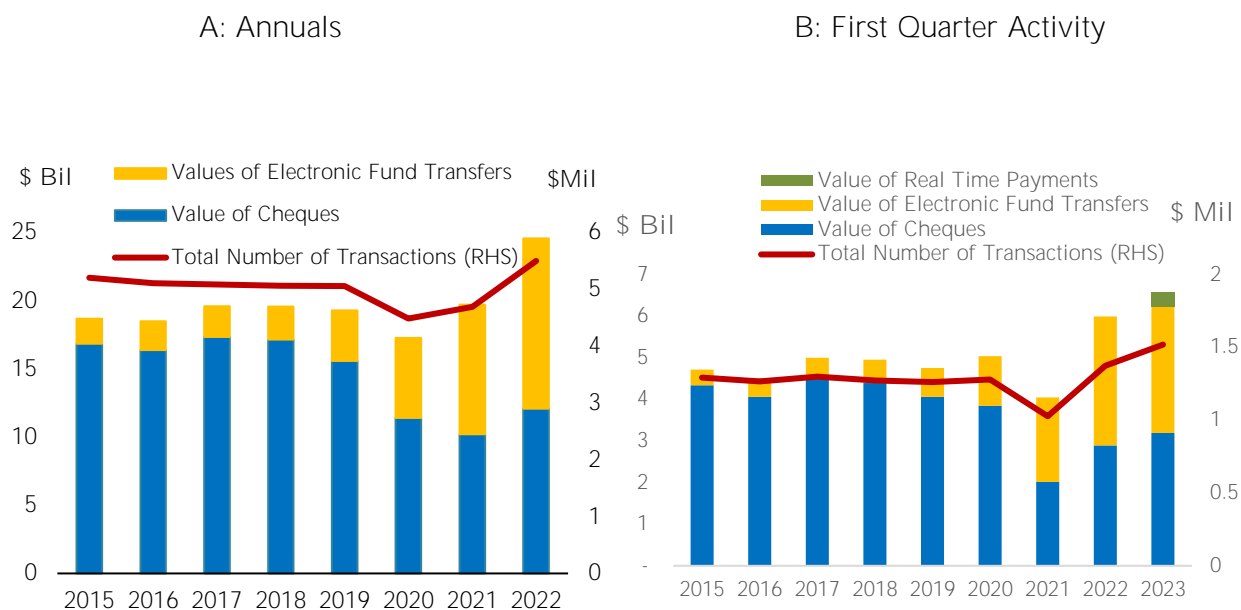
²⁵ Does not include debit card transactions.

²⁶ RTGS processes large value and/or time sensitive payments between the domestic banking system and the Central Bank.

Payments activity through the Barbados Automated Clearing House Services Incorporated (BACHSI)²⁷ system, was dominated by electronic fund transfers for the first time since the inception of the automated clearing house (Figure 65). The value of electronic funds transferred surged by 31.3 percent to account for 51 percent of total value of transactions processed through BACHSI in 2022 (Figure 65A). The value of cheques processed was 18 percent higher than in 2021. This growth was reflective of increased economic activity, as well as upgrades to the BACHSI system to allow for real time payments (RTP) for time sensitive transactions.

The facilitation of real time payments by BACHSI commenced from February 2023. With the introduction the instant payment option for households and business clients in the first quarter of 2023, there was a noticeable shift during this period from the standard direct electronic method to the real time option (Figure 65B). During the first quarter of 2023, payments through the system increase by 4.1 percent relative to corresponding period in 2022, primary due to cheque transactions.

Figure 65: BACHSI Transactions

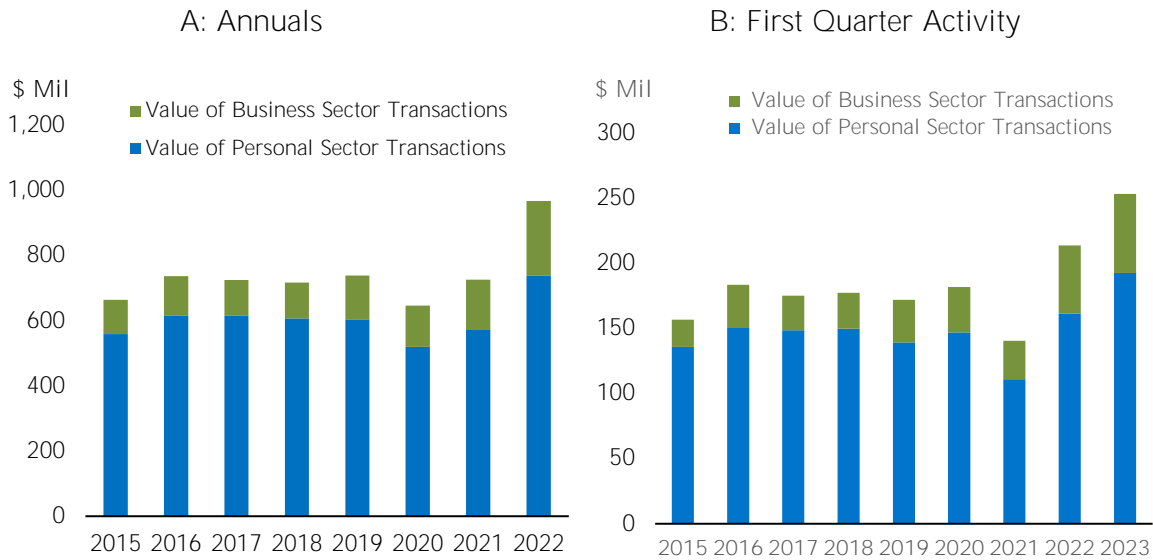


Source: Central Bank of Barbados

Buoyed by the improvement in economic and labour market conditions, the value of domestic credit card payments grew by 33.2 percent in 2022 and 18.5% in the first quarter of 2023 relative to comparable period one year earlier (Figure 66). While these increases were driven by both household and business activities, the demand by households for dining and entertainment services was the dominant driver.

²⁷ BACHSI facilitates the clearing of cheques, direct payments and daily inter-bank settlements.

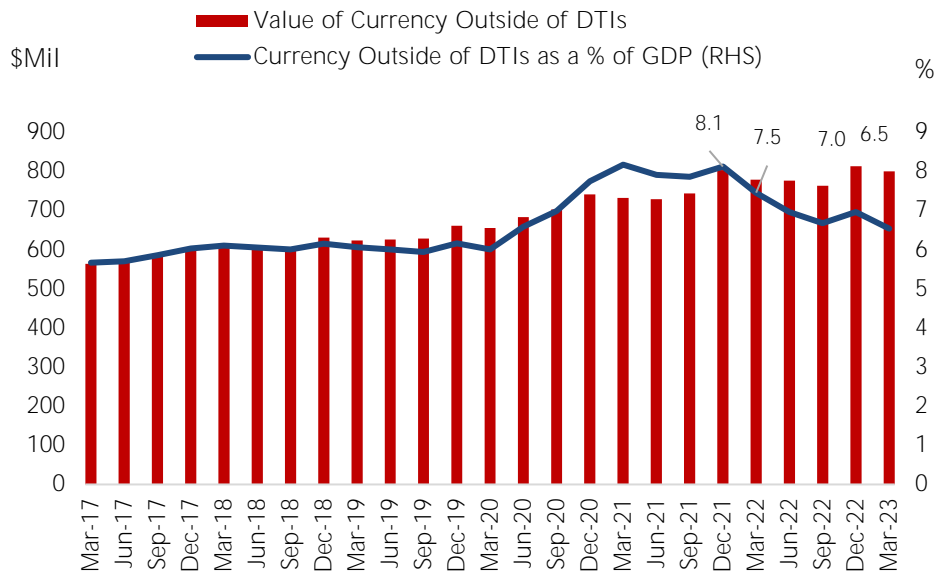
Figure 66: Credit Card Transactions



Source: Central Bank of Barbados

While cash remained a prominent feature of the payments space, reliance on this payment method weakened (Figure 67). Growth in currency circulating outside of DTIs slowed to 1.2 percent in 2022 after growing by 8.4 percent in 2021. As for the first quarter of 2023, currency held by the public waned by 1.6 percent compared to a decline of 3.1 percent during comparable period of the previous year. However, with strong economic activity exceeding the demand for cash, currency holdings of the public as a percent GDP also fell as consumers relied more heavily on electronic payments.

Figure 67: Indicators of Public Cash Usage



Source: Central Bank of Barbados

7. Conclusion

The domestic financial sector remained stable over the review period. Regulators sustained their efforts to ensure that licensed entities continued to comply with their requirements while monitoring the financial landscape to address any emerging risks to the system. The failures of three mid-sized US banks and one Swiss-based globally systemically important bank did not **impact Barbados' financial system since the US and Swiss regulators moved quickly to contain any further fallout.**

The majority of the sector's financial stability metrics improved based on the widely-accepted performance indicators. Additionally, asset growth, credit quality, liquidity, and capital adequacy remained sound. Profitability as measured by the ROAA picked up for banks and finance companies in 2022. On the other hand, the credit union segment registered an ROAA in 2022 that was similar to that of the previous year. However, during the first quarter **of 2023 the credit unions' profitability declined.** Exchange rate risk appears to be minimal given **the currency composition of the aggregate banking and finance companies' net foreign currency open positions,** and the level and movement of these positions as a percent of their respective regulatory capital bases. In terms of the credit risk stress tests, DTIs exhibited resilience that is similar to that of the comparable period one year earlier. On the other hand, DTIs showed slightly weaker resilience in the liquidity stress test than in the previous year.

The performance of the insurance sector was mixed. Greater underwriting expenses and higher claims provisioning resulted in reduced capital in the general insurance industry. General insurers continued to increase the proportion of reinsurance ceded relative to gross premiums to mitigate climate risks. As for the life insurance industry, financial stability strengthened compared to 2021, with most financial stability indicators improving.

Both the mutual and pension funds sectors softened in 2022. The hike in global interest rates led to declines in local mutual funds and pension funds. The majority of the deterioration in the mutual fund sector was driven by reductions in the value of investment in equity and other mutual funds. For occupational pension funds, the loss of portfolio value is due to a lower performance by their mutual fund investments, following high volatility in the international financial markets.

A stable financial outlook requires adaptation of surveillance, analysis, and regulation to address risks associated with digitalisation, climate change, the macroeconomy, and geopolitical tensions. Efforts to strengthen the regulatory framework including the development of more macro-focussed stress testing will be crucial. Additionally, regulators must bring more financial entities under their ambit. Focus will also be placed on completing the regulatory guidelines to facilitate the review of applications and licensing of payment providers, while ongoing work to facilitate the credit unions obtaining deposit insurance protection will continue.

Appendix A: Macro-Prudential Indicators

Banking Stability Index (BSI)

The BSI measures the financial stability of banks in a single index via a weighted average of standardised banking sector indicators, namely, capital adequacy, asset quality, profitability, liquidity, foreign exchange rate risk and interest rate risk. The higher the index, the more financially stable the banking sector is deemed to be.

Table A1: Partial Indicators for Banking Stability Index

Partial Indicator	Weight	Variable	Systemic Impact of Financial Stability
<i>Capital Adequacy</i>	0.05	Regulatory Capital to RWA	+
		Tier 1 Capital to RWA	+
		Tier 1 Capital to Total Assets	+
<i>Asset Quality</i>	0.3	NPLs to Total Loans	-
		NPLs (net of provisions) to Tier 1 Capital	-
<i>Profitability</i>	0.25	Return on Assets	+
		Return on Equity	+
<i>Liquidity</i>	0.2	Liquid Assets to Total Assets	+
		Liquid Assets to Short-term Liabilities	+
		Loans to Total Deposits	-
<i>Foreign Exchange Rate Risk</i>	0.1	Net Foreign-Currency Position to Tier 1 Capital	-
<i>Interest Rate Risk</i>	0.1	Spread between Commercial Bank Average Lending Rate to Average Deposit Rate	+

Source: Central Bank of Barbados

Aggregate Financial Stability Index (AFSI)

The AFSI is a composite measure that assesses the stability of the commercial banking sector with use of both internal and external indicators. It is generated as a weighted average of normalised macroeconomic and financial statement variables, with four major sub-indices, namely, Financial Development (FD), Financial Vulnerability (FV), Financial Soundness (FS), **and the World's Economic Climate (WEC). After being normalised, all individual variables were converted so that an increase indicates an improvement in financial stability.** Sub-indices were calculated using equal weights and the ASFI is a weighted sum of these variables.

Table A2: Partial Indicators for Aggregate Financial Stability Index

Partial Indicator	Weight	Variable	Systemic Impact of Financial Stability
<i>Financial Development</i>	0.1	Total Credit to GDP	+
<i>Financial Vulnerability</i>	0.4	Inflation Rate	-
		Current Account Balance to GDP	+
		Net Foreign Assets to Total Assets	-
		Broad Money to Net International Reserves	-
		Fiscal Balance to GDP	-
		Real Effective Exchange Rate	-
<i>Financial Soundness</i>	0.4	Net International Reserves to External Debt	+
		Capital to Total Risk-Weighted Assets (RWA)	+
		Liquid Assets to Total Assets	+
<i>World Economic Climate</i>	0.1	NPLs to Total Loans	-
		World Economic Growth	+
		CBOE Volatility Index	-
		Global Economic Barometer	+

Source: Central Bank of Barbados

Appendix B: Financial Development Indicators

Table B1: Keys Indicators of the Structure of the Financial System

	2016	2017	2018	2019	2020	2021	2022
Number of:							
Total DTIs	47	46	45	43	42	41	38
Commercial Banks	5	5	5	5	5	5	5
Finance Companies	8	8	7	5	5	4	4
Credit Unions	34	33	33	33	32	32	29
Insurance Companies	24	23	23	23	21	20	20
Life	8	7	7	8	6	6	6
General	16	16	16	15	15	14	14
Pension Plans	303	310	274	269	261	251	248
Mutual Funds	16	16	16	16	16	16	19
Assets to Total Financial System Assets (%)							
Total DTIs	69.5	67.9	66.7	65.3	65.5	64.6	66.0
Commercial Banks	54.8	53.0	52.5	51.0	50.9	50.1	51.2
Finance Companies	6.3	6.2	4.2	4.0	3.8	3.8	3.9
Credit Unions	8.4	8.7	10.0	10.4	10.8	10.7	10.9
Insurance Companies	14.1	14.1	14.3	14.5	14.6	13.9	13.5
Life	9.8	9.9	10.1	10.3	10.6	10.1	9.9
General	4.3	4.2	4.2	4.2	4.0	3.8	3.6
Pension Plans	8.9	9.1	10.2	10.5	10.4	11.2	10.9
Mutual Funds	7.4	8.8	8.9	9.7	9.6	10.2	9.6
Assets to GDP (%)							
Total DTIs	173.7	172.5	158.0	153.0	178.0	179.3	158.4
Commercial Banks	137.0	134.7	124.5	119.5	138.3	139.1	122.9
Finance Companies	15.8	15.7	9.9	9.3	10.4	10.4	9.3
Credit Unions	21.0	22.1	23.6	24.3	29.3	29.8	26.2
Insurance Companies	35.3	35.8	33.8	34.0	39.5	38.6	32.5
Life	24.6	25.2	24.0	24.2	28.8	28.0	23.7
General	10.7	10.6	9.9	9.7	10.8	10.6	8.8
Pension Plans	22.3	23.2	24.1	24.7	28.1	31.2	26.2
Mutual Funds	18.5	22.5	21.0	22.7	26.1	28.4	23.1
Memo:							
Credit Union Membership (000's)	186	195	206	216	222	228	235
Pension Plans Membership (000's)	29	29	28	26	24	27	27

Source: Financial Services Commission

Table B2: Key Indicators of the Payments System

\$ Millions	2016	2017	2018	2019	2020	2021	2022	2022 Q1	2023 Q1
RTGs Transactions	33,561	36,781	27,001	11,668	14,771	15,488	16,163	4,121	4,707
ACH Transactions	18,501	19,584	19,559	19,293	17,268	19,710	24,566	5,994	6,578
Cheques	16,385	17,343	17,151	15,573	11,412	10,198	12,079	2,891	3,193
Direct Payments	2,116	2,241	2,408	3,719	5,855	9,512	12,487	3103	3046
Real Time Payments	0	0	0	0	0	0	0	0	340
Debit Card Transactions	1,136	1,197	1,248	1,324	1,223	658	N/A	N/A	N/A
ATM Transactions	639	660	675	698	611	329	N/A	N/A	N/A
Debit Card POS Transactions	497	537	573	626	612	328	N/A	N/A	N/A
Credit Card Transactions	737	725	717	739	646	726	967	213	253
Personal Sector	615	615	607	604	520	574	737	161	192
Business Sector	122	110	110	135	126	152	230	52	61
Currency in Circulation Outside of Commercial Banks and Finance Companies	579	603	631	661	741	803	813	779	800

Source: Central Bank of Barbados

Appendix C: Key Financial Soundness Indicators

Table C1: **Commercial Banks' Financial Soundness Indicators**

	2016	2017	2018	2019	2020	2021	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1
Solvency Indicators (%)											
Capital adequacy ratio (CAR)	17	17	13.8	13.5	16	16.8	17.7	17.8	18	17.6	17.6
Leverage ratio	8.5	8.6	7.5	7	9.5	9.9	10.0	9.9	10.2	10.5	11.0
Non-performing loans net of provisions to capital	16	7.4	14.8	16.3	11.6	11.4	9.9	10.2	10	11.1	10.8
Liquidity Indicators (%)											
Loan-to-deposit ratio	74.2	74.8	63	61.7	57.1	53.0	50	49.7	52.2	53.1	52.2
Transferable deposits to total deposits	90.3	90.1	92.3	94.8	95.9	96.3	96.6	96.7	96.5	97.0	97.1
Transferable deposits to total deposits (Domestic currency)	90.6	91.5	92.7	94.9	95.9	96.4	96.5	96.7	96.7	96.9	97.0
Liquid assets to total assets	31.6	29.7	25.9	26.0	27.4	31.1	34.1	33.9	32.6	32.0	32.6
Liquid assets to total assets (Domestic currency)	32.5	32.6	26.1	21.8	25.4	28.8	30.6	31.5	30.4	28.9	30.0
Liquid assets to transferable deposits	48.5	46.1	36.5	35.5	36.1	40.2	43.6	43.1	41.6	40.4	40.1
Credit Risk Indicators (%)											
Total loans	-0.6	1.4	-0.7	-0.6	-2.1	-2.1	(1.4)	(0.7)	2.2	6.2	6.7
NPL ratio	8.6	7.7	7.4	6.6	7.3	7.4	7.0	6.8	6.2	5.9	5.7
Substandard loans to total loans	6.9	6.1	5.7	5.2	5.5	5.7	5.6	5.3	4.8	4.9	4.8
Doubtful loans to total Loans	1	0.8	0.9	0.5	1.3	1.0	1.0	0.9	0.8	0.6	0.5
Loss loans to total loans	0.7	0.8	0.8	0.9	0.5	0.6	0.4	0.5	0.6	0.4	0.4
Provisions to NPLs	62.7	80.4	67.3	59.4	62.0	60.3	60.9	58.4	58.2	50.8	51.2
Foreign Exchange Risk Indicators (%)											
Foreign-currency loans to total loans	5.1	4.4	4.0	2.9	1.8	1.7	1.6	1.9	1.7	1.6	1.5
Foreign-currency deposits to total deposits	7.9	8.1	6.8	6.7	8.0	7.8	9.4	10.2	8.9	8.9	9.8
Liquid assets to transferable deposits (Foreign currency)	117.2	90.7	73.1	140.8	96.2	92.8	99.1	77.9	80.3	82.3	78.9
Net Open Position in Foreign Exchange (on balance sheet) to Regulatory Capital	49.0	44.6	52.5	50.2	35.2	28.4	26.4	25.9	23.1	20.7	21.0
Profitability Indicators (%)											
Return on average assets	1.5	1.3	-0.2	0.6	0.8	1.1	1.3	1.2	1.1	1.3	1.3
Net interest margin	5	5.2	5.3	5.7	4.9	4.5	5.0	4.9	4.8	4.8	4.8
Interest rate spread	5.7	5.8	6.0	6.1	5.7	5.6	5.6	5.5	5.5	5.5	5.4

Source: Central Bank of Barbados

Table C2: **Finance Companies' Financial Stability** Indicators (FSIs)

	2016	2017	2018	2019	2020	2021	2022 Q1	2022 Q2	2022 Q3	2022 Q4	2023 Q1
Solvency Indicators (%)											
Capital adequacy ratio (CAR)	36.2	38.8	21.8	18.4	19.3	19.0	20.5	21.4	20.5	19.8	21.0
Leverage ratio	21.3	22.0	11.5	11.2	12.1	12.4	13.3	13.0	12.8	12.6	14.3
Non-performing loans net of provisions to capital	12.6	11.8	24.5	43.0	42.5	63.1	57.5	54.7	50.8	51.2	45.0
Liquidity Indicators (%)											
Loan-to-deposit ratio	107.6	103.2	97.3	97.2	103.0	100.6	106.3	106.7	107.0	107.8	112.1
Transferable deposits to total deposits	12.1	18.6	1.4	2.6	3.7	5.6	6.6	7.3	7.8	5.1	5.4
Transferable deposits to total deposits (Domestic currency)	11.9	18.4	1.3	1.6	2.4	2.1	2.2	2.6	2.8	2.9	2.7
Liquid assets to total assets	18.1	19.3	13.7	12.9	11.9	13.3	15.7	16.0	17.4	18.0	14.7
Liquid assets to total assets (Domestic currency)	16.5	17.7	12.2	9.7	8.8	6.9	6.8	9.0	11.0	12.7	8.7
Liquid assets to transferable deposits	252.7	170.0	1382.0	678.2	459.3	332.0	356.9	326.0	339.9	544.7	420.0
Credit Risk Indicators (%)											
Total loans	(3.0)	(1.7)	(25.0)	(0.0)	1.8	1.8	2.4	4.0	2.7	3.1	3.4
Non-performing loans ratio	9.5	9.4	8.4	11.3	11.7	16.1	15.3	14.8	14.2	14.1	12.5
Substandard loans to total loans	6.3	6.4	6.8	8.9	9.3	13.3	12.8	12.6	11.9	11.8	10.7
Doubtful loans to total loans	2.5	0.8	0.6	0.6	0.9	0.7	0.6	0.4	0.3	0.3	0.3
Loss loans to total loans	0.6	2.3	1.0	1.7	1.5	2.0	1.9	1.8	1.9	2.0	1.5
Provisions to NPLs	43.3	44.9	31.0	26.0	24.1	24.0	26.0	26.5	26.7	26.1	26.1
Foreign Exchange Risk Indicators (%)											
Foreign-currency deposits to total deposits	1.4	1.4	0.2	1.3	1.7	5.1	5.1	5.3	5.6	3.0	3.1
Liquid assets to transferable deposits (Foreign currency)	1839.5	2189.3	2528.1	486.7	360.0	266.1	317.1	237.4	213.8	369.2	363.9
Net Open Position in Foreign Exchange (on balance sheet) to Regulatory Capital	4.4	3.9	11.7	22.8	12.6	11.3	15.1	15.6	10.7	12.3	14.8
Profitability Indicators (%)											
Return on average assets	1.4	1.2	0.4	1.2	0.7	1.0	1.1	1.1	1.2	1.2	1.2
Net interest margin	4.2	4.7	4.7	4.5	4.5	4.4	4.5	4.6	4.6	4.6	4.5
Interest rate spread	4.2	4.7	4.4	4.5	4.3	4.2	4.2	4.2	4.2	4.2	4.0

Source: Central Bank of Barbados

Table C3: Credit Unions' Performance Indicators

	2016	2017	2018	2019	2020	2021	2022	2023 Q1
Capital Adequacy (%)								
Total capital to total deposits	14.3	14.3	13.7	13.0	12.6	12.8	12.9	12.9
Total capital to total assets	12.2	12.2	11.8	11.3	11.0	11.1	11.2	11.2
Total NPLs on total capital	47.4	47.0	53.3	58.1	76.7	73.0	73.6	68.7
Total NPLs net of provisions to total capital	31.9	32.7	37.7	41.2	58.7	50.1	50.3	46.8
Asset Quality (%)								
Total loans to total assets	76.1	74.4	70.8	68.2	64.0	63.5	64.7	64.4
Total NPLs to total loans	7.6	7.7	8.9	9.6	13.2	12.8	12.7	11.9
Total NPLs net of provisions to total loans	5.1	5.4	6.3	6.8	10.1	8.8	8.7	8.1
Provisions to total NPLs	32.6	30.4	29.3	29.2	23.4	31.4	31.7	31.8
Provisions to total loans	2.5	2.4	2.6	2.8	3.1	4.0	4.0	3.8
Earnings & Profitability (%)								
Return on average assets	1.2	1.2	0.9	0.8	0.6	0.7	0.7	0.5
Interest margin to gross income	57.3	60.0	62.3	67.2	67.1	65.4	66.5	67.4
Liquidity (%)								
Liquid assets to total assets	8.3	8.2	12.3	16.1	19.5	20.0	17.1	17.3
Liquid assets to total deposits	5.5	6.6	11.6	16.1	20.3	20.3	17.7	18.2
Total loans to total deposits	89.3	86.7	81.9	78.3	73.4	73.2	74.6	74.1
Growth Indicators (%)								
Total assets	8.3	8.7	9.6	7.5	7.3	5.3	4.0	0.8
Total deposits	9.1	9.4	10.4	8.3	7.6	4.8	4.0	1.0
Total loans	7.4	6.3	4.2	3.5	0.8	4.4	6.0	0.3

Source: Financial Services Commission

Table C4: General Insurance's Performance Indicators

	2016	2017	2018	2019	2020	2021	2022	2023 Q1
Capital Adequacy (%)								
Net prem. to capital	73.5	80.9	114.1	143.6	135.5	83.6	112.3	N/A
Capital-to-liabilities ratio	40.5	35.6	25.7	20.8	21.7	38.8	27.8	31.6
Asset Quality (%)								
Rein. ceded to gross premiums written	52.2	51.5	52.1	50.5	53.0	53.4	55.9	59.4
Profitability (%)								
Return on assets	2.1	0.1	-2.4	2.1	4.0	5.1	-2.9	N/A

Source: Financial Services Commission

Table C5: Life Insurance's Performance Indicators

	2016	2017	2018	2019	2020	2021	2022	2023 Q1
Capital Adequacy (%)								
Capital-to-liabilities ratio	76.6	85.5	81.9	86.9	93.1	94.2	96.4	97.1
Asset Quality (%)								
Rein. ceded to gross premiums written	12.2	13.8	11.5	11.4	10.7	7.1	6.7	3.2
Earnings (%)								
Return on assets	5.7	5.3	6.3	4.8	4.4	3.5	4.0	N/A

Source: Financial Services Commission

Table C6: Mutual Funds' Performance Indicators

	2016	2017	2018	2019	2020	2021	2022
Asset Concentration (%)							
Related-party investments to total assets	9.9	27.2	28.4	30.0	30.7	30.7	30.1
Liquidity (%)							
Cash & cash equivalents to total assets	9.4	7.7	6.1	6.3	4.9	5.2	4.1
Liquid investments to total assets	28.1	32.0	28.1	27.5	25.8	25.1	24.8
Asset Growth (%)							
Return on net assets (net income/net assets)	8.7	13.3	-1.80	8.6	-3.6	24.0	-1.2
Net assets under management	-5.7	26.4	-3.8	13.5	1.9	11.5	-3.1

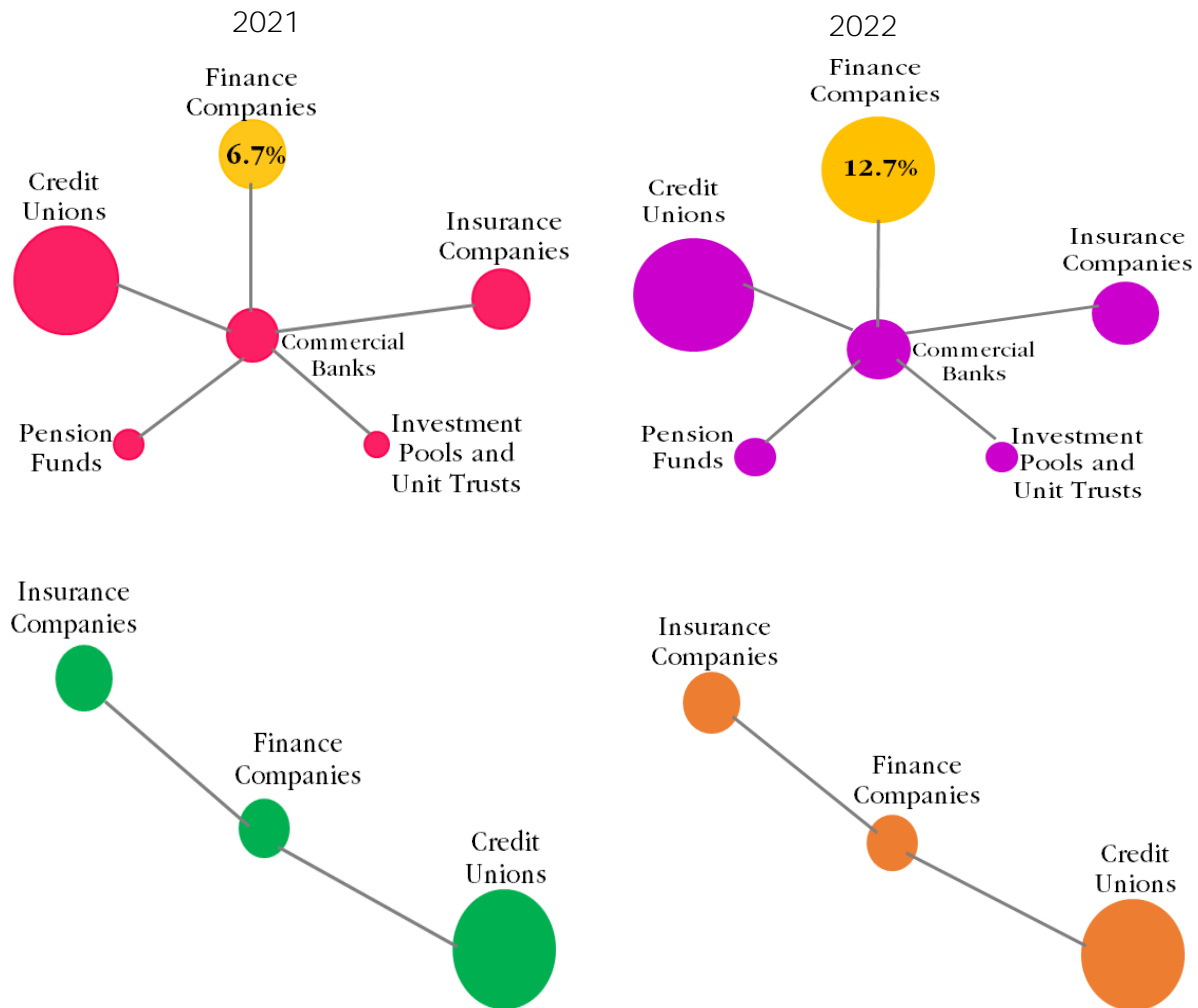
Source: Financial Services Commission

Appendix D: Financial Sector Interconnectedness

Cross-Sectoral Analysis

The main change relative to 2021 is that finance companies' exposure to commercial banks increased substantially in line with the subsector's higher liquidity position (Figure D1). Finance companies increased their deposits at commercial banks from 6.7 percent as a percent of their total assets one year earlier, to a ratio of 12.7 percent by the end of 2022.

Figure D1: Cross-Sectoral Deposits Network



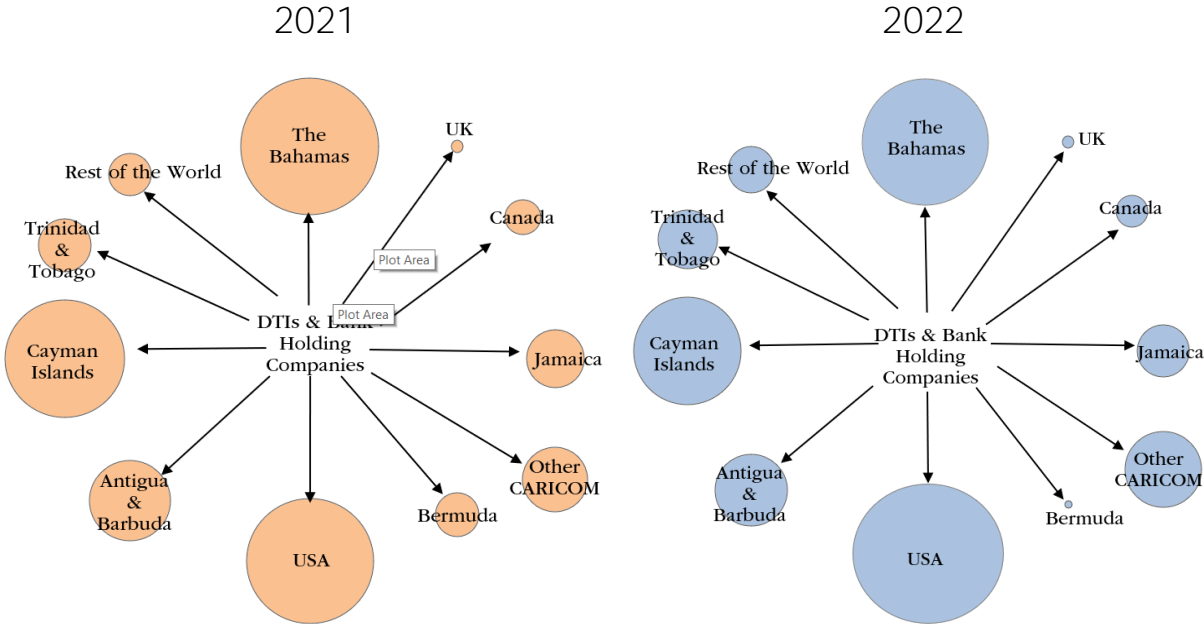
Source: Central Bank of Barbados

Note: Outer nodes represent the subsectors' deposits in the centre node relative to the assets of that financial subsector.

Appendix E: Cross-Border Assets of DTIs and Bank Holding Companies by Geographical Location

Claims on non-residents (also referred to as cross-border assets or foreign assets) broadly comprise holdings of equity, debt instruments and financial derivatives. During 2022, total cross-border assets of DTIs and bank holding companies rose by 4 percent to account for 17.8 percent of their total assets. This was primarily driven by increased debt instrument claims on residents (institutions and individuals) of the USA, Trinidad and Tobago, The Bahamas, Japan (in “rest of the world”), and the eastern Caribbean countries (in “Other CARICOM”²⁸) (Figure E2). Cross-border debt instrument claims grew by 8.1 percent in 2022, reflecting increases across all categories of debt instruments with the exception of long-term debt securities. Given this development, the USA overtook The Bahamas as the top non-resident destination for local DTIs and bank holding companies’ asset holdings in 2022 (Figure E1).

Figure E1: Total Claims on Non-Residents by Country and Region of Residence



Source: Central Bank of Barbados

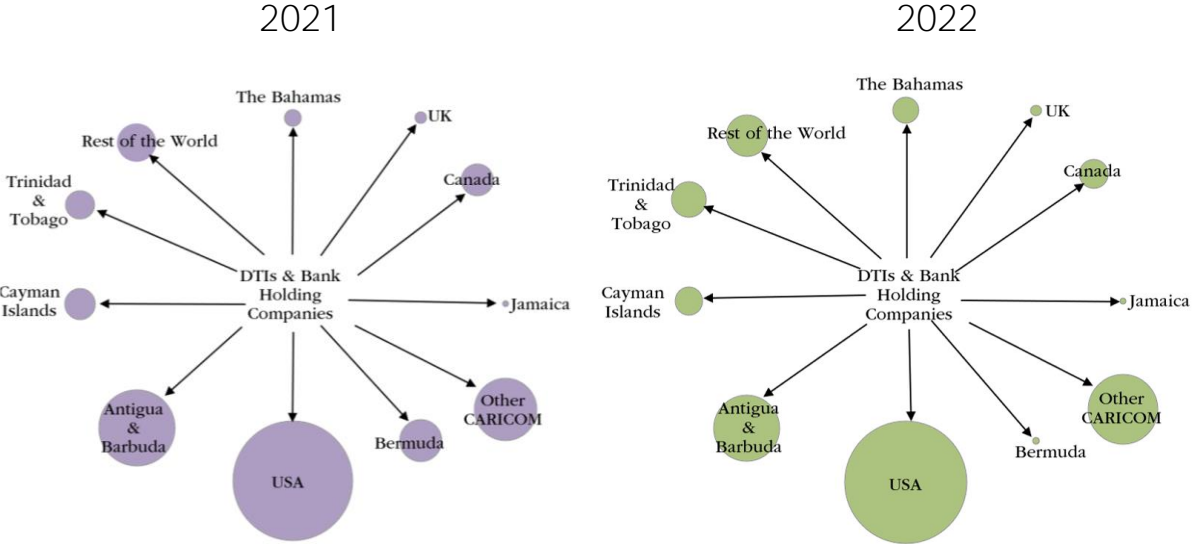
Among the debt instrument categories, deposits registered the greatest pick up as DTIs ramped up their holdings in banks domiciled in CARICOM countries, the USA and Japan. Short-term debt securities saw the second largest increase due to greater investments in U.S. Government treasury bills. The majority of the expansion in cross-border loans and accounts receivable accrued to residents of Trinidad and Tobago, The Bahamas and other CARICOM countries.

The share of equity in total cross-border assets moved from 52 percent in 2021 to 49.7 percent in 2022 on account of notably higher debt instrument assets, and a marginal decline in equity

²⁸ “Other CARICOM” includes both member states and associate members not reported elsewhere.

holdings due to reduced portfolio equity investment in Trinidad and Tobago. Holdings in the larger repositories of equity investment, The Bahamas, Cayman Islands and Jamaica, remained unchanged over the review period. Investment in financial derivatives also declined but the impact on total foreign assets was negligible due to the low level of derivatives held.

Figure E2: Debt Instrument Claims on Non-Residents by Country and Region of Residence



Source: Central Bank of Barbados

Note: Debt instrument claims are assets in the form of debt instruments. They comprise deposits, debt securities, loans, accounts receivable and cash.