FINANCIAL STABILITY REPORT 2018

CENTRAL BANK OF BARBADOS

FINANCIAL SERVICES COMMISSION

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Preface

Oversight of the financial system is shared between the Central Bank of Barbados (Bank), the Financial Services Commission (FSC) and the Barbados Deposit Insurance Corporation (BDIC) in the form of a Financial Oversight Management Committee (FOMC). The FOMC is responsible for the continuous oversight of the financial system, the assessment of vulnerabilities and the initiation of policies to increase the resilience of the system in the face of possible adverse events.

This eighth issue of Barbados' Financial Stability Report is a collaboration between the Bank, the FSC and the BDIC and provides an assessment of the risk exposures of domestic deposit-taking institutions, insurance companies, mutual funds and pension funds. This report analyses a range of financial stability indicators for financial institutions, as well as balance sheet and income and expenditure trends.

Abbreviations

Abbreviation	*Meaning*
ACH	Automated Clearing House
AFSI	Aggregate Financial Stability Index
ATM	Automated Teller Machine
BACHSI	Barbados Automated Clearing House Services Incorporated
BERT	Barbados Economic Recovery and Transformation
BSI	Banking Stability Index
CAR	Capital Adequacy Ratio
CARIFS	Caribbean Integrated Financial Services
CBB	Central Bank of Barbados
CBOE	Chicago Board Options Exchange
DTI	Deposit Taking Institution
ECL	Expected Credit Loss
EFF	Extended Fund Facility
EMBI	Emerging Market Bond Index
FIA	Financial Institutions Act
FOMC	Financial Oversight Management Committee
FSC	Financial Services Commission
FSR	Financial Stability Report
GDP	Gross Domestic Product
GPW	Gross Premiums Written
IA	Insurance Act
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
NIR	Net International Reserves
NIS	National Insurance Scheme
NPL	Non-performing Loan
NPV	Net Present Value
NSRL	National Social Responsibility Levy
POS	Point of Sale
ROA	Return on Assets
RTGS	Real Time Gross Settlement
RWA	Risk Weighted Assets
VAT	Value Added Tax

1. Overview

2018 was especially challenging for financial institutions. The resumption of sustainable growth continued to lag positive developments associated with the recovery of other key macroeconomic indicators, including international reserves, fiscal balance and public sector indebtedness. In these circumstances, asset growth was generally weak, except in the credit union and life insurance sectors. Credit demand remained tepid and the financial system continued to record substantial excess liquidity. However, non-performing loans remained higher than desired.

The Government of Barbados' decision to restructure the domestic securities and loans in which these institutions had invested and the adoption of the IFRS 9 accounting standard by financial companies resulted in accounting losses for deposit takers, insurance companies, mutual funds and pension funds. These developments had an adverse impact on indicative indicators of financial stability, especially profitability and capital buffers.

The new securities were issued to financial institutions at par, with long maturities and very low coupons, particularly in the early years. However, in these circumstances, the IFRS standards require institutions to recognise net present value losses, resulting in the erosion of capital. Consistent with the expectations from pre-restructuring stress tests, the financial system was able to absorb these losses without the emergence of a systemic crisis and, by year-end, most financial institutions remained above their minimum regulatory capital or solvency requirements. Given different financial year-ends, some institutions were still in the process of evaluating the impact of these developments on their balance sheets. Over time, these losses are expected to be reversed as the new securities come to maturity, but stress tests demonstrate that, in the short term, the buffers to absorb substantial shocks have been reduced.

The cost of the restructuring on financial institutions emphasised the prior reliance placed on Government securities in what remains a shallow capital market. With commercial banks already offering very low rates on deposits, the restructuring reduced future investment income in an environment of fiscal consolidation and growing liquidity pools. The limited domestic investment opportunities therefore create the potential for increased interconnectedness among financial institutions.

In the interim, the Bank and the FSC have undertaken to work with any institutions that incurred regulatory breaches as a result of the debt restructuring. These regulators will discuss the implications of the stress tests with individual institutions. At the same time, deposit-taking institutions need to monitor closely the persistently high non-performing loan levels and the associated loan loss provisioning.

2. Macro-Financial Environment

2.1 Overview of Local Economic Conditions

Economic policy changed markedly during 2018 as the Government of Barbados launched its Barbados Economic Recovery and Transformation (BERT) programme to address the macroeconomic imbalances that had developed over the past decade.

On June 1, 2018, principal payments to domestic creditors and all debt payments to external commercial creditors were suspended as Government embarked on a programme to restructure the country's public sector debt. The restructuring of domestic debt issued by Government and its public sector entities was finalised in the fourth quarter of 2018. Government's liabilities to the private sector were restructured mainly by lengthening the maturity and reducing interest rates on the new securities. This resulted in a reduction of about 22 percentage points in the gross public sector debt-to-GDP ratio when compared to 2017.

The BERT plan received the support of the International Monetary Fund (IMF) as evidenced by their agreement on October 1, 2018 to honour the request made by Barbados authorities for a four-year Extended Fund Facility (EFF). The quantitative performance criteria under the EFF include floors on the Central Government primary balance and net international reserves, along with ceilings on Central Government transfers and grants to public intuitions, public debt and the net domestic assets of the Central Bank.

Progress has been made in terms of restoring economic stability. The suspension of external commercial debt, tighter tax policies, and lower interest rates on domestic Government securities, based on the restructured terms, contributed to a significant improvement in Government's cash flow. The improved fiscal position, in conjunction with $350 million in policy-based loans from regional multilateral agencies and stricter caps on Central Bank lending, dramatically reduced Government's reliance on the Central Bank for financing during 2018.

The gross international reserves (GIR), which had been declining since 2013, rose by $588.0 million to 12.9 weeks of reserve import cover at the end of 2018, from 5.3 weeks of cover one year earlier **(Figure 1)**. In large part, this outturn was made possible by Government's suspension of debt service payments to external commercial creditors coupled with the loan disbursements from the IMF, Caribbean Development Bank (CDB) and Inter-American Development Bank (IADB) in the last quarter of 2018. The underlying foreign exchange market also saw some improvement, with net foreign exchange sales to the Central Bank also contributing to the rise in reserves.

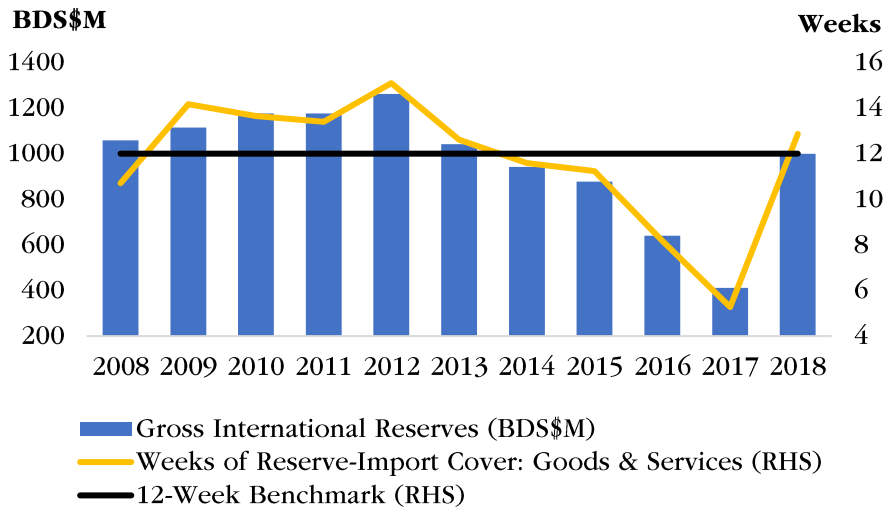
Table 1: Selected Economic Indicators

	2013	2014	2015	2016	2017	2018
			Percent			
Real Sector						
Real GDP Growth	(1.4)	0.0	2.5	2.6	0.8	(0.4)
Inflation	1.8	1.8	(1.1)	1.5	4.5	3.7
Unemployment Rate (Average)	11.5	11.6	12.3	11.3	9.7	10.0
			In percent of GDP			
Public Sector						
Central Government Balance (FY)	(10.2)	(7.6)	(9.0)	(5.3)	(4.6)	(0.3)
Primary Fiscal Balance (FY)	(3.7)	(0.5)	(2.0)	2.2	3.2	3.5
Central Government Debt	118.3	124.0	131.8	140.6	139.0	125.4
Gross Public Sector Debt	133.6	139.2	146.5	153.4	150.5	126.3
External Sector						
Current Account	(8.4)	(9.2)	(6.1)	(4.3)	(3.8)	(4.0)
Capital Account	(0.2)	(0.2)	(0.2)	(0.1)	0.0	0.5
Financial Account	5.5	7.9	4.9	1.4	3.3	9.4
			BDS$M, unless otherwise stated			
Monetary						
Net Domestic Assets	470.7	723.3	1168.3	1906.5	2041.2	1826.6
NIR	954.1	861.7	821.4	574.9	334.7	832.3
GIR	1041.3	942.6	878.0	639.8	411.3	999.3
Broad Money to NIR (%)	1029.5	1176.0	1309.1	1948.1	3386.7	1212.1
Import Reserve Cover (Goods & Services) (Weeks)	12.6	11.6	11.2	8.2	5.3	12.9

Source: Barbados Statistical Service and Central Bank of Barbados

However, the cumulative effect of the fiscal adjustment measures of recent years contributed to a weak growth environment. Economic activity declined modestly, with the bulk of the falloff occurring in the construction, retail and the services sectors. The continued absence of growth coupled with labour market uncertainty has adversely impacted underlying credit growth to the private sector by commercial banks and deposit-taking finance and trust companies over the past few years.

Figure 1: International Reserves



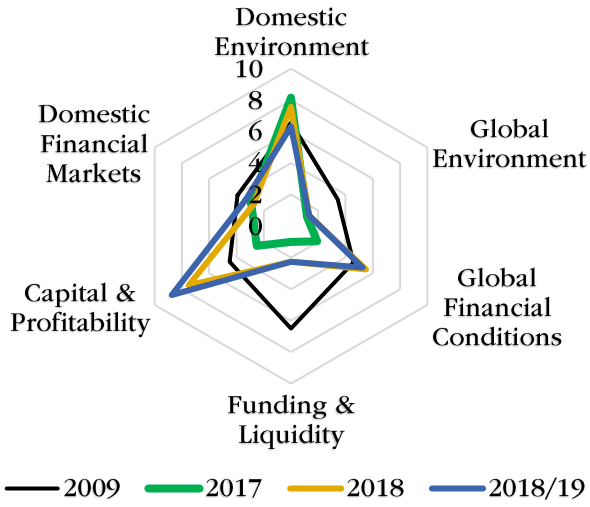
Source: Central Bank of Barbados

2.2 Macro-Financial Risks

The macro-financial environment weakened during 2018 and the first three months of 2019, as indicated by the Financial Stability Cobweb, the Aggregate Financial Stability Index, the Banking Stability Index and the Consolidated Risk Index for credit unions. These indices quantify the relative balance between risk and stability in the Barbadian financial system. Information on the construction of the indicators is presented in **Appendix A**.

The Financial Stability Cobweb (**Figure 2**) below provides a graphical summary of the risk exposure faced by financial institutions across six dimensions: the domestic environment, domestic financial markets, capital and profitability, funding and liquidity, global financial conditions, and the global environment. Increases in risk are represented by increased values across particular dimensions indexed from zero to ten but the cobweb does not provide an aggregate indicator of risk.

Figure 2: Financial Stability Cobweb



Note: Movement away from the centre reflects an increase in risk, while movement towards the centre reflects a reduction in risk.

The higher the risk exposure, the higher the score for the particular dimension of financial stability risk. For this report, scores for the six selected dimensions of financial stability risk were computed for the periods 2018 and 2018/19 (April 2018 - March 2019) for comparative analysis.

During 2018, reduced inflationary pressure, an improved fiscal balance and a lower sovereign debt stock as a percentage of GDP lowered risks within Barbados' Domestic Environment when compared to 2017. The risk reduction for 2018/19 was even more apparent as all four indicators of domestic environment risk - inflation, fiscal balance to GDP, sovereign debt to GDP and broad money to net international reserves (NIR) - improved relative to 2017 and 2018. The reduction in average retail prices from the removal of NSRL, lower international oil prices, the success of the debt exchange in pushing down both the debt stock and interest expense, and the increase in the net international reserves led to overall improvement in domestic environment risk.

The risk scores for Domestic Financial Markets and Global Environment remained virtually unchanged for 2017, 2018 and 2018/19. In contrast, the other indicators weakened. Potential risk related to the Global Financial Conditions rose in 2018 and 2018/19 as the MSCI World Index of Equity Returns, CBOE Volatility Index and Emerging Market Bond Index Spread for the said periods worsened when compared to 2017. Similarly, the Capital and Profitability risk index increased significantly in 2018 and 2018/19 on account of lower returns on assets and a reduction in banks' regulatory capital due to the debt restructuring and the implementation of IFRS 9. In addition, banks registered lower liquid assets to total assets relative to 2017.

To further assess the stability of commercial banks, the Aggregated Financial Stability Index (ASFI) was employed. The ASFI is a composite measure of financial stability which is generated as a weighted average of normalised macroeconomic and financial

statement variables. Four major sub-indices are used to determine the ASFI, namely, financial development (FD), financial vulnerability (FV), financial soundness (FS), and world's economic climate (WEC). After being normalised, all individual variables were converted so that an increase indicates an improvement in financial stability. Sub-indexes were calculated using equal weights and the ASFI is a weighted sum of these variables.

Figure 3: Aggregate Financial Stability Index

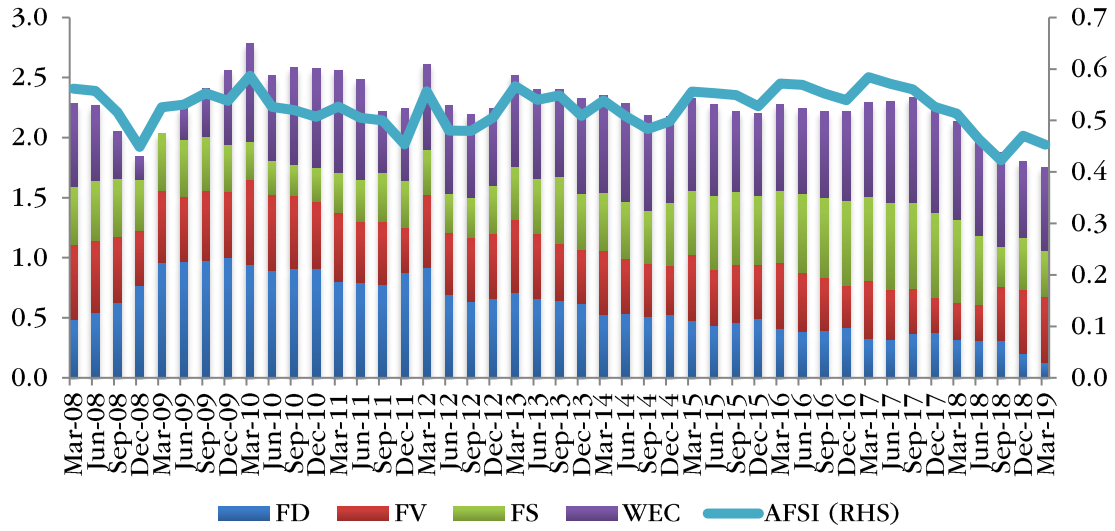
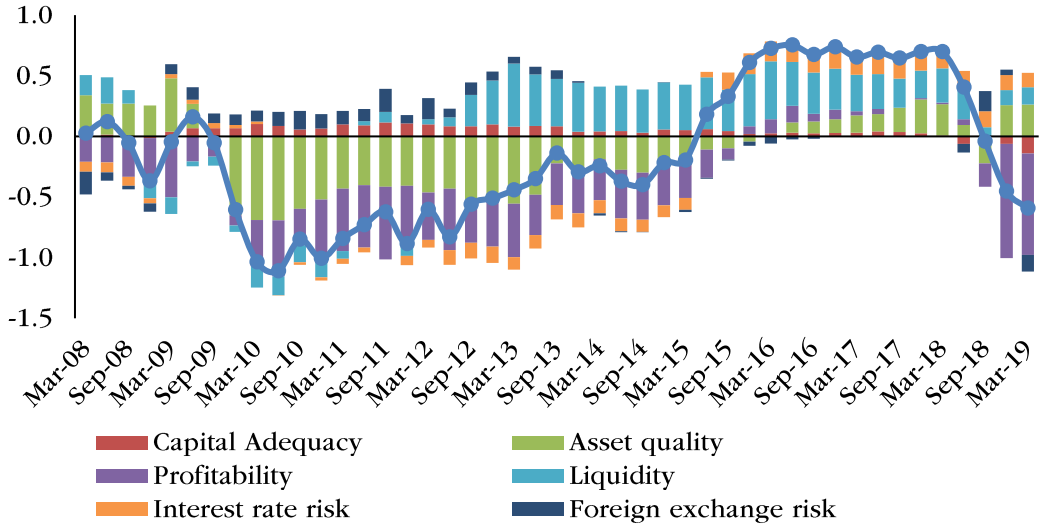


Figure 3 shows that the AFSI deteriorated during 2018 and Q1 2019 relative to 2017 and Q1 2018, respectively. Among the domestic factors driving the decline for the sub-indices were declines in the capital of banks for the Financial Stability index and the credit-to-GDP ratio decline for the Financial Development index. Internationally, higher volatility, worsening perceptions about the world economic climate, and slower world economic growth, drove down the World Economic Climate index. However, the domestic Financial Vulnerability sub-index improved during the review periods, as this was heavily influenced by the accumulation of foreign reserves relative to broad money growth and lower domestic inflation.

The Banking Stability Based Index (BSI) seeks to capture the level of stability 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. Based on the BSI (**Figure 4**), the stability of commercial banking sector weakened dramatically since December 2017. During 2018, the decline in the BSI was mainly driven by the losses incurred by banks during the latter half of the year as a result of the stringent loan provisioning dictated by IFRS 9 coupled with income statement

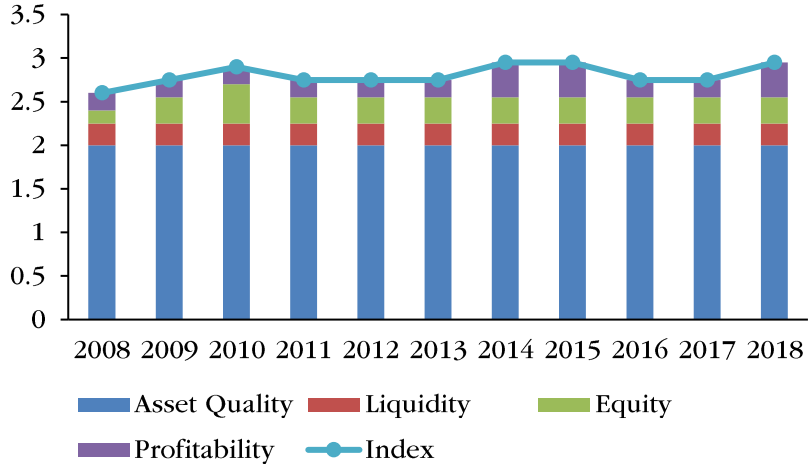
impact of the domestic debt exchange. Capital adequacy was another financial stability indicator that fell during 2018. At the end of March 2019, the BSI was lower than that of March 2018 and December 2018. The deterioration relative to March 2018 was again due to declines in profitability, capital adequacy and net foreign assets to Tier 1 Capital, while the decline relative to December 2018 was only driven by lower profitability and capital adequacy.

Figure 4: Banking Stability Index



The Consolidated Risk Index for the credit union sector checks for financial soundness using indicators such as asset quality, liquidity, equity and profitability in a weighted formula to assess the overall risk of the sector. **Figure 5** shows heightened risk in 2018, mainly resulting from a reduction in profitability when compared to 2017.

Figure 5: Consolidated Risk Index for Credit Unions

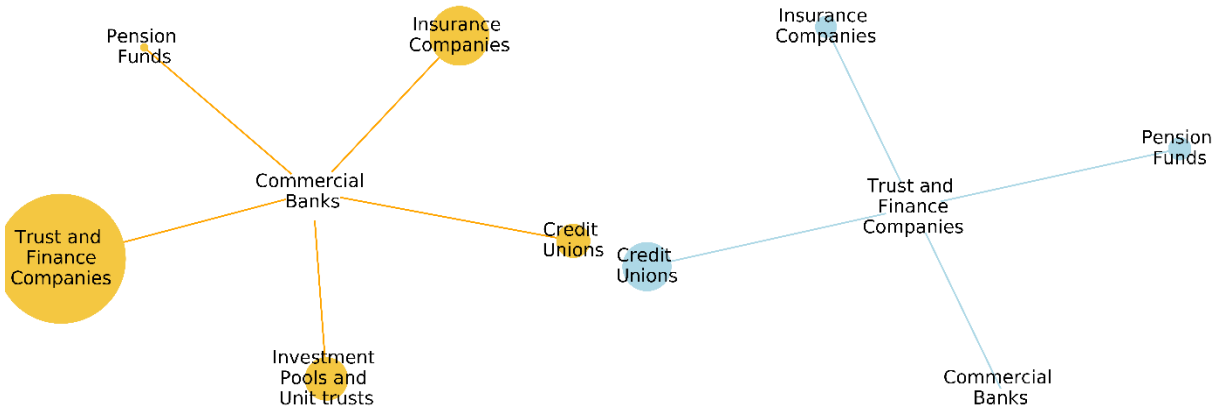


Source: Financial Services Commission

2.2.1 *Financial System Interconnectedness*

In 2018, several sectors in the financial system continued to show significant gross exposure to commercial banks and trust and finance companies relative to their assets. Finance and trust companies remained the subsectors with the greatest relative exposures to commercial banks in 2018, while credit unions and insurance companies had relatively high exposures to finance and trust companies (**Figure 6**).

Figure 6: Network of Gross Institutional Exposures (to Commercial Banks and F&Ts)



Source: Central Bank of Barbados

Note: Outer nodes represent the gross credit exposure to the centre node and are weighted based on the level of exposure to total assets of that financial sub-sector

3. Financial Sector Developments

3.1 Structure of the Financial System

During 2018, total assets of the financial system fell by 2.8 percent to represent 245 percent of GDP. The decline was attributable to the settlement of a large foreign currency intra-group loan absent which, assets grew by 1 percent compared to 5.4 percent in 2017 (**Table 2**).

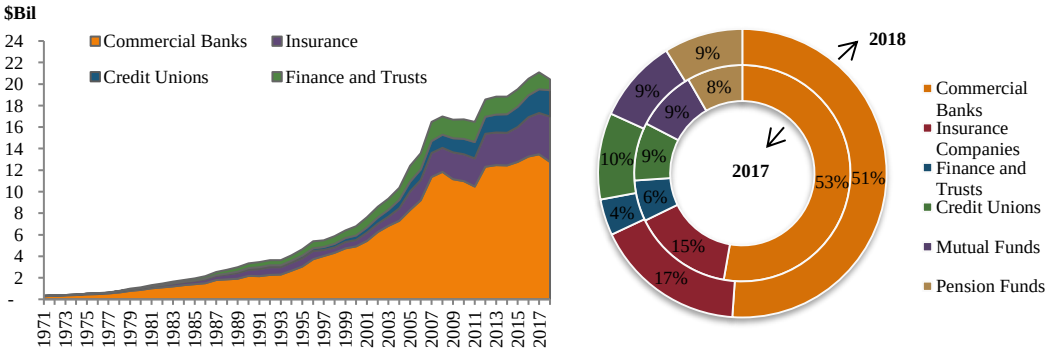
Table 2: Assets of Financial Services Sector*

$Mil	2013	2014	2015	2016	2017	2018
Commercial Banks	12,480	12,447	12,774	13,280	13,469	12,770
Insurance Companies	3,011	3,025	3,243	3,635	3,837	4,224
Finance & Trusts Companies	1,644	1,630	1,647	1,535	1,569	1,016
Credit Unions	1,683	1,752	1,879	2,035	2,212	2,422
Mutual Funds	1,836	1,821	1,855	2,004	2,210	2,125
Pension Funds	1,944	2,022	2,061	2,160	2,319	2,345
Total	**22,598**	**22,696**	**23,458**	**24,650**	**25,616**	**24,903**

Source: Central Bank of Barbados and Financial Services Commission
*Notes: *Includes data revisions to prior periods*

Consequently, commercial banks' share of the market was marginally lower than in 2017, representing 51 percent of total financial assets in 2018 (**Figure 7**). The insurance industry expanded to account for an additional 2 percent of the market, while finance and trust companies' contribution fell by an equivalent amount. Mutual funds, private pension schemes and credit unions remained relatively unchanged.

Figure 7: Assets of the Financial System by Institution[1]



Sources: Central Bank of Barbados and Financial Services Commission

Local, regional and international interlocking financial corporate structures and conglomerates continue to give rise to high concentration, interconnectedness and cross-border linkages. Of the five local commercial banks in operation, the three Canadian banks accounted for 74 percent of total bank assets, while the two Trinidadian banks held the remaining 26 percent. Additionally, the largest seven of the 33 credit unions accounted for 93 percent of the segment's asset base. The life insurance sector

[1] Mutual fund and pension fund data is not available for the entire historical period.

accounted for 76 percent of total industry assets, and was also highly concentrated, with the top three life insurers holding 85 percent of the life insurance industry's assets. Similarly, the top seven general insurers represented 89 percent of the general insurance industry.

Since all five commercial banks are foreign owned and many insurance companies operate as a branch of a foreign parent, **Table 3** presents a summary of the most recent ratings agencies' perspectives on the parent banks and largest insurance company as well as the ratings of the sovereigns in which they are headquartered. The table indicates that parent entities are well capitalised and, in the event of a crisis, the sovereigns have the capacity to support these entities.

Table 3: Capital Adequacy and Rating of Parent

Domestic Bank/ Insurance Company	Majority Shareholder	Majority Shareholder Capital Adequacy (2018)	Majority Shareholder's Rating (Standard and Poor's)	Country Rating (Majority Shareholder) (Standard and Poor's)
Republic Bank Barbados Limited	Republic Bank Limited	18.1*	BBB+	BBB+/Trinidad and Tobago
CIBC FirstCaribbean International Bank	CIBC	14.9**	A+	AAA/Canada
Scotiabank	Bank of Nova Scotia	14.3**	A+	AAA/Canada
Royal Bank of Canada	Royal Bank of Canada	14.6**	AA-	AAA/Canada
First Citizens	First Citizens Group	39.3*	BBB	BBB+/Trinidad and Tobago
Sagicor Life[2]	Sagicor Financial Corporation	n.a	B	A+/Bermuda

Notes: *Tier I & Tier II Capital Adequacy under Basel 1 (Annual Report 2018 - Data as at Sep 2018);
**Based on Basel III definitions and requirements of total capital (Annual Report 2018 - Data as at Oct 2018).

Notwithstanding the current dominance of the Canadian banks, it should be noted that regionally, there has been somewhat of a retreat by the Canadian banks from the Caribbean. The Royal Bank of Canada has reduced the number of Caribbean countries in which it operates and, in 2018, the Bank of Nova Scotia indicated its intention to sell its Eastern Caribbean and Guyana business to another regional bank. In addition, CIBC considered an international share listing that would have had the effect of reducing its equity share in FirstCaribbean International Bank. International observers have cited

[2] Sagicor Financial Corporation re-domiciled its headquarters to Bermuda from Barbados in 2016.

the low profitability relative to more lucrative investment opportunities in extra-regional markets, as the common thread for these developments.

3.1.1 Deposit Insurance

The Barbados Deposit Insurance Corporation (BDIC), which guarantees each depositor at commercial banks and finance and trust companies up to $25,000 on domestic currency accounts, continues to support financial stability. As of December 2018, the number of qualified, insurable accounts carried an estimated value of $9.6 billion **(Table 4)**. The falloff in insurable non-banks' deposits and subsequent small pickup in the commercial bank sector was due to the consolidation of a finance and trust company with its parent bank.

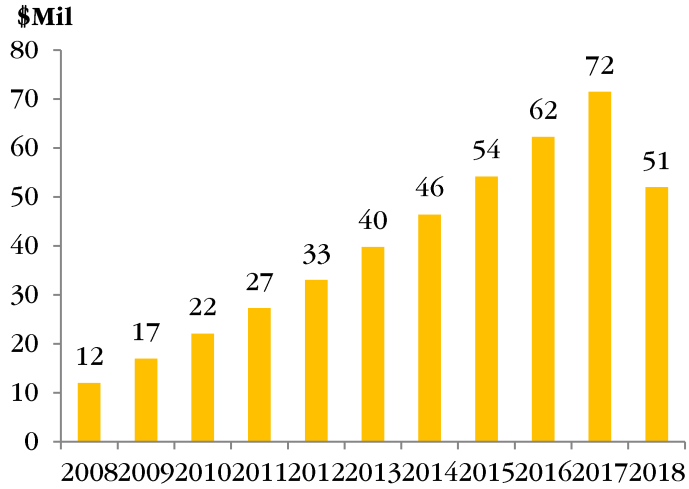
Table 4: Total Estimated Insurable Deposits

($ Millions)	2013	2014	2015	2016	2017	2018
Commercial Banks	8,305	8,119	8,482	8,821	8,836	8,915
Non-banks	980	958	993	873	907	722
Total	**9,285**	**9,077**	**9,475**	**9,695**	**9,743**	**9,637**

Source: Barbados Deposit Insurance Corporation

Following the sovereign debt exchange, the accounting value of the fund's assets is estimated to have fallen to $51 million, compared to $72 million one year prior (**Figure 8**). These accounting valuation losses were driven by the longer maturities and lower coupons of the exchanged bonds which would have fallen in value under the discounted cash flow technique used in fair value accounting. Despite this accounting treatment, the actual Government obligation to the BDIC has a nominal value of $77 million, and these valuation losses should be recovered over time as the replacement bonds mature.

Figure 8: Deposit Insurance Fund



Source: Barbados Deposit Insurance Corporation

Box 1: Domestic Financial Regulatory Reforms

During 2018, Government initiated several regulatory reforms in the Barbadian financial system. Government's decision to converge taxes for firms trading internationally and locally served as a primary influence in the changes, but there were additional reforms reflecting the commitment of the Central Bank (Bank) and the Financial Services Commission (FSC) to maintain and promote financial stability.

In December 2018, the Financial Institutions (Amendment) Bill 2018 was passed to enact amendments to the Financial Institutions Act, Cap. 324A following the repeal of the International Financial Services Act Cap. 325 (IFSA). Companies that were formally licensed under IFSA have been transitioned to FIA under the provisions in Part III B for Foreign Currency Earning Banks. Other changes include additional provisions for the effective supervision of financial institutions by the Central Bank, provisions for the supervision of financial holding companies, and for capturing the activities of money or value transmission service providers under this legislation.

The Insurance Act, Cap. 310 (IA) was amended to incorporate all insurance entities, including exempt insurance companies and qualified insurance companies and the Exempt Insurance Act was repealed. Under the IA amendments, insurance companies will now be categorised into three classes of licences. The first class will include insurance companies that restrict their business to underwriting related party insurance business. The class 2 category will include insurance companies which underwrite or can underwrite third party business while class 3 includes brokers, other intermediaries, insurance management companies and insurance holding companies. The FSC has indicated its intention to adopt risk-based capital requirements for its licensees and has from 2019 introduced a requirement for licensees to pay fees for supervision.

Prior to the completion of Barbados' sovereign debt restructuring, the financial sector regulators, industry practitioners and relevant stakeholders maintained frequent dialogue in an effort to assess the possible fall-out from the exercise. Although preliminary stress testing and discussions suggested that the debt exchange would not result in financial instability, some institutions did experience significant reductions in their capital buffers. Consequently, the Bank and the FSC agreed to facilitate temporary arrangements for the restoration of capital, reserves, profitability and other statutory benchmarks arising from the loss in net present value of these investments for periods up to three years and five years, respectively.

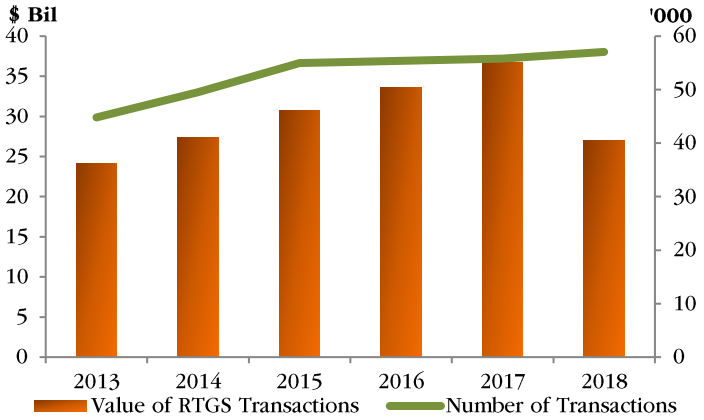
3.2 Payment Systems Developments

Payments processed in the domestic market contracted during 2018 to represent 485 percent of GDP, compared to 593 percent in the previous year. This decline was driven by a fall-off in electronic payments as a direct result of depressed trading in domestic Government securities following the suspension of public sector external debt payments and the subsequent "cease trading" order on domestic debt. Outside of this policy-driven shift electronic payments dominated, followed by cheque-based payments, which declined over the year. On the other hand, the use of cash persisted as evident by the increased value of cash removed from automated teller machines (ATMs) and the increase in currency-in-circulation.

Transactional platforms, namely the Caribbean Integrated Financial Services Incorporated (CARIFS), the Barbados Automated Clearing House Services Incorporated (BACHSI) and the Central Bank's Real Time Gross Settlement (RTGS) system, directly facilitated 55 percent of all payments. The CARIFS system is an ATM network provider which links the ATMs of commercial banks and credit unions to point-of-sale (POS) outlets to allow twenty-four-hour access to bank accounts. BACHSI engages in direct payments processing, clearing of cheques and daily inter-bank settlement. The CARIFS and BACHSI transactions are ultimately settled through the RTGS, which processes large value and/or time sensitive credit transfers between the domestic banking system and the Central Bank.

For the first six months of 2018, both the volume and value of payments transacted through the Real Time Gross Settlement System (RTGS) outperformed the corresponding period for 2017. This outturn was largely driven by increased sales of Government securities. However, following Government's debt restructuring announcement in June 2018 and the subsequent cease-trading order implemented on domestic Government securities, there were significantly lower payments through the system in the latter half of 2018. Consequently, despite an overall 2 percent increase in the number of transactions conducted in the RTGS, the nominal value of these payments was almost 37 percent lower in 2018 when compared to 2017 (**Figure 9**).

Figure 9: RTGS Transactions



Source: Central Bank of Barbados

Box 2: Innovations in the Payment Systems

Technological advancements are altering the payments space by transforming the way transactions are executed in the domestic market. Credit and debit cards already supplement more traditional cash and cheque payments processes. Direct transfers via the ACH and RTGS together with on-line banking within and across banks are complemented by a payments processor who intermediates mainly high volume, low value transactions. These developments are designed to reduce the use of cash and to improve efficiency in the payments system. However, productivity continues to be impacted by consumer use of physical locations which, along with delays in cheque clearing and back office processing, renders part of the payments system inefficient.

The Bank, financial institutions and Government are keen to address these inefficiencies. Government has embarked on a process to eliminate its issuance of cheques and to instead rely on the ACH and RTGS to make payments to suppliers and for the issuance of tax refunds. The National Insurance Board, which is one of the island's main issuer of cheques, is also moving towards a phased elimination of cheques. Additionally, the Barbados Revenue Authority is working towards accepting online tax payments via the banking system, and through credit and debit cards. This should reduce both queues and the use of cheques.

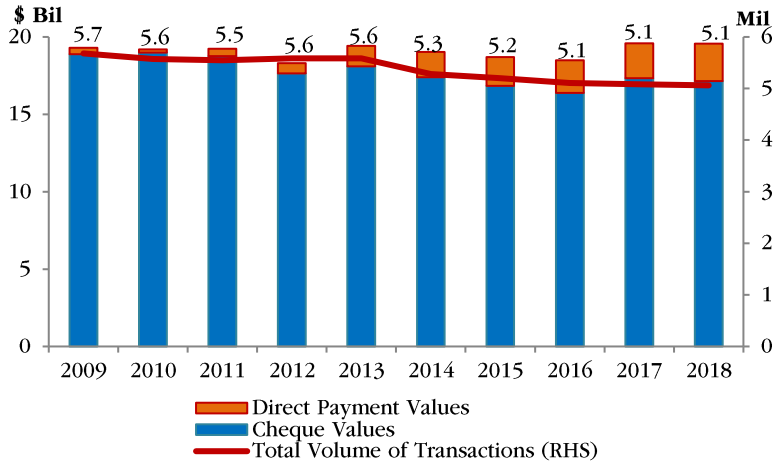
To facilitate expanded use of the ACH, the Bank will allow access to the ACH system to credit unions that wish to do direct debits. This is a potentially significant development in the payment system given the growing importance of the credit union segment to the overall financial sector. This innovation requires the adoption of legislative, infrastructural and administrative changes that are expected to come on-stream during the second half of 2019.

An interesting development is the emergence of digital wallets for the conduct of financial transactions by non-traditional players. The Bank and FSC established a Regulatory Sandbox to facilitate testing of emerging technologies and one participant has tested its mobile wallet. The technology worked for the limited volume of transactions tested and the Bank anticipates that the seamless use of this class of emerging technologies could ultimately reduce the use of cash.

With the dynamic nature of the payments market, the Central Bank is in the process of developing payments legislation and regulatory frameworks to govern payment systems in order to ensure its continued development, soundness and efficiency. The Bank continues to monitor global developments related to the exploration of central bank digital currencies.

The number and volume of transactions processed through Barbados' Automated Clearing House (ACH) system remained relatively unchanged during 2018. Although cheques[3] cleared through the ACH remained the second largest form of domestic payments in 2018 after RTGS, the number and value of these transactions fell by 3.3 percent and 1.1 percent, respectively. This decline was driven by intensified efforts to move away from paper-based payments towards electronic payments. (**Figure 10**).

Figure 10: ACH Transactions



Source: Central Bank of Barbados

The growth in debit card usage continued in 2018 with the number and value of these transactions totalling 9.7 million and $1.2 billion, respectively. The value of payments via the point-of-sale (POS) portals grew by 6.7 percent to represent 46 percent of total transactional values of debit cards. Additionally, the value of transactions conducted through ATMs grew by 2.3 percent and remained the major use of debit cards in terms of value, accounting for 54 percent (**Figure 11**).

During 2018, domestic payments via credit cards fell by one percent, compared to a 1.7 percent decline in 2017. This marginal fall-off in transactions was driven by reduced credit card usage of the personal sector **(Figure 12)**.

[3] This includes cheque payments made across banks and with Central Bank but does not include those cheques which are drawn and settled within the same bank.

Figure 11: Debit Card Transactions

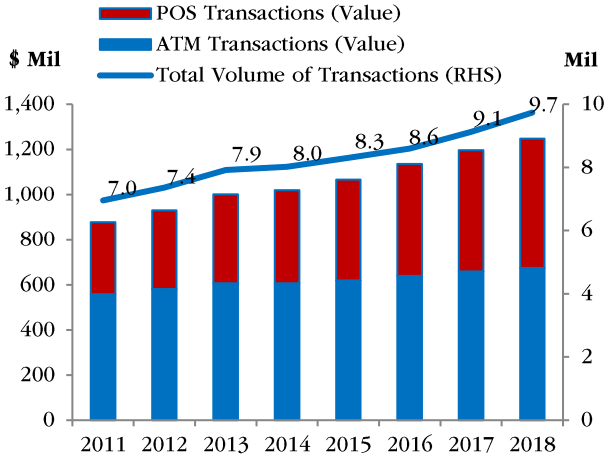
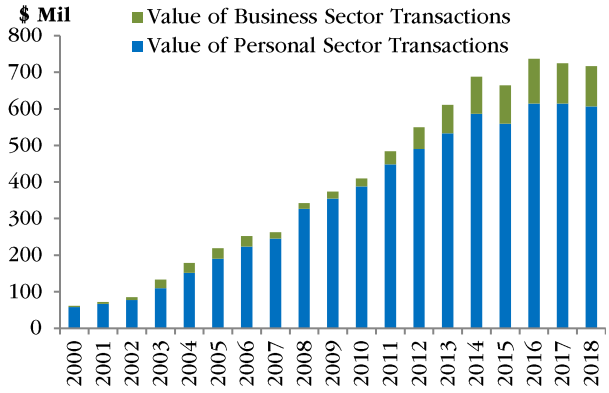


Figure 12: Credit Card Transactions

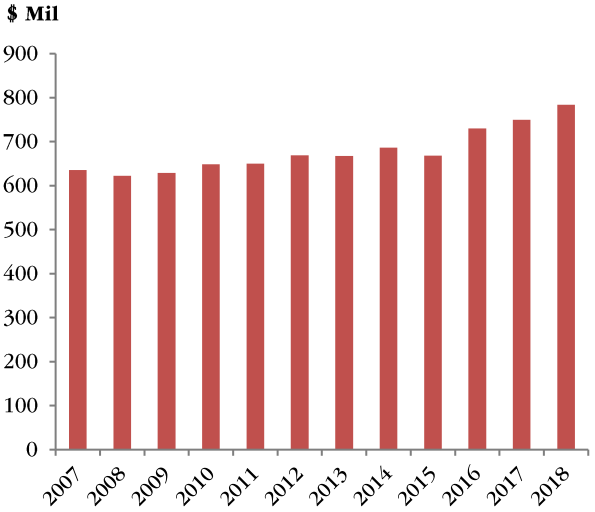


Source: Central Bank of Barbados

Currency-in-circulation continued to expand, growing by 4.5 percent to represent $784 million or 7.7 percent of GDP by the end of 2018 (**Figure 13**). This is high compared to most of its regional counterparts, and highlights the key role cash continues to play in Barbados' payment system.

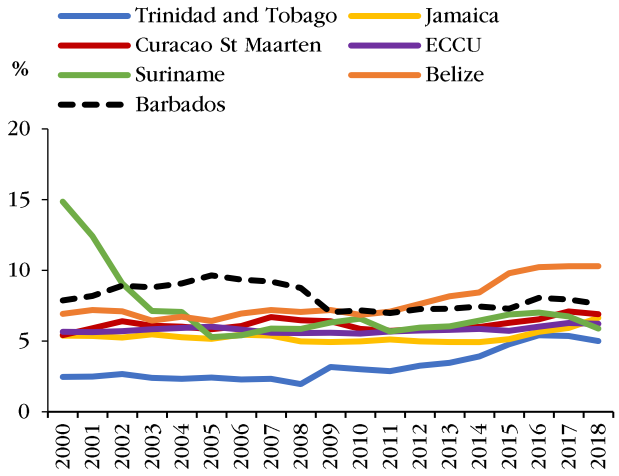
Figure 13: Currency in Circulation

A: Domestic Currency in Circulation



Source: Central Bank of Barbados

B: Regional Currency to GDP



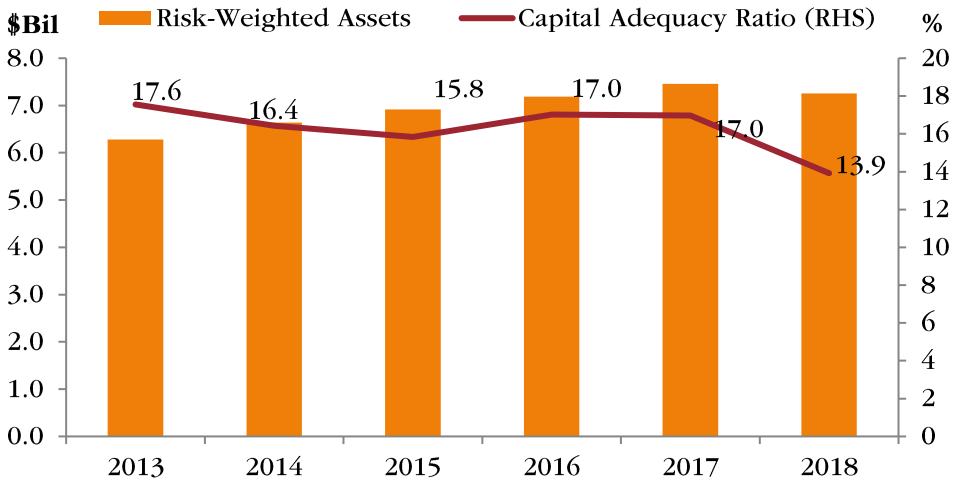
Source: Regional Central Banks

4. Analysis of the Financial System

4.1 Commercial Banks

During 2018, the commercial banking sector remained solvent. Ordinary banking operations remained profitable, but the lengthening of the maturity on Government securities, the reduction in the coupon rates of the new instruments paid and the implementation of IFRS 9 resulted in a negative return on assets for the year and an overall reduction in regulatory capital. However, capital buffers remained in excess of the prescribed levels as the system's capital adequacy ratio declined to 13.9 percent by December 2018, from 17 percent at year-end 2017 (**Figure 14**). At March 2019, individual capital adequacy ratios ranged from 25.8 percent to just under the 8 percent benchmark, while the system capital ratio was 12.7 percent.

Figure 14: Capital Adequacy

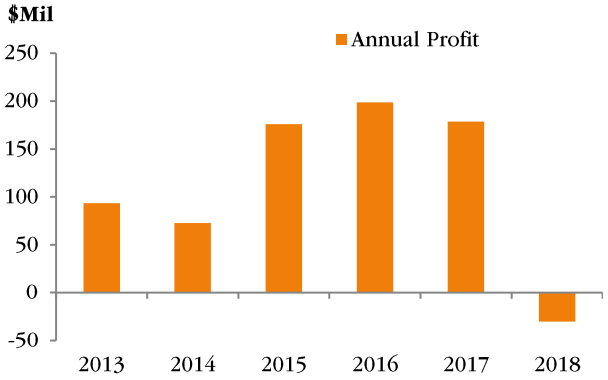


Source: Central Bank of Barbados

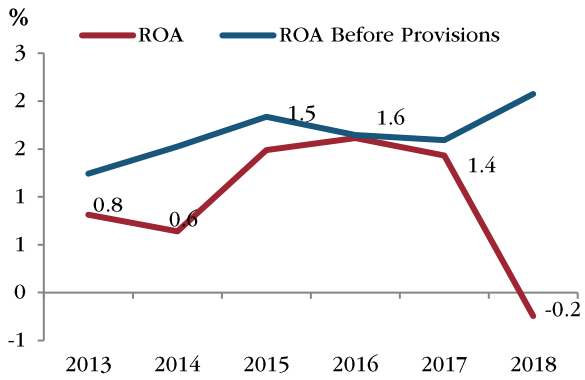
Pre-tax net income, before adjustment for provisions and net present value losses arising from the restructuring, declined by 5 percent. This largely reflected higher operational expenses and a contraction in net interest income of just over 1 percent, as falling interest expenses did not fully compensate for declines in interest income from loans and securities (**Figure 15**).

Figure 15: Profitability

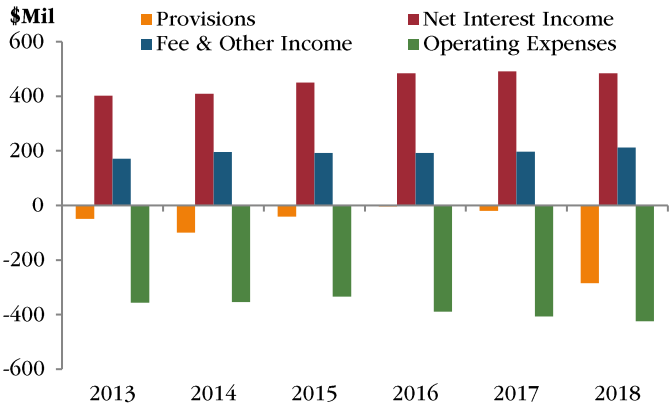
A: Net Income



B: Return on Assets



C: Net Income by Category

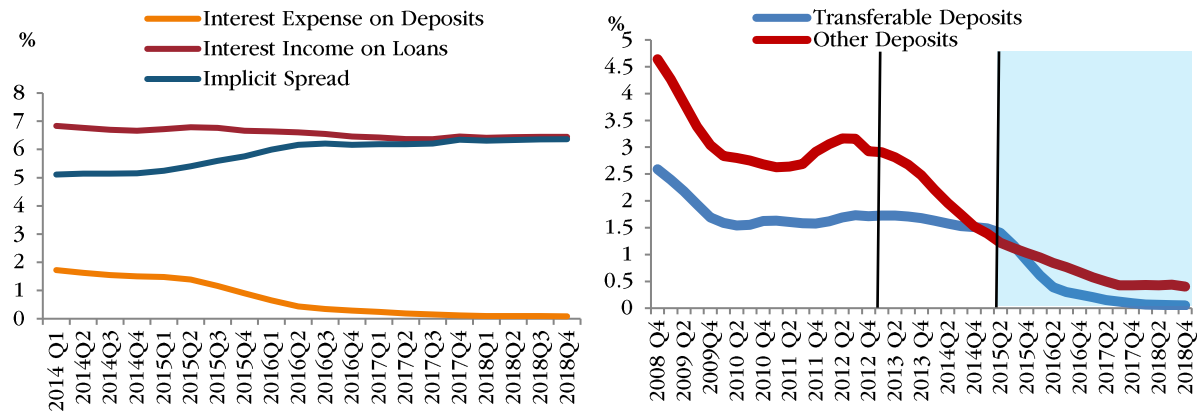


Source: Central Bank of Barbados

Interest rates on deposits remain at historical lows with the average deposit rate estimated at 0.1 percent in 2018. However, interest income on loans remained flat at 6.5 percent. With a marginal falloff in deposit rates, the implicit spread moved from 6.3 percent to 6.4 percent at year-end (**Figure 16**).

Figure 16: Commercial Banks' Interest

A: Interest Earnings and Expense **B: Interest Expense by Type[4]**



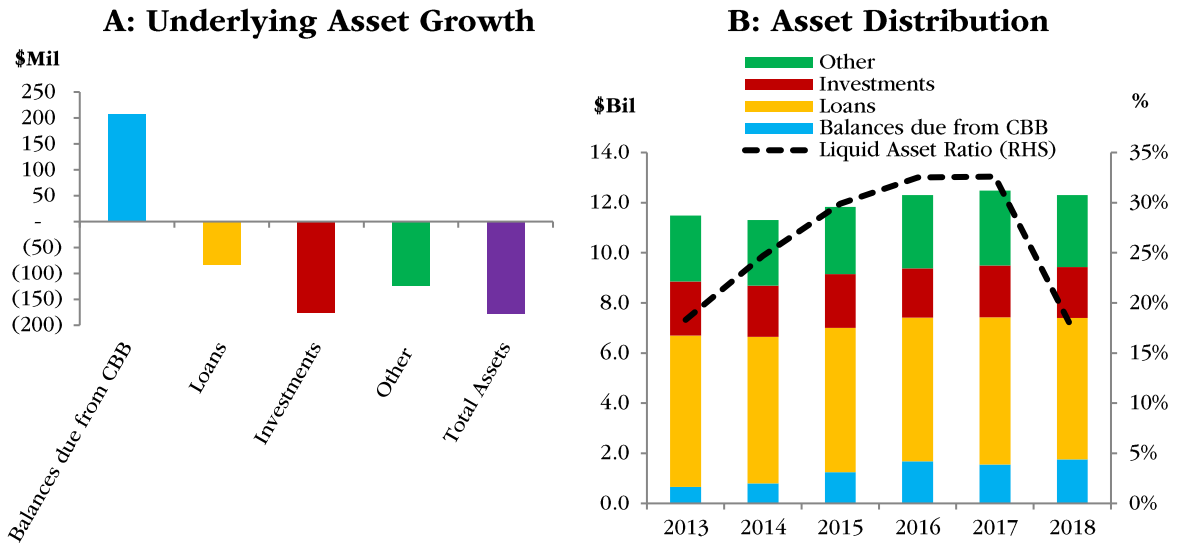
Source: Central Bank of Barbados

The consolidated balance sheet of banks contracted by 5 percent. The amalgamation of one of the larger banks with its subsidiary finance and trust company cushioned the impact of a one-off settlement of a foreign currency inter-company loan that reduced gross loans. Net of these transactions, total assets declined by 1.4 percent, principally the result of the accounting adjustment resulting from the debt restructuring.

With banks indicating only modest lending opportunities, balances held on reserve at the Central Bank grew by 14 percent (**Figure 17**). Liquidity remained high with an excess cash ratio of 16.5 percent, up from 14.6 percent in 2017 (**Figure 18**). At the same time, the reduction in the securities requirement ratio from 20 percent to 17.5 percent helped to raise the excess security ratio which stood at 4.8 percent at the end of 2018. As a result of the debt restructuring, liquid assets as a percentage of total assets declined to 17 percent due to the maturity extension on treasury bills.

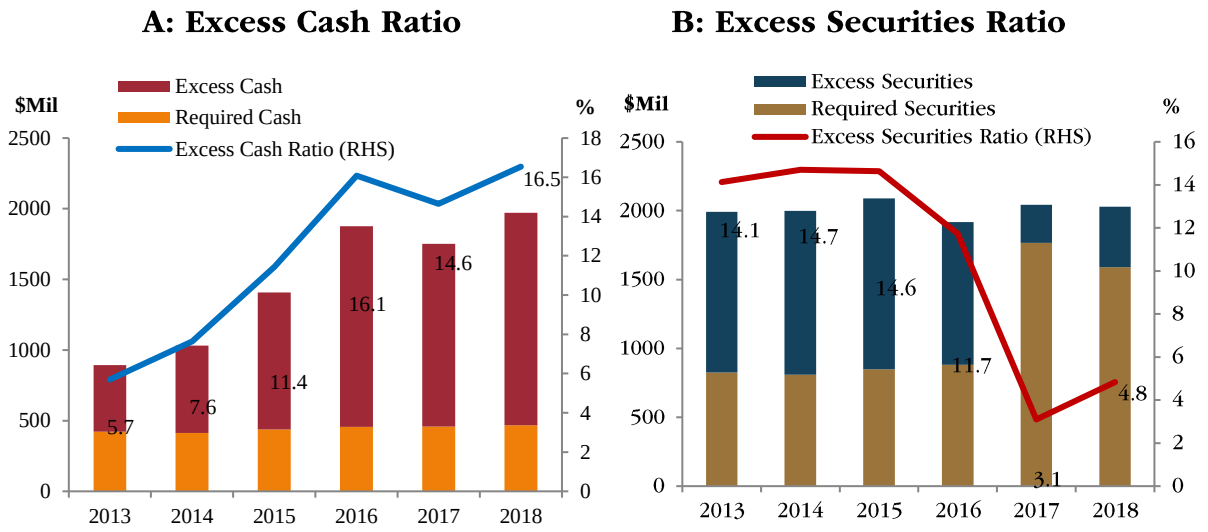
[4] Transferable deposits comprise call deposits, demand deposits and savings deposits with unrestricted withdrawal privileges.

Figure 17 : Total Assets



Source: Central Bank of Barbados

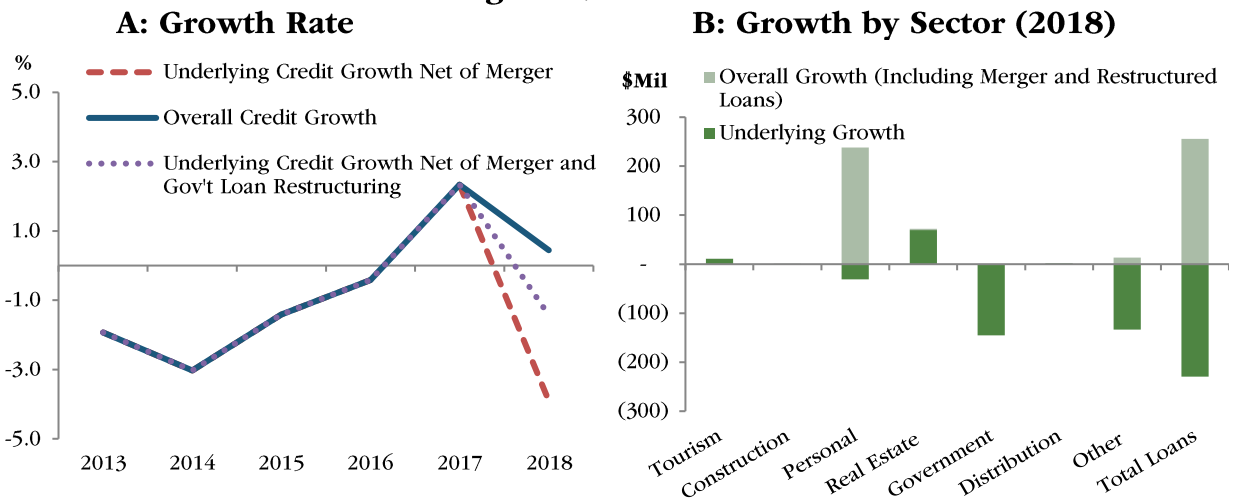
Figure 18: Excess Liquidity



Source: Central Bank of Barbados

During 2018, the amalgamation of the parent bank with its mortgage lending affiliate enabled domestic-currency credit to expand by 0.4 percent but there was an underlying contraction of 3.9 percent. The decline was largely attributed to the reclassification of loans to Government into securities and a shrinkage in the consumer credit portfolio. After adjusting for both the reclassification of Government loans and the amalgamation, domestic currency credit contracted by approximately 2 percent. However, there was modest growth in real estate and tourism loans by 5 percent and 10 percent, respectively (**Figure 19**).

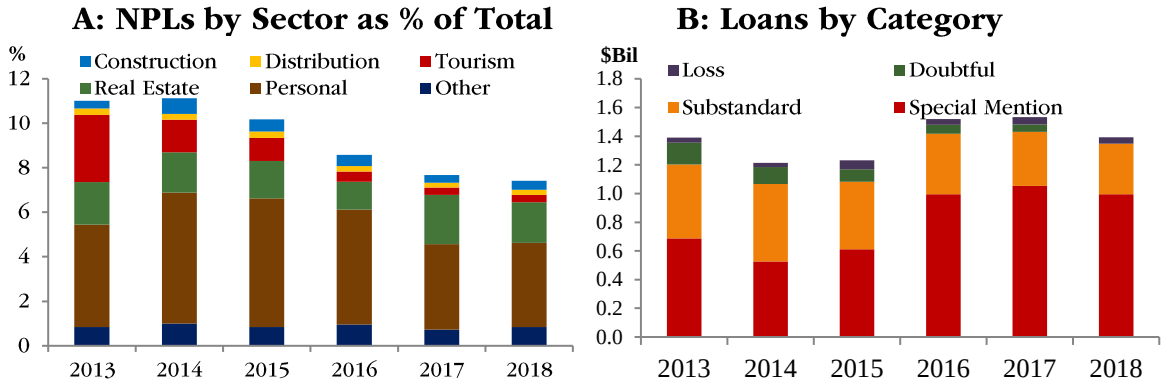
Figure 19: Loan Growth



Source: Central Bank of Barbados

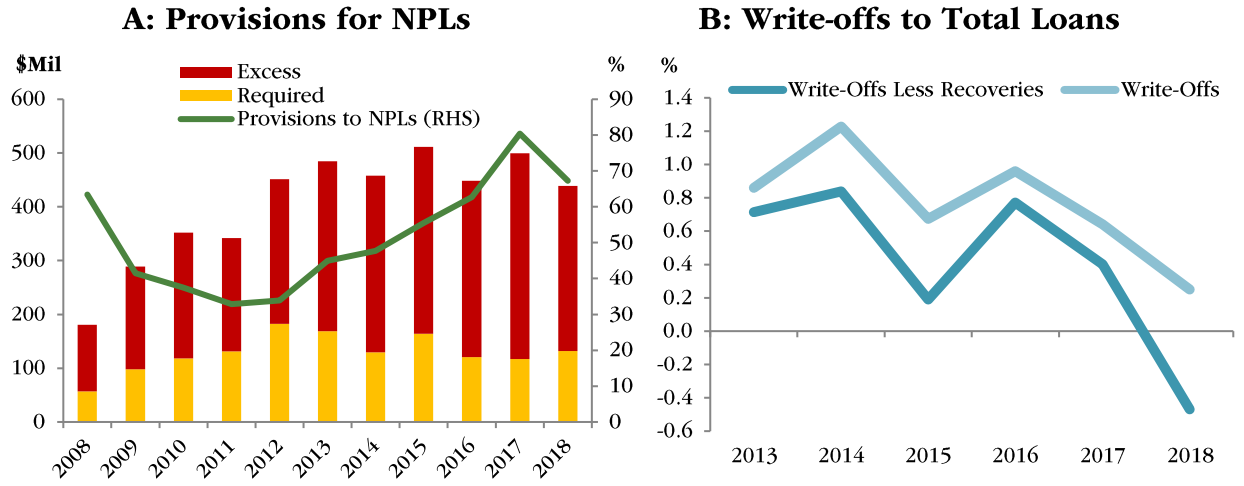
The non-performing loans to total loans ratio fluctuated during 2018. NPLs increased by 20 basis points to 7.9 percent in the first quarter before rising 11.2 percent by the end of the third quarter. This temporary surge in non-performing loans occurred due to the classification of loans to Government and its entities as "substandard", following the debt restructuring announcement. At the end of the fourth quarter, NPLs reverted to 7.4 percent as loans to government were restructured and converted to debt securities (**Figure 20**). Total classified loans declined by 5 percent and this was reflected in loans classified as "substandard" and "loss". The substandard category continued to account for the largest share of gross classified debt, accounting for 78 percent while the doubtful and loss categories represented 12 percent and 10 percent, respectively.

Figure 20: Non-Performing Credit Portfolio



Provisions-to-NPLs contracted to 67 percent, from 80 percent in the previous year **(Figure 21)**. However, the fall in provisions to NPLs largely reflects adjustments made by institutions that had significantly over-provisioned prior to the debt restructuring. Banks are also making considerable strides towards recovering bad debt, indicative of recoveries outstripping write-offs for the year. Furthermore, write-offs continue to represent a modest percentage of total loans outstanding.

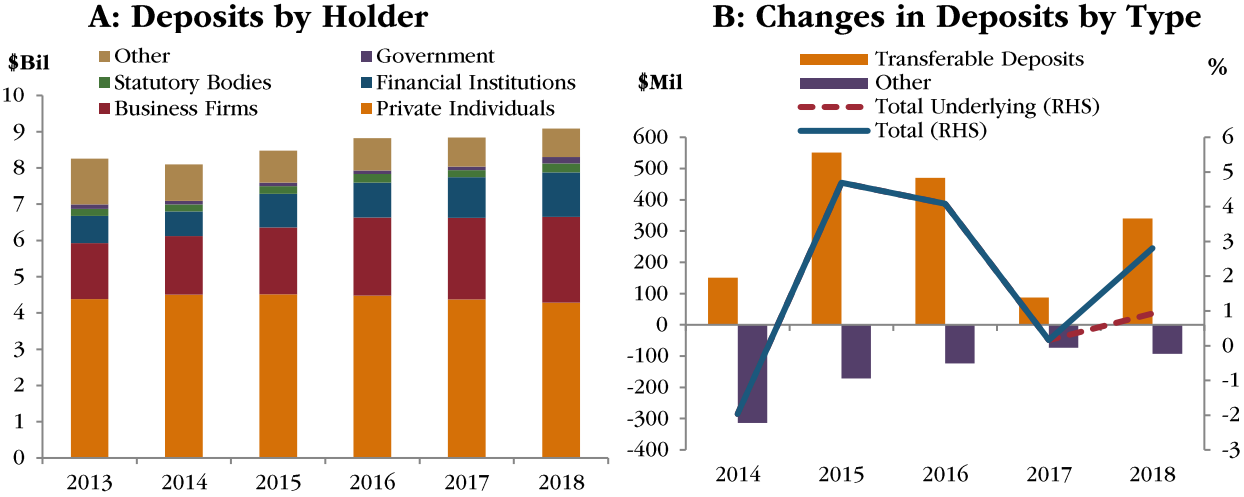
Figure 21: NPLs Provisions and Write-offs



Source: Central Bank of Barbados

Deposits grew by 2.8 percent, but net of the amalgamation deposits growth was only 1 percent. These gains were fuelled by increases in deposits held by all major categories except private individuals. In the prevailing low deposit rate environment, deposits by private individuals have been falling since 2015, with some individual deposits migrating to the credit union sector in search of higher yields. Consequently, deposits held by private individuals declined by 2.0 percent (**Figure 22**). In contrast, deposits held by businesses and financial institutions grew by 5.1 percent and 9 percent, respectively. The decline in deposit rates has also spurred an increasing proportion of deposits held in immediately accessible or "transferable" accounts versus deposits which are largely on fixed term contracts.

Figure 22: Domestic Deposits

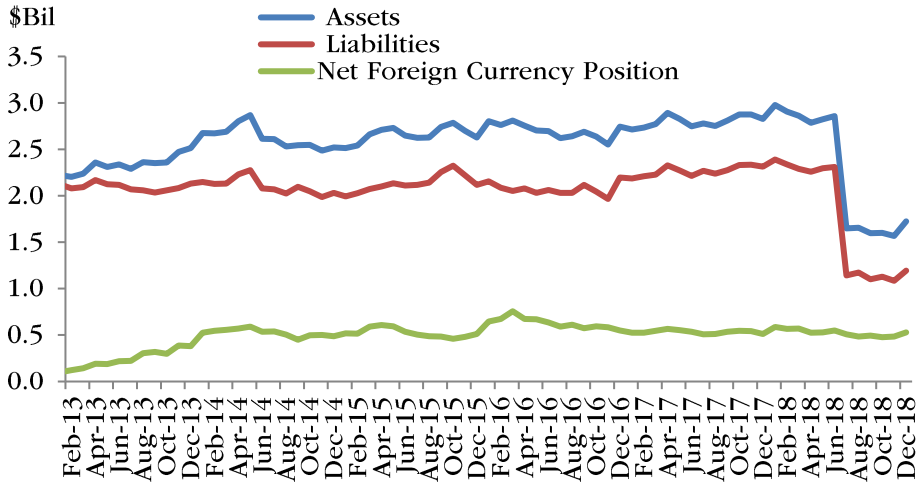


Source: Central Bank of Barbados

There was a moderate improvement in the net foreign currency position of banks. The settlement of the large foreign currency group transaction reduced both assets and

liabilities denominated in foreign currency, but there were declines in other foreign assets and liabilities (**Figure 23**). Foreign currency deposits which accounted for 6.8 percent of total deposits at year end and foreign currency loans which represent 4 percent of the overall loan portfolio declined.

Figure 23: Net Foreign Currency Position

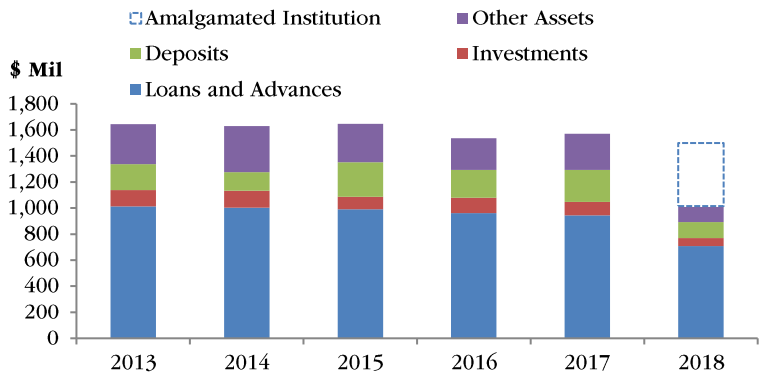


Source: Central Bank of Barbados

4.2 Deposit-taking Finance and Trust Companies

The intra-group amalgamation removed the largest company from this sub-sector, which resulted in a 35.4 percent decrease in assets compared to the corresponding period in 2017 **(Figure 24)**. However, after discounting the effects of the amalgamation, the decline in the underlying assets of the sub-sector was 4 percent. This was partly due to a 35 percent reduction in investments in securities as the sub-sector did suffer some losses from the debt restructuring. However, these were contained as these institutions did not have significant exposure to government.

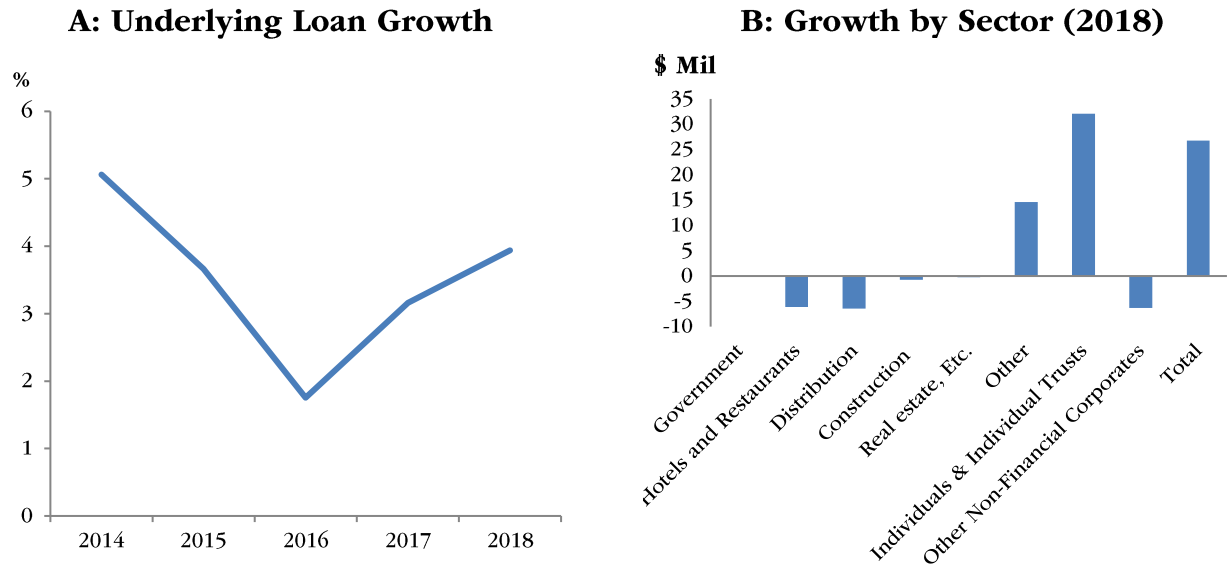
Figure 24: Asset Distribution



Source: Central Bank of Barbados

Loans and advances remained the principal asset class, recording a net underlying gain of 3.9 percent, up from 3.2 percent in 2017, with lending to individuals increasing by 3.2 percent. **(Figure 25).**

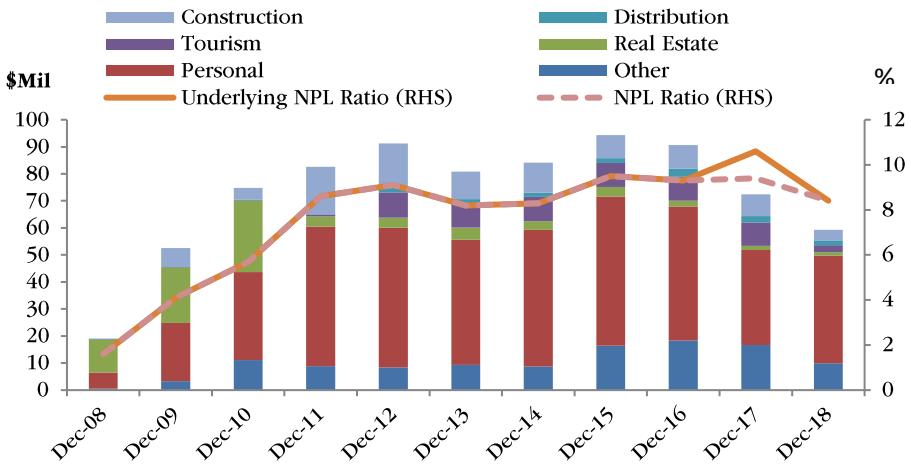
Figure 25: Loan Growth



Source: Central Bank of Barbados

Excluding the effects of the amalgamated company, total non-performing loans declined across all sectors except the personal lending sector, falling from 10.6 percent, to 8.4 percent in 2018 (**Figure 26**). Two institutions were primarily responsible for these declines which were mainly due to substantial write-offs of existing bad debts, and some recoveries.

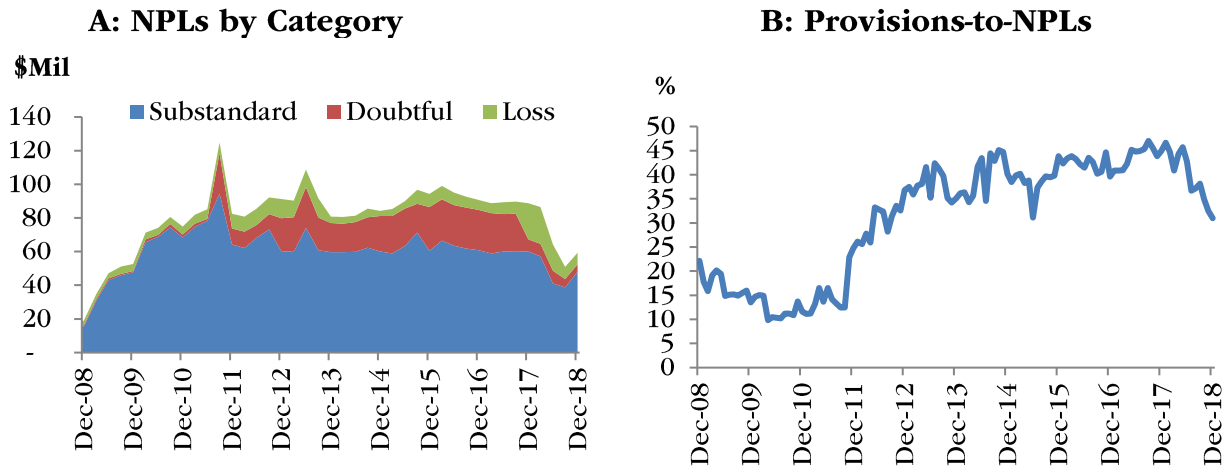
Figure 26: Non-Performing Loans by Sector



Source: Central Bank of Barbados

These events resulted in 81 percent of NPLs being in the substandard classification, compared to 64 percent the previous year. Year-end provisions for NPLs declined due to write-offs. The new composition of the NPL portfolio, with fewer loans requiring provisions, led to a 19 percent drop in the provisions to NPLs ratio to 31 percent (**Figure 27**).

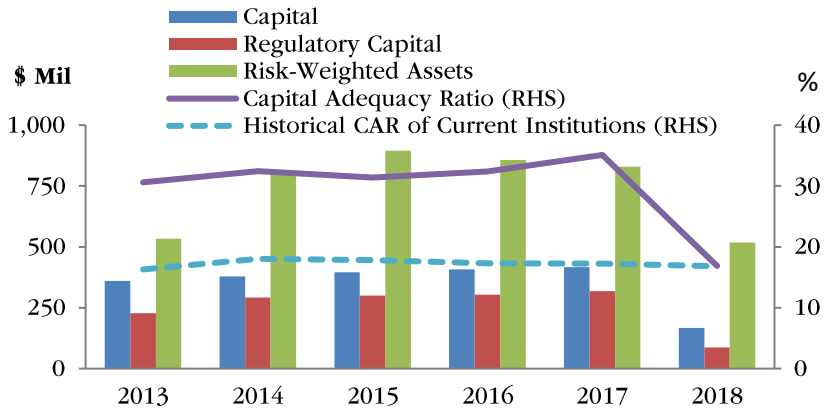
Figure 27: Non-Performing Loans & Provisioning



Source: Central Bank of Barbados

The capital adequacy ratio of companies remaining in the subsector declined to 16.9 percent in 2018 from 17.2 percent one year earlier. This is more than twice the industry standard and is considered adequate for the degree of risk exposures carried by the sub-sector. (**Figure 28**).

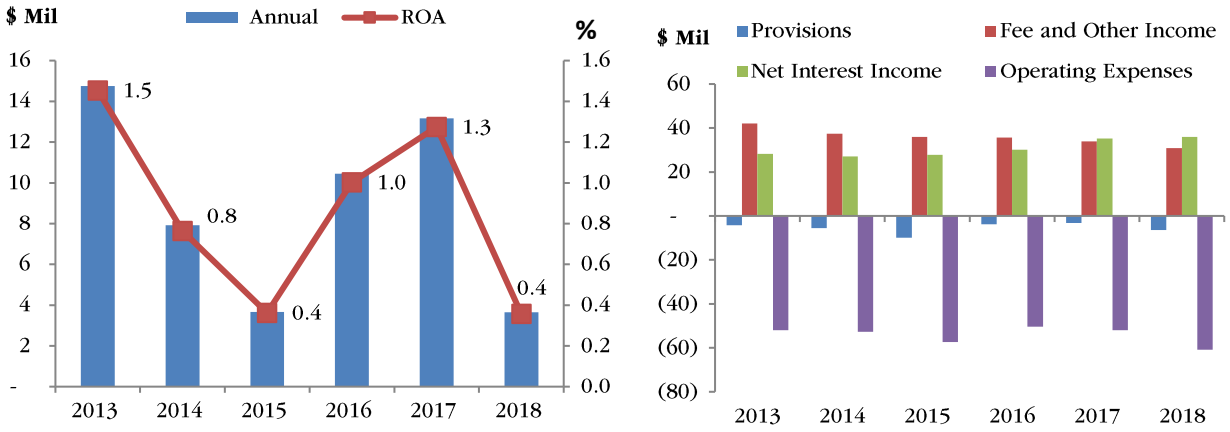
Figure 28: Capitalisation



Source: Central Bank of Barbados

After extracting the amalgamated company from the historical performance, the return on assets fell to 0.4 percent down from 1.3 percent in 2017 (**Figure 29**). Only half of the companies in this sub-sector were profitable in 2018 as falling fee and other income and rising operating expenses reduced aggregate profitability.

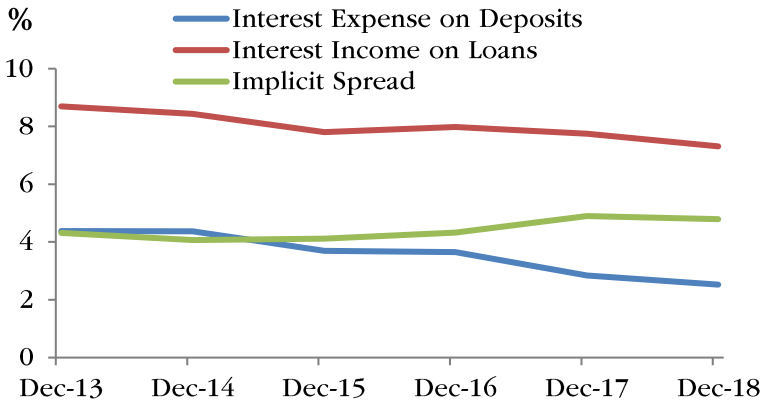
Figure 29: Profitability



Source: Central Bank of Barbados

The average loan rates for finance and trust companies declined to 7.3 percent, while average cost of funds fell to 2.5 percent at December 2018. The result was a marginal reduction of the spread to 4.8 percent (**Figure 30**).

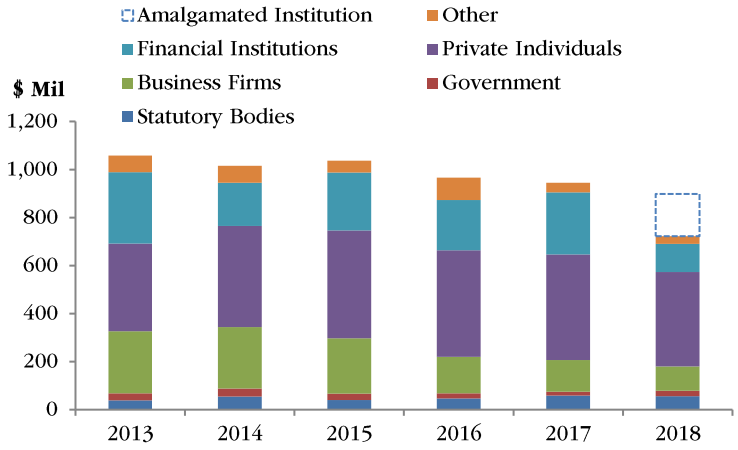
Figure 30: Interest Rates



Source: Central Bank of Barbados

Total deposits fell by 24 percent but excluding the amalgamation, underlying growth in total was flat. **(Figure 31).** The deposits of insurance companies declined but the deposits of credit unions and other corporates helped to compensate for the loss. The general distribution of deposits in this sector remained unchanged with private individuals holding over 54 percent.

Figure 31: Deposits by Holder



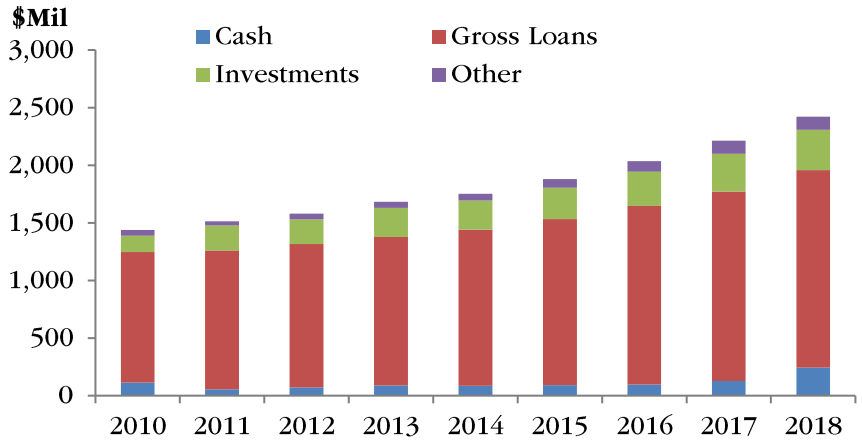
Source: Central Bank of Barbados

The liquidity position of this sub-sector showed some moderate improvement over the year with deposit balances at other financial institutions increasing and the loan to deposit ratio declining from 101 percent to 97.8 percent.

4.3 Credit Unions

The credit union sector experienced growth in 2018, with total assets rising by 9.5 percent over the period (**Figure 32**) One significant facet of this growth was loans, which expanded by 4.2 percent, as the credit union sector outperformed other deposit-taking intermediaries in loan origination. Nevertheless, this performance represented the slowest rate of expansion of the credit unions' loan book in the past five years. Given robust deposit growth, the sector grappled with burgeoning liquidity, reflected in rising cash and other liquid assets, which nearly doubled. Collectively, the credit unions were only modestly impacted by Government's debt restructuring, but the unavailability of short-term treasury bills to manage short-term liquidity spurred the credit unions to hold larger deposit balances at other financial institutions.

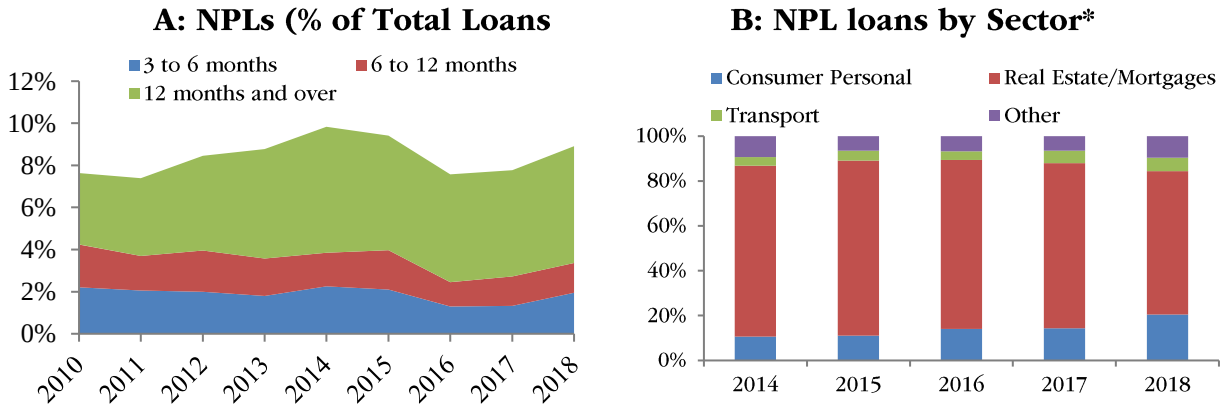
Figure 32. Assets of the Credit Union Sector



Source: Financial Services Commission

Non-performing loans (NPLs) for the sector rose to approximately 8.9 percent of gross loans compared to 7.8 percent at the end of 2017. The increase in loans classified as non-performing was almost equally split between in the twelve-month-and-over and three-to-six-month categories **(Figure 33)**.

Figure 33: Non-Performing Loans

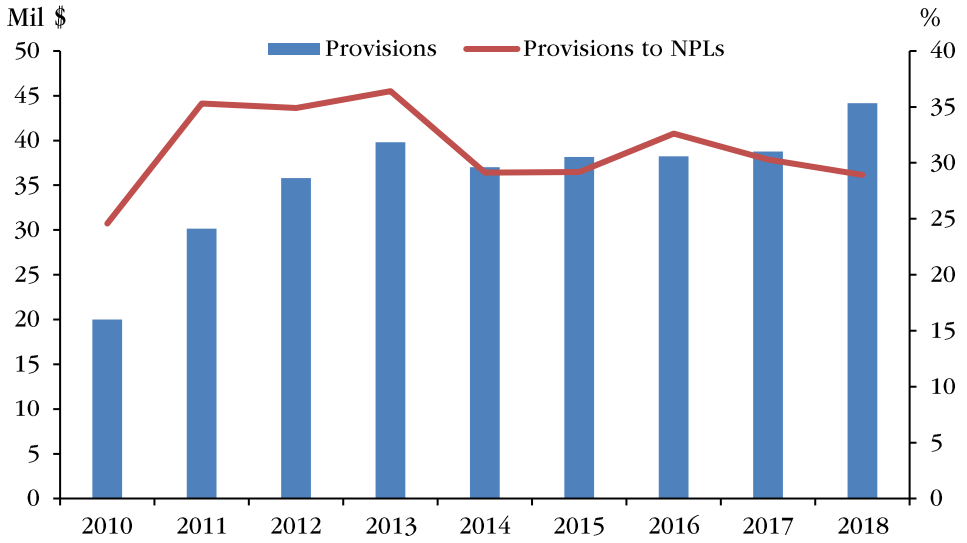


Source: Financial Services Commission

**This data captures 80 percent of the sector*

Data for the largest credit unions shows that real estate/mortgages continue to be the most significant component of the NPLs, accounting for 57.5 percent of the total, followed by consumer personal lending, which accounted for approximately 18.3 percent of NPLs. While the credit unions continued to write-off loans in the twelve-month-and-over category, these were generally unrelated to mortgages. Consequently, the twelve-month-and-over category of NPLs remains elevated. Provisioning within the sector increased modestly but due to the rising NPLs, the provisions-to-NPL ratio fell slightly to 28.9 percent in 2018 **(Figure 34)**.

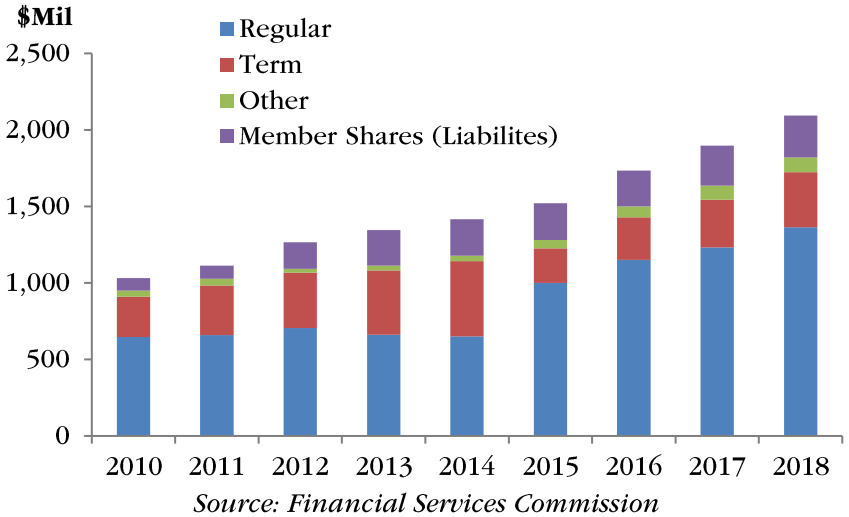
Figure 34: NPLs as a Percentage of Provisioning



Source: Financial Services Commission

Funding for the growth in assets continued to be provided largely by regular members' savings and term deposits. With the abolition in 2015 of the minimum savings rate at commercial banks', credit unions have seen an acceleration in deposit growth as savers seek higher yields than what is available in the commercial banking sector. Indeed, deposits grew by an average of 11 percent per annum in the four years ending 2018, while between 2010 and 2014 the average rate of growth was just under 7 percent per year. Member savings' over 2018 expanded by 10.4 percent, with regular and term deposits being the main contributors **(Figure 35)**.

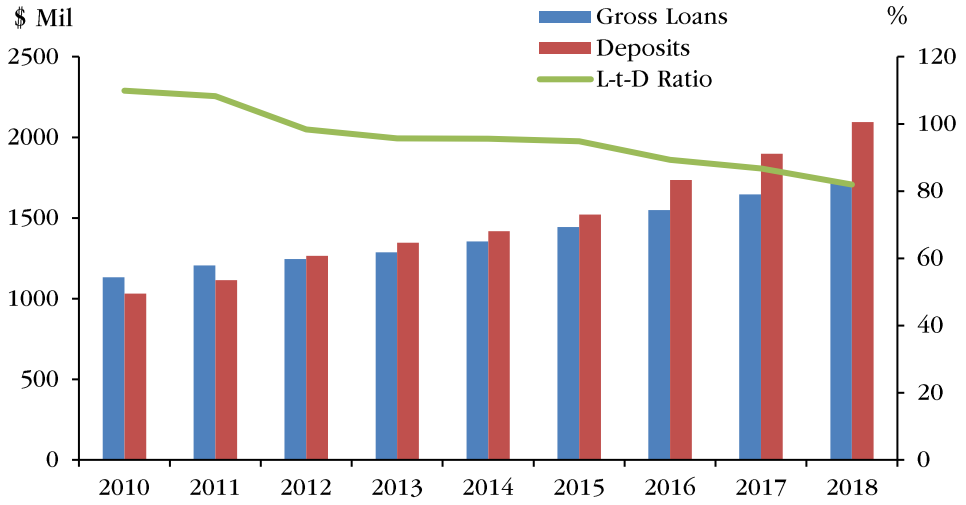
Figure 35: Member Savings



Source: Financial Services Commission

Another major indicator of rising liquidity with the credit union sector, has been the ratio of the sector's loans to its deposit base. In a reflection of the modest loan demand relative to significant deposit inflows, the downward trend in the loan-to-deposit ratio continued into 2018 with the ratio falling from 86.7 percent to 81.9 percent **(Figure 36).**

Figure 36: The Loan-to-Deposit Ratio

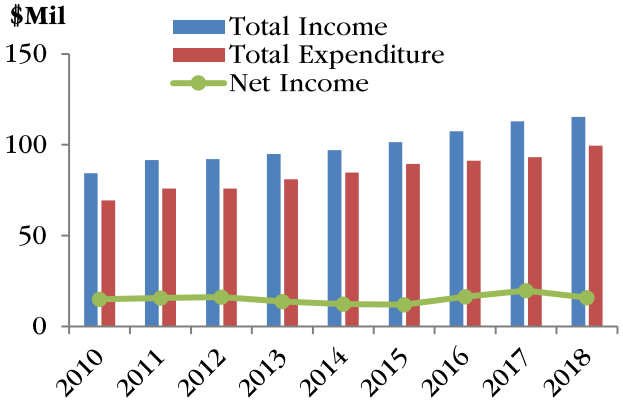


Source: Financial Services Commission

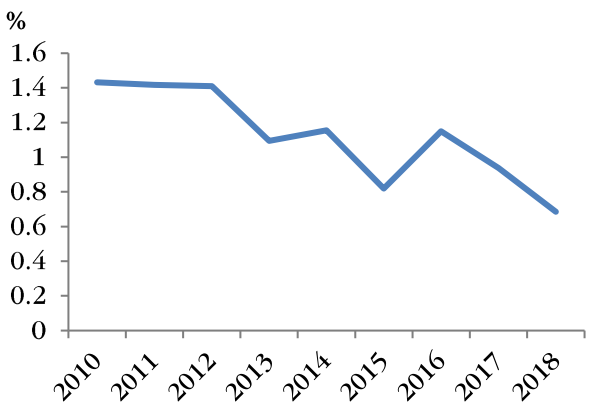
Net interest income for the period under review increased marginally, as higher interest income on loans offset the marginal decline in the investment income and interest expense on deposits. However, a near 6 percent increase in operational expenditure and rising loan loss expenses drove down the overall net income by 19 percent compared to 2017 **(Figure 37)**. Consequently, the return on average assets slipped for the second consecutive year, falling to 0.7 percent.

Figure 37: Profitability

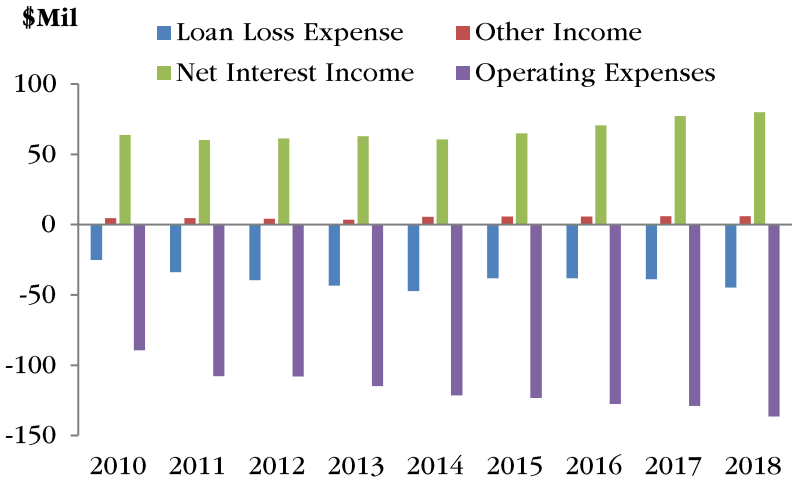
A: Net Income



B: Return on Average Assets



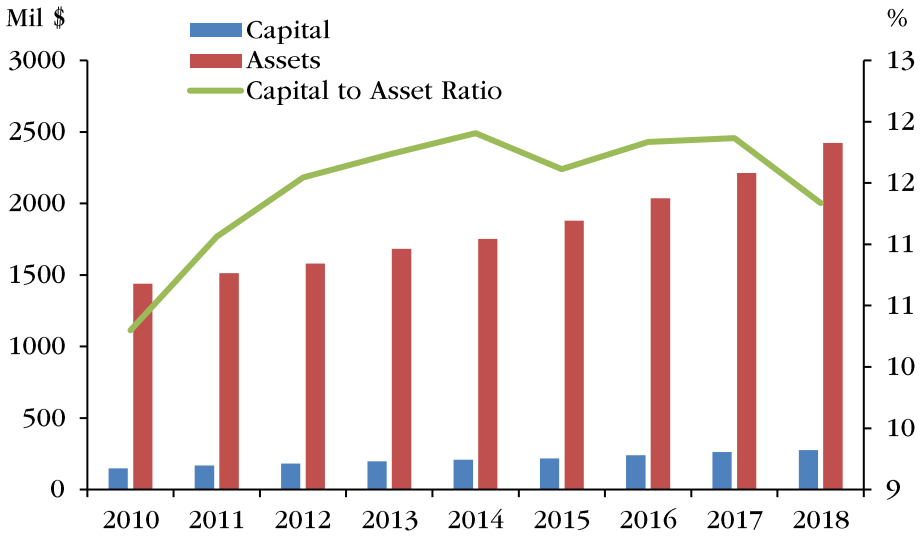
C: Components of Net Income



Source: Financial Services Commission

With the growth in assets and weaker profitability, the credit union sector experienced a marginal decline in its capital-to-asset ratio. However, the capital-to-asset ratio remained above the regulatory requirements of 10 percent **(Figure 38)**. Two credit unions registered capital asset ratios below the threshold.

Figure 38: Capital to Asset Ratio



Source: Financial Services Commission

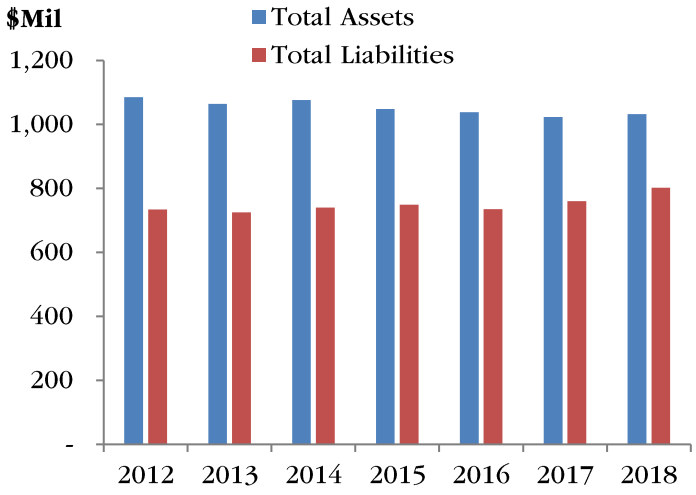
4.4 Insurance Companies

The combined assets for the sector were 10.1 percent higher than at December 2017. However, the performance of life and general segments continued to diverge, with the life insurance industry continuing to outperform general insurance as has been the case since 2015. The life insurance sub-sector accounted for over 75 percent of assets at year-end. The general insurance sector became slightly more concentrated as one of the smaller companies merged with a larger one.

The General Insurance Sector

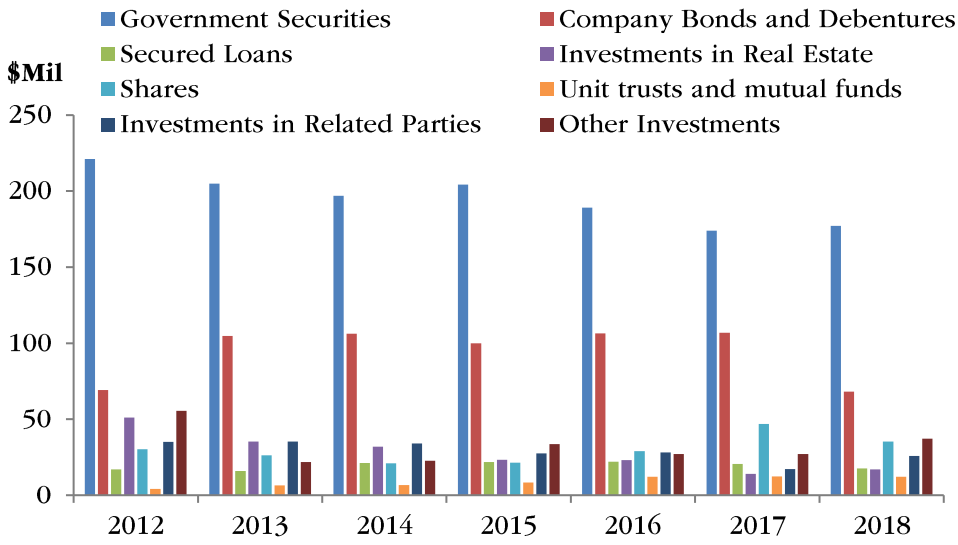
Total assets of the general insurers were only 0.9 percent higher than the assets as at December 2017 **(Figure 39)**. Cash and cash equivalents held by the sector increased by 19.9 percent as the industry adjusted its portfolio in light of the restructuring of treasury bills. At the same time, there was a significant decline in the investments of the sector, which was down 6.8 percent over 2017. Corporate bonds and debentures declined by 36.3 percent while holdings of shares fell by 24.6 percent. Government securities increased marginally, the result of increased holdings of government debt from non-Barbadian jurisdictions **(Figure 40)**.

Figure 39: Assets and Liabilities



Source: Financial Services Commission

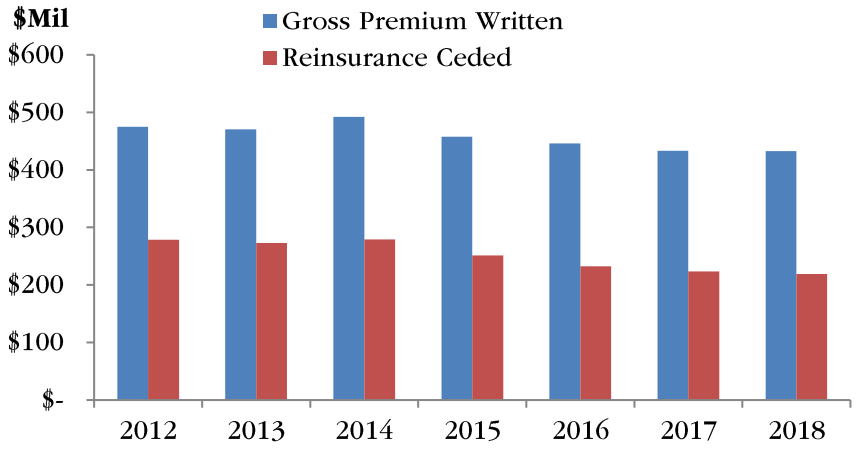
Figure 40: Classes of Investments for the General Insurance Sector



Source: Financial Services Commission

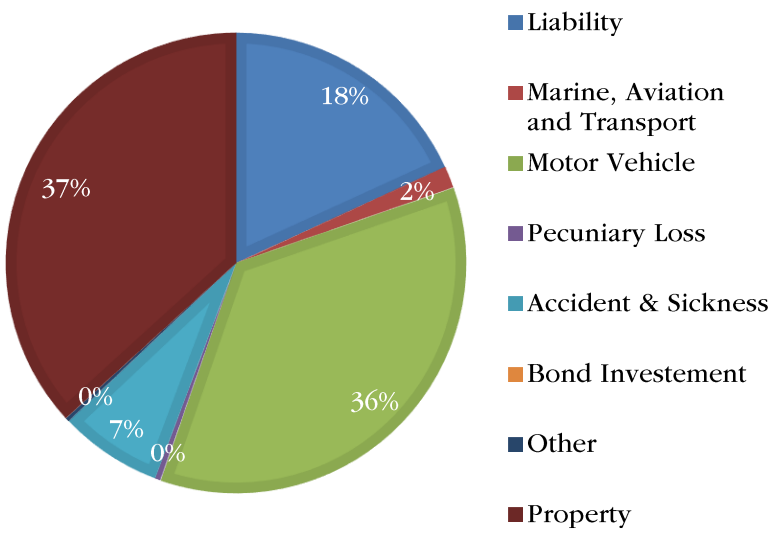
Gross premiums, which have declined continuously since 2014, fell by 2.5% in 2018, as the industry continued to grapple with weak underwriting growth **(Figure 41)**. Property and Motor Vehicle continue to be the largest lines of business for the sector, accounting for 37 and 36 percent of premiums, respectively **(Figure 42)**. However, reinsurance ceded for the sector was approximately 2.0 percent less than in 2017, resulting in a modest uptick in net premiums retained by the industry and a risk retention ratio of above 50 percent of the gross premiums written each year.

Figure 41: Gross Premiums Written vs Reinsurance Ceded for the General Insurance Sector



Source: Financial Services Commission

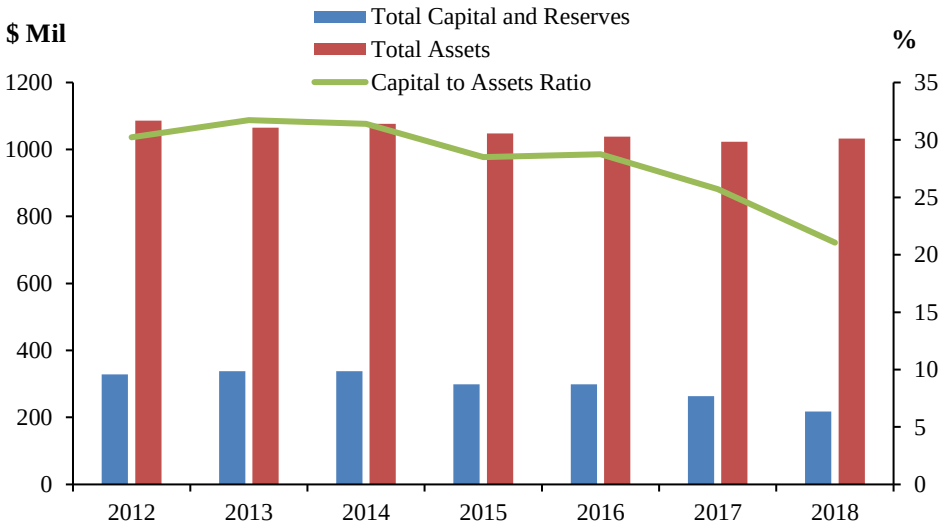
Figure 42: Gross Premiums Written 2018



Source: Financial Services Commission

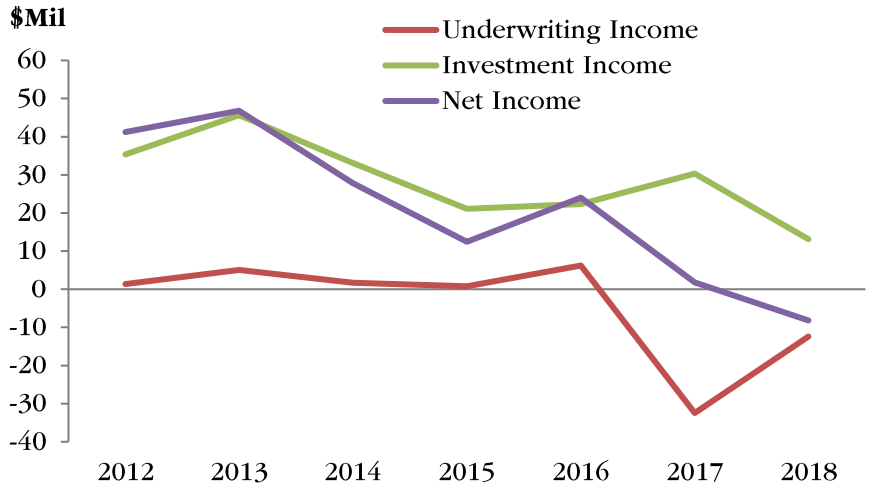
Net claims, were 30 percent lower than one year ago, the lowest figure in the last seven years. This resulted in a narrowing of losses in terms of industry's net underwriting income. However, this was insufficient to compensate for the significant fall in investment income, resulting in overall losses in the general insurance industry in 2018 **(Figure 43)**. The decrease in retained earnings drove down the capital-to-asset ratio, which fell to 21.1 percent, the lowest figure since 2012 **(Figure 44)**.

Figure 43: Capital to Asset Ratio of the General Insurance Sector



Source: Financial Services Commission

Figure 44: Profitability of the General Insurance Sector

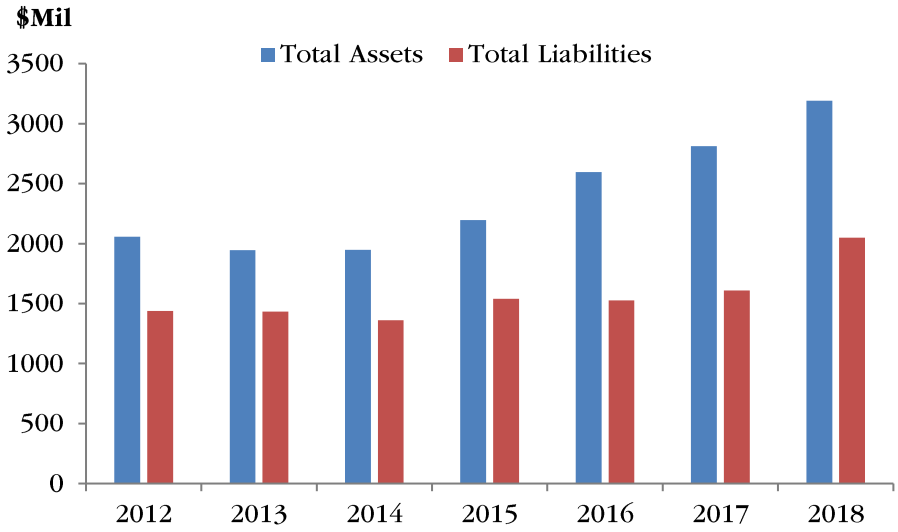


Source: Financial Services Commission

The Life Insurance Sector

Unlike the general insurance segment, the life insurance industry registered significant growth in assets, if not revenues, in 2018. Total assets for the life insurance sector grew by 13.4 per cent, evidenced by a 65 percent increase in the non-domestic government investment portfolio **(Figure 45)**.

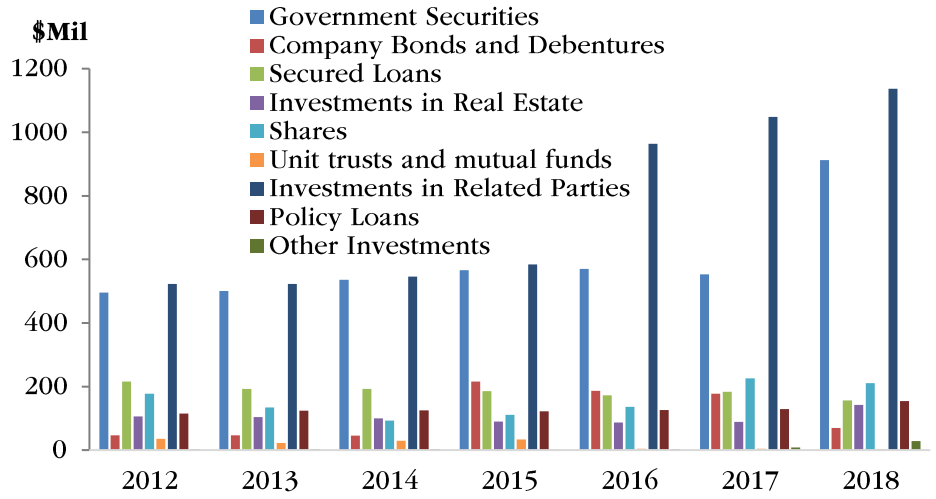
Figure 45: Total and Assets and Liabilities of the Life Insurance Sector



Source: Financial Services Commission

There was also significant growth in investments in real estate, related parties and policy loans. The sector did, however, record a decline in corporate bonds and debentures **(Figure 46)**.

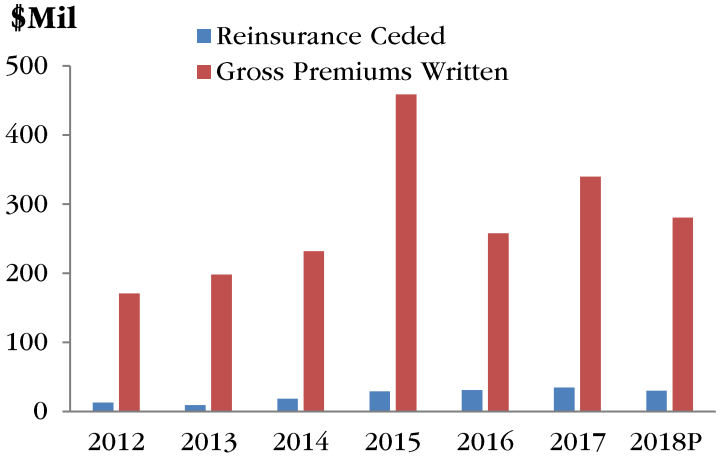
Figure 46: Classes of Investments for the Life Insurance Sector



Source: Financial Services Commission

Gross premiums for the life insurance sector experienced a decline of approximately 17.4 percent in 2018, as premium revenue returned to normal growth after the exceptional performance in 2017 **(Figure 47)**. With premiums falling, reinsurance ceded also declined. Ordinary life premiums remained the major line of business for the life insurance sector but fell to 57 percent of total premiums written[5]. Annuities assumed a greater importance relative to 2017 **(Figure 48)**.

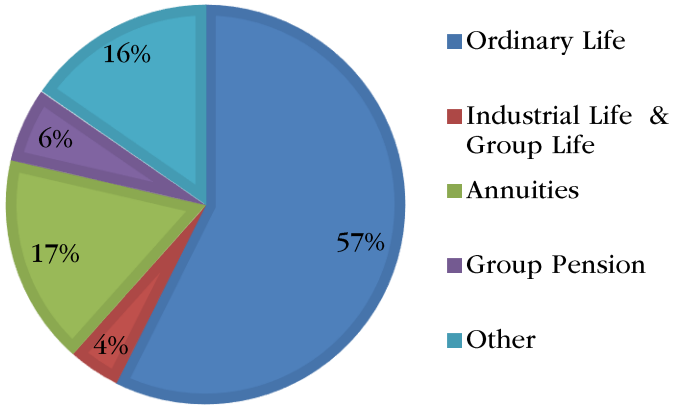
Figure 47: Gross Premiums Written vs Reinsurance Ceded



Source: Financial Services Commission

[5] The category "Other lines of business" accounted for 16 percent and is comprised of classes of business such as group and individual health, group life and creditor life and health.

Figure 48: Gross Premiums Written 2018 by Type



Source: Financial Services Commission

Profitability for the sector declined moderately relative to the exceptional performance of 2017. Total expenses for the period actually decreased, but the fall in revenue recorded by the sector, resulted in decreased net income. Despite the fall in profitability, the ROA of 4% in 2018, was on par with performance of industry between 2014 to 2016 **(Figure 49)**. The life insurance sector remained well capitalised but the capital-to-asset ratio for the sector experienced a slight decline, falling to 40.4 percent at December 2018 **(Figure 50)**.

Figure 49: Profitability

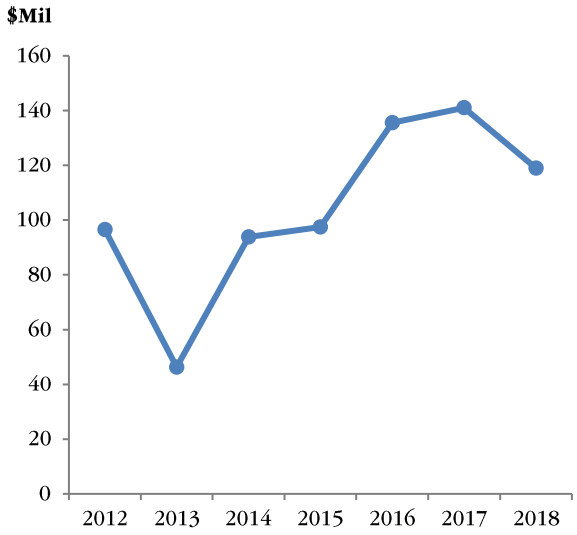
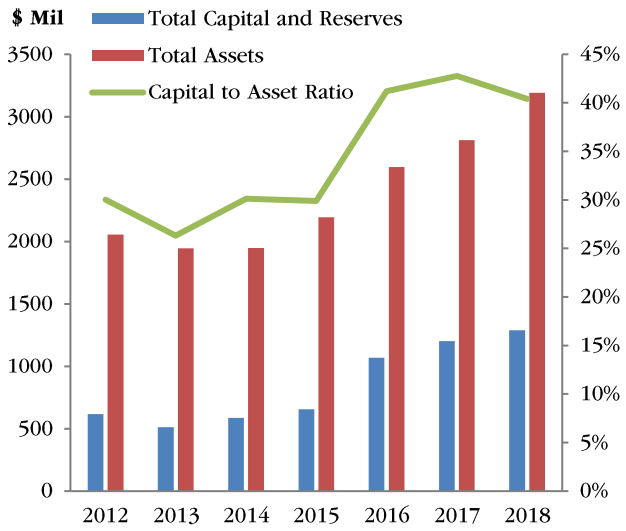


Figure 50: Capital to Asset Ratio



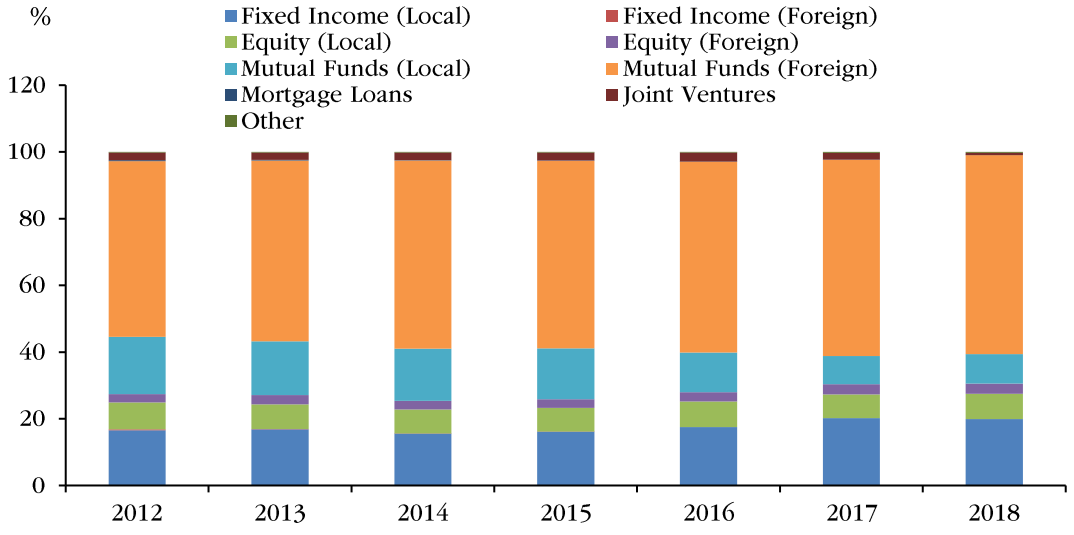
Source: Financial Services Commission

4.5 Pension Funds

The performance of the occupational pension plan industry during 2018 was influenced by the debt restructuring and the relative exposure that individual plans had in government securities. Preliminary data indicates that the assets of the occupational pension plan industry grew by 1.1 percent. However, some downward adjustment in the valuation is anticipated as pension funds update the valuation of their holdings of Government of Barbados paper. Some registered plans were directly exposed to Government of Barbados debt at the time of restructuring while there was also indirect exposure through investments in mutual funds. Plans that are part of cross-border schemes and that are invested in foreign mutual funds, which continue to be the largest segment of the investment portfolio, were less adversely affected.

The restructuring could impact the liquidity of some plans because of the lower interest coupons on the new securities, but this may be mitigated in the short-term by the build-up of cash and cash equivalents arising from the limited investment opportunities for long-term investors. Cash and cash equivalents were 26.9 percent higher than in 2017 but investments for the period declined marginally, with local fixed income securities now accounting for 19.9 percent of the investment portfolio. Foreign mutual funds continue to be the largest segment of the investment portfolio for the sector accounting for 59.7 percent **(Figure 51)**.

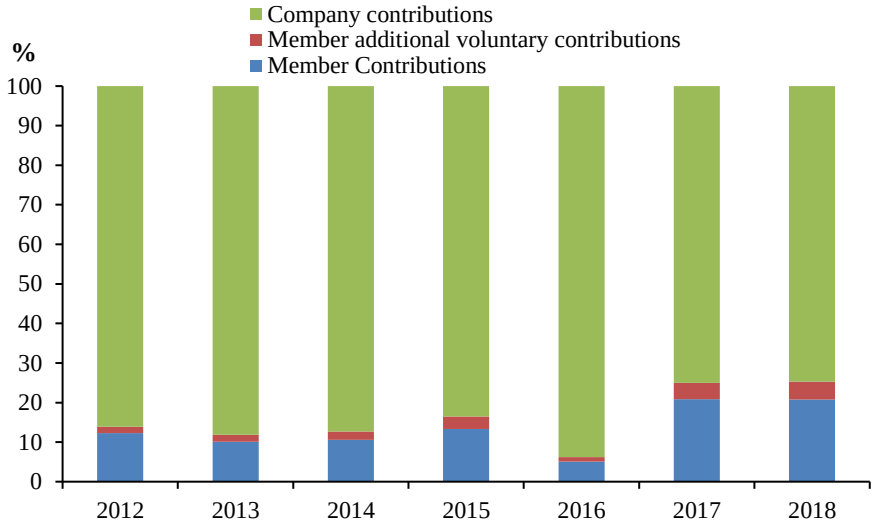
Figure 51: Distribution of Investments as a Percent of Total Plan Value



Source: Financial Services Commission

As **Figure 52** indicates, corporate contributions consistently accounted for over 70 percent of total contributions between 2017 and 2018, as compared to an average of around 86 percent between 2012 and 2015. In 2016, company contributions eclipsed the increase in member contributions as one large plan made a significant injection into its pension plan.

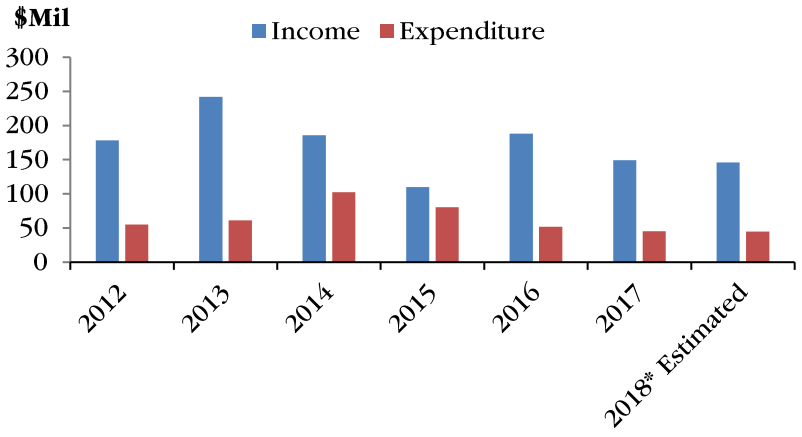
Figure 52: Relative Share of Pension Plan Contributions



Source: Financial Services Commission

Total income for the pensions sector is likely to be impacted in the near future, particularly for occupational pension plans that are heavily exposed to domestic Government debt. Already, the partial 2018 figures have shown a marginal decline **(Figure 53)**.

Figure 53: Total Income and Expenditure for the Pension Industry

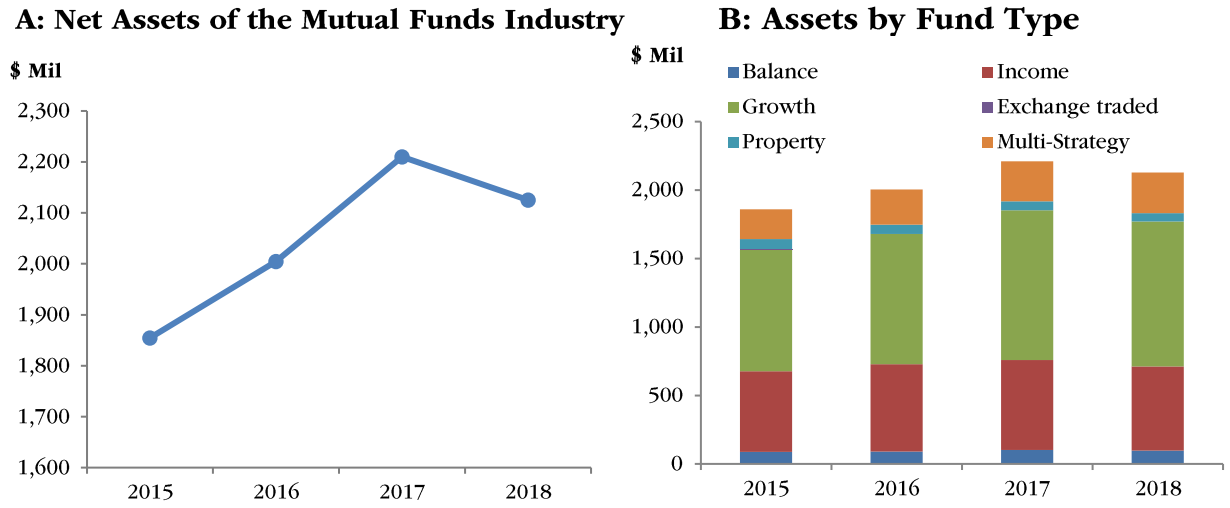


Source: Financial Services Commission

4.6 Mutual Funds

Net assets for the mutual fund sector decreased by 3.8 percent during 2018. The most significant contributors to this decline were fixed income instruments, which fell by 22.8 percent, followed by cash equivalents and equities, respectively. Much of this decline in fixed income can be attributed to extraordinary events associated with the restructuring of Government's debt as well as the maturing of some fixed income securities.

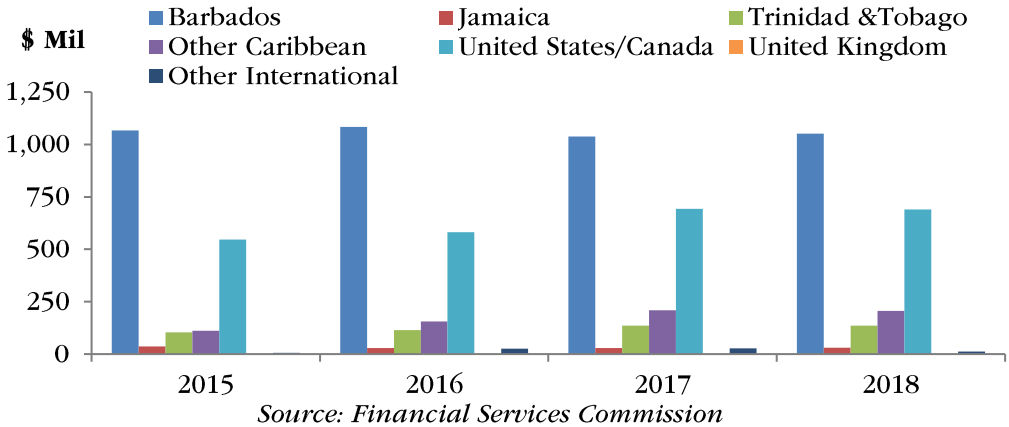
Figure 54: Assets



Source: Financial Services Commission

Jurisdictional exposures remained relatively similar to prior years **(Figure 55)**, with the most significant country exposure being Barbados (49.5 percent), followed by the United States/Canada (32.5 percent).

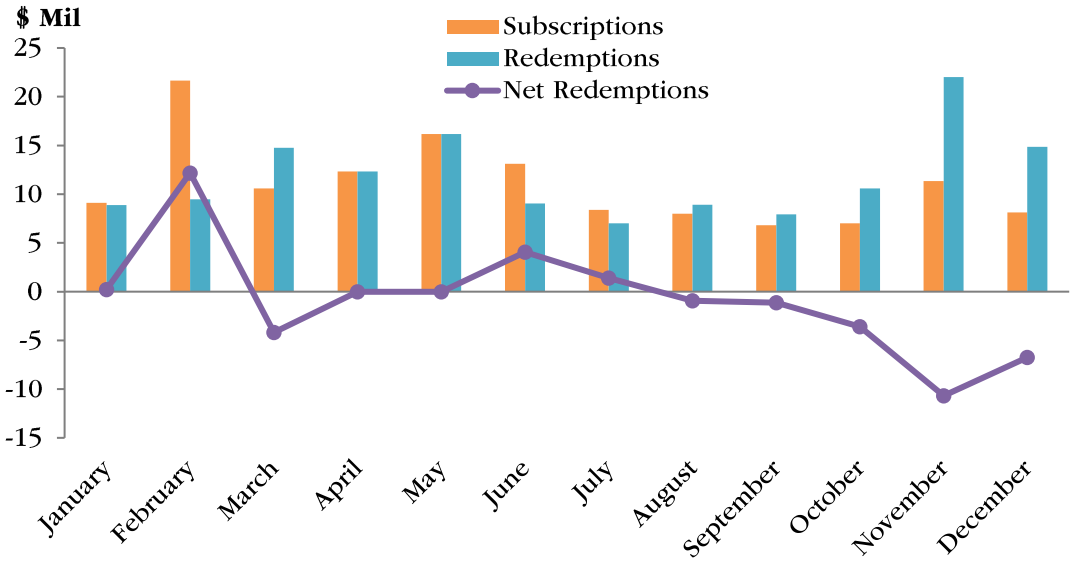
Figure 55: Jurisdictional Exposure



Source: Financial Services Commission

The mutual funds sector experienced negative capital inflows during the latter half of 2018. Subsequent to the announcement of the debt restructuring by the Government, there was an increasing trend towards net redemptions. Consequently, the FSC in recognising the challenges that entities experienced as a result of the debt restructuring, determined that it was in the public's interest to issue an order to cease trading in securities that were subject to the debt restructuring. As a result, the cease trading was issued on July 5, 2018 to regulated entities licensed and registered under the Mutual Funds Act and the Securities Act, and other relevant entities.

Figure 56: Net Redemptions for the Year Ended December 2018



Source: Financial Services Commission

5. Key Financial Stability Indicators

5.1 Deposit Taking Institutions

This section evaluates the resilience of commercial banks, deposit-taking finance and trust companies and credit unions to macroeconomic and other adverse shocks. The impact of the shocks is directly transmitted to the institutions' capital, and is assessed both on an institution-specific and systemic basis. Therefore, the simulations determined whether existing capital buffers were adequate to absorb potential losses and focused particularly on credit, large exposure, liquidity, contagion and interest rate risks. The results indicated that the Government debt restructuring, adoption of IFRS 9 and the weak prevailing macroeconomic conditions in 2018 have significantly reduced the capital and liquidity buffers, and that the resulting condition requires careful monitoring. Consequently, DTIs are generally less able to endure a range of negative shocks when compared to 2017.

5.1.1 Credit Risk

The NPL ratio of DTIs declined marginally to 7.9 percent due mainly to write-offs and recoveries. Banks and finance and trust companies' credit exposure was heavily concentrated in consumer credit which made up roughly 60 percent of their loan portfolios and 51 percent of total NPLs.

Under-provisioning Shocks

The pre-shock provisions to NPLs stood at 69 percent for the banks and finance and trust companies. Due to the reduced provisions, the first shock in the stress tests[6], which focused on under-provisioning, had a significant impact on the banks and deposit-taking finance and trust companies. With no increases in NPLs and with 100 percent provisioning, aggregate post-shock Capital Adequacy Ratio (CAR) declined from 13.9 to 11.8 percent for the banks and from 16.9 to 16.3 percent for the deposit-taking trust and finance companies. At the institutional level, the CAR of one bank and two finance and trust companies fell below the 8 percent prudential/regulatory limit, with one finance and trust company becoming insolvent.

As at December 2018, with average credit union provisions at 28.9 percent, two credit unions were already below the 10 percent threshold for capital. When provisioning was raised to 100 percent to cover expected credit losses in the twelve-months-and-over category of NPLs, the CAR of 5 credit unions fell below the 10 percent threshold.

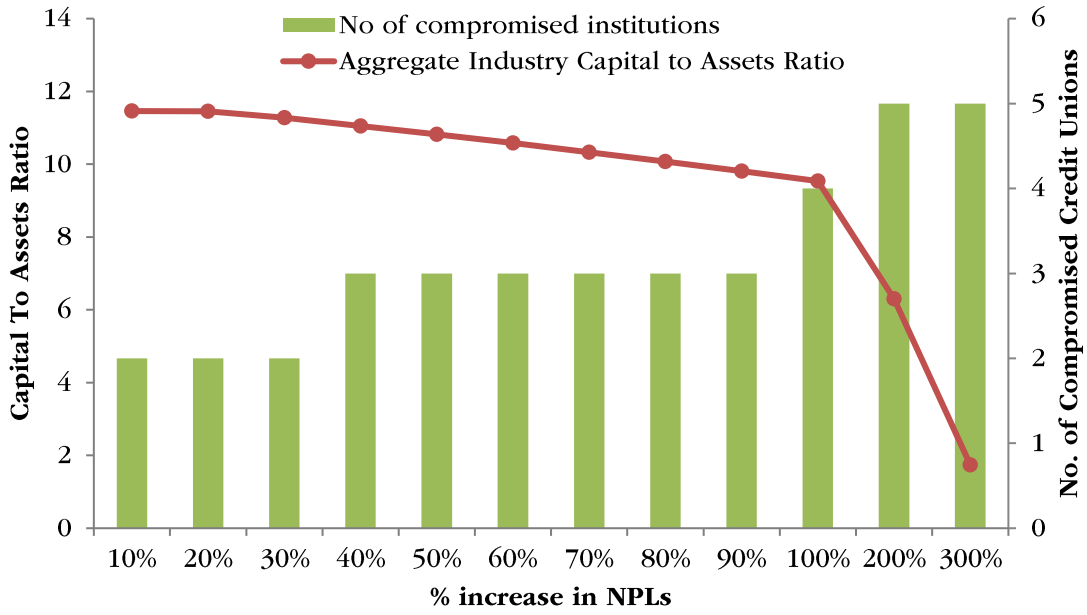
[6] Stress tests on credit, liquidity and interest rate risk for commercial banks and trust and finance companies were guided by the framework of Čihák, M. (2007). Introduction to Applied Stress Testing. IMF Working Paper WP/07/59

NPL Shocks

The second shock in the stress test assessed the impact of increasing NPLs on the CAR or capital levels of credit unions, commercial banks and trust and finance companies.

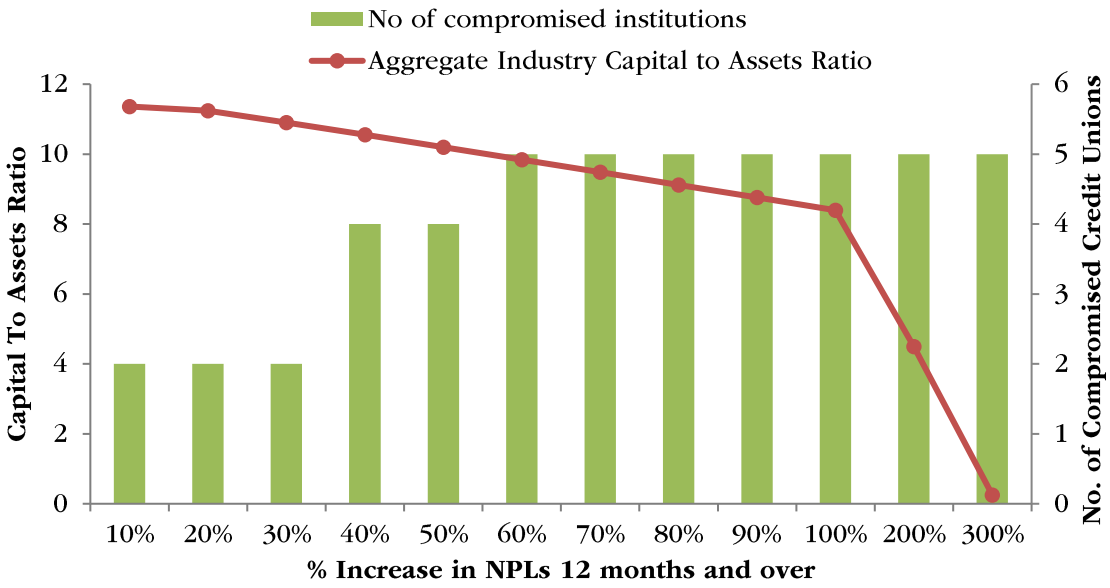
For credit unions, while holding the existing level of provisions constant (28.9 percent of NPLs), progressive iterations were performed to determine the required levels of NPLs needed to lower capital below the legislative requirements. As at December 2018, two credit unions were below the 10 percent threshold for capital, and it requires an increase beyond 30 percent in required provisions for an additional credit union to be compromised. While an increase of over 80 percent in NPLs is required to lower the industry CAR below the 10 percent threshold, an increase in NPLs beyond 330 percent is required for total industry capital to be eroded **(Figure 57)**.

Figure 57: Uniform Increases in NPLs with Provisions Held at the Current Industry Average



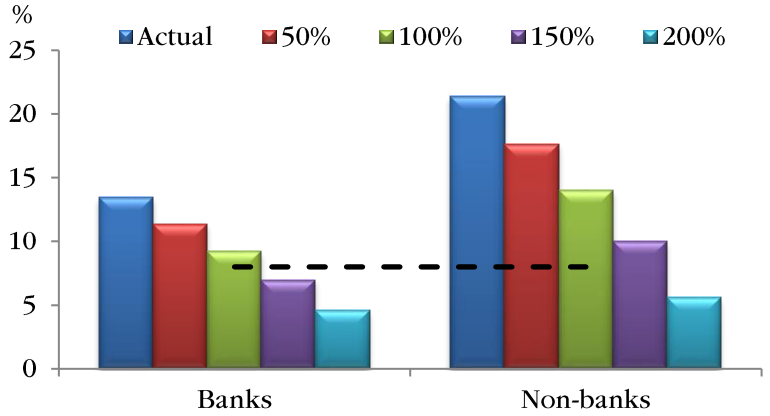
Given current IFRS 9 standards, the industry was also tested to see how capital is affected when provisioning is raised to 100 percent to cover expected credit losses in the twelve-months-and-over category of NPLs rather than the current average of 28.9 percent. In attempts to correct any under-provisioning, it is expected that the capital of some entities will be impacted. The test shows that at approximately 56 percent, 5 credit unions are under the threshold which was also enough to lower the CAR for the entire industry **(Figure 58)**.

Figure 58: NPLs, 12-Months and Over Provisioned at 100 Percent



At the end of 2018, commercial banks could only withstand an increase of up to 100 percent of NPLs before their CAR fell below 8 percent, **(Figure 59)**. Comparing 2018's results to 2017's, stress tests at December 2017 revealed that on a sub-sector level, commercial banks and finance and trust companies could withstand up to a 150 percent increase in NPLs (with 100 percent provisioning), while maintaining adequate CARs.

Figure 59: CAR Outcomes from Increasing NPLs



At the institutional level in 2018, with a 50 percent increase in NPLs, the CAR of one bank and one finance and trust company fell below 8 percent. With a 100 percent increase in NPLs, two banks and two finance and trust companies did not meet the benchmark, with one of each actually becoming insolvent. With an assumption of a 200 percent increase in NPLs, a total of five institutions (two banks and three finance and trust companies) required additional capital, and two of each actually became insolvent.

Table 6 below illustrates the progressive deterioration of the institutions' CARs in the sub-sector with increasing NPLs.

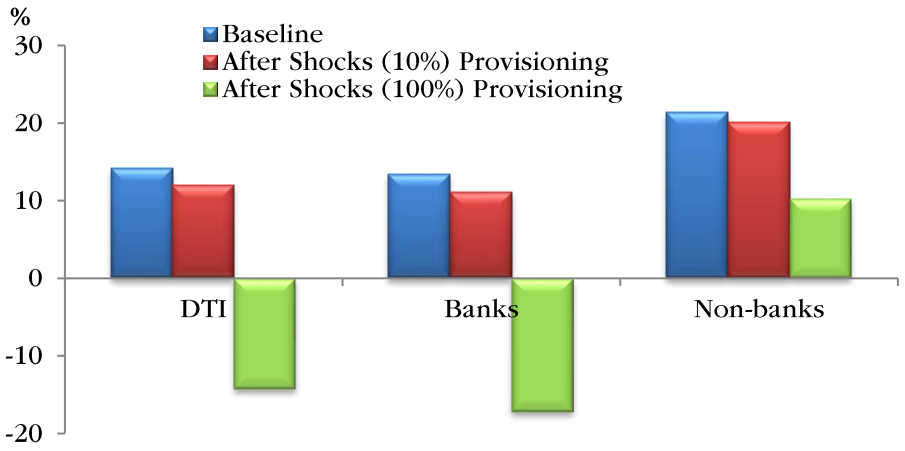
Table 6: CAR Outcomes from Increasing NPLs

	CAR < 8%		CAR < 10%
Scenario	**No. of Banks**	**No. of Finance & Trust**	**No. of Credit Unions**
50% NPL Increase	1	1	3
100% NPL Increase	2	2	4
150% NPL Increase	2	2	N/A
200% NPL Increase	2	3	5

Large Exposure Shocks: Commercial Banks and Trust & Finance Companies

Large exposure tests indicated that commercial banks' and finance and trusts' capital could withstand defaults from their five largest borrowers with provisioning requirements up to 10 percent (**Figure 60**). It was assumed that the five largest loans sequentially became non-performing, and the impact was assessed under the requirement of 10 percent, 50 percent and 100 percent provisioning. All institutions maintained adequate levels of CAR with 10 percent provisioning. At 50 percent, two finance and trust and two banks required more capital after the first round. The aggregate CAR was inadequate for banks at the end of the first round. By the fifth round, three banks and two finance and trusts companies fell below the prudential requirement. Under 100 percent provisioning, by the fifth round, the aggregate CAR was adequate for the non-banks, with only two of them failing. This was due to the relatively small size of their largest loans.

Figure 60: CAR Outcomes of Large Exposure Shocks



5.1.2 Liquidity Risk

Given that DTIs funding model is primarily through deposits, maintaining adequate liquidity is of major importance. Overall, DTIs continued to display high levels of liquidity with an approximate liquid assets-to-total assets ratio of 17.2 percent for banks and finance and trusts, as at December 2018.

Liquidity stress tests indicated that while commercial banks were more resilient than the finance and trust companies, both groups appear to be more vulnerable than in the previous year. The liquid assets of all the banks were significantly reduced as a result of the Governments' Treasury Bills no longer being liquid. The finance and trust companies which were far less exposed to Government Treasury Bills were less impacted with two institutions having higher liquid assets than at 2017. For banks and finance and trusts, withdrawals on time deposits were fixed at three percent and one percent per day on domestic and foreign accounts, respectively and drawdowns on foreign demand accounts were fixed at five percent per day. Assuming that 95 percent of all liquid assets and 1 percent of all other assets were fully convertible to cash on a given day, 5, 10 and 15 percent runs on domestic demand accounts were examined.

Table 7a: Results of Deposit Runs 2018: No. of Institutions Requiring Liquidity Support

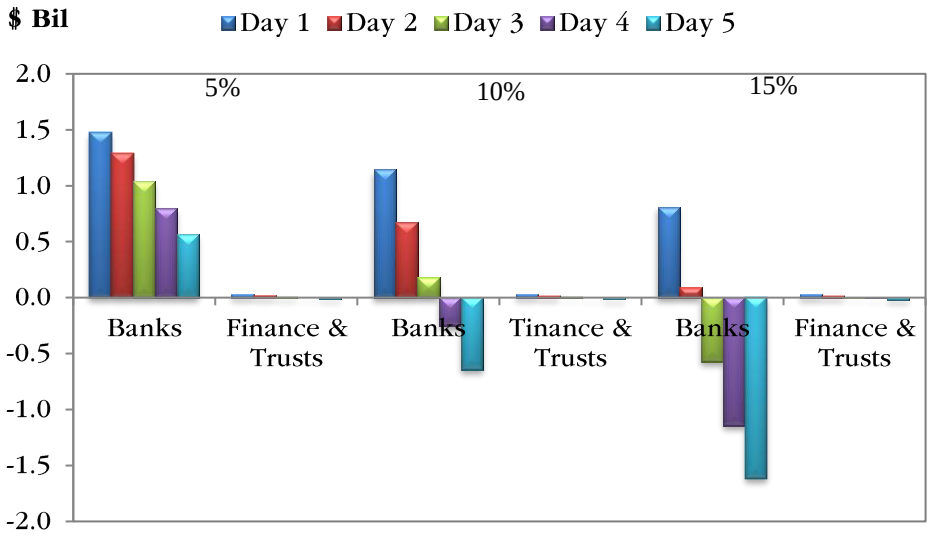
	At 5%		**At 10%**		**At 15%**	
	Banks	*Finance and Trusts*	*Banks*	*Finance and Trusts*	*Banks*	*Finance and Trusts*
Day 1	0	1	0	1	0	1
Day 2	0	3	1	4	3	4
Day 3	0	5	2	5	3	5
Day 4	0	5	3	5	3	5
Day 5	1	5	3	5	4	5

Table 7b: Results of Deposit Runs 2017: No. of Institutions Requiring Liquidity Support

	At 5%		**At 10%**		**At 15%**	
	Banks	*Finance and Trusts*	*Banks*	*Finance and Trusts*	*Banks*	*Finance and Trusts*
Day 1	0	0	0	1	0	2
Day 2	0	3	0	3	0	4
Day 3	0	3	0	4	0	4
Day 4	0	3	0	4	2	4
Day 5	0	4	0	5	2	5

The results depicted in **Table 7** indicate that finance and trusts were more severely affected than banks in terms of the number of institutions that would be unable to meet their obligations. With 5 percent runs per day, one finance and trusts required liquidity support after day one, and this increases to five after day three. With 10 percent deposit runs, one finance and trust required support from day one; one bank and four finance and trusts by day two, and three and five respectively by day five. With 15 percent runs per day, one finance and trusts required support from day one, and this increased to four banks and five finance and trusts by day five. **Figure 61** shows the impact on the aggregated banks' and finance and trust companies' net cash flow.

Figure 61: 2018 Results of Deposit Runs (Net Cash Flow)



5.1.4 Interest Rate Risk

Domestically, interest rates continued to fall post the deregulation events of 2013[7] and 2015[8]. At the end of December 2018, the weighted average deposit rate for the combined bank and trust sector stood at 0.3 percent, while the weighted average lending rate was 6.5 percent. The short-term maturity gap was used to examine the impact of rising deposit rates on institutions' funding costs and ultimately their

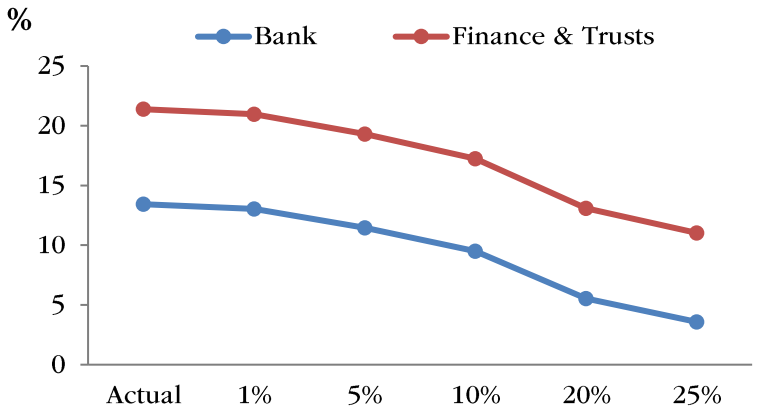
[7] Effective April 18, 2013, The Central Bank of Barbados indicated that the minimum deposit rate would no longer be used for interest rate guidance. With the introduction of this policy, the Bank, however, continued to stipulate a 'minimum savings rate' to the single purpose saving accounts of private individuals and non-profit organizations.

[8] Effective April 21, 2015, The Central Bank of Barbados indicated that it would no longer stipulate a minimum rate of interest on savings deposits at commercial banks. As a result, commercial banks would have the ability to determine the rate to be paid on savings accounts in light of market conditions, in the same way that they could for all other interest rates.

profitability, given the funding structure of depository institutions is typically mismatched in terms of the relative maturities of deposits and loans.

The results revealed that although the aggregate CAR for both the banks and finance and trust companies could withstand a deposit rate increase of up to 10 percent in 2018 **(Figure 62)**, on an individual basis some institutions fell below the regulatory CAR limit of 8 percent (**Table 8**). Additionally, commercial banks and finance and trust companies are not as well insulated against rising deposit rates as they were in 2017. In 2018 both banks and Finance and Trusts would have started falling below 8 percent CAR with only a 1 percent deposit rate increase (**Table 8**).

Figure 62: Interest Rate Impact on CAR



While in 2017, a 10-percentage point increase would have resulted in one bank's CAR falling below 8 percent, in 2018 two banks and one finance and trusts institutions fail.

Table 8: Interest Rate Impact on CAR: Number Falling below 8%

Deposit Rate Increase	No. of Banks	No. of Finance & Trusts
1%	1	1
5%	1	1
10%	2	1
20%	3	3
25%	3	4

6. Research Notes

6.1. The Impact of Government's Domestic Debt Restructuring and IFRS 9 Implementation on the Financial System

The financial sector faced several challenges following the implementation of International Reporting Standard 9 (IRFS 9) and the Government of Barbados' debt restructuring during 2018. These regulatory and macro-economic adjustments led to a weakening of the sectors profitability, capital and reserve positions. Additionally, in the case of the banking sector, some regulatory large exposure limits were exceeded as a result of the loss to capital for some institutions.

Banking Sector

The commercial banking sector in particular was heavily impacted by implementation of IFRS9 and the domestic debt exchange given the relatively large size of their investment and loan portfolios. Over the twelve-month period ending December 2018, the banking sector expensed roughly $285 million in loss provisions in order to meet the new requirements under IRFS 9 (**Figure 1**). These additional funds, which represented more than half of net income generated for the period, were largely required to cover the sectors approximate $2.3 billion exposure to the Government of Barbados.

Given the new terms on Government debt, which feature longer maturities and lower interest, the present value of these instruments fell significantly. Therefore, following the debt exchange and given the erosion of profits, banks wrote down the value of their portfolio against their reserves and capital holdings. Moreover, after adjusting for the amalgamation of a bank with its subsidiary, shareholders' equity fell by $435 million during the period, largely due to the write down of the value of Government of Barbados securities after the debt exchange and the adoption of IFRS9 (**Figure 2**).

Figure 1: Banks' Provision Expense

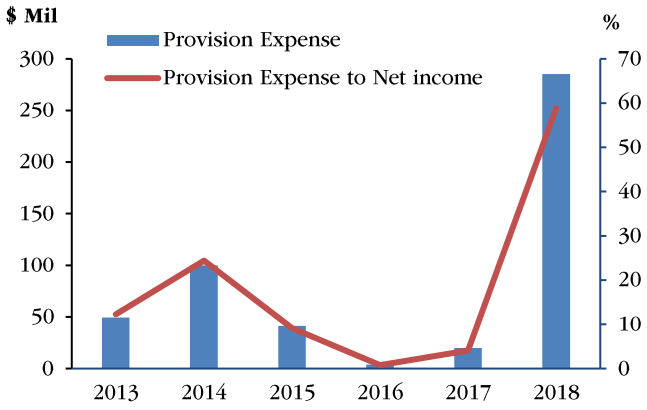
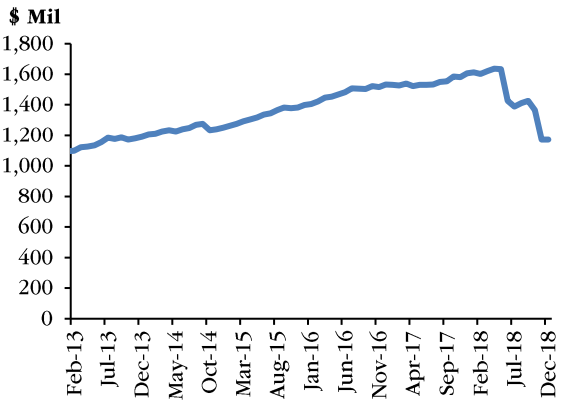


Figure 2: Banks' Shareholders' Equity



Source: Central Bank of Barbados

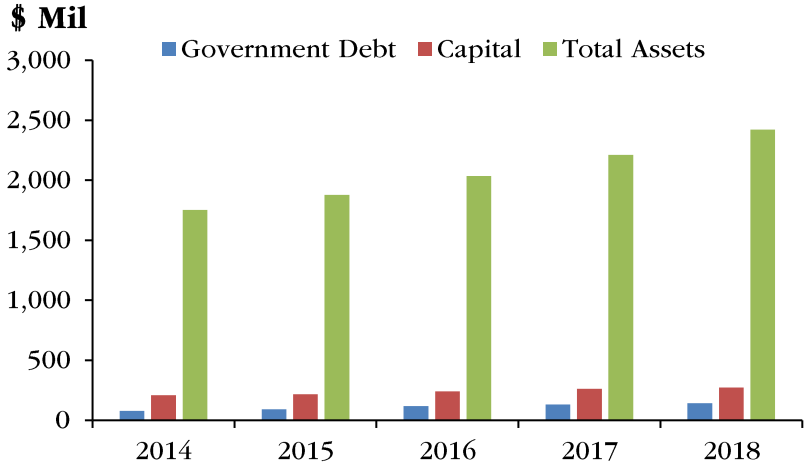
As a result of the declines in regulatory capital, some commercial banks breached their exposure to regulatory capital (large exposure limits[9]) for some customers. However, all of the breached exposures continue to be serviced in line with their loan agreements and possess adequate collateral. Banks are required to develop and implement capital management plans to eliminate any breaches over the next three years.

Finance and trust companies were not very exposed to Government and therefore were not heavily impacted by the debt restructuring.

Credit Unions

Domestic government securities accounted for approximately 6 percent of the assets held by the credit union sector as at December 2018, while capital represented 11 percent of assets **(Figure 3)**. Notably, one credit union held government securities which accounted for approximately 32 percent of its assets, but this entity would not constitute a systemic risk to the system. As credit unions are also required to hold 8 percent of their liabilities in liquid assets, much of the securities held by the sector were short-dated treasury bills. With the extension of maturity of these instruments, increased cash holdings were observed across the sector. However, increases in cash holdings mean fewer opportunities to generate returns on other investments, which are clearly needed to supplement impacted capital levels. The investment income from interest payment associated with the bonds and T-bills held by the sector fell, contributing to overall decrease (11.4 percent) in total investment income for the sector **(Figure 4)**. Additionally, the level of provisioning that the sector would have to put aside for these impaired assets could significantly erode capital to less than the 10 percent regulatory requirement for some institutions.

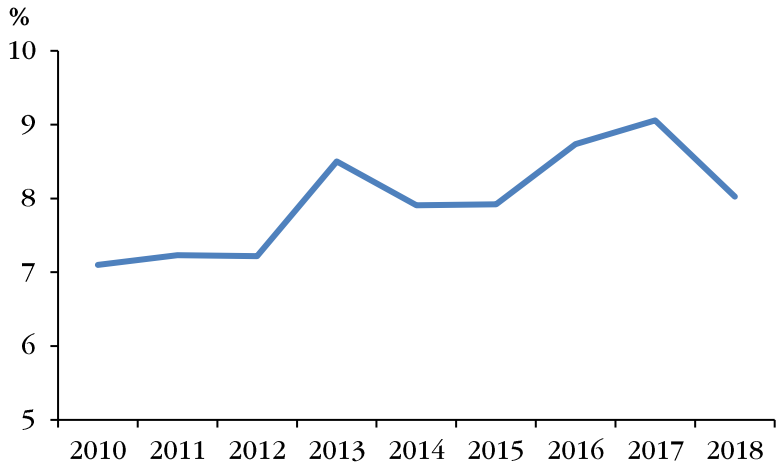
Figure 3: Government Securities vs Total Assets



Source: Financial Service Commission

[9] Regulatory large exposure limits for the commercial banks are set out in Section 21 of the Financial Institutions Act, Cap. 324A. http://www.centralbank.org.bb/banking-supervision/regulatory-framework/regulatory-legislation.

Figure 4: Investment Income



Source: Financial Service Commission

Insurance

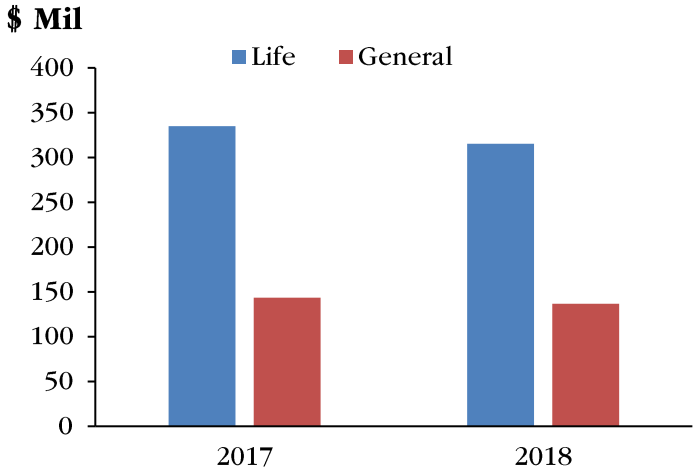
The insurance sector was significantly impacted by the debt restructuring. The Insurance Act CAP 310 requires companies to have assets equivalent to their liabilities held in the statutory fund and further requires the sector to hold 80 percent of the assets in the statutory fund as local instruments. For much of the industry, the assets of choice were Government bonds. The debt exchange replaced existing securities with a new series of bonds.

In recognising impairment due to the debt exchange, the statutory funds of some companies fell below required levels. In addition, due to the maturity extension and reduction in interest rates on the new bonds, investment contract liabilities and income for the sector were negatively impacted. Further losses were incurred on the recognition of the Series F bonds used to settle arrears[10] instead of cash payments.

The life insurance sector continues to have the highest exposure to local Government debt, accounting for in excess of 80 percent of the Government securities held by the sector (**Figure 5)**. General insurance aggregate levels are lower, but local Government debt accounts for 88 percent of the sovereign debt held by that sector.

[10] Series F bonds: These zero-coupon bonds were solely created for the purpose of settling arrears from government. They are repayable in equal instalments over 3 ½ years following a six-month moratorium.

Figure 5: Insurance Sector Exposure to Local Government Debt



Source: Financial Service Commission

This situation is further compounded for the general insurance sector by the negative income of the sector. Over the last five years, the investment income has functioned almost as a buffer for the industry's profitability. Given the debt exchange, interest payments generated by these securities has fallen significantly, resulting in reduced net income. With the new bond series, interest rates are lower, and principal repayments only commence in years four to fifteen, depending on the instrument. This also has implications for reinsurance coverage as reinsurance contracts stipulate a minimum deductible (amount of the sum insured) which the general insurance companies must first cover, before reinsurance coverage can be paid.

Mutual Funds

The mutual funds sector experienced declines in the size of its investment portfolio. As at June 2018, domestic government securities accounted for approximately 11 percent of the investments held by the sector, with 11 of the 15 (domestic) mutual funds having direct exposure to local sovereign debt.

Pensions

Estimated figures show that the occupational pensions sector has begun to see declines in the investment income subsequent to the debt restructuring. Preliminary figures showed a slight decrease in the valuation of holdings of fixed-income securities. Domestic government securities accounted for approximately 19 percent of the assets held by the sector and the treatment of these assets will determine the severity of the impact to the sector post restructuring.

6.2. Government of Barbados' Debt Restructuring and the Banking System: A Yield Curve Analysis

A yield curve is a graphical representation of interest rates for fixed-income instruments with comparable risk across different maturity periods and represents the relationship between the level of interest (cost of borrowing) and the time to maturity (term of debt), in a given currency. Analysis of these curves is critical because they are used to derive interest rates that are used to value securities.

Traditionally, yield curves are usually derived based on trade data, that is, the discount or premium a security trades to its par value. Alternative derivations need to be employed in markets where there is insufficient trade to permit reliable pricing. Prior to the 2018 debt restructuring, the Central Bank provided an estimated yield curve which was a composite of the auction-determined treasury bill rate and the administratively determined Treasury Note/Debenture rate. By construction, this curve was upward sloping, as this represents the "normal" relationship in which the longer the maturity, the higher the yield investors usually demand (Fabozzi(2000)). However, it should be noted the yield curve can assume different shapes depending on investor expectations around current and future rates.

In 2018, the Government of Barbados initiated a sovereign debt restructuring on both its external and domestic debt aimed at lowering interest costs and spreading maturities which would subsequently result in a lower debt burden. Specifically, the restructuring targeted a public debt-to-GDP ratio of 80 percent by the midterm (FY2027/28) and a long-term position of 60 percent of GDP by fiscal year 2033/34. While negotiations on the external debt remained ongoing, the domestic portion was completed in September 2018 and the commercial banks were issued with new Government bonds as detailed in Table 9.

Table 1: New Government of Barbados Bond Instruments issued to Banks

New Bonds	Maturity	Interest Rate	Payment Schedule	Old Instruments Eligible
Liquidity Reserve Fund Treasury Bills	90-days	0.5 percent per annum for the first 10 years Market Rates thereafter		15 percent of Treasury Bills, Treasury Notes and Debentures held as part of banks' reserve requirements as at 30 Sep 2018
Series B (Amortising Strips)	15 years	1.0 percent per annum for first 3 years 2.5 percent per annum for 4 years 3.75 percent per annum to maturity	Quarterly	85 percent of Treasury Bills, Treasury Notes and Debentures held as part of banks' reserve requirements as at 30 Sep 2018
Series D (Amortising Strips)	35 years	1.5 percent per annum for first 5 years 4.25 percent per annum for 6-10 years 6.0 percent per annum for 11-15 years 7.5 percent per annum to maturity	Quarterly	All other loans and bonds owed by the Government of Barbados and eligible state-owned enterprises (SOEs)

Source: Debt Holder (Approval of Debt Restructuring) (Amendment) Bill, 2019[11]

During debt restructurings, investors typically incur losses as the recovery value of investments are lower than their pre-debt restructuring values. Investor losses, otherwise known as net present value (NPV) losses are derived as the difference between the present value of the old and new instruments. The discount rate used to assess the present value of investments is usually the expected yield prevailing immediately after the exchange - also known as the "exit yield". This is because creditors are concerned with the market price of debt holdings in their portfolios, (Kozack, 2005). Therefore, if the new instruments are traded on secondary markets, exit yields are readily available as was the case with Pakistan (21.4 percent), Belize (9.10 percent) and Grenada (8.90 percent), (Zettelmeyer, Trebesche & Gulati, 2013; Asonuma, Papaioannou, Togo, & van Selm, 2018; Asonuma, Xin Li, Papaioannou, Thomas, & Togo, 2017). In the context of Ukraine, Pakistan and Ecuador, the value of the exchanged securities was determined using the yields of the new instruments issued (23 percent to 28 percent), with a small maturity adjustment based on the U.S. yield curve, Sturzenegger & Zettelmeyer (2008).

In contrast, where new instruments are not traded on the secondary market, there is no explicit exit yield. This was the case with Russia's domestic debt restructuring in 1999,

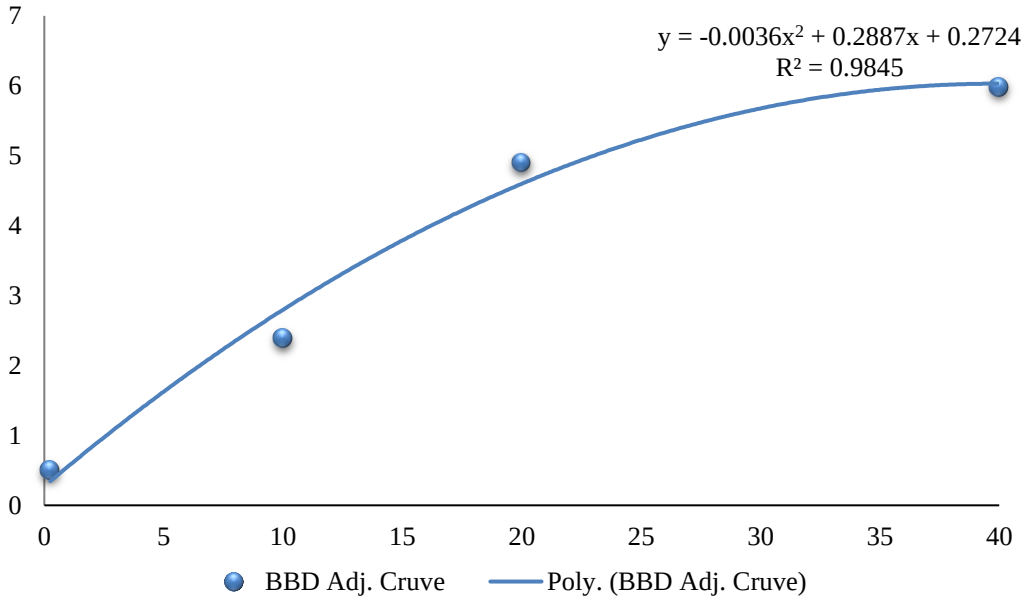
[11] https://www.barbadosparliament.com/uploads/bill_resolution/f8330e9578edd3ba1d1fb59ab0b72832.pdf

the Ukraine Treasury bill restructuring of 1998, and the November 2001 Argentine debt exchange. In these instances, Sturzenegger and Zettelmeyer (2008) estimated implicit yields using interest rate data and adjusting for market conditions and expectations. For Russia's GKO/OFZ debt exchange in 1999, Sturzenegger & Zettelmeyer (2008) constructed an exit yield which was influenced by utilising inflation expectations and default risk. Similarly, Zettelmeyer, Trebesche, and Gulati (2013) combined assumptions about the distribution of default probability in Greece to develop a yield curve for instruments with short- and medium-term maturities after the Greek debt exchange. Cruces and Trebesch (2013) also designed a different procedure to estimate exit yields for 180 restructurings in its study. These imputed exit yields encompassed two determinants of the cost of capital facing debt issuers at the end of the restructuring agreement namely, the specific country situation and the level of the credit risk premium at that time. To compute the implicit exit yields, Cruces and Trebesch (2013) utilised secondary market yields on low-grade US corporate bonds and grouped them based on their respective credit ratings. These were then converted into discount rates on sovereign debt by linking corporate and sovereign secondary market yields and then imputing yield levels for each sovereign based on its credit rating at the time of the restructuring.

For Barbados, as with many of the cases listed above, limited activity on the secondary bond markets have resulted in no yield curve on post-restructured Government of Barbados' bonds. As such, financial institutions applied various approaches to price these new holdings in order to assess their losses given the extended maturities and reduced expected interest income. The methodologies employed varied, with most banks utilising a similar approach to Cruces and Trebesch (2013), where a curve on a comparable B-rated US corporate bond - plus some spread - was used to price the new bonds. In other instances, a single discount rate was applied to price the new bonds. Unfortunately, the varying methodologies has meant no common valuation standard is applied across the financial system making comparability across the system difficult. Through the application of these varied approaches, the combined provisions were around $285 million Barbadian dollars which directly impacted their profitability, capital and special reserves.

Based on the revised terms of the domestic debt restructuring outlined in Table 4, a yield curve was estimated using a polynomial function. The results of the polynomial curve are shown below (**Figure 1**).

Figure 1: Yield Curve Based on Coupon Rates of Restructured Bonds



However, the above is based on administratively determined rates, and the chart does not capture the likelihood that the restructured bonds will trade at some discount to their face value. Consequently, one approach that has been examined by the Central Bank was to estimate what investors would consider a default-free risk environment. At least two factors appear to strongly influence rates: domestic liquidity and investor concerns regarding the safety of the investment. As **Figure 2** shows, domestic T-bill rates tended to fall in periods of surplus liquidity prior to 2009, and rise as the banks' used up their stocks of available cash. In the aftermath of the global recession, however, there appears to have a breakdown in the relationship between the excess cash and the treasury bill rates especially in the post-2014 period, in which historically unprecedented levels of excess cash failed to push down the T-bill rate.

Figure 2: Barbados T-bill rate(T_BILL_RATE) & Commercial Banks' Excess Cash Liquidity(X_CASH_R)

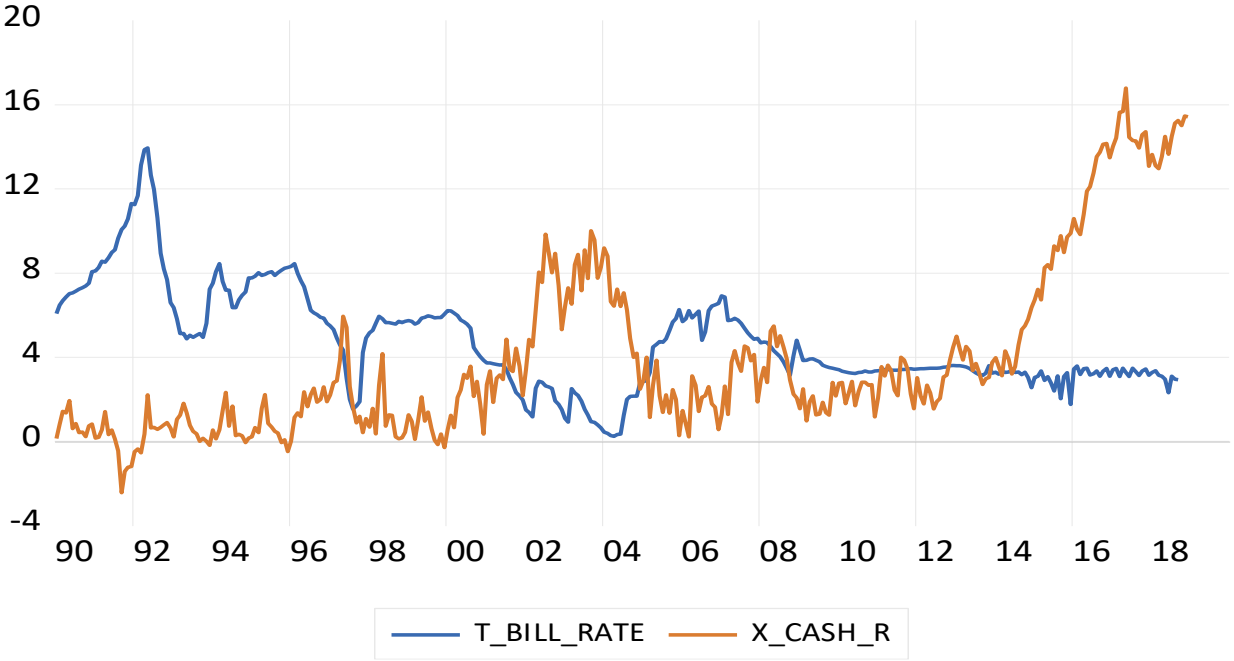
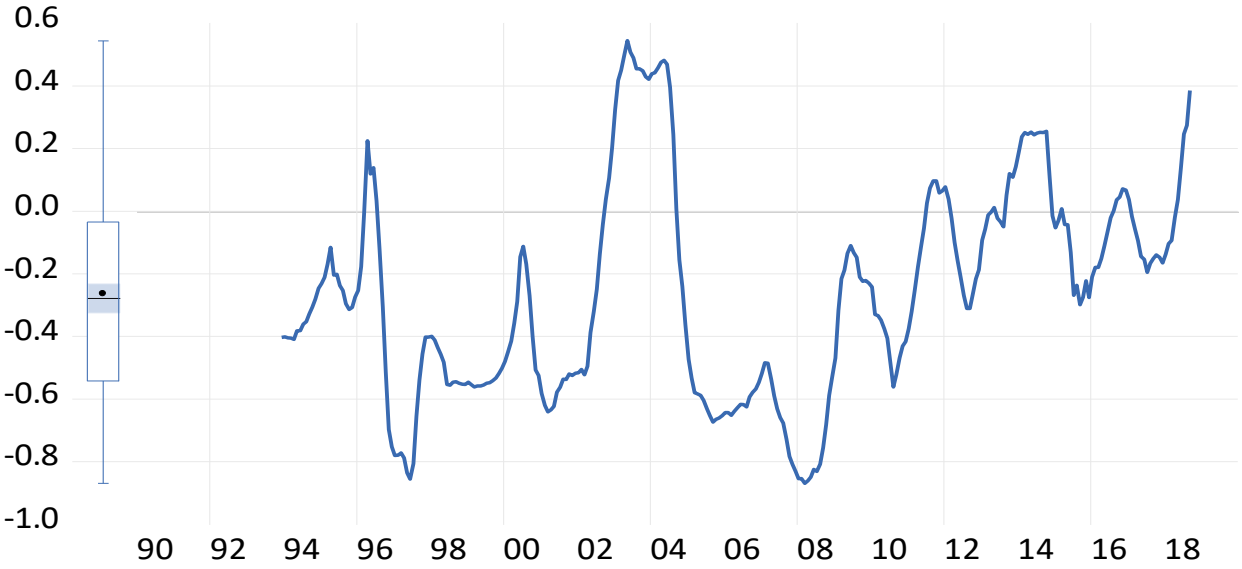


Figure 3 provides a rolling three-year linear correlation between changes in the domestic t-bill rates and changes in domestic liquidity. Prior to 2009, this tended to be moderately negative, but the relationship broke down in the post-2009 period.

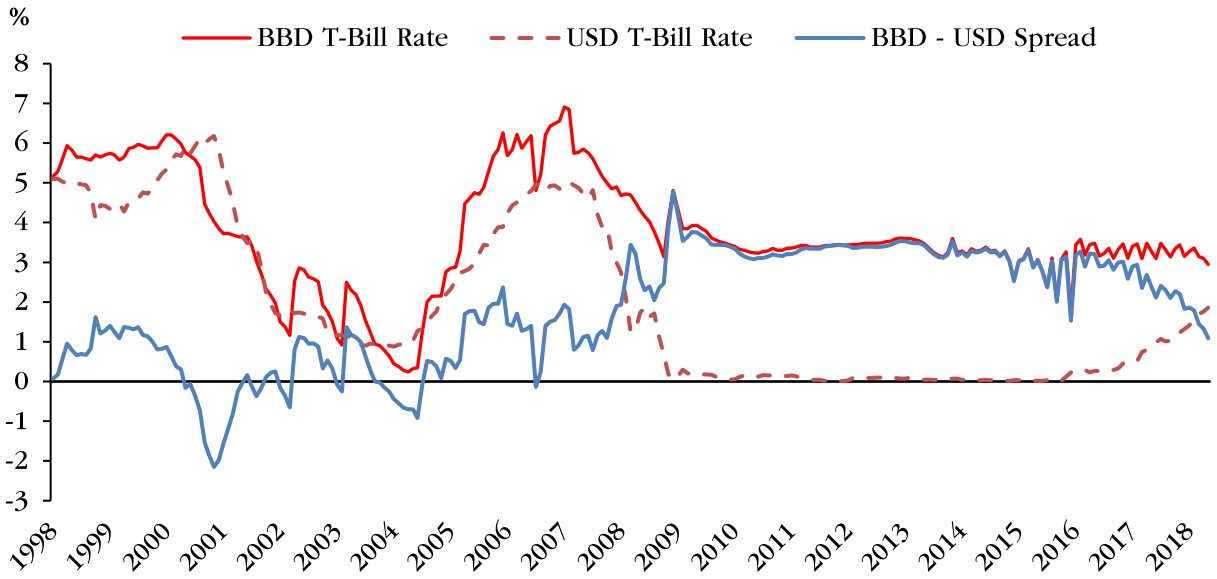
Figure 3: Three-Year Rolling Correlation - Change in Excess Cash and Change in T-bill Rate



The other factor which appears to determine rates is the risk premium investors assign to holding the Barbadian T-bills. This can be proxied by the spread between the US and

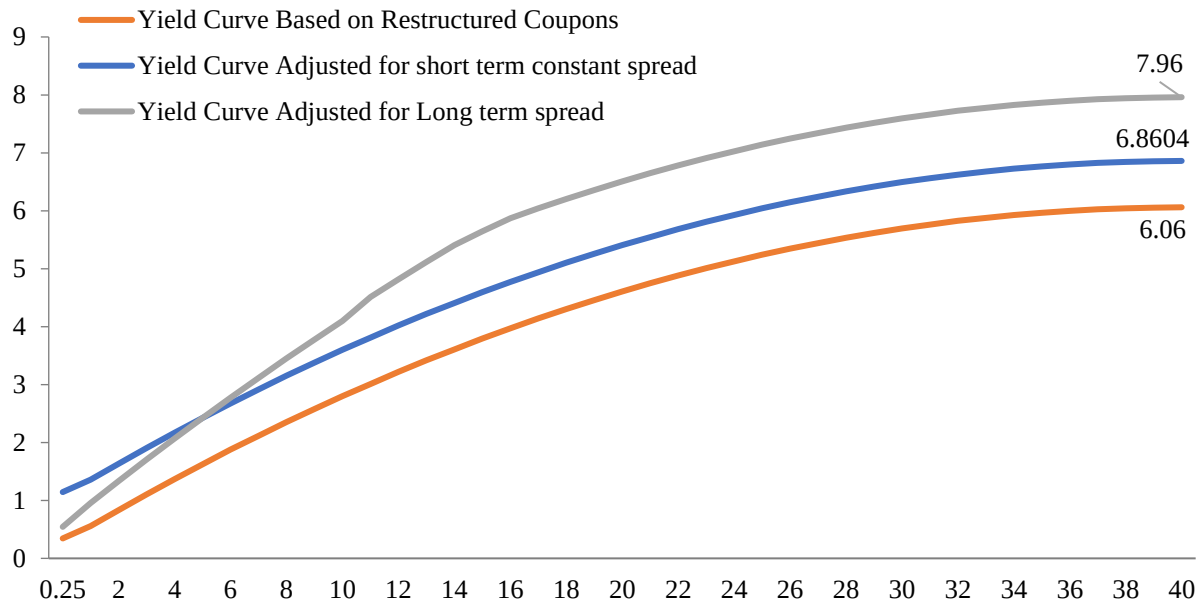
Barbadian T-bills. As can be seen from **Figure 4,** the premium has varied substantially over time. Between 2005 and 2007, domestic investors accepted a premium of 1.42 percent over the US T-bill rate. However, over the longer period of 2000 to 2007 this premium averaged 0.74 percent due to the US T-bill rate periodically exceeding the Barbados rate. The post-2008 period paints a different picture with the premium remaining stubbornly wide and narrowing solely due to the US T-bill rates rising after 2015, despite the attempts by the Central Bank of Barbados to push down rates.

Figure 4: US Barbados T-bill Spread



One side-effect of the restructuring has been a reduction in the resultant risk associated with the securities. With Government having entered an IMF EFF program, fiscal surpluses are expected to be generated over the life of the program generating a substantial reduction in the debt burden and the lack of new debt issuance. Based on internal assumptions on what investors would consider acceptable, and treating the new bonds as though the risk environment was typified by pre-2009 rather that the post-2009 conditions, the CBB team estimated the following series of hypothetical yield curves:

Figure 5: Hypothetical Yield Curves with Alternative Risk Premium Approaches



Ultimately, the appropriate yield curve is subjective and depends on investor expectations regarding the probability of default. However, if Barbados' credit rating continues to improve, investors may find that domestic liquidity considerations become the dominant factor in determining yields, at least at the short end of the yield curve. Based on the few trades to date for the Series F bond maturing September 2022, the yield to maturity has ranged from 3.8 percent to 2.6 percent suggesting that the market remains unsettled. The Central Bank recognises that an active secondary market may develop as investors, with short time horizons and in search of liquidity, may wish to offer some of their securities for sale. Given its importance to investors, the Bank is working to facilitate the trading of individual strips which should help to reduce trading margins over time and develop a yield curve for market participants.

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Appendix A: Macro-Prudential Indicators

Table 1: Partial Indicators for Financial Stability Cobweb

Partial Indicator	Variable	Systemic Risk Impact
Domestic Environment	Inflation Rate	+
	Total Fiscal Deficit to GDP	+
	Total Sovereign Debt to GDP	+
	Broad Money to Net International Reserves	+
Domestic Financial Market Conditions	Barbados T-Bill Rate[12]	+
	Return on Barbados Stock Exchange Main Index	-
Global Financial Market Conditions	MSCI World Index of Equity Returns	-
	CBOE Volatility Index	+
	JP Morgan Emerging Market Bond Index Spread	+
Global Environment	MSCI World Growth Index	-
	Crude Oil (petroleum) simple average Brent, West Texas Intermediate, and the Dubai Fateh	+
Capital & Profitability Quality	Capital Adequacy Ratio	-
	Return on Assets	-
Funding and Liquidity	Loan to Deposit Ratio	+
	Liquid Assets to Total Assets	-

[12] Not applicable to calendar year 2018 nor fiscal year 2018/2019.

Table 2: Partial Indicators for Aggregate Financial Stability Index

Partial Indicator	Weight	Variable	Systemic Impact of Financial Stability
Financial Development	0.1	Total Credit to GDP	+
Financial Vulnerability	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	-
		Net International Reserves to External Debt	+
Financial Soundness	0.4	Capital to Total Risk-Weighted Assets (RWA)	+
		Liquid Assets to Total Assets	+
		NPLs to Total Loans	-
World Economic Climate	0.1	World Economic Growth	+
		CBOE Volatility Index	-
		World Economic Climate Index	+

Table 3: Partial Indicators for Banking Stability Index

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

Table 4: Indicators and Risk Ratings

			Risk Rating				
Indicator	**Ratio**	**Weigh**	**High**	**Medium**	**Medium**	**Medium**	**Low**
Equity	*Total Capital/Total Assets*	**15%**	**<8%**	**≥8% - <10%**	**≥10% - <11%**	**≥11% - <12%**	**≥12%**
Asset Quality	*Delinquent Loans >90 days/Total Loans*	**40%**	**>5%**	**≤5% - >4%**	**≤4% - >2.5%**	**≤2.5% - >1%**	**≤1%**
Liquidity	*Liquid Assets/Short-term Liabilities*	**25%**	**<6%**	**≥6% - <8%**	**≥8% - <9%**	**≥9% - <10%**	**≥10%**
Earnings	*Net Profit/Total Assets*	**20%**	**<0.25%**	**≥0.25% - <0.5%**	**≥0.5% - <0.75%**	**≥0.75% - <1%**	**≥1%**

Table 5: Overall Risk Score

Overall Risk Score				
High	**Medium-High**	**Medium**	**Medium-Low**	**Low**
≥4.5 - ≤5	**≥3.5 - <4.5**	**≥2.5 - <3.5**	**≥1.5 - <2.5**	**≥1 - <1.5**

Appendix B: Financial Development Indicators

Table 1: Keys Indicators of the Structure of the Financial System

	2013	2014	2015	2016	2017	2018
Number of:						
Total DTIs	48	48	47	47	46	45
Commercial Banks	5	6	5	5	5	5
Finance, Trust and Mortgage	8	7	8	8	8	7
Credit Unions	35	35	34	34	33	33
Non-DTI Trust Companies	5	5	5	5	5	5
Insurance Companies	26	23	21	24	23	22
Life	9	7	6	8	7	7
Non-Life	17	16	15	16	16	15
Pension Plans	302	304	300	303	263	259
Mutual Funds	21	20	19	16	16	16
Assets to Total Financial System Assets (percent)						
Total DTIs	69.9	69.6	69.4	68.3	67.3	65.0
Commercial Banks	55.2	54.8	54.5	53.8	52.5	51.2
Finance, Trust and Mortgage	7.3	7.2	7.0	6.2	6.1	4.1
Credit Unions	7.4	7.6	7.9	8.2	8.6	9.7
Non-DTI Trust Companies	0.1	0.1	0.1	0.1	0.1	0.1
Insurance Companies	13.3	13.3	13.8	14.7	15.0	16.9
Life	8.6	8.6	9.4	10.5	11.0	12.8
Non-Life	4.7	4.7	4.5	4.2	4.0	4.1
Pension Plans	8.6	8.9	8.8	8.8	9.0	9.4
Mutual Funds	8.1	8.0	7.9	8.1	8.6	8.5
Assets to GDP (percent)						
Total DTIs	169.2	169.7	170.8	172.0	172.1	158.4
Commercial Banks	133.6	133.6	134.1	135.5	134.4	124.8
Finance, Trust and Mortgage	17.6	17.5	17.3	15.7	15.7	9.9
Credit Unions	18.0	18.6	19.4	20.8	22.1	23.7
Non-DTI Trust Companies	0.3	0.3	0.3	0.3	0.2	0.2
Insurance Companies	32.2	32.5	34.0	37.1	38.3	41.3
Life	20.8	20.9	23.0	26.5	28.1	31.2
Non-Life	11.4	11.6	11.0	10.6	10.2	10.1
Pension Plans	20.8	21.7	21.6	22.1	23.1	22.9
Mutual Funds	19.7	19.5	19.5	20.5	22.0	20.8
Memo:						
Credit Union Membership (000's)	161	168	176	186	195	206
Pension Plans Membership (000's)	30	29	31	29	29	29

Source: Central Bank of Barbados and Financial Services Commission

Table 2: Key Indicators of the Payment System

$ Millions	2013	2014	2015	2016	2017	2018
RTGs Transactions	24,168	27,334	30,731	33,561	36,781	27,001
ACH Transactions	19,415	19,028	18,689	18,501	19,584	19,559
Cheques	18,090	17,387	16,847	16,385	17,343	17,151
Direct Payments	1,325	1,641	1,842	2,116	2,241	2,408
Debit Card Transactions	1,001	1,019	1,067	1,136	1,197	1,248
ATM Transactions	607	607	620	639	660	675
Debit Card POS Transactions	394	412	446.7	497	537	573
Credit Card Transactions	611	688	664	737	725	717
Personal Sector	533	586	559	615	615	607
Business Sector	78	102	105	122	110	110
Currency in Circulation	667	686	668	730	750	784

Source: Central Bank of Barbados

Appendix C: Key Financial Soundness Indicators

Table 1: Commercial Banks' Financial Soundness Indicators (FSIs)

%	2013	2014	2015	2016	2017	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Solvency Indicators									
Capital Adequacy Ratio (CAR)	17.6	16.4	15.8	17.0	17.0	16.8	16.1	15.6	13.9
Leverage Ratio	10.2	10.1	10.4	9.6	9.4	9.4	10.5	9.7	11.3
Liquidity Indicators#									
Domestic Loan to domestic deposit ratio	73.0	72.2	68.0	65.1	66.5	66.0	68.0	68.2	65.0
Transferable deposits to total deposits	82.3	86.2	88.8	90.6	91.5	91.9	91.9	92.2	92.7
Liquid assets to total assets	18.0	20.0	24.0	26.0	26.0	25.6	26.0	28.8	22.1
Credit Risk Indicators (percent)									
Total assets	2.8	(1.4)	4.2	3.7	1.3	0.6	3.3	(5.3)	(5.0)
Domestic assets		(.8)	4.2	3.5	0.9	0.5	3.8	4.8	4.0
Loans and advances		(3.0)	(1.4)	(0.4)	2.3	(0.1)	4.0	4.0	0.4
Non-performing loans ratio	9.5	9.6	8.7	7.4	7.7	7.9	7.7	11.2	7.4
Substandard loans/ Total loans	7.0	7.5	6.6	5.9	5.2	5.6	6.6	7.2	5.7
Doubtful loans/ Total loans	2.0	1.6	1.2	0.9	0.7	0.6	0.5	3.2	0.9
Loss Loans/ Total loans	0.5	0.4	0.9	0.6	0.7	0.6	0.7	0.7	0.7
Provisions to non-performing loans	44.9	47.7	55.5	62.7	80.4	76.8	67.5	51.5	67.3
Foreign Exchange Risk Indicators (percent)									
Deposits in Foreign Exchange to Total Deposits	5.7	5.4	7.9	7.9	8.1	8.3	7.8	6.7	6.8
Loans in Foreign Exchange to Total Loans	18.2	18.6	19.3	19.2	18.3	18.2	17.6	4.6	4.0
Profitability Indicators									
Return on Assets (ROA)	0.7	0.6	1.4	1.5	1.3	1.3	1.2	1.1	(0.2)
Net Interest Margin	4.3	4.5	5.3	5.3	5.3	5.0	4.9	5.6	4.8
Interest Rate Spread	4.5	4.5	6.4	6.5	6.3	6.5	6.5	6.5	6.4

Source: Central Bank of Barbados
**Reflects the financial consolidation of a finance and trust company with its parent bank.*
 # Includes foreign components unless otherwise state

Table 2: Finance and Trust Companies' Financial Stability Indicators (FSIs)[13]

%	2013	2014	2015	2016	2017	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Solvency Indicators (percent)									
Capital Adequacy Ratio (CAR)	30.6	32.4	31.4	32.4	38.3	36.6	17.5	17.8	16.9
Leverage Ratio	13.7	17.9	18.7	18.8	20.6	20.6	6.5	7.1	5.4
Liquidity Indicators# (percent)									
Loan to deposit ratio	99.0	98.8	95.6	99.7	101.0	108.3	100.7	97.8	97.8
Liquid assets to total assets (Domestic)	19.8	8.8	16.5	16.6	17.9	17.0	11.5	11.4	12.4
Credit Risk Indicators (percent)									
Total assets	3.9	(0.8)	1.0	(6.8)	2.4	(0.8)	(34.3)	(32.8)	(35.4)
Domestic currency assets	6.4	(1.8)	2.5	(7.1)	2.8	(1.2)	(34.3)	(33.1)	(35.5)
Loans	0.5	(1.0)	(1.4)	(3.0)	(1.7)	(.5)	(27.4)	(26.2)	(25.2)
NPL ratio	8.2	8.4	9.6	9.5	9.4	9.1	9.1	7.2	8.4
Substandard loans	6.1	6.0	6.1	6.3	6.4	6.0	5.9	5.5	6.8
Doubtful loans	1.8	2.1	2.7	2.5	0.8	0.8	1.1	0.7	0.6
Loss loans	0.4	0.3	0.8	0.6	2.3	2.3	2.2	1.0	1.0
Provisions to NPLs	35.1	40.2	43.8	43.3	44.9	40.9	42.8	38.1	31.0
Foreign Exchange Risk Indicators (percent)									
Deposits in Foreign Exchange to Total Deposits	3.6	3.5	3.8	10.7	3.8	0.2	0.2	0.3	0.2
Profitability Indicators (percent)									
Return on Assets (ROA)	1.9	0.8	0.8	1.4	1.2	1.2	1.0	0.8	0.4
Net Interest Margin	4.0	4.0	4.0	4.2	4.7	4.7	4.7	4.7	4.7
Interest Rate Spread	4.0	3.9	3.9	4.2	4.7	4.7	4.6	4.4	4.4

Source: Central Bank of Barbados

**Reflects the financial consolidation of a finance and trust company with its parent bank.*

[13] Indicators capture DTIs only.

Table 3: Credit Unions' Financial Stability Indicators (FSIs)

%	2013	2014	2015	2016	2017	2018Q1	2018Q2	2018Q3	2018Q4
Solvency Indicator									
Capital to Assets	11.7	11.9	11.6	11.8	11.9	11.8	11.6	11.5	11.3
Reserves to Total Liabilities	8.1	8.6	8.5	8.7	8.7	9.7	10.3	10.0	9.8
Liquidity Indicators									
Loan to deposit ratio	92.3	92.8	90.8	89.3	86.7	85.3	83.6	82.8	81.9
Credit risk Indicators									
Total assets, annual growth rate	4.2	6.2	7.2	8.3	8.7	8.9	9.1	8.8	9.5
Loans, annual growth rate	3.7	7.3	7.2	6.9	6.3	6.1	6.1	5.8	4.2
Nonperforming loans ratio	8.4	9.4	9	7.6	7.8	7.7	8.6	8.6	8.9
Arrears 3-6 months/	1.7	2.2	2	1.3	1.3	1.3	2.0	1.9	1.9
Arrears 6 – 12 months	1.7	1.5	1.8	1.2	1.4	1.3	1.2	1.3	1.4
Arrears over 12 months	5	5.7	5.2	5.1	5	5.2	5.4	5.4	5.5
Provisions to Total loans	3.4	3.5	2.6	2.5	2.4	2.4	2.6	2.5	2.6
Profitability Indicator									
Return on Assets (ROA)	1.1	0.9	0.9	1.1	1.3	1.1	0.3	0.5	0.7

Source: Financial Services Commission

Table 4: Life Insurance Performance Indicators

%	2012	2013	2014	2015	2016	2017*	2018P
Capital Adequacy							
Capital to Assets Ratio	30	26	30	30	41	43	40
Asset quality							
Reinsurance Ceded to GPW	7	5	8	6	12	13	12
Actuarial Risk							
Risk Retention Ratio	92	96	92	94	88	87	87
Earnings							
ROA	4	2	4	4	4	6	4

Source: Financial Services Commission
P-provisional
**Excludes the general insurance business of life insurers.*

Table 5: General Insurance Performance Indicators

%	2012	2013	2014	2015	2016	2017*	2018[P]
Capital Adequacy	207	205	220	214	220	222	225
Net Prem/Capital	63	61	65	72	73	84	104
Capital to Assets Ratio	30	32	31	29	29	26	21
Asset quality							
Rein. Ceded to GPW	59	58	57	55	52	56	51
Actuarial Risk	207	205	220	214	220	222	225
Risk Retention Ratio	44	44	45	47	49	50	52
Profitability and Earnings	130	127	122	136	132	143	100
Loss Ratio	63	62	55	64	60	64	44
ROA	4	4	3	1	2	0	(1)

Source: Financial Services Commission

*[P]-provisional * Includes the general insurance business of life insurers*

Table 5: Mutual Fund Assets

	2015	2016	2017	2018
Cash & Cash Equivalents	132.9	171.5	172.5	131.8
Derivatives	(0.8)	(0.1)	(0.1)	(0.5)
Equities	595.7	528.2	590.0	556.8
Fixed Income	391.5	479.9	483.8	373.4
Mortgages	94.7	93.0	90.8	97.2
Mutual Funds	432.0	529.7	669.7	749.6
Real Estate	144.9	120.0	113.0	108.5
Term Deposits	37.4	34.3	46.4	60.4
Other	89.3	96.3	80.8	101.4
Totals	**1,917.7**	**2,052.8**	**2,246.8**	**2,178.6**

Source: Financial Services Commission

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