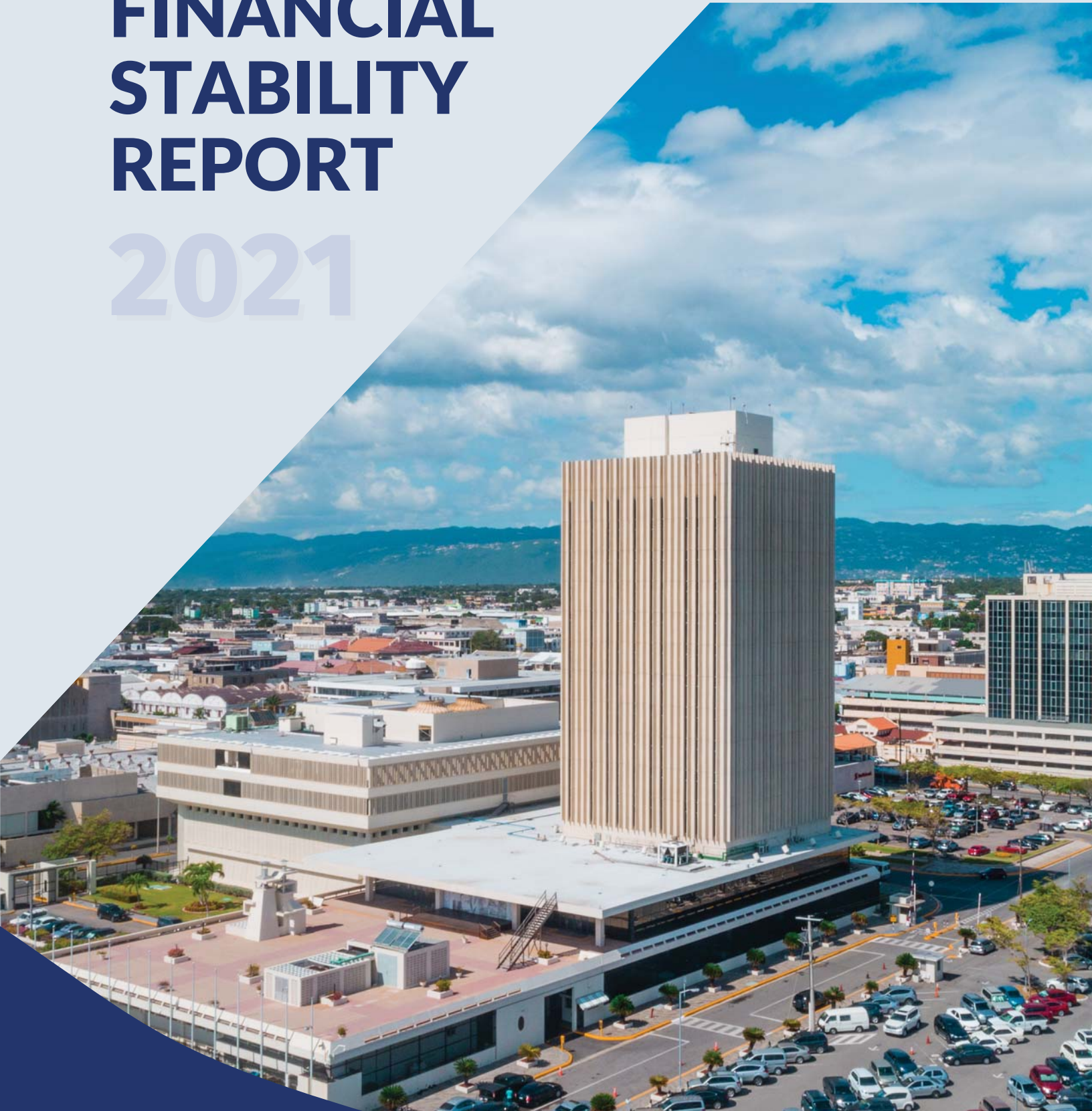




FINANCIAL STABILITY REPORT 2021



FOREWORD

The maintenance of financial stability by the Bank of Jamaica (BOJ) primarily concerns the safeguard of conditions which ensure the proper and efficient functioning of the financial system. The financial system consists directly of three basic financial components: institutions, markets and infrastructure.* These components interact with each other as well as with other indirect participants in the system – such as households, nonfinancial corporations and the public sector – to allocate economic resources and redistribute financial risks.

Aside from the supervision of deposit-taking institutions (DTIs), BOJ is charged with the responsibility of ensuring that the overall financial system is robust to shocks and that participants are assured of its robustness. This entails making sure that financial institutions are sound. The maintenance of financial stability by the Bank also involves overseeing the efficient and smooth determination of asset prices,



making certain that participants are able to honour promises to settle market transactions and preventing the emergence of systemic settlement risk arising from various financial imbalances that may develop within individual institutions or the system.

The 2021 Financial Stability Report provides an assessment of the main financial developments, trends and vulnerabilities influencing the stability of Jamaica's financial system during the year. The data utilized for the analyses are at end-2021 except in some instances where data were available for end-September 2021.

The Report covers:

- i) an overall assessment of financial stability;
- ii) macro-financial risks;
- iii) financial system developments; and
- iv) financial system sectoral exposures;

Comments and suggestions from readers are welcomed. Please email your feedback on this report to library@boj.org.jm



* For the purpose of this report, financial institutions include banks, securities dealers and insurance companies. Financial markets include foreign exchange, money and capital markets. Financial market infrastructure refers to payment and securities settlement systems.

ABBREVIATIONS AND ACRONYMS

ABM Automated Banking Machine	HHI Herfindahl-Hirschman Index
ACH Automated Clearing House	IC Insurance Companies
AFSI Aggregate Financial Stability Index	LI Life Insurance
BAML- Bank of America Merrill Lynch	JDX Jamaica Debt Exchange
GFSI Global Financial Stress Index	JSE Jamaica Stock Exchange
BINS Benchmark Investment Notes	LSCRI Large-Value System Concentration Risk Index
BIS Bank for International Settlement	LCR Liquidity Coverage Ratio
BN Billion	MaFi Macro-Financial Index
BOJ Bank of Jamaica	MCCSR Minimum Continuing Capital and Surplus Requirements
BPS Basis Points	MCT Minimum Capital Test
CAR Capital Adequacy Ratio	MiPI Micro-Prudential Index
CD Certificate of Deposit	NDTFI Non-Deposit-taking Financial Institution
CIS Collective Investment Schemes	NDX National Debt Exchange
CISS Composite Indicator of Systemic Stress	NIR Net International Reserves
CPI Consumer Price Index	NOP Net Open Position
CRE Credit Risk Exposure	NPL Non-Performing Loan
CSD Central Securities Depository	POS Point-of-Sale
CY Calendar Year	REER Real Effective Exchange Rate
D-SIB Domestic Systemically Important Bank	ROA Return on Asset
DTI Deposit-taking Institution	ROE Return of Equity
DVBP Dollar Value of a Basis Point	RTGS Real-Time Gross Settlement System
EMBI+ Emerging Market Bond Index	RWA Risk-Weighted Assets
ERPS Electronic Retail Payment Services	SD Securities Dealer
FSC Financial Services Commission	SIFI Systemically Important Financial Institution
FSI Financial Soundness Index	The Bank. Bank of Jamaica
FSR Fiscal Stability Ratio	VIX Volatility Index
FSSC Financial System Stability Committee	WTI West Texas Intermediate
FX Foreign Exchange	
FUM Funds Under Management	
GDP Gross Domestic Product	
GI General Insurance	
GOJ Government of Jamaica	
GOJGB Government of Jamaica Global Bonds	
GWP Gross Written Premium	

Financial Policy Committee



Richard Byles
Chairman



Wayne Robinson
Senior Deputy Governor
BOJ



Maurene Simms, CD
Deputy Governor
Financial Institutions
Supervisory Division, BOJ



Natalie Hayes
Deputy Governor
Banking, Currency Operations &
Financial Markets
Infrastructure, Boj



Myrtle Halsall, OD
Appointed Member



David Tennant
Appointed Member

Financial System Stability Committee



Richard Byles
Chairman



Wayne Robinson
Senior Deputy Governor - BOJ



Maurene Simms, CD
Deputy Governor -
Financial Institutions
Supervisory Division, BOJ



Darlene Morrison
Financial Secretary -
Ministry of Finance and
Public Service



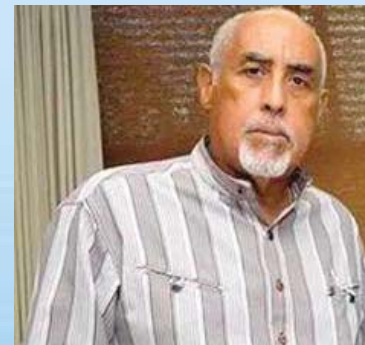
Everton McFarlane
Executive Director-
Financial Services
Commission



Antoinette McKain
CEO- Jamaica Deposit
Insurance Corporation



David Marston
Appointed Member



Claremont Kirton
Appointed Member

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FINANCIAL STABILITY SUMMARY

The Jamaican economy began to recover from the effects of the COVID-19 pandemic in 2021. With this recovery, selected macroeconomic indicators also began to improve. However, the risk profile of the economy began to shift as the normalisation of economic activity coincided with increased inflationary pressures and tightening monetary conditions. Notwithstanding, the financial sector maintained adequate levels of capital, liquidity as well as strong asset quality ratios.

Macro-financial environment

The global economy showed signs of recovery in 2021. Growth in the global economy was estimated at 5.9 per cent for the year. Despite increased access to vaccines, economic recovery was hampered by the low take up in some countries as well as the emergence of new mutations of the virus. Notably, the recovery in economic activity was accompanied by increased volatility in the financial markets during the first three quarters of the year.

There was also some recovery in the domestic economy underpinned by partial normalisation of economic activity in key economic sectors, particularly tourism. The domestic economy was estimated to have grown in real terms by 4.4 per cent in 2021. Additionally, the unemployment rate fell to 7.1 per cent as at October 2021. In the context of the recovery, there was an improvement in the fiscal accounts. (see Chapter 2).

In light of the rebound in nominal GDP, the public sector debt to GDP ratio began to trend downwards once more, following a brief disruption during the height of the pandemic. Notably, the public debt to GDP ratio fell below the pre-pandemic level of 100 per cent.

A combination of increasing international food and commodity prices as well as strengthened domestic demand resulted in heightened inflationary pressures. This resulted in the inflation exceeding the Bank of Jamaica's (BOJ)'s target band of 4.0 and 6.0 per cent for the last four months of 2021, mainly due to the impact of the pandemic on supply chains in international commodity markets and shipping costs. In order to mitigate the second round impact of these shocks and guide inflation back to the target range in the near term, the BOJ increased its policy rate on three occasions from a historic low of 0.5 per cent to 2.5 per cent at end-2021.

Notably, DTIs' liquidity and capitalization measures remained strong. There was broad expansion in their asset base, reflecting foreign currency investment gains. These gains as well as improved economic activity were further reflected in their earnings which returned to pre-pandemic levels. Similar results were noted among non-deposit-taking financial institutions (NDTFIs) as their assets expanded, in line with the economic recovery. Furthermore, the ten largest securities dealers showed improved profit margins as well. However, the insurance sector's profit margins declined as their claims ratio increased for the year. (see Chapter 3).

Financial system sectoral exposures

Household loans continued to dominate the credit portfolio of deposit taking institutions (DTIs) during the year. Notably, household NPL ratio remained stable within the context of continued credit risk mitigation strategies by DTIs, which were implemented due to the negative impact of the COVID-19 pandemic on households' balance sheets. Household debt as a proportion of GDP decreased for the year, which largely stemmed from the rebound in nominal GDP.

On the other hand, credit to the corporate sector declined in real terms, which was underpinned by a reduction in credit to half the economic sectors during 2021. This result was coupled with a marginal decline in loan quality, particularly for the tourism sector, due to the on-going impact of the pandemic.

Additionally, non-deposit taking financial institutions (NDTFIs) continued to reduce their exposure to public sector debt. Furthermore, NDTFIs' exposure to equities and real estate assets remained relatively low during the review period (see Chapter 4). [1]

Risk assessment of the financial system

In line with the recovery in economic activity, the credit to GDP gap fell significantly below the Bank of International Settlements' (BIS) threshold of 10.0 per cent.[2] This reduction of the credit gap was reflective of the rebounding GDP figure as growth in economic activity realigned with credit growth.

Network analysis revealed an increase in the risks associated with the inter-bank funding network, as measured by the systemic risk score.[3] Additionally, DTIs and securities dealers continued to be the most significant contributors within the financial system network, which simultaneously showed strong funding relationships with each other.

Furthermore, within the context of the economic recovery, the risks to the wider financial system were relatively subdued. Financial entities remained adequately capitalized and resilient to the various forms of scenario-based shocks which were evaluated (see Chapter 1).

New Developments

The pilot programme for the Central Bank Digital Currency (CBDC) was successfully carried out during the last eight months of 2021. During this time, two wallet providers received \$6.0 million worth of CBDC. Through these providers, a small number of retail customers and vendors were onboarded. The participants were able to successfully conduct person-to-person transactions as well as cash-in and cash-out transactions. The full roll out of the CBDC is scheduled to take place within the first half of 2022. Furthermore, two additional wallet providers, who are currently undergoing virtual simulations, will be authorized to purchase CBDC from the BOJ for distribution.

There was continued work by the BOJ, Financial Services Commission (FSC), Jamaica Stock Exchange (JSE) and the Development Bank of Jamaica (DBJ) on developing deeper financial markets. Among the ongoing initiatives, is the push to expand the use of credit ratings on locally traded financial assets through various incentives. This initiative was bolstered by the opening of a CariCRIS branch in Jamaica during 2021. Further work includes: simplifying the process of listed companies issuing additional shares, the development of the JSE's private market electronic trading portal and the work by the DBJ to privatize non-core government assets. The Financial Deepening Implementation group will continue to pursue these and other initiatives to accelerate the deepening of the financial markets (see Box 3.1 Financial Deepening).

The BOJ is currently working on developing a suite of macroprudential policy tools, such as a systemic risk buffer and a countercyclical capital buffer, which are both aimed at limiting systemic risk.[4] In the medium-term, the Bank plans to develop other macroprudential policy tools to aid in limiting risky lending practices within the financial sector.

Additionally, recognizing the potential impact of climate related financial risk (CRFR), the BOJ has made plans to advance its oversight in this area. Specifically, with support from the Agence Française de Développement (AFD), BOJ will be looking to integrate climate risks into the Bank's supervisory activities as well as to conduct climate-specific stress testing of the financial system. This support is anticipated to be long-term in nature.

During 2021, the Bank concluded the consultation process of its Phase I Basel III Programme, which is aimed at improving and strengthening the frameworks for prescribed capital and liquidity requirements for DTIs. Furthermore, the supervisors of the financial system continued to advance work on developing a framework for consolidated supervision. [5]

[1] Non-deposit-taking financial institutions include pension funds, collective investment schemes, securities dealers, life insurance companies and general insurance companies

[2] The credit-to-GDP gap is defined as the deviation of the credit-to-GDP ratio from its long-run trend

[3] The systemic risk score utilizes an adjacency matrix (which quantifies the influence of each institution) to capture the interconnectedness of the institutions in the system, by aggregating each institutions' contribution to systemic risk.

[4] The systemic risk buffer is a requirement for larger more complex and interconnected banks to hold higher capital. The goal is to directly target "too-big-to-fail" concerns surrounding these types of entities to reduce the possibility of government bailouts by having these institutions self-insure against severe financial crisis. The countercyclical capital buffer is a time varying capital requirement. It requires banks to increase capital at times when credit is growing rapidly so that buffer can be reduced if the economic and financial environment becomes substantially worse.

[5] 2021-BOJ-Annual-Report.pdf

1.0 FINANCIAL STABILITY ASSESSMENT

This chapter examines the current state of financial stability in Jamaica, the main vulnerabilities and risks to the financial system.

1.1 Overview

The recovery of the economy in 2021 and positive developments in the financial sector were reflected in improvements in macro-financial indices of financial stability. Specifically, the financial sector remained liquid, profitable and well capitalized in 2021.

*Notwithstanding the uncertainty created by the COVID-19 pandemic, the domestic economy showed signs of recovery in 2021 (see **Chapter 2**). While the economy is poised to register further growth, inflation pressures are likely to remain strong or be amplified in 2022. Moreover, there remains an ongoing risk associated with climate change.*

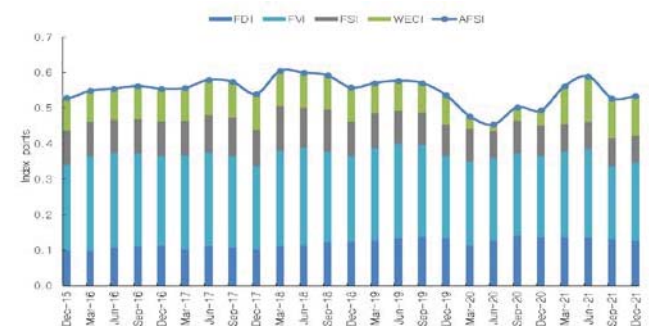
Stress tests conducted by the BOJ showed that the financial sector continued to be resilient to selected hypothetical adverse shocks to the economy. Deposit-taking institutions and securities dealers were tested against an adverse scenario in which the quality of the sectors' credit portfolio deteriorates within the context of tightened credit and monetary conditions in 2022. The vulnerabilities associated with these events were assessed to be manageable by the system, although there was some reduction in resilience given the stresses already weathered by the sectors in 2021. There is not enough data on the financial system's exposure to climate related risks. Nonetheless, hypothetical scenarios, in which credit quality and GDP fall following a significant adverse weather event, suggest that the financial sub-sectors would remain resilient to these shocks.

1.2 Macro-financial conditions in Jamaica

Despite rising inflation and the ongoing impact of the COVID-19 pandemic, macro-financial conditions, as measured by composite indices of financial stress, in particular the Aggregate Financial Stability Index (AFSI) and the Macro

Financial Index (MaFI), improved in 2021.¹ Specifically, the quarterly AFSI increased to an average of 0.6 for 2021, from 0.5 for 2020, indicating general stability (see **Figure 1.1**). The performance in the AFSI reflected increases in the financial development and the world economic climate sub-indices. The performance of the financial development index mainly reflected improvements in the Jamaican stock market, domestic interest rate spread and total credit to GDP, relative to 2020. Stronger global growth and improvement in the economic climate indicators contributed to the performance of the world economic climate sub-index. However, the impact of these improvements was partially offset by increased inflationary pressures, associated with the continuing impact of the COVID-19 pandemic on international commodity and shipping prices.

Figure 1.1 Aggregate financial stability index



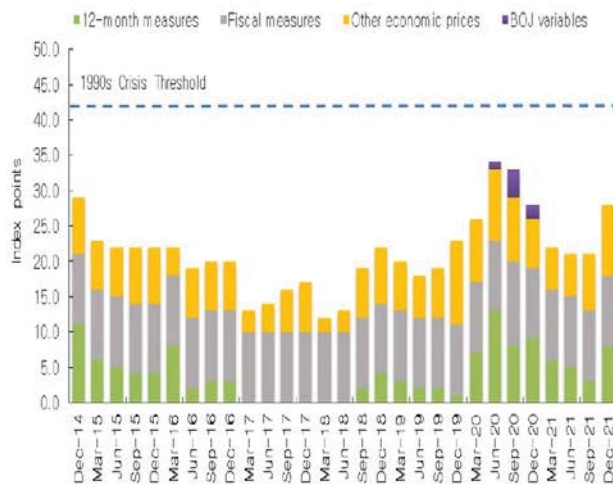
Source: BOJ

Note: The AFSI aggregates microeconomic, macroeconomic and international factors to form a single measure of financial stability. A higher value indicates increased financial stability while a lower value indicates deterioration in financial sector stability. Of importance, microeconomic data captures information for DTIs: Financial Development Index (FDI), Financial Vulnerability Index (FVI), Financial Soundness Index (FSI) and World Economic Climate Index (WECL).

¹ The construction and interpretation of the AFSI is described by Morris, V., *Measuring and Forecasting Financial Stability: The Composition of an Aggregate Financial Stability Index for Jamaica*, 2010. http://boj.org.jm/uploads/pdf/papers_pamphlets/papers_pamphlets_Measuring_and_Forecasting_Financial_Stability_The_Composition_of_an_Aggregate_Financial_Stability_Index_for_Jamaica.pdf

The MaFI also improved in 2021, which was reflected in a fall in the quarterly average of the index to 24.3 for 2021 from 30.3 for 2020 (see **Figure 1.3**). This result reflected an improvement in the 12-month growth in the stock market index and GDP the impact of which was partly offset by higher inflation. The MaFI remained well below the financial crisis threshold value of 44.0 points.

Figure 1.2 Macro-financial index



Source: BOJ

Note: The MaFI are signal-based indices computed using scores for indicators based on the number of standard deviations of each indicator from its 'tranquil period' mean value. The tranquil period for both indices spans the period March 2002 to March 2003. The scores range from 0 to 5 with a score of 5 representing the most severe signal. The higher the aggregate score, the more severe the signal.

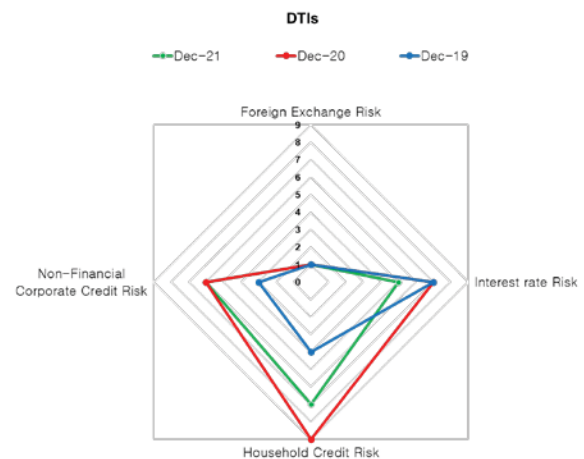
1.3 Emerging risk and vulnerabilities

Key risks to the Jamaican financial system in the near-term include elevated domestic inflation and the impact of a climate related event. In particular, continued high domestic inflation due to the impact of international supply chain issues as well as geopolitical tensions is of concern to regulators. Inflation was above the Bank's target range of 4.0 per cent to 6.0 per cent as at end-2021. Furthermore, the Bank projects that, in the absence of further policy actions, inflation will be

above target for the next 10 to 12 months.² Even while they continue to proactively manage their portfolios, financial institutions are well capitalized to withstand the potential impact on their balance sheets of tightened monetary policy.

For 2021, financial institutions' credit, interest rate and foreign currency risk indicators generally improved relative to 2020. Additionally, financial institutions remained liquid, adequately capitalized and profitable (see **Chapter 3**). In particular, the financial risk exposure "cobweb", which measures annual average exposure to financial risks, showed that there were improvements in DTIs' exposure to household credit risk and interest rate risks, as measured by non-performing loans to total loans and cumulative maturity gaps, respectively. DTIs' exposures to foreign currency risks and corporates were unchanged relative to 2020 (see **Figure 1.3**).

Figure 1.3 Financial Risk Exposures of DTIs



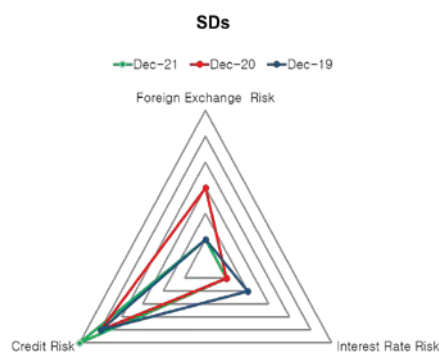
Source: BOJ

Note: Movements away from the centre of the diagram represent an increase in DTIs' risk exposures. Movements towards the centre of the diagram represent a reduction in DTIs' risk exposures. Risk exposure indicators are: (i) Foreign exchange risks – Net open position/Capital; Loans to Non-FX earners/Total FX loans (ii) Interest rate risks – Cumulative maturity gap of up to 30 days/Assets; Cumulative maturity gap of up to 90

² The Monetary Policy Committee (MPC) has reacted to the potential second round effect by tightening monetary policy.

days/Assets; Cumulative maturity gap of up to 365 days/Assets; DVBP/Capital (iii) Credit Risks – NPL/Total loans

Figure 1.4 Evolution of risk exposure indicators for the 12 largest SDs



Source: BOJ

Note: Movements away from the centre of the diagram represent an increase in securities dealers' risk exposures. Movements towards the centre of the diagram represent a reduction in securities dealers' risk exposures. Risk exposure indicators are: (i) Foreign exchange risks – Net open position/Capital; (ii) Interest rate risks – Cumulative maturity gap of up to 30 days/Assets; Cumulative maturity gap of up to 90 days/Assets; Cumulative maturity gap of up to 365 days/Assets; DVBP/Capital (iii) Credit Risks – NPL/Total loans

The outturns in the performance of securities dealers' sector average quarterly risk exposures were mixed for 2021, relative to 2020 (see **Figure 1.4**).³ In particular, securities dealers' exposure to foreign exchange risks improved due to a decrease in their net open position (NOP) to capital ratio. Susceptibility to interest rate shocks, as measured by changes in cumulative maturity gaps, was unchanged for the review year. Despite increasing credit exposure, the risk remained moderate as credit was not an integral part of the business model.

³ The analysis is based on a representative sample of twelve SDs.

1.4 Climate Related Risk

Jamaica is a small island developing state in the Caribbean with significant exposure to weather-related natural disasters and climate change. The island's location, size, extensive and low-lying coastlines expose it to rising sea level and sea surface temperatures, increased intensity of storms and heightened uncertainty in rainfall events.⁴ According to the IMF, Jamaica is among the top 20 countries most exposed to natural disasters globally.⁵ In particular, Jamaica experienced recurring bouts of severe flooding and drought during 2021. Climate analysts suggest that the risk of extreme weather conditions, including flooding, will increase with changing climatic conditions. These risks are of concern given the country's strong dependence on *Tourism* as well as *Agriculture*, *Energy*, *Construction* and *Mining*.

Climate related risks may translate into financial risks and are material to the mandate of the Bank of Jamaica. Notably, climate related financial risks have been increasingly identified by central banks as being material to the financial system stability mandate.⁶ In fact, several regulatory authorities have already started the process to develop and utilize methods and models to assess the impact of climate risk on the financial system.

A key takeaway is that domestic financial institutions are exposed to climate risks through their lending to and investments in sectors which are more susceptible, such as agriculture, real estate, energy and tourism. As such, the impact of climate risk on these sectors could translate

⁴ Baptiste, A. K., & Kinlocke, R. (2016). We are not all the same: Comparative climate change vulnerabilities among fishers in Old Harbour Bay, Jamaica. *Geoforum*, 73, 47–59.

⁵ The country has withstood about 40 disasters between 1950–2017, averaging about a disaster a year. Sixty per cent of these were hurricanes and storms, and about 25.0 per cent were related to floods, droughts, and epidemics (see <https://www.elibrary.imf.org/view/journals/002/2018/103/article-A001-en.xml>).

⁶ D'Orazio, P. (2021). Towards a post-pandemic policy framework to manage climate-related financial risks and resilience. *Climate Policy*, 21(10), 1368–1382.

into losses for financial institutions, depending on the extent of their exposure to these sectors. In this regard, the Basel Committee on Banking Supervision provided guidance that an individual bank may require additional buffers to mitigate against CRFR.⁷

The macroeconomic transmission of a climate shock can impact DTIs and NDTFIs in the following ways:

- a) Lower real GDP due to a fall-out in capacity based on the impact of the hurricane;
- b) Higher inflation caused by supply shocks;
- c) Increase in interest rates to moderate inflation back to within the target range; and
- d) Depreciation of the local currency.

1.5 Quantifying the impact of an elevated inflation & climate related risk scenario

Against the background of the above, stress tests were conducted to determine the impact of elevated inflation and a 1 in a 100-year hurricane shock on the solvency of financial institutions based on data as at end-2021.

Based on contemplated scenarios, two assessments were undertaken;

- (1) a baseline scenario premised on Bank of Jamaica's February 2022 macroeconomic projections; and
- (2) an adverse scenario which examines plausible shocks as a result of inflationary pressures and a climate related event.^{8,9,10}

7 Basel Committee on Banking Supervision, Principles for the effective management and supervision of climate-related financial risks 16 November 2021

8 The market and credit risk factors under the baseline and adverse assessment for elevated inflation and hurricane scenarios represent year-on-year projected changes in macroeconomic variables.

9 In addition, the assumed shocks under the adverse case for the elevated inflation scenario were generally based on worse-case macro-economic projections multiplied by a factor of 1.25.

1.6 Stress test results for elevated inflation scenario

Macro-prudential stress test scenarios showed that the financial sector was broadly resilient to the contemplated shocks to credit and market risk factors. In particular, under both the baseline and adverse elevated inflation scenarios, all financial sub-sectors recorded post-shock capital adequacy ratios (CARs) above the prudential minima.

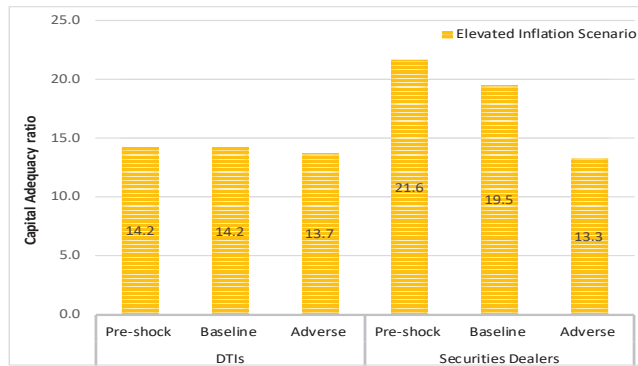
Of note, the results of the combined credit and market risk shocks (under the adverse scenario) showed that the CARs of the DTI and securities dealer sub-sectors would decline by 0.5 percentage point and 8.3 percentage points, respectively to 13.7 per cent and 13.3 per cent (see **Figure 1.4**). The reduction in the CAR for the DTI sub-sector was primarily due to its credit risk exposure to households. The CAR for the securities dealer sub-sector was mostly impacted by interest rate risk and reflected the magnitude of institutions' positive repricing gap positions.

This factor is utilized in order to account for heightened uncertainty relating to geo-political tensions and its impact on economies, domestically and globally. The adverse projection for the elevated inflation scenario examined the forecast of unhinged expectations (inflation expectation greater than a specific threshold), while the climate related scenario involves macro-economic forecasts base on a 1 in a 100-year hurricane shock.

10 In relation to credit risk shocks, the migration of past due loans (PDLs) and performing loans (PLs) to NPLs were based on historical relationships between these variables as well as with projected changes in GDP. By extension, the relationship between GDP and non-performing loans (NPLs) was determined based on the following equation:

$$\ln\left(\frac{NPL_{i,t}}{1-NPL_{i,t}}\right) = +\alpha \ln\left(\frac{NPL_{i,t-1}}{1-NPL_{i,t-1}}\right) + \sum_{s=0}^S \beta_{t-s} \Delta \ln(GDP)_{t-s} + \varepsilon_{it}$$

Figure 1.4 Combined stress test results showing post-shock CARs – Inflation Scenario

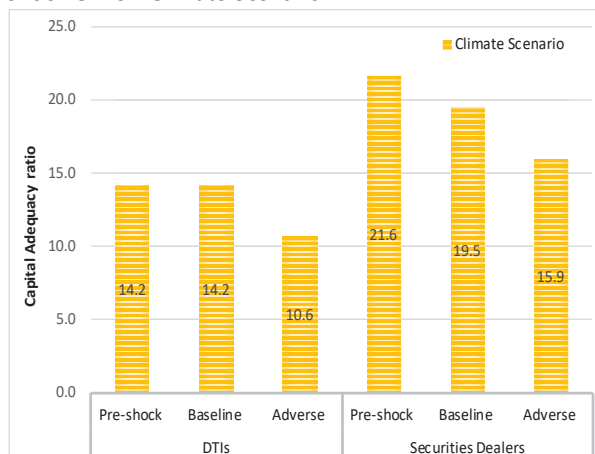


Source: BOJ

1.7 Stress test results for climate related risk /Hurricane scenario

The results of the climate related scenarios also indicated that the financial sub-sectors would maintain capital adequacy ratios above prudential benchmarks under both scenarios. Notably, in response to the combined shocks under the adverse scenario, the DTI and securities dealer sub-sectors recorded declines in CARs of 3.5 percentage points and 5.6 percentage points, respectively. The decline in the CARs mainly reflected the impact of shocks to performing loans in the case of the DTIs and exposure to interest rate risks for securities dealers.

Figure 1.5 Combined stress test results showing post-shock CARs - Climate Scenario



Source: BOJ

1.8 Contagion simulation on the interbank network

Spillover risks within the domestic financial system remained moderate. Contagion simulations were carried out to assess the potential for increased vulnerability to spillover and contagion risks within the interbank funding network. This stress scenario was conducted by ascertaining the impact of any one institution defaulting on its credit obligations and assuming that the affected entities were only able to recover 70.0 per cent of their losses. The index of contagion (IoC) highlighted that, although the domestic financial system is highly interconnected, the vulnerability to contagion and spillover risks remained moderate and was relatively unchanged for the review period.¹¹ Moreover, the IoC signalled that, on average, an institution would cause a 3.1 per cent loss in capital of its counterparties. Further, the maximum average capital loss caused by an institution was 12.7 per cent compared to a minimum of 0.0 per cent or no capital loss. The results also emphasised the potential spillover risks emanating from inter-financial group transactions.

1.9 Summary of risk mitigation measures

Regulatory authorities of the financial system are committed to implementing policies and measures geared towards mitigating risks. As such, BOJ is currently working on developing a suite of macroprudential policy tools, such as a systemic risk buffer and a countercyclical capital buffer, which are both aimed at limiting systemic risk.¹² In particular, the systemic risk buffer will

¹¹ The index of contagion represents the average percentage of loss in other financial institutions' capital base due to the failure of the specific institution.

¹² The systemic risk buffer is a requirement for larger more complex and interconnected banks to hold higher capital. The goal is to directly target "too-big-to-fail" concerns surrounding these types of entities to reduce the possibility of government bailouts by having these institutions self-insure against severe financial crisis. The countercyclical capital buffer is a time varying capital requirement. It requires banks to increase capital at times when credit is growing rapidly so that buffer can be reduced if the

be useful in mitigating risks associated with the high degree of concentration and interconnectedness within the financial system. For the medium-term, the Bank plans to develop other macroprudential policy tools. These are tools utilized by the FPC to aid, mitigate and limit undue exposure to credit risk.

Additionally, recognizing the potential impact of CRFR, BOJ requested technical assistance from Agence Française de Développement to integrate climate risks into supervisory activities as well as to conduct stress testing of the financial system.

During 2021, the Bank concluded the consultation process of its Phase I Basel III programme, which is aimed at improving and strengthening the frameworks for prescribed capital and liquidity requirements for deposit-taking institutions. Furthermore, supervisors of the financial system continued to advance work on developing a framework for consolidated supervision.¹³

economic and financial environment becomes substantially worse.

¹³ [2021-BOJ-Annual-Report.pdf](#)

2.0 MACRO-FINANCIAL DEVELOPMENTS

This chapter examines the risks and vulnerabilities of the financial system due to macroeconomic developments

2.1 Overview

Within the context of the COVID-19 pandemic, the global and domestic macro-financial environment displayed mixed results for 2021. While growth in advanced economies rebounded, there was increased volatility in financial markets over the March to September quarters of 2021. These developments occurred in the context of mutations in the virus, which led to more infections than were previously expected, fueled by the uneven access to vaccines. In the domestic context, there was economic recovery which contributed to improved labour market conditions. However, disruptions in supply chains in international commodity markets led to inflationary pressure in both the global and domestic economies. In response to this inflationary pressure, the Bank of Jamaica reduced the level of monetary policy accommodation in order to guide inflation back to the target range.

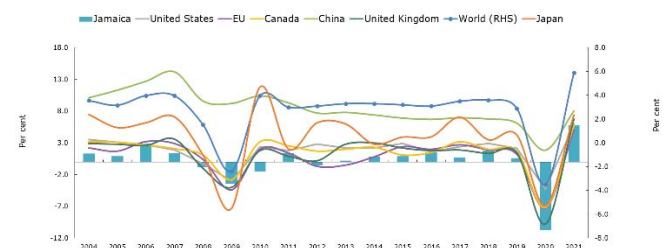
2.2 Global developments

Within the context of the COVID-19 pandemic, the macro-financial environment displayed mixed results for 2021. There was a rebound in growth in most of the advanced economies. However, uncertainty relating to the spread of the virus remained, constraining the rate of growth as well as recovery in some economies. On the other hand, the rollout of COVID-19 vaccines led to increased optimism in financial markets and contributed to the recovery in advanced economies.

There was an estimated growth of 5.9 per cent in the global economy for 2021 in contrast to the contraction of 3.1 per cent for 2020.¹³ The growth in the global economy was a reflection of the performances of advanced and emerging economies (see **Figure 2.1**). In particular, China experienced an expansion of 8.0 per cent in 2021, following growth of 2.3 per cent in 2020. The

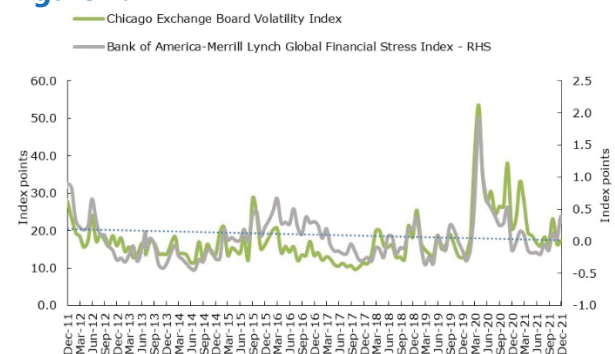
United States of America (USA), United Kingdom (UK), European Union (EU) and Canada experienced economic growth ranging from 5.0 per cent to 6.8 per cent for 2021. Of note, however, disruptions in global supply chains precipitated a significant increase in oil and other commodity prices which triggered a spike in inflation across the world.¹⁴

Figure 2.1 GDP growth rates of selected countries



Source: IMF World Economic Outlook

Figure 2.2 International financial market indicators



Source: Bloomberg

Note: (i) The BAML-GFSI is a calculated, cross market measure of risk, hedging demand and investor flows in the global financial system. Values greater than 0 indicate more financial market stress than normal while values less than 0 indicate less financial stress than normal. (ii) The VIX reflects a market estimate of future volatility, based on the weighted average of the implied volatilities for a wide range of strikes. An increase in the VIX index indicates increased volatility.

¹³ See IMF World Economic Outlook Update October 2019.

¹⁴ West Texas Intermediate (WTI) oil prices increased by 72.4 per cent to an average of US\$67.93 per barrel for 2021.

Figure 2.3 Selected domestic macroeconomic indicators

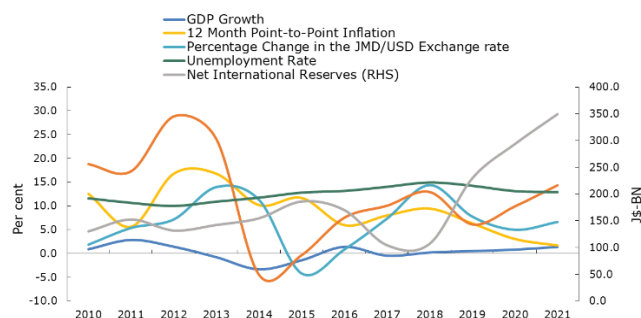


Figure 2.4 Spread between GOJ global bonds and EMBI+



Source: Bloomberg

There was also increased volatility in financial markets as well as heightened financial stress over the March to September quarters of 2021. The increase in volatility in global financial markets was evidenced by the Chicago Board Options Exchange Volatility Index (VIX) and The Bank of America Merrill Lynch Global Financial Stress Index (BAML-GFSI) (see Figure 2.2).

2.3 Domestic environment

Domestic macroeconomic conditions also reflected mixed results for the review period.

Real GDP is estimated to have grown by 4.3 per cent for 2021 in contrast to the decline of 9.9 per cent for 2020. The estimated growth for 2021

largely reflected partial recovery in tourism and its affiliated services as well as increased production and distribution activities due to the easing of COVID-19 containment measures. In this context, the unemployment rate fell by 3.6 percentage points to 7.1 per cent at end 2021, reflecting improved labour market conditions. Conversely, annual point-to-point inflation increased by 2.1 percentage points to 7.3 per cent at end-2021, relative to end-2020. Domestic inflation breached the target of 4.0 per cent to 6.0 per cent on seven occasions in 2021, mainly due to the impact of the pandemic on supply chains in international commodity markets and shipping costs. In order to limit the second-round effects of the pandemic related supply shocks and to guide inflation back to the target range over the next two years, the Bank of Jamaica's Monetary Policy Committee agreed to reduce the level of monetary policy accommodation. In this regard, among other measures the policy interest rate was increased by 200 basis points during 2021 to 2.50 per cent.¹⁵

The Jamaica Dollar depreciated by 8.7 per cent vis-à-vis the United States dollar for 2021 following depreciation of 7.6 per cent for the prior year (see Figure 2.3). This outturn was largely due to episodes of increased end-user demand for portfolio-related purposes.

In the context of economic growth as well as improvement in investor confidence over the review period, there was narrowing of the TRE spread and the spread between GOJ Global Bonds composite yield (GOJGB) and the Emerging Market Bond Index (EMBI+) (see Figure 2.4).¹⁶ The average monthly TRE spread decreased to -0.08 per cent from 1.3 per cent for 2020. This was due to a notable increase in the 30-day T-Bill rate relative to the private money market rate (see Figure 2.5). In addition, the spread between GOJGB and EMBI+ narrowed over the review period (see Figure 2.4).

¹⁵ The Policy rate is the rate offered to deposit taking institutions on overnight placements with BOJ.

¹⁶ The TRE spread measures the premium priced in the repo rate for default risk and is computed as the difference between the 30-day private money market repo rate and the 30-day T-bill rate

2.4 Equity Market Performance

The improved economic conditions in the USA reduced tail risks in equity markets for 2021. For Jamaica, the gradual lifting of restrictions aided the recovery in the domestic stock market. Furthermore, the co-movement between the JSE and S&P 500 declined over the review period.

The Standard & Poor's 500 Index (S&P 500), which is a market-capitalization-weighted index of the 500 largest publicly traded companies in the USA, increased by 26.9 per cent for the review period. The performance of the market was supported by accommodative fiscal and monetary policies by the Federal Reserve. Meanwhile, the JSE (Main) index increased by 0.6 per cent, over the same period. As such, there was a notable decline in the co-movement between the JSE (Main) index and the S&P 500 index during 2021 (see Figure 2.6). Specifically, the correlation co-efficient between the two indices was 0.5 for 2021 relative to 0.7 for 2020.

Figure 2.5 TRE Spread

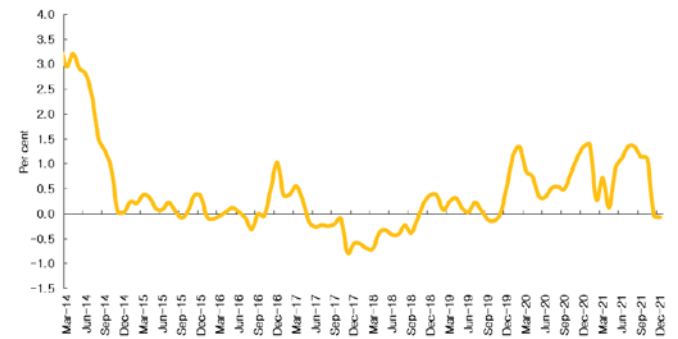
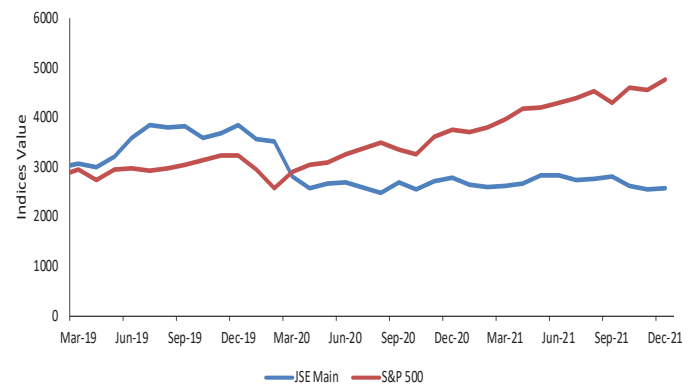


Figure 2.6 Jamaica Stock Exchange (Main) index and S&P 500 index co-movement



3.0 FINANCIAL SYSTEM DEVELOPMENTS

This chapter describes the major developments in the financial system.

3.1 Overview

DTIs' asset base expanded in 2021, primarily reflecting growth in DTIs' foreign currency investments, as well as the impact of depreciation in the domestic currency. Against this background, DTIs' foreign exchange risk increased over the review period but remained well within the required statutory limits.

The composition of DTIs' assets remained relatively stable relative to 2020. Loans, Advances and Discounts continued to account for the largest share of DTIs total assets, despite a slowdown in the pace of growth for domestic currency loans. This slower growth reflected a slower pace of growth in DTIs' supply of credit to the corporate sector.

There was a change in the sectoral concentration of DTIs credit to the private sector, largely reflecting an increase in the supply of credit to the mining sector. Notwithstanding, the household sector remained the largest credit exposure for DTIs. Notably, DTIs' asset quality was relatively unchanged.

Total liabilities for the DTI sub-sector increased for 2021, with deposits remaining the primary source of asset financing.

All DTIs continued to maintain adequate liquidity levels in compliance with the liquidity coverage ratio (LCR) requirements. In addition, all DTIs maintained strong capital positions over the review period. Against the background of the recovery in the economy, DTIs' earnings for the review period returned to pre-COVID-19 levels. Notably, there was growth in credit union's assets and liabilities for 2021.

Non-deposit-taking financial institutions recorded a moderate increase in total assets, consistent with the continuing recovery in the domestic economy. The twenty-nine core securities dealers recorded the highest market share within the NDTFI sector. More specifically, information available for the year ended-September 2021, showed a moderate increase in on- and off-balance sheet funds under management.

Information available up to end-2021, for the ten largest securities dealers, showed that the capital adequacy ratio of these institutions decreased marginally but remained above the prudential minimum. However, securities dealers' profitability indicators showed improvement.

The life and general insurance sub-sectors both recorded increases in asset base for 2021. Government securities continued to be dominant in the asset portfolio of the life insurance sub-sector. Of note, the claims ratio for insurance companies increased at end-2021. In addition, the insurance sub-sector's profitability decreased substantially over the review period. Nonetheless, the sector remained adequately capitalized and solvent.

The interbank funding network continued to display significant interlinkages between the DTI and NDTFI sub-sectors.

For 2021, market activity in the JamClear®-RTGS system exhibited general improvements. Retail payments activity for the review period indicated signs of recovery from the negative impact of the pandemic. There was a marginal increase in the level of liquidity concentration within the JamClear®-RTGS system. Both the average monthly and overall value of transactions within BOJ's intraday liquidity facility, marginally declined.

Figure 3.1 Jamaica's financial intermediation (assets of financial corporations as % of GDP)

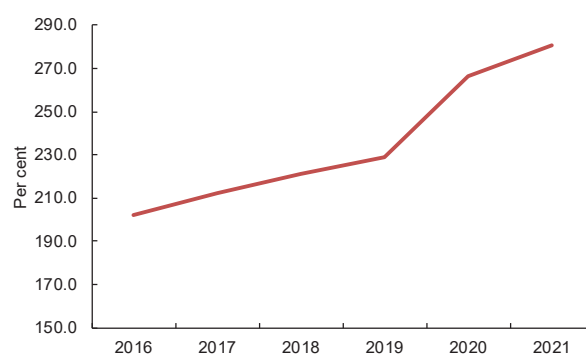
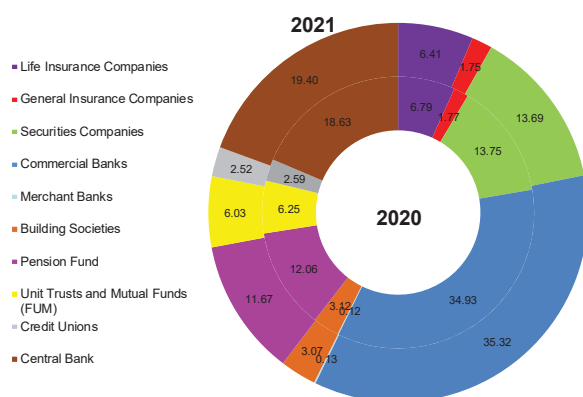
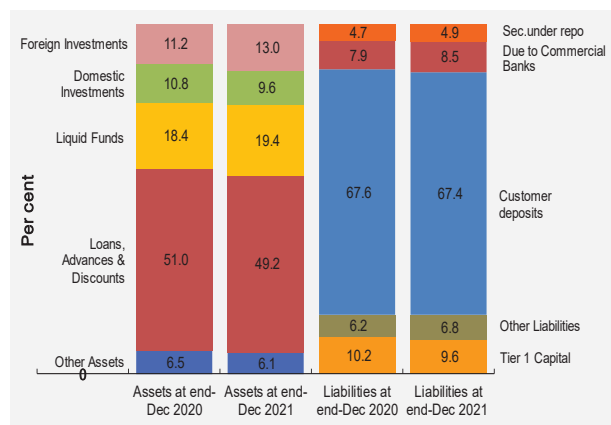
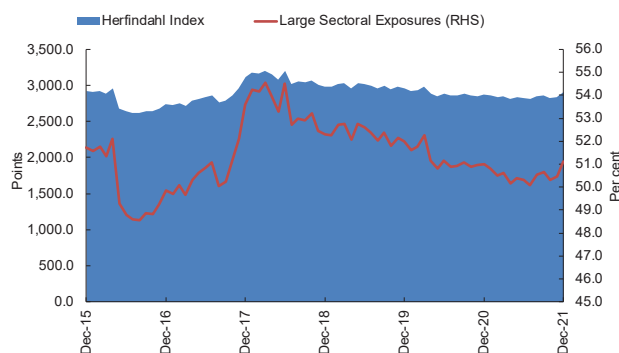


Figure 3.2 Distribution of financial system assets¹⁷**Figure 3.3** Major components of DTIs' aggregate balance sheet**Figure 3.4** Concentration of DTIs' loan portfolio to private sector

3.2 The financial system

Financial intermediation improved in 2021, as shown by an increase in the ratio of total financial institution assets to GDP for the review period (see **Figure 3.1**).¹⁸ At end-2021, this ratio was 280.5 per cent relative to 259.1 per cent at end-2020. This outturn largely reflected the stronger growth in financial system assets relative to GDP growth.

3.3 Deposit-taking institutions

3.3.1 Market share of deposit-taking institutions

The market shares of all DTI sub-sectors were relatively unchanged.¹⁹ Commercial banks continued to be the dominant financial sub-sector, with these entities' share of total DTI assets increasing marginally to 91.7 per cent at end-2021, from 91.5 per cent at end-2020. In addition, commercial banks' market share of total financial system assets grew by 0.4 percentage point to 35.3 per cent at end-2021 (see **Figure 3.2**).

3.3.2 Deposit-taking institutions' balance sheet position

DTIs' total assets grew by 13.6 per cent to \$2,299.8 billion at end 2021, relative to 11.9 per cent for 2020. The growth in DTIs' assets primarily reflected an increase in DTIs' *Foreign Investments*. DTIs' *Foreign Investments* grew by 31.5 per cent to \$298.5 billion (see **Figure 3.3**). The growth in foreign currency investments was largely due to the acquisition of foreign currency securities, mainly US and Canadian Treasury Bills, as well as GOJ foreign currency securities.²⁰ The depreciation in the Jamaica

¹⁷ Assets are defined as total balance sheet assets.

¹⁸ Total Financial Institutions assets includes the assets of commercial banks, building societies, FIA licensees, securities dealers, insurance companies and the Bank of Jamaica (BOJ)

¹⁹ Market share is measured by each sub-sector's assets as a percentage of overall financial system assets.

²⁰ Foreign currency government securities grew by J\$37.5 billion, and GOJ foreign currency securities grew by J\$32.9 billion.

Dollar relative to the US dollar contributed significantly to this growth.²¹

The composition of DTIs' assets was relatively unchanged at end 2021 when compared with end 2020, as *Loans, Advances and Discounts* continued to account for the largest share of DTIs' total assets. Notably, there was a slowdown in the pace of growth for domestic currency loans to 10.7 per cent for 2021 from 11.4 per cent the prior year. The slower pace of increase in domestic currency loans was largely due to weaker growth in credit supply to the corporate sector.²² This reflected institutions' risk aversion due to the potential impact of the Covid-19 pandemic.

A sectoral breakdown of DTIs' credit portfolio revealed that the reduction in credit was largely influenced by decreases in loans to the public sector by 48.0 per cent, and to the entertainment and agricultural industries by 13.7 per cent and 6.0 per cent, respectively. In addition, DTIs reduced their credit exposures to the manufacturing, tourism and construction industries by 3.6 per cent, 3.0 per cent and 1.8 per cent, respectively. Foreign currency loans increased by 5.7 per cent for 2021, relative to 8.7 per cent for the prior calendar year. Concurrently, DTIs' holdings of *Liquid Funds* increased by 19.8 per cent for 2021, relative to growth of 23.4 per cent for 2020.

The sectoral concentration of DTIs' credit to the private sector increased in 2021, compared to 2020 (see Figure 3.4).²³ This outturn primarily reflected an increase in the share of DTIs' credit extended to the *Mining* sector. Notwithstanding, the household sector (personal loans) remained the largest credit exposure for DTIs, with the

share of loans to the sector being 51.1 per cent at end-2021.²⁴

DTI's credit portfolio reflected high concentration levels at end-2021, with 79.4 per cent of loans extended to private sector being channeled to four main economic sectors.²⁵ Three of the eleven DTIs continued to supply more than 60.0 per cent of credit to each of these four sectors (see Figure 3.5). Furthermore, the share of the top three DTIs which account for the largest share of private sector credit grew to 62.1 per cent at end-2021 relative to 60.0 per cent at end-2010. The increase over the 11-year period, was particularly significant for *Distribution*, where the share of the top three DTIs increased by 28.1 per cent over the review period. Conversely, these three DTIs reduced their exposures to the construction, tourism and household sectors, by 67.3 per cent, 28.7 per cent and 3.3 per cent, respectively.

There was a slowdown in credit growth within the DTI sector for 2021. DTIs' total credit grew by 7.6 per cent for the year ended December 2021, relative to 10.4 per cent for the previous year. Consequently, the credit-to-GDP gap indicator fell by 4.2 percentage points to 3.9 per cent at end-December 2021. This outturn was largely due to the stronger growth in nominal GDP during the review period (see Figure 3.6). The gap indicator remained below the BIS's upper threshold of 10.0 per cent, which suggests the absence of risks related to the trade cycle. Loan quality ratios continued to be low.

For the review period, there was a reduction in loans under moratoria relative to 2020 as some DTIs continued to gradually phase-out deferral arrangements. Loans under moratorium declined to \$14.8 billion at end-2021 from \$70.2 billion at end-2020. Notably, some DTIs continued to offer these facilities as a consequence of the prolonged adverse effects of the pandemic. Households accounted for 20.7 per cent of the outstanding loans offered by DTIs, which were

²¹ During 2021, the depreciation in the exchange rate contributed \$60.9 billion to the growth in total assets, relative to \$51.2 billion for 2020.

²² Loans extended to the corporate sector grew by 3.5 per cent for 2021, relative to growth of 12.5 per cent for 2020.

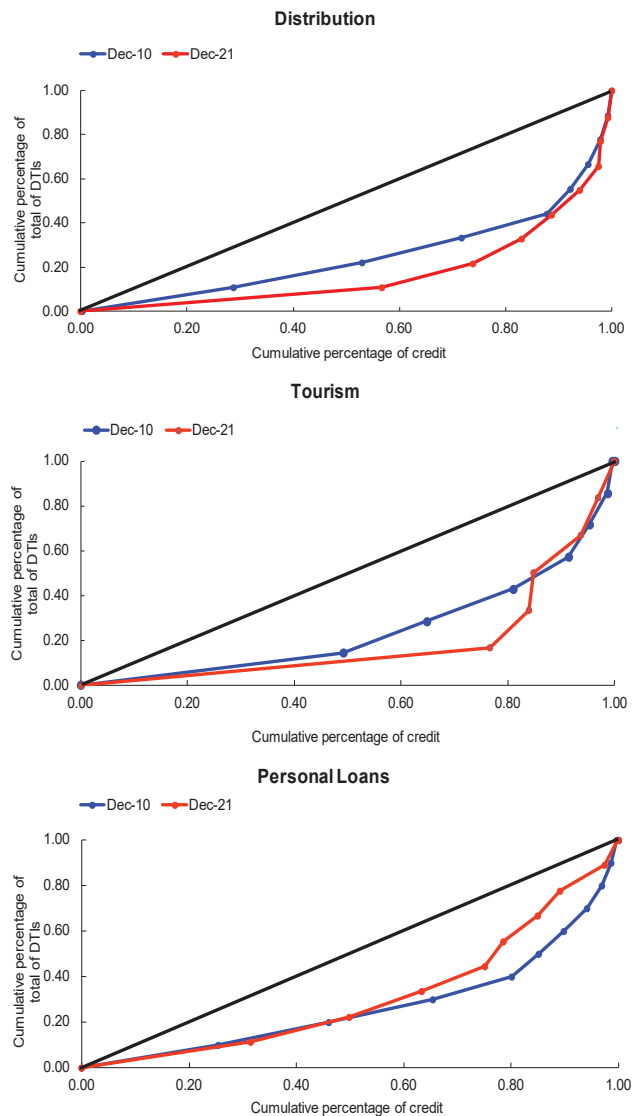
²³ The Herfindahl-Hirschman Index (HHI) is calculated by squaring the loan share of each sub-sector within the private sector loan market and then summing the resulting numbers. The HHI index can range from close to zero to 10 000.

²⁴ "Household" is used to represent the "Personal Loans" line item which includes mortgages to households.

²⁵ The four main economic sectors are Distribution, Tourism, Construction and the household sector (or personal loans).

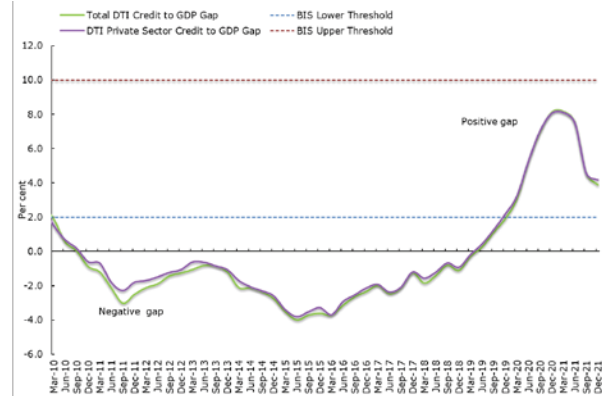
under moratoria, while large corporates accounted for approximately 60.8 per cent. The reduction in the stock of moratorium facilities over the review period, was attributable to the expirations and repayments of loans by customers particularly in the Tourism sector in the context of continuing economic recovery.

Figure 3.5 Lorenz curve distribution of credit for DTIs²⁶



²⁶ The Lorenz curves show the distribution of credit by DTIs within three of the four main economic sectors, from end-2021 relative to the close of 2010.

Figure 3.6 Credit-to-GDP Gap



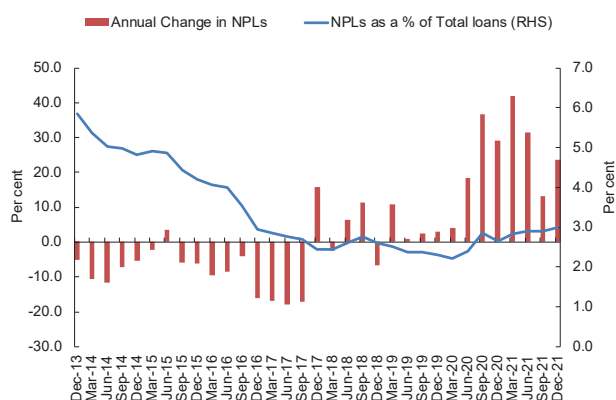
Note: Credit-to-GDP gaps were estimated by applying the one-sided Hodrick Prescott (HP) filter to quarterly data spanning the period 2000 to 2015 for all DTIs.

Notwithstanding, the Tourism, Utilities and Distribution sectors continued to rely significantly on moratorium arrangements.

DTIs' asset quality remained relatively stable over the review period. Specifically, the non-performing loans (NPLs) to total loans ratio, increased marginally by 0.1 percentage point to 2.9 per cent at end-2021. There was an increase in the dollar value of NPLs by 12.6 per cent to \$33.0 billion at end-2021, in comparison to a significantly larger increase of 41.9 per cent to \$29.3 billion at end-2020 (see **Figure 3.7**). The NPL coverage ratio declined to 107.0 per cent at end-2021 relative to 118.2 per cent at end-2020.²⁷ This outturn was primarily driven by slower growth in DTIs' provisioning for the review period. However, the loan loss provisioning rate, as measured by the ratio of loan loss provisions to total loans, was relatively unchanged at 3.4 per cent at end-2021.²⁸

²⁷ NPL coverage ratio measures a bank's ability to absorb potential losses from its non-performing loans. It is calculated as provisions for impairment under the International Financial Reporting Standards (IFRS) plus prudential provisions for expected losses based on regulatory criteria as a ratio to NPLs.

²⁸ Loan loss provisions represent the net new allowances that DTIs make in the period against bad or impaired loans. This is done based on the likelihood of losses. Under the International Financial Reporting Standards, the loan loss provisioning rate is calculated as provisions of impairment plus prudential provisions as a percentage of total loans.

Figure 3.7 NPLs in the DTI sector

DTIs' foreign exchange risk increased over the review period but remained well within the required statutory limits.²⁹ DTIs' NOP to capital narrowed to a short position of 16.9 per cent, at end-2021, from a short position of 26.0 per cent at end-2020.³⁰ In addition, over the review period, DTIs' foreign currency assets increased at a faster pace relative to foreign currency liabilities. This was largely due to DTIs' purchases of BOJ Indexed Bonds and new foreign currency forward contracts to mitigate against the impact of the depreciation in the domestic currency.

All DTIs continued to maintain adequate liquidity levels in compliance with the domestic currency LCR requirements.³¹ More specifically, the LCR for the DTI sector increased by 21.4 percentage points to 233.2 per cent over the 9-month period ended-December 2021.³² The uptick in the LCR was primarily driven by an increase in DTIs'

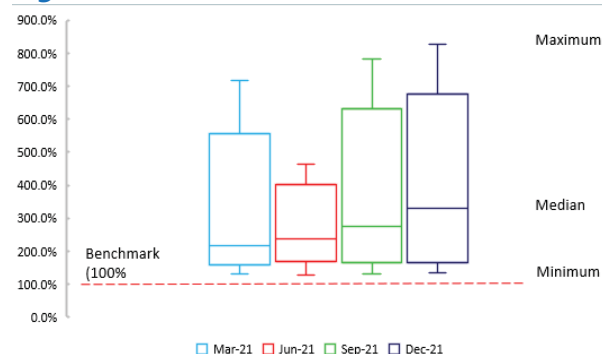
²⁹ The required limit for long positions is 15.0 per cent of regulatory capital denominated in Jamaica Dollars or \$4.5 billion, whichever is lower; For short positions, the limit is 25.0 per cent of regulatory capital denominated in Jamaica Dollars, or \$7.0 billion, whichever is lower.

³⁰ The average quarterly NOP to capital for 2021 increased to a short position of 22.3 per cent relative to a short position of 19.7 per cent for 2020.

³¹ DTIs are required to hold high-quality liquid assets (HQLAs) sufficient to cover more than 100 per cent of their net cash outflows for a 30-day period. High-quality liquid assets (HQLAs) refer to assets that can be easily liquidated, especially in distress periods. These are assets which can easily be converted to cash through sales or by being pledged as collateral, with no significant loss of value.

³² The analysis covers the 9-month period, as the first official LCR calculations for the DTI sector started from March 2021.

holdings of high-quality liquid assets (see **Figure 3.8**).

Figure 3.8 Liquidity conditions in the DTI sector

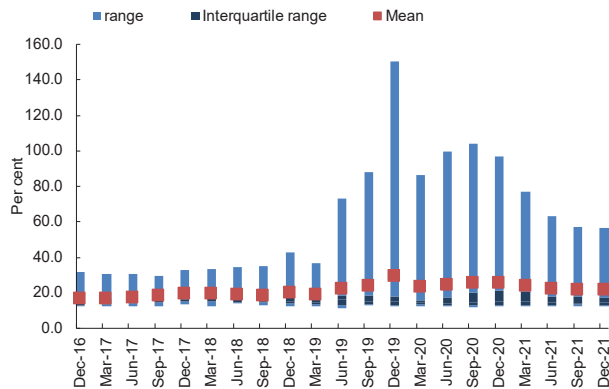
Total liabilities for the DTI sector increased for 2021. Funding from deposits remained the primary source of asset financing for DTIs. Specifically, DTIs' total deposits increased by 13.3 per cent to \$1 548.2 billion. Deposits represented 77.0 per cent of total liabilities at end-2021 relative to 78.3 per cent at end-2020. Note that, the Jamaica Deposit Insurance Corporation, established in 1998, manages the Deposit Insurance Scheme (DIS) to protect depositors and contributes to the confidence and stability in Jamaica's financial system (see **Box 3.2** *The role of the Jamaica Deposit Insurance Corporation in financial system stability*). Furthermore, there was a decline in financial intermediation as the loans to deposit ratio fell by 2.5 percentage points to 73.1 per cent for the review period.

All DTIs maintained strong capital positions over the review period as the average CAR for DTIs remained well above the regulatory benchmark of 10.0 per cent. At end-2021, the average CAR was 21.5 per cent relative to 25.3 per cent at end-2020 (see **Figure 3.9**).³³ Concurrently, the quality of DTIs' regulatory capital, as measured by the ratio of Tier 1 capital to total regulatory capital, improved by 0.4 percentage point to 94.5 per cent at end-2021, compared to 94.1 per cent at end-2020. However, the ratio of retained earnings to capital, declined by 0.5

³³ The average is computed by using the arithmetic mean of the distribution of CARs as at December 2021.

percentage point to 29.4 per cent at end-2021.³⁴ Furthermore, the ratio of Tier 1 capital to risk weighted assets decreased by 0.4 percentage point to 13.7 per cent at end-2021. The decline in the ratio was due to stronger growth in risk-weighted assets relative to Tier 1 capital.

Figure 3.9 Distribution of capital adequacy ratio



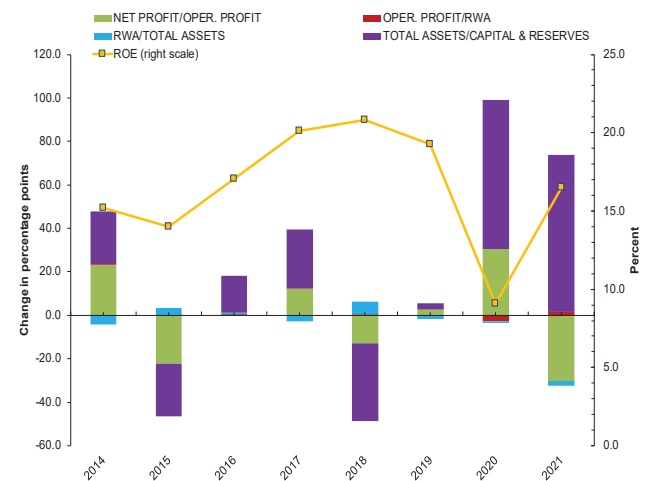
3.3.3 Deposit-taking institutions' earnings and profitability

As the economy continued to recover, DTIs' earnings for the review period returned to pre-COVID-19 levels. The DTI sub-sector's net profits were \$47.1 billion for 2021, compared to a low of \$25.0 billion for the previous year. DTIs' total operating income increased by 16.1 per cent to \$217.7 billion for 2021. Operating expenses grew by 4.4 per cent to \$174.5 billion. Consequently, operating profits increased by 121.6 per cent to \$50.6 billion from \$22.8 billion for 2020. DTIs' provisions for loans and security losses declined by \$10.2 billion to \$12.1 billion for the review period. A drill-down of DTIs' net profits showed that the improved profitability performance for 2021, reflected a rebound in key non-interest revenue streams, particularly dividends & trading profits on securities and fee income on loans.

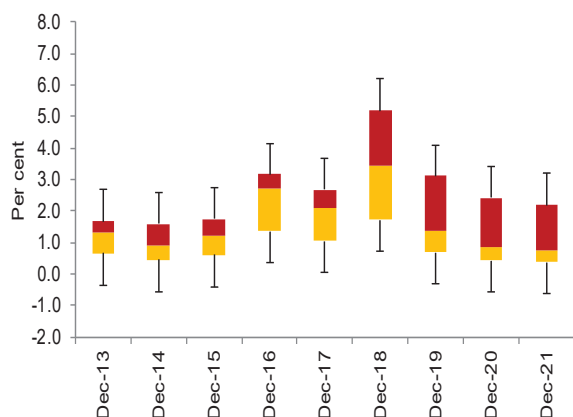
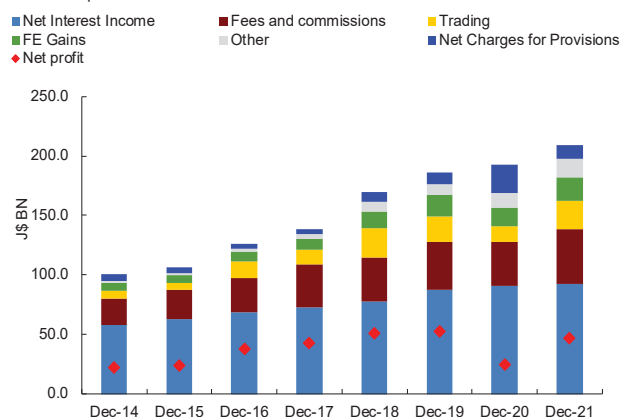
³⁴ The retained earning to capital ratio shows the amount of DTI's capital that is made up of Core Tier 1 capital.

Against the background of the growth in profits, profitability indicators for the DTI sub-sector improved over the review period. Note that, high occurrences of bank fraud can cause impairment to financial institutions' profitability (see Box 3.3 *Bank fraud and its implications for money laundering risks in Jamaica*). Specifically, DTIs' return on equity (ROE) grew by 7.4 percentage points to 16.5 per cent for the review period, compared to 9.1 per cent for the previous period. A decomposition of the ROE showed that the increase in the ROE was primarily influenced by a higher leverage ratio, which indicated that DTIs primary means of asset financing over the review period was through the issuing of debt. In addition, the ROE decomposition showed that there was an increase in DTIs' operating margin. The results highlighted a stronger growth in DTIs assets, relative to the growth in capital and reserves (see Figure 3.9).

Figure 3.10 Decomposition of DTIs' ROE³⁵



³⁵ The ROE level is presented on the right-hand scale in percentage; the changes of factors (components of ROE) are presented on the left-hand scale.

Figure 3.11 Distribution of DTIs' ROA**Figure 3.12** DTIs' sources of revenue, total provisions and net profit

DTIs' return on assets (ROA) grew to 2.0 per cent for 2021 from 1.2 per cent for 2020. The primary contributors to the increase in the ROA were higher income from trading, other income, fees & commissions as well as foreign exchange gains. However, the median ROA remained at -0.3 per cent, that is, similar to the previous year (see Figure 3.11).

Of note, DTIs' net charges for provisions significantly declined by 50.6 per cent for the review period (see Figure 3.12). However, DTIs' interest expenses grew by 8.5 per cent, mainly reflecting increases in interest paid on time deposits and other borrowings.³⁶ As a result,

DTIs' net interest margin, as measured by the ratio of net interest income to average earning assets, decreased to 6.0 per cent for 2021 from 6.6 per cent for the previous period.

3.3.4 Credit Unions' balance sheet position

Credit Unions' total assets grew by 9.6 per cent to \$1 503.3 million at end 2021, relative to end-2020. The growth in credit unions assets largely reflected an increase in credit unions' *Foreign Investments* which grew by 23.0 per cent to the equivalent of \$4.7 million. The growth in foreign currency investments was primarily due to an increase in *Securities purchased with a view to resale*, mainly from other counterparties. Notwithstanding, *Loans, Advances and Discounts* continued to account for the largest share of credit unions' assets. Of note, the share of *Loans, Advances and Discounts* to credit unions' total assets declined by 2.4 percentage points to 64.4 per cent at end 2021 (see Figure 3.13). This decline was due to stronger growth in credit unions' total assets, relative to the growth in loans. However, the dollar value of credit unions' *Loans, Advances and Discounts*, grew by 5.6 per cent to \$967.7 million at end-2021 relative to 2020. An increase in domestic currency loans by 5.9 per cent to \$1004.0 million was the primary contributor to this outcome. Meanwhile, credit unions reported no foreign currency loans for the calendar year. Concurrently, credit unions' holdings of *Liquid Funds* increased by 22.1 per cent to \$79.4 million at end-2021.

³⁶ "Other borrowings" excludes borrowing from the Bank of Jamaica (BOJ).

Figure 3.13 Major components of Credit Unions' aggregate balance sheet

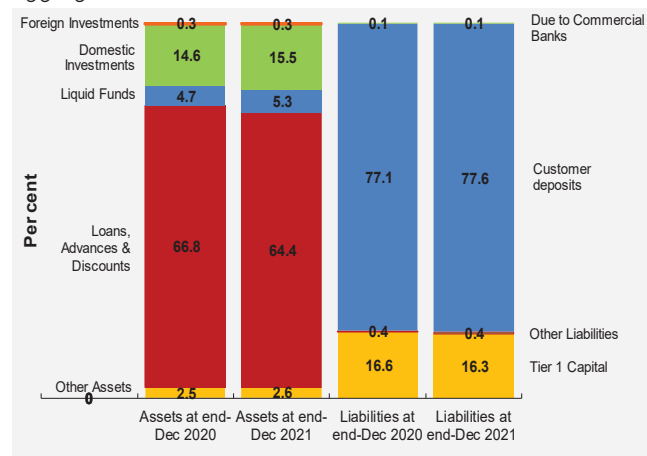
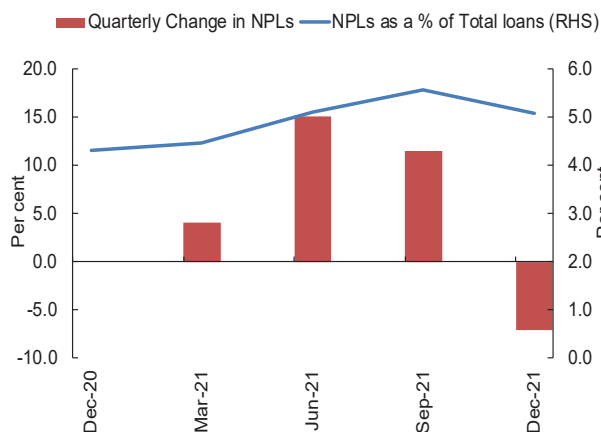


Figure 3.14 NPLs for Credit unions



Asset quality of the credit union sector declined marginally over the review period. Specifically, the ratio of NPLs to total loans, increased by 0.8 percentage point to 5.1 per cent at end-2021 (see **Figure 3.14**). The higher NPL ratio primarily reflected an increase in the dollar value of NPLs, which grew by 24.1 per cent to \$49.2 million at end-2021.

Credit unions' total liabilities increased for 2021, with funding from deposits remaining the primary source of asset financing. Specifically, credit unions' total deposits increased by 10.3 per cent to \$1 167.0 million. The share of deposits to total liabilities remained relatively stable at 95.1 per cent at end-2021, relative to 2020. Furthermore, there was a decline in financial

intermediation for credit unions, as the loans to deposit ratio fell by 3.7 percentage points to 82.9 per cent at end-2021.

3.4 Non-deposit-taking financial institutions (NDTFI)

3.4.1 Non-deposit-taking financial institutions' market share and balance sheet position

Non-deposit-taking financial institutions recorded a moderate growth in total assets, consistent with the continuing recovery in the domestic economy. Specifically, the asset base of the NDTFI sector increased by 9.7 per cent to \$2 411.9 billion as at end-September 2021, relative to growth of 2.1 per cent for the year ended-September 2020.³⁷ The assets of life insurance, general insurance, pension funds and collective investment schemes (CIS) grew by 6.1 per cent, 10.6 per cent, 9.0 per cent and 9.6 per cent, respectively, for the year-ended September 2021.³⁸ At the same time, the asset base of the twenty-nine core securities dealers grew by 12.1 per cent.

Core Securities dealers recorded the highest market share within the NDTFI sector. For the year ended-September 2021, the market share of the core securities dealers was marginally higher at 33.9 per cent of NDTFIs' total assets compared to 33.2 per cent at end-September 2020.³⁹ Meanwhile, pension funds and CIS accounted for 28.9 per cent and 17.0 per cent of NDTFIs' total assets relative to 29.1 per cent and 17.1 per cent, respectively, at end-September 2020. Additionally, the core securities dealers and general insurance companies' proportions of NDTFI's total assets were higher

³⁷ NDTFIs consist of securities dealers, pension funds, CIS, life insurance and general insurance companies.

³⁸ CIS includes pooled funds and other assets, where other assets consist of derivatives, interest receivables, other receivables and other investments such as real estate.

³⁹ Core securities dealers refers to the twenty-nine listed securities dealers and data is available as at end-September 2021.

at end-September 2021 relative to end-September 2020.

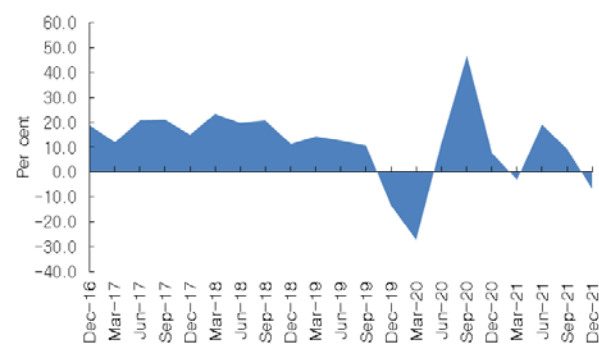
Figure 3.15 Major components of securities dealers' funds under management (FUM) assets



Figure 3.16 Securities dealers' regulatory capital, capital adequacy and primary ratios



Figure 3.17 Foreign Currency Net Open Position (NOP) to Capital (exposure to foreign exchange risk)



3.4.2 Securities dealers

Core securities dealers' on- and off-balance sheet funds under management (FUM) moderately increased over the review period. Specifically, core securities dealers' on- and off-balance sheet FUM increased by 5.4 per cent to \$1 355.0 billion at end-September 2021. This growth was mainly influenced by an increase in the market share of *Corporate Bonds* by 1.6 percentage points to 15.4 per cent (see **Figure 3.15**). Furthermore, the asset base of the core securities dealers was \$817.0 billion at end-September 2021 relative to \$728.9 billion at end-September 2020.

The capital adequacy ratio of the ten largest securities dealers decreased marginally, but remained well above the prudential minimum of 10 per cent.⁴⁰ These institutions' regulatory capital grew by 6.5 per cent to \$123.9 billion while, their risk-weighted assets (RWA) increased by 10.8 per cent to \$577.5 billion at end-December 2021 relative to end-December 2020. In this context, there was a decline of 0.8 percentage point to 21.5 per cent in the capital adequacy ratio (see **Figure 3.16**).⁴¹

Securities dealers' exposure to foreign exchange risk fell for the review period. In particular, the NOP to capital ratio of the sub-sector declined by 14.7 percentage points to 6.9 per cent at end-December 2021 (see **Figure 3.17**). This downturn was mainly due to a sharp reduction in foreign exchange assets by 194.8 per cent. In addition, the ratio of foreign currency investments to total investments, a measure of dollarization, decreased by 2.3 percentage points to 53.7 per cent at end-December 2021.

Securities dealers' profitability indicators showed improvement. For the year ended December 2021, the securities dealers' ROA and ROE increased to 2.3 per cent and 12.4 per cent from 1.7 per cent and 7.9 per cent, respectively (see **Figure 3.18**). This performance was driven by an

⁴⁰ For the remainder of the chapter, the analysis is based on a representative sample of ten securities dealers that comprise 91.5 per cent of the sector.

⁴¹ Capital adequacy ratio is measured as the ratio of regulatory capital to risk-weighted assets.

increase in profits due to higher non-interest income. In addition, leverage, as measured by the total liabilities to total assets ratio, increased to 84.5 per cent as at end-December 2021 from 78.6 per cent at end-December 2020.

3.4.3 Insurance companies

The insurance sector’s asset base increased over the review period. Specifically, the sector’s asset base grew by 8.3 per cent to \$499.7 billion at end-2021. Life insurance companies accounted for 79.6 per cent of the insurance sector’s total assets relative to 80.0 per cent at end-2020. Within the life insurance sub-sector, the assets of the two largest companies accounted for 83.6 per cent of the sub-sector’s asset base relative to 82.6 per cent at end-2020. As it relates to general insurance companies, the two largest institutions accounted for approximately 37.7 per cent of the sub-sector’s asset base, relative to 35.6 per cent at end- 2020.

The life and general insurance sub-sectors both recorded increases in asset base for 2021. More specifically, the asset base of life insurance and general insurance companies increased by 8.2 per cent and 6.2 per cent to \$397.6 billion and \$102.1 billion, respectively. The growth in assets of life insurance companies was largely influenced by respective increases of 15.7 per cent and 12.6 per cent in *Government Bonds and Debentures* and *Total Equity Investments*. For general insurance companies, the growth in the asset base was mainly due to an increase of 23.9 per cent in *Other Assets*.

Figure 3.18 Securities Dealers’ Return on Asset (ROA) and Return on Equities (ROE)

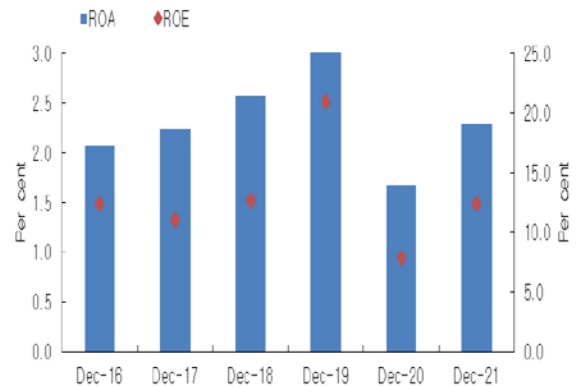


Figure 3.19 Distribution of assets of life insurance companies

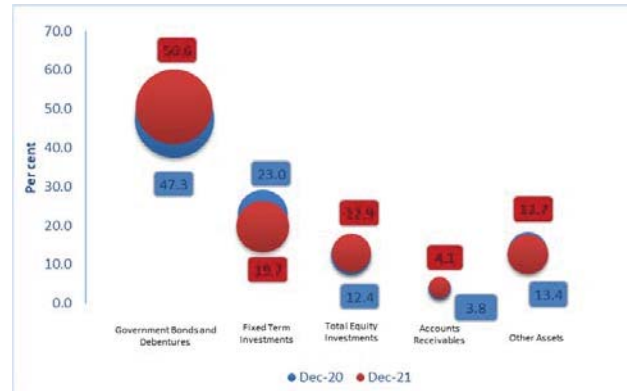


Figure 3.20 Distribution of assets of general insurance companies

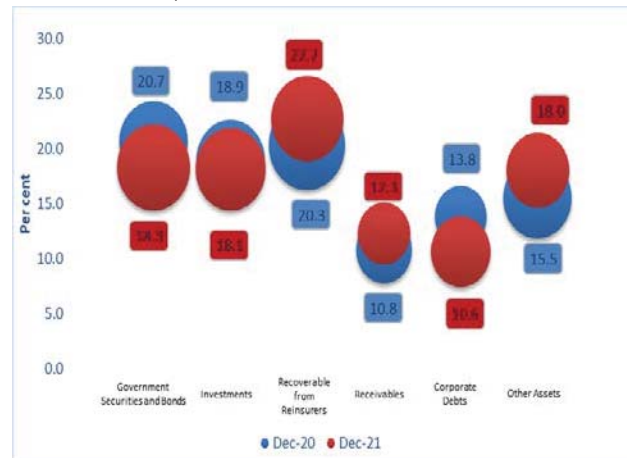


Figure 3.21 Premium income and growth of insurance sector

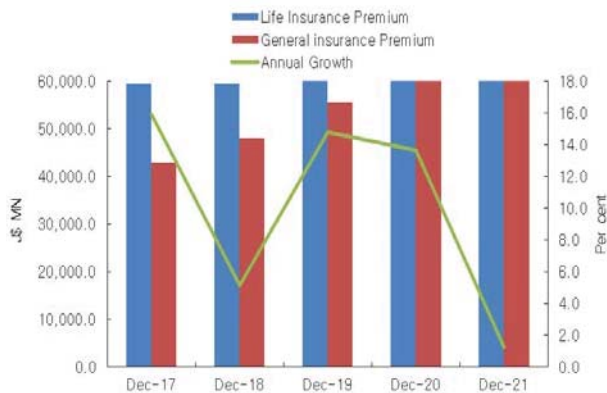


Figure 3.22 Earned premium, claims incurred and claims ratio of insurance sector



Figure 3.23 Growth in profit before tax for insurance companies



Government securities continued to dominate the asset portfolio of the life insurance sub-sector while the general insurance sub-sector's investments were more diversified. *Government securities* accounted for 50.6 per cent of the life insurance sub-sector's total assets at end-2021 relative to 47.3 per cent at end-2020 (see **Figures 3.19**). On the other hand, *Recoverable from Reinsurers* accounted for the largest share (22.7 per cent) of the total assets of general insurance companies. *Government Securities and Bonds* constituted the second highest share of the asset base of the general insurance companies, accounting for 18.3 per cent at end-2021 (see **Figure 3.20**).

Insurance penetration remained low during the review period. In particular, insurance penetration, as measured by the ratio of gross premium to GDP, decreased to 3.5 per cent and 3.0 per cent, respectively, for the life and general insurance companies at end-2021 from 4.1 per cent and 3.1 per cent, at end-2020.^{42,43} Of note, total gross premiums for the sector increased by 1.2 per cent to \$142.2 billion at end-2021 (see **Figure 3.21**). The insurance density, measured as the ratio of average gross premiums for the life and general insurance sub-sectors to the country's total population size, remained at 21,033 at end-December 2021.

The claims ratio for insurance companies increased during the review period. The ratio of claims incurred to premiums earned for the insurance sector increased by 1.2 percentage points to 29.9 per cent at end-2021 (see **Figure 3.22**).^{44,45} This outturn was influenced by a faster growth in claims, partly influenced by the impact of the COVID-19 pandemic, relative to premiums earned. Of note, the outturn was also

⁴² Insurance penetration measures the importance of insurance activity relative to the size of the economy

⁴³ The average insurance sector penetration was 3.1 per cent for Latin America and Caribbean countries in 2016. See, Gonzalez, R., "Insurance penetration in Latin America and the Caribbean", The Actuary, 2018.

⁴⁴ Earned premium is the pro-rated portion of the policy holder's prepaid premium that applies to the expired portion of the policy, which now belongs to the insurer.

⁴⁵ The breakdown of data required for the calculation of this ratio is not available for life insurance companies.

higher than the five-year average of 29.2 per cent.⁴⁶

The insurance sector's profitability declined substantially over the review period. The sector's profit before tax fell by 33.5 per cent to \$32.6 billion for end-2021 (see **Figure 3.23**).⁴⁷ The deterioration in the insurance sector's profitability was largely due to an increase in claims incurred and operating expenses due to the COVID-19 pandemic. However, there was an increase of 9.7 per cent in the total income earned for 2021 relative to 0.4 per cent for the prior year (see **Figure 3.24**). The growth in total income was largely influenced by an increase of 84.6 per cent in investment income.

For the review year, the insurance sector remained adequately capitalized and solvent. In particular, all life insurance companies exceeded the Minimum Continuing Capital and Surplus Requirements (MCCSR) ratio prudential benchmark of 150.0 per cent. At end-2021 the MCCSR of the sub-sector was 211.2 per cent.⁴⁸ Similarly, the general insurance sub-sector's Minimum Capital Test (MCT) remained the prudential benchmark of 250.0 per cent. At the close of the review year the MCT ratio of the sub-sector was 281.6 per cent.⁴⁹ Additionally, the average solvency ratio for life and general insurance companies were 273.6 per cent and 320.7 per cent, respectively, as at end-2021 with five insurance companies falling below 100 per cent (see **Figure 3.25**).⁵⁰ Notably, there was

⁴⁶ Faster growth in claims may have been due to an increase in health claims, a larger number of motor vehicle claims and the surrender of life insurance investments as a result of hardships caused by the COVID-19 pandemic. The slower growth in premiums earned may have been due to the general fall out in income.

⁴⁷ Profit before tax was calculated using the moving sum of the four quarters to 2021 for both insurance sub-sectors.

⁴⁸ The Minimum Continuing Capital and Surplus Requirements (MCCSR) measures an insurer's capital adequacy to meet its obligations to policyholders.

⁴⁹ The MCT Prescribed Capital Required ("PCR") assesses the riskiness of assets and policy liabilities and compares capital available to capital required. It was initially set at 200.0 per cent in 2011, was increased to 225.0 per cent in the first quarter of 2012 and again to 250.0 per cent in 2013. Except for annual filing of the MCT, the figures are preliminary.

⁵⁰ Solvency ratio examines a firm's ability to meet its long-term debts and obligations.

a marginal decrease in the ratio of capital to total assets to 24.3 per cent at end-2021 from 25.4 per cent at end-2020 (see **Figure 3.26**).

increase of 0.2 percentage point to 98.4 per cent at end-2021.⁵¹ However, the general insurance companies' retention rate decreased by 4.8 percentage points to 52.2 per cent at end-2021 (see **Figures 3.26 and 3.27**).⁵²

Figure 3.24 Total income (GWP + investment income) of the insurance sector



Figure 3.25 Distribution of the solvency ratio of insurance companies



⁵¹ The retention rate is measured by the ratio of net premium written to gross direct premium written.

⁵² Reinsurance retention ratio measures the amount of risk being absorbed by an insurer rather than passing it on to a reinsurer. Measured as the ratio of net premiums written to gross premiums, the ratio captures the net amount of risk which the reinsurer keeps for his own account. The lower the ratio, the more the company is able to avoid financial distress following a large claim.

Figure 3.26 Capitalization of the insurance sector

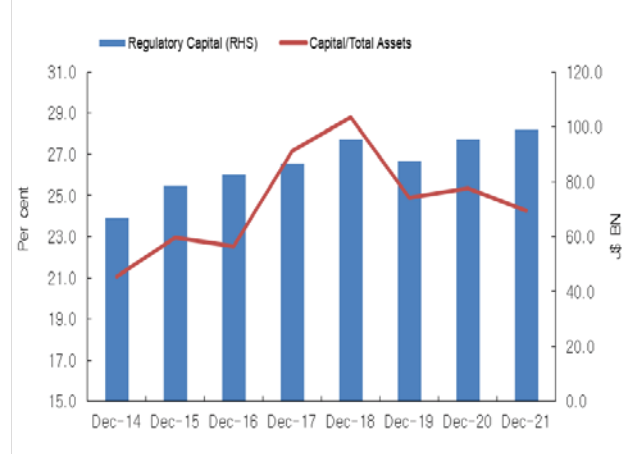


Figure 3.27 Retention rate of life insurance companies

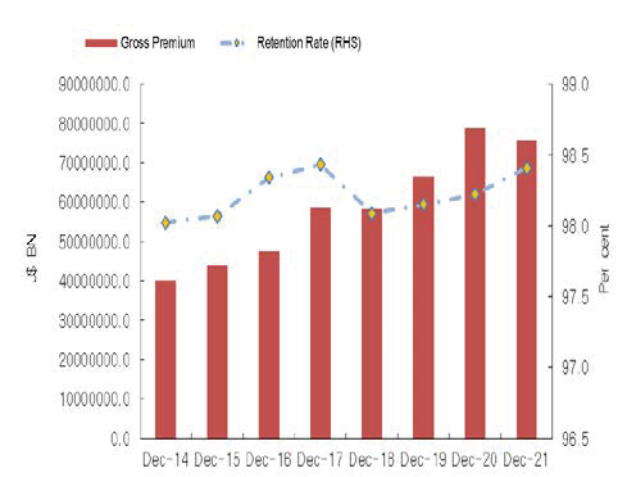
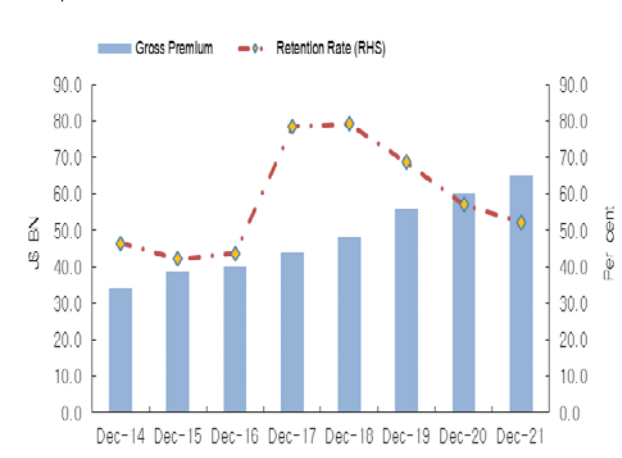


Figure 3.28 Retention rate general insurance companies



3.6 Interlinkages in the Financial System

The interbank funding network displayed significant interlinkages between the DTI sector and NDTFI sector. More specifically, the commercial banking and securities dealers’ sub-sectors continued to exhibit strong and sizeable funding relationships (see Figure 3.29). This indicated that the financial system’s susceptibility to direct and indirect interconnectedness risks remained high. Four commercial banks and three securities dealers were the most central entities in the interbank funding network. Within these institutions, there was one financial group pair (see Figure 3.30).

DTIs and securities dealers remained willing to engage in funding transactions with each other. There was a significant number of reciprocated funding relationships within the DTI and securities dealers interbank funding network at end-2021, as reciprocity was recorded at 50.7 per cent.⁵³ Concurrently, density within the same network was 30.7 per cent.⁵⁴ The systemic risk score (SRS) for the review period was 4.9 relative to 5.2 for the previous period. Based on the SRS, risk associated with the interbank funding network declined slightly at end-December 2021 when compared to end-December 2020. This is attributed to a more equitable risk concentration in a few key financial institutions in the network. Further, domestic financial institutions continued to rely significantly on foreign entities for funding, especially foreign group affiliates and correspondent banks. As a result, the strong relationships between DTIs and group affiliated securities dealers continued to be of concern as it relates to vulnerabilities within the financial system network. Notably, the interbank funding network’s overall dollar value, density and reciprocity returned to pre-COVID-19 pandemic values.

⁵³ Reciprocity reflects the proportion of bi-directional funding relationships (Entity X both sends and receives funding from Entity Y and vice versa) that exist in the network.

⁵⁴ Density measures the proportion of actual funding relationships in the system against the total number of potential funding relationships in the network.

Figure 3.29 Network of gross credit exposures within the financial system at end-December 2021

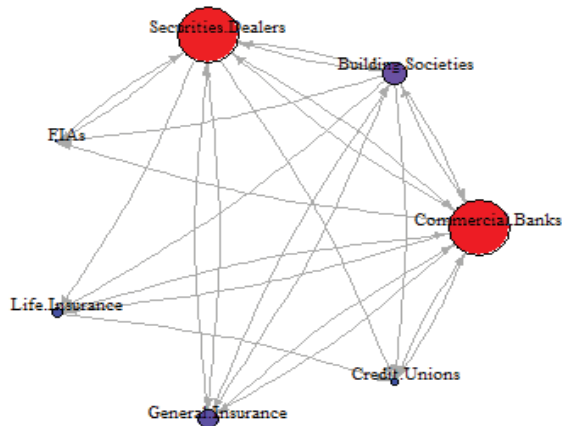
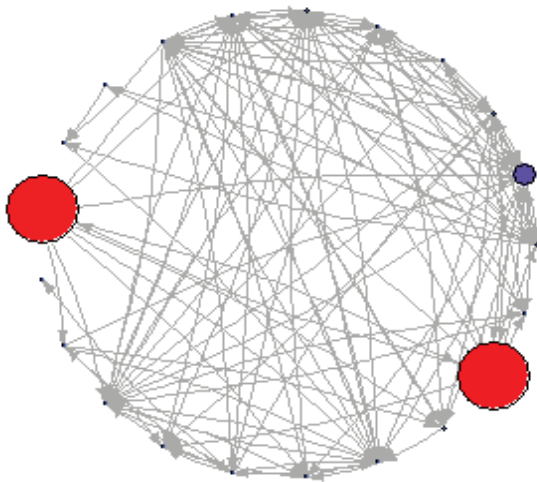


Figure 3.30 Network of gross credit exposures between DTIs and SDs at end-December 2021



3.7 Payment system developments

3.7.1 Key developments in large value payments^{55,56}

For 2021, market activity in the JamClear®-RTGS system exhibited general improvements. These results largely signalled the economy's return to pre-COVID-19 level of economic activity. In particular, overall transaction values within the JamClear®-RTGS system increased to \$16.6 trillion for 2021 from \$12.5 trillion for 2020. The system turnover was 7.6 times GDP for the year, compared to 6.3 for the preceding year.^{57,58} Average monthly transaction values increased by 18.4 per cent to \$1.2 trillion for 2021, representing an average monthly turnover of 1.6 times monthly GDP.^{59,60}

Total volume of JamClear®-RTGS transactions grew by 81.7 per cent to 2.8 million transactions for 2021 relative to 1.5 million at end 2020. Additionally, average monthly transaction volumes increased by 72.4 per cent to 307 476 transactions (see Figure 3.31). Customer credit transfers⁶¹ (single and multiple) accounted for approximately 97.1 per cent of total transaction volumes relative to a share of 95.3 per cent for 2020.

Total transaction value in the JamClear®-CSD system during 2021, increased by 10.2 per cent to \$12.9 trillion, which represented a system turnover of 4.3 times GDP.⁶² This improved

⁵⁵ JamClear®-RTGS statistics include both JMD and USD denominated transactions.

⁵⁶ The JamClear®-RTGS system consists of 23 full members: eight commercial banks, two clearinghouses, one building society, one merchant bank, eight primary dealers (broker dealers), the Jamaica Central Securities Depository (Trustee), Accountant General Department (AGD) and BOJ.

⁵⁷ Turnover is measured as the ratio of total transaction value as a percentage of GDP.

⁵⁸ System turnover (pre-Covid-19) was 6.1 times GDP for the year 2019

⁵⁹ The monthly GDP was derived based on the interpolation of quarterly nominal GDP using the quadratic match sum method.

⁶⁰ JamClear®-RTGS overall value does not include general ledger and Financial Institution Transfers (FIT).

⁶¹ Credit transfer refers to a payment transaction by which a credit institution transfers funds to a payee's account on the basis of a payer's order.

⁶² JamClear®-CSD statistics include both JMD and USD denominated transactions.

performance was also reflected in an increase in the average monthly value of JamClear®-CSD transactions to \$1.1 trillion for 2021, an average monthly turnover of 1.6 times monthly GDP. Conversely, overall volumes fell by 5.8 per cent to 56 497 transactions for 2021.

Figure 3.31 JamClear®-RTGS monthly transaction values and volumes

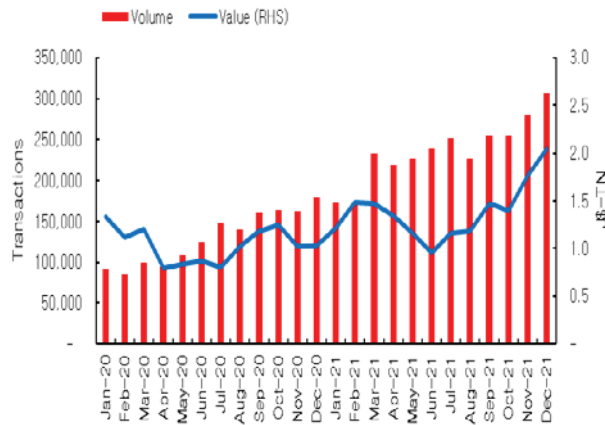


Figure 3.32 Automated Clearing House monthly transaction values and volumes

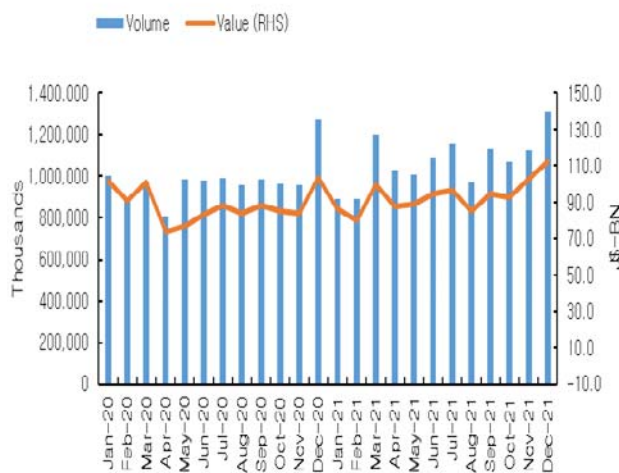


Figure 3.33 Number of active POS and ABM Terminals

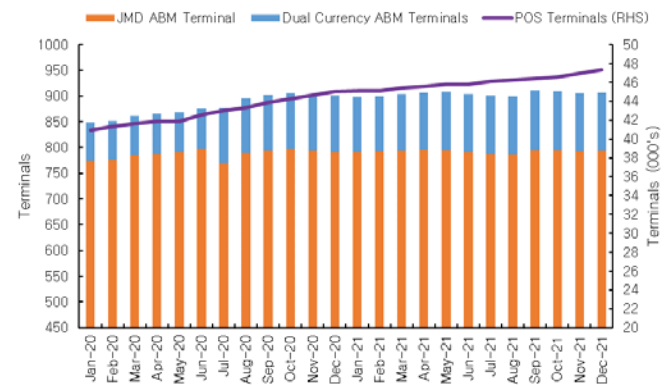
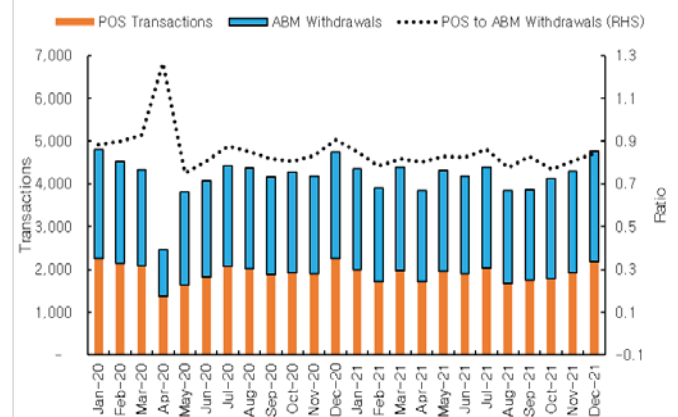


Figure 3.34 POS transactions to ABM withdrawals



3.7.2 Key developments in retail payments⁶³

Retail payments activity for the review period indicated signs of recovery from the negative impact of the pandemic.⁶⁴ Of note, the average monthly transaction values grew to \$153 637 per person for 2021 from \$140 678 per person for the previous year. Concurrently, average monthly transaction volumes were relatively unchanged at 5.0 transactions per person for 2021 relative to 4.9 transactions per person for the previous year. Of note, debit cards continued to be the most utilized retail payment instrument and

⁶³ All retail payments figure except cash data are per 1000 persons of working age (age 15 and older).

⁶⁴ Retail payments include cheque payments, debit and credit card payments and other electronic forms of payment.

accounted for 64.2 per cent of the total number of retail payment transactions.

There was a further decline in the value of cheques as a percentage of the total value of retail transactions. The value of cheques as a percentage of total transactions decreased to 24.3 per cent for 2021 from 31.8 per cent for 2020. This decline reflected the continued migration to electronic forms of payments from paper-based means of payments. There was a noted increase of 44.7 per cent and 54.4 per cent in both the value and volumes of other electronic payments, respectively.⁶⁵

In 2021, the BOJ announced the launch of its CBDC. With the implementation of the CBDC, it is expected that persons will increase their use of the digital currency over time. The CBDC is expected to be a complement to cash and not a replacement.

Automated Clearing House (ACH)⁶⁶

Consistent with the BOJ's objective of minimizing net settlement risk, activity within the ACH system increased over the review period, relative to the previous year. Specifically, the total value of transactions processed by the ACH increased by 5.7 per cent to \$1.1 trillion for 2021.^{67,68} Of the total ACH transaction value for 2021, the share of cheques processed was 50.3 per cent or \$565.0 billion, relative to 58.5 per cent for the previous year. The average monthly value of cheques increased to \$144 430 per transaction from \$134 761 per transaction for 2020 (see Figure 3.32). Additionally, total volume of ACH transactions increased to 12.9 million for 2021 from 11.8 million for 2020. This was primarily due to increases in both direct credit and debit

⁶⁵ Other electronic payments include any transaction conducted without a card such as online transfers.

⁶⁶ The Automated Clearing House (ACH) is owned by commercial banks. Clearing transactions are undertaken against their accounts and those transactions made on behalf of other payment services providers with indirect access to the ACH.

⁶⁷ This performance was attributed to the success of the ACH value threshold of \$1 million which resulted in a reduction in the processing of large value cheques through the ACH.

⁶⁸ Commercial banks faced a charge of \$5 000.0 per transaction greater than and equal to the targeted ACH threshold of \$1.0 million.

transactions as the number of processed cheques fell by 15.2 per cent for the review period.

Electronic payment channels offered by commercial banks

As banks continued their initiative to reduce in-branch transactions, the number of active ABM and POS terminals operated by commercial banks continued to increase in 2021. Specifically, the number of active POS terminals grew by 5.3 per cent to 47 366, while the number of active ABM terminals marginally increased by 0.3 per cent to 793 (see Figure 3.33). At end-2021, the average monthly number of ABM withdrawals increased by 3.2 per cent to 2 307 transactions per 1 000 persons. Conversely, the average monthly POS transactions declined by 3.2 per cent to 1 883 transactions per 1 000 persons relative to the previous year.

The ratio of POS transactions to ABM withdrawals, decreased marginally to 0.84 at end-2021 from 0.91 at end-2020. This reflected a slight decrease in customers' preference for using the transactions channel (see Figure 3.34).

Figure 3.35 Large-value system concentration risk index

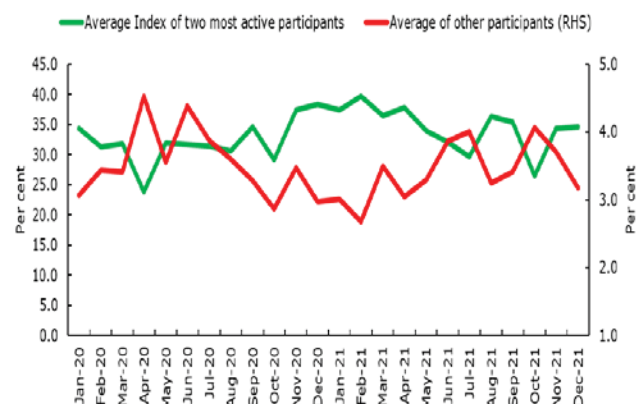


Figure 3.36 Herfindahl index of JamClear–RTGS payment activity

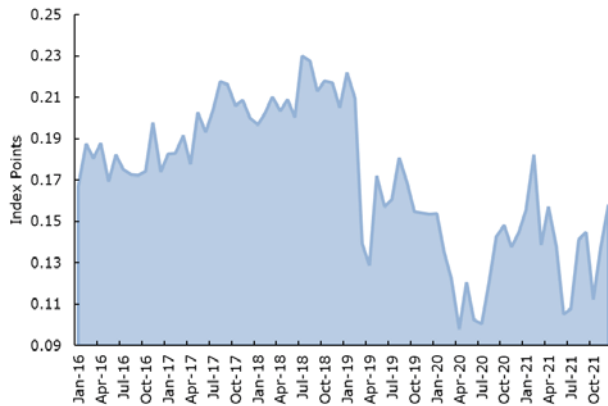


Figure 3.37 BOJ intraday repo facility monthly transaction value

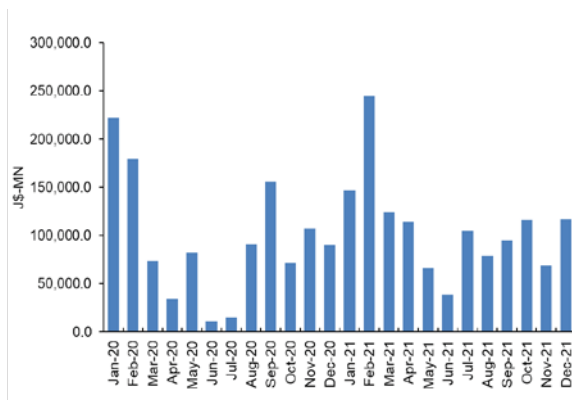
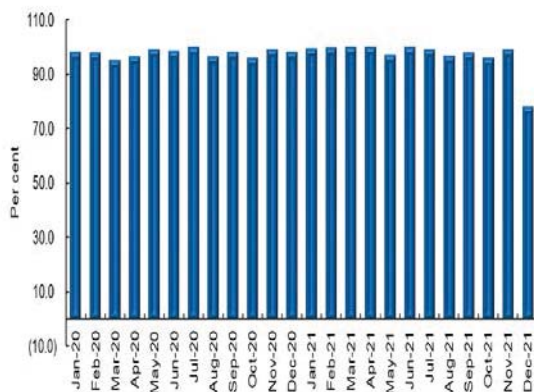


Figure 3.38 Share of BOJ intraday repos (values) demanded by the top four subscribers during 2020 & 2021



3.8 Concentration risk in the Large-value system⁶⁹

The degree of concentration risk, as measured by the large-value payment system concentration index, reflected a marginal increase for 2021 relative to the previous year.⁷⁰ Notwithstanding, the two most active participants continued to dominate the share of payment activity, with both accounting for an average monthly share of 34.6 per cent of payment activity during 2021, relative to 32.3 per cent for 2020. At the same time, the monthly average share of activity for other participants within the system increased to 3.4 per cent at end-2021 from 3.5 per cent at end-2020 (see Figure 3.35).

During 2021, the level of liquidity concentration within the JamClear®–RTGS system, as measured by the Herfindahl index, reflected an increase relative to the previous year. In particular, the index averaged 0.2 for 2021 relative to an average index value of 0.1 for 2020, an indication that the system was more concentrated for the review period (see Figure 3.36).⁷¹ The higher levels of concentration within the payment system, as determined by both the HHI and LSCRI, indicated increased exposure to systemic risk within the Jamaican payment system.

⁶⁹ This measure is computed based on payments made and received by each bank as a share of overall payments for the system.

⁷⁰ The LSCRI records the share of payment activity between:

- the two most active participants in relation to all other participants; and
- all other participants in relation to the two most active participants.

The calculation excludes the activities of the Accountant General Department, BOJ and Clearing Houses who are also participants in the RTGS system.

⁷¹ Values of 0.2 and above indicate that the system is concentrated, while values below suggest that the system is competitive.

3.8.1 Liquidity risk

Usage of BOJ's intraday liquidity facility⁷²

For the review period, both the average monthly and overall value of transactions within BOJ's intraday liquidity facility declined marginally (see **Figure 3.37**). The reduced usage of the facility mainly reflected a return to pre-COVID-19 banking operations as well as the reduction in haircuts on Jamaican Treasury Bills as well as GOJ global and local bonds.⁷³ Of note, the average monthly and overall value of BOJ's intraday liquidity facility usage increased to \$109.5 billion and \$1.3 trillion, respectively, for 2021, relative to \$94.3 billion and \$1.1 trillion for 2020. Similarly, the number of intra-day liquidity transactions increased by 4.6 per cent to 1 092 for 2021. As it relates to the BOJ intra-day repo facility, on average, the top four institutions demanded above 90.0 per cent of funds during 2021. However, there was a noted decline for the month of December 2021 (see **Figure 3.38**).

⁷² The BOJ's intraday liquidity facility provides funds to financial system participants to minimize liquidity exposure brought about by timing mismatches between incoming and outgoing payment activities.

⁷³ Effective 07 June 2021, the BOJ's policy on Eligible Collateral was revised for consistency with amendments made to the Bank of Jamaica Act. Accordingly, as indicated in the LCR Standard of Sound Practice (SSP), the haircuts applied to GOJ securities eligible as High-Quality Liquid Assets (HQLAs) and certain cash outflows and cash inflows collateralized by these securities were adjusted as follows: the haircut on GOJ Benchmark Investment Notes and Treasury Bills was reduced from 25.0 per cent to 10.0 per cent, and the haircut on GOJ Global Bonds and Other GOJ Bonds was reduced from 60.0 per cent to 20.0 per cent.

BOX 3.1: FINANCIAL DEEPENING

Bank of Jamaica, the Financial Services Commission, Jamaica Stock Exchange (JSE) and the Development Bank of Jamaica (DBJ) are the members of the Financial Deepening Implementation group which was established in November 2018. Jamaica's financial deepening agenda focuses on implementing reforms and initiatives which are aimed at expanding the range of domestic assets that are formally intermediated in order to develop deeper financial markets.

1. Standardizing Asset Quality

During 2021, both BOJ and the FSC continued to pursue regulatory reforms to ensure that financial intermediaries were sufficiently liquid and capitalized given the risk exposures. In this regard, BOJ made progress with plan for the implementation of its capital adequacy framework deposit-taking Institutions under the Basel III framework. The capital adequacy framework for DTIs will, among other things, allow licensees to utilize external credit ratings to determine the risk weightings on credit exposures. This reform will incentivize DTIs to take advantage of the lower capital charges associated with better external ratings.[1]

Concurrent with the reforms being undertaken by BOJ, the FSC initiated work on liquidity management and capital adequacy reforms for the non-bank sector, with focus on the liquidity reforms. These liquidity and capital reforms should facilitate an enhanced market making function by securities dealers, given the incentives related to the use of credit ratings. The liquidity and capital adequacy reforms to be implemented by BOJ and FSC are expected to encourage the following:

- An increase in the pool of high-quality liquid assets (HQLA)
- The ability for Jamaican financial institutions to invest in alternative sources of HQLA that meet regulatory and risk management objectives
- Lower cost of funding for issuers of Jamaica Dollar corporate debt securities which are rated as highly liquid non-financial sector bonds and equities and
- More prudent risk-taking decisions and the potential for more efficient capital management for DTIs.

Throughout the review period, there were continued efforts to improve Jamaica's credit ratings infrastructure. In particular, following discussions with BOJ, the FSC prepared proposed credit ratings amendments for inclusion in a Market Conditioning Consultation Paper which will be submitted to the market for consultation in 2022, followed by implementation. The amendment is expected to address gaps within the credit rating infrastructure, particularly with respect to unsophisticated retail investors.

Ongoing efforts to encourage and incentivize a credit rating culture was bolstered by the opening of a CariCRIS branch office in Jamaica in April 2021. Its opening was in response to an increasing demand for credit ratings by Jamaican corporates. During 2020 and 2021, a total of 16 new credit ratings were conducted for Jamaica by CariCRIS, relative to a total of eight new credit ratings for the prior two-years. In the year ended-March 2021, five new ratings were conducted for Jamaican corporates which accounted for 63.0 per cent of CariCRIS' new business.[2] This was higher than the prior three-year average for Jamaica, which accounted for 47.0 per cent of new business.

2. Increasing Transparency and Price Discovery in Markets

In 2021, BOJ continued to work closely with the JSE to explore and implement initiatives to increase transparency and price discovery in markets. In particular, work advanced on the project to facilitate the listing and trading of GOJ securities on the JSE trading platform. This will require an interface of the JSE trading platform and the Jam-Clear CSD. In March 2021, the business requirement document was finalized

[1]The capital adequacy reform provides an incentive for DTIs to hold highly rated exposures to corporates. Furthermore, a Standard of Sound Practice for the Basel III capital adequacy framework will be issued by BOJ at end-March 2022 and will signal implementation of the reform.

and signed by all stakeholders.[3] This paved the way for the JSE and BOJ to engage their respective platform providers regarding the technical specification to facilitate the integration of the two platforms. By end 2021, the platform providers outlined the majority of the required modifications. BOJ and JSE will continue their engagement to finalize the next steps, cost and implementation timelines.

Another key development was the launch of JSE's private market trading portal on 11 January 2021. This portal facilitated the electronic trading of private securities which enabled enhanced trading efficiency and promoted price discovery. Subsequent to the launch, the JSE continued the build out of the portal with additional enhancements. At end-2021, the private market trading portal recorded over 67 transactions with volume of 375.9 million units valued at \$38.2 billion. Furthermore, a total of 11 securities were listed on the JSE private market with market value of \$17.8 billion.[4]

3. Facilitating an Easier Registration Process for Listed Companies Wanting to Issue Additional Securities Publicly

During 2021, BOJ and the FSC worked towards a proposal aimed at a simpler registration requirement for listed companies interested in issuing additional securities publicly. The proposal received non-objection from the Companies Office of Jamaica (COJ) in November 2021. This was important as it will reduce the processing time for applications and the time needed by issuers to prepare documents for registration. Given the COJ's non-objection, the FSC will proceed to finalize an Issuers Guideline for submission to the market which will outline implementation details.

4. Accelerating the Creation of Investible Domestic Assets

The financial deepening agenda includes pursuing the GOJ's direct role in increasing the supply of domestic assets in the market. Against this background, BOJ continued to engage DBJ regarding efforts to monetize non-core government assets. During 2021, DBJ continued work towards the sale of GOJ's shareholding in the

Jamaica Public Service Company (JPSCo) as well as the privatization of the Jamaica Mortgage Bank's (JMB) via the JSE. Both transactions are expected to be completed during FY 2022/23.

[2] CariCRIS Annual Report 2021

[3] The stakeholders on the project are BOJ, FSE, JSE, Jamaica Securities Dealers Association, and the Ministry of Finance and the Public Service.

[4] The JSE website, www.jamstockex.com

BOX 3.2: THE ROLE OF THE JAMAICA DEPOSIT INSURANCE CORPORATION IN FINANCIAL SYSTEM STABILITY

"Financial system stability is a key component of a healthy economy and contributes directly to economic growth and development. An effective deposit insurance system is one of the pillars of a sound financial system and public confidence in that system".[1]

Deposit insurance is a system established to protect depositors against the loss of their insured deposits or parts thereof if their deposit-taking institution is unable to meet its obligations to the depositors. Experiences from past financial crises have reinforced the importance of maintaining depositor confidence in the financial system as well as the key role that deposit insurance systems play in maintaining that confidence. Ensuring depositors have prompt access to their insured deposits if their DTI fails as well as being aware of and having confidence in the deposit insurance system helps to significantly reduce the "run" on the DTI and minimize adverse impact on other financial institutions and the wider economy.[2]

1. Jamaica Deposit Insurance Corporation Guaranteeing the Protection of Depositors.

The Jamaica Deposit Insurance Corporation, established in 1998, manages the Deposit Insurance Scheme (DIS) to protect depositors and contributes to the confidence and stability in Jamaica's financial system. The Deposit Insurance Act (DIA) provides that the JDIC must pay out of the Deposit Insurance Fund (DIF), in respect of an insured deposit up to the prescribed coverage limit, which is currently \$1.2 million, to every depositor of a Policyholder in circumstances where the Policyholder/DTI fails or is unable to make payment in respect of a deposit.[3],[4],[5]

Therefore, the maximum deposit insurance coverage limit is \$1.2 million (principal and interest combined) per ownership category, per

Policyholder. For the purpose of deposit insurance coverage, the account ownership categories are: individual accounts; joint accounts; business accounts; trust accounts; and nominee accounts.

2. Aiding in Resolution of Non-Viable Financial Institutions

The JDIC's mandate and powers in fulfillment of its statutory objects are not limited to the payout of insured deposits from the DIF in the context of the failure of a DTI and insolvency proceedings. As deposit insurer, the JDIC plays a critical role in the resolution of non-viable/insolvent DTIs to ensure the protection of depositors.[6] This is done in collaboration with the other members of the financial system safety net and consistent with governing pieces of legislation. In a resolution, the JDIC may be appointed to act as receiver and liquidator of any DTI, its holding company or subsidiary which becomes insolvent. In acting, as such the JDIC may arrange for the restructuring of the insolvent DTI whether by merger with or acquisition by another DTI or otherwise. The JDIC also has the power to make loans and issue guarantees, with security, to fund the decided strategy to resolve the institution. This is done giving due consideration to the least cost to the DIF and with the ultimate objective of protecting insured depositors.

The role of the JDIC in resolution is consistent with international standards adopted following the Global Financial Crisis of 2007–09. The International Association of Deposit Insurers (IADI) Core Principles for Effective Deposit Insurance Systems provide that, subject to safeguards, the deposit insurance system resources may be used for the resolution of member institutions as an alternative to payout.

Similarly, the Financial Stability Board (FSB) Key Attributes of Effective Resolution Regimes for Financial Institutions consider the deposit insurance system as a possible source of

[1] IADI Enhanced Guidance for Effective Deposit Insurance Systems: Public Awareness of Deposit Insurance Systems, 2012

[2] A "run" of a DTI occurs when large groups of depositors withdraw their money from DTIs simultaneously based on fears that the institution will become insolvent.

[3] The Deposit Insurance Fund is established under the Deposit Insurance Act and managed by the JDIC to pay depositors should their DTI fail or to offer temporary financial assistance with security to DTIs in a state of financial distress.

[4] Effective August 31, 2020, the Jamaica Deposit Insurance Corporation increased the deposit insurance coverage limit for depositors to J\$1,200,000 from J\$600,000.

[5] All Deposit-taking financial institutions licensed and supervised by the Bank of Jamaica are members of the Deposit Insurance Schemes and are referred to as Policyholders pursuant to the Deposit Insurance Act. As at March 2022, membership in the DIS include eight Commercial Banks, two Building Societies and one Merchant Bank.

[6] Resolution refers to the disposition plan and process for a non-viable Bbank and may include: Liquidation and depositor reimbursement; transfer and/or sale of assets and liabilities; establishment of a temporary bridge institution; and write-down or conversion of debt to equity. Resolution may also include the application of procedures under Insolvency law to parts of an entity in resolution, in conjunction with the exercise of Resolution Powers (Source: IADI Glossary).

funding for resolution.

3. Promoting Deposit Insurance Awareness and Public Education

Also important in guaranteeing depositor protection and contributing to financial system stability, is promoting public awareness and educating the public about the deposit insurance system. This is also reinforced by the IADI Core Principle which states, “In order for the deposit insurance system to be effective, it is essential that the public be informed on an ongoing basis (in non-crisis and crisis periods) about the benefits and limitations.”

Consistent with international best practice standards, the JDIC places significant focus on public awareness and education. Through its public education programme, the JDIC ensures that depositors and the public are kept informed about: the roles of the JDIC and the DIS; scope of coverage, including which types of deposits and depositors are covered by deposit insurance; a list of which DTIs are members of the DIS and how they can be identified; the deposit insurance coverage level limit; and depositors’ access to their insured deposits upon the failure of a DTI.

The JDIC works closely with the other financial system safety-net participants and DTIs to build public confidence, disseminate consistent and accurate information to depositors and the public on an ongoing basis using several media.[7],[8] This also broadens the awareness and knowledge about the DIS among the public and supports financial inclusion. Ongoing monitoring of the public awareness activities, including periodic independent evaluations of its effectiveness, are also conducted.

In carrying out its statutory objective to manage the DIS for the protection of deposits against loss, the JDIC undertakes several functions including, ensuring mechanisms are in place to: reimburse/payout depositors promptly; execute its role in the resolution of non-viable DTIs; and maintain a robust public awareness and education programme, in continued collaboration with the other members of the financial system safety net partners. Through these objects and functions the JDIC plays an important role in protecting deposits and contributing to the stability of Jamaica’s financial system.

[7] Jamaica’s Financial System Safety Net (FSSN) consists of the Ministry of Finance and the Public Service, the Bank of Jamaica, the Financial Services Commission, and the Jamaica Deposit Insurance Corporation.

[8] Additional information on the Deposit Insurance Scheme may be accessed on the JDIC’s website: www.jdic.org

BOX 3.3: BANK FRAUD AND ITS IMPLICATIONS FOR MONEY LAUNDERING RISKS IN JAMAICA

The Bank of Jamaica conducted a thematic study on deposit-taking institutions' banking fraud in an effort to deepen the banking sector's knowledge about the level of money laundering risks derived from fraudulent activities. The study examined the ways in which the DTI sector's exposure to money laundering risks which emanated from bank fraud evolved throughout the January 2018 to October 2021 period.^[1] Bank fraud is defined as the use of unlawful means to obtain funds or other property owned by a financial institution or a depositor of a financial institution. Bank fraud can also be viewed as a predicate offence for money laundering (ML). Money laundering is typically carried out in three stages:

- (1) Placement - Introducing money into the financial system by some means;
- (2) Layering - Undertaking a complex system of financial transactions to camouflage the original source of the money; and
- (3) Legitimization - Completing the process by acquiring wealth from the prior actions involving the unlawfully obtained money.

Therefore, efforts against money laundering and bank fraud can be viewed as similar in nature, but different in motivations (complying with anti-money laundering (AML) regulatory requirements versus reducing financial losses).

1. Methodology

The Bank Fraud assessment was informed by survey responses submitted to the Bank of Jamaica by deposit-taking institutions pursuant to section 132(1)(b) of the Banking Services Act (BSA) to ascertain the level of fraudulent activities inherent in the banking system throughout the January 2018 to October 2021 period. Bank fraud data was

collated on a monthly basis and featured key data points such as Fraud Type, Reported Losses, Actual Losses and the Number of Police Reports. Fraud types explored for the period included the following:

- (1) Fraudulent Cheque – The unlawful use of cheques to illegally obtain or borrow money (such as counterfeit, forgery, or alteration);
- (2) Credit/Debit Card Fraud – Fraudulent use of a cardholder's account through the theft of the physical card or by compromising the details associated with the account;
- (3) Internal (Occupational) Fraud – Fraud committed by an employee against an organization;
- (4) Internet Banking Fraud – Fraud committed using technology to illegally remove money from an account (e.g. phishing, virus, trojan);
- (5) Fraudulent Loans – Supplying false information when applying for/receiving a loan (borrower);
- (6) Fraudulent Wire Transfers – Illegally obtained funds via wire transfer (including under false pretense, obtaining bank information and wiring funds); and
- (7) Other Fraud – any other bank related fraud activity not defined above.

2. Findings

Throughout the January 2018 to October 2021 review period, bank fraud losses averaged \$1.0 billion per annum, and represented approximately 0.05 per cent of Jamaica's GDP. Over the review period, bank fraud losses reported by DTIs declined by an average of 13.8 per cent per annum. For the 46 months review period, DTI's accumulated bank fraud losses of

[1] Of note, information conveyed in the Bank Fraud assessment was premised on an overall DTI system submission rate of 88 per cent for the review period. This is reflective of an upward trend in institutional year-over-year compliance rates.

\$3.9 billion with reports of over 37,253 incidences of fraud. [2]

Annual bank fraud losses peaked at \$1.3 billion in 2019, 5.5 per cent higher than the losses of \$1.2 billion in 2018. However, fraud losses fell by a substantive 37.3 per cent to \$0.8 billion in 2020 and by a further 24.6 per cent to \$0.6 billion in 2021. The reduction can be linked to improved effectiveness of combative measures employed by DTIs to lower fraud losses. These measures included the introduction of Europay, Mastercard, Visa (EMV) chip and pin technology post-2018 as well as the introduction of multi-factor authentication and expanded use of push notification features. These features were increasingly adopted by DTIs and were used to alert customers of suspicious or unusual activities on their accounts.[3]

Among fraudulent activities reported over the review period, card fraud (debit and credit cards) was the most prevalent, and accounted for 84.6 per cent (\$3.3 billion) of fraud losses. Of note, the downward trend in value of fraud losses over the review period was directly related to trends in card related fraud. On average, card fraud losses declined by 23.0 per cent per annum over the review period. Card fraud losses for the calendar year to end-October 2021 totaled \$0.5 billion (81.4 per cent share of total losses) relative to \$1.1 billion (90.3 per cent share of total losses) for 2018.

Bank fraud was largely concentrated in card services among a few banks.

Fraud losses were highly concentrated in a few reporting institutions, with four DTIs collectively accounting for 93.0 per cent (\$3.5 billion) of total bank fraud losses over the review period. The extent of fraud related losses among these institutions was associated with their exposure to debit and credit card fraud.

Most banks with significant exposure to debit and credit card fraud reflected noticeable declines in fraud losses over the review period. Of note, the average decline in debit and credit card fraud among the top four DTI's ranged from 16.5 per cent

to 30.8 per cent. Apart from card related frauds, a number of deposit-taking institutions were affected by internet banking fraud throughout the review period. Annual trends highlighted an increase in internet banking fraud at a few banks in 2021. Higher internet banking fraud losses for these banks were on account of "Sim-Swap Fraud", whereby fraudsters sought to gain access to institution's online platform. [4]

In late 2021, the BOJ provided an updated instrument for surveying fraud occurrences across the DTI sector to include demographic data. Preliminary data were obtained from five deposit-taking institutions. The results pointed to a gender bias towards females, who experienced approximately 59.8 per cent (2 850 instances) of total fraud occurrences. These occurrences were as a result of card fraud, largely credit card fraud which accounted for 55.1 per cent.

Approximately 90.2 per cent (4 299 instances) of fraud victims were between the ages of 18 years and 70 years. While there was no disparity among these age groups in the total number of fraud occurrences, there were notable target preferences in relations to credit card fraud and debit card fraud..

For the December 2021 quarter, those persons between 51 and 70 years old were the main victims of credit card fraud. Persons between 18 and 34 years old were largely targeted for debit card fraud.

Bank fraud losses accounted for a small portion of institutional pre-tax profits for most deposit-taking institutions.

Impairment to institutional profits accounted for an average 3.3 per cent of profits in 2019, marginally above the impact of 3.2 per cent for 2018. This was in line with higher dollar value losses of \$1.3 billion for 2019 and \$1.2 billion for 2018. In 2020, the ratio of fraud losses to pre-tax profits declined by 1.3 percentage points to 1.9 per cent and moderated further to 1.8 per cent by end-October 2021.

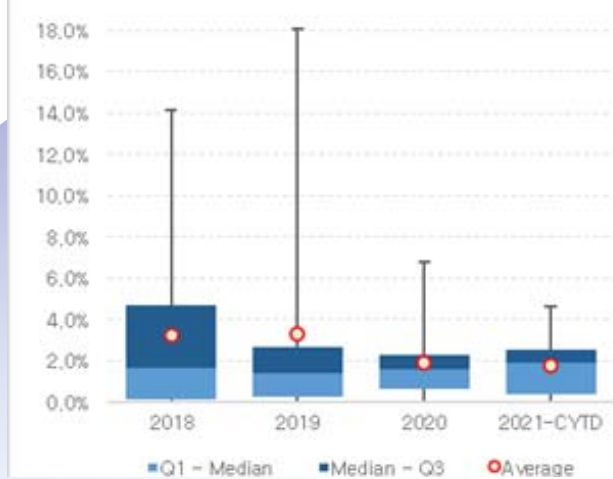
[2] As a result of gaps in the data, trend in the number of occurrences for the review period should be treated as indicative..

[3] EMV chip and pin technology refers to computer chips embedded in credit cards, debit cards or prepaid cards that require a unique numerical code (pin) for each use. Multi-factor authentication refers to an electronic authentication method in which a user is granted access to a website or application only after successfully presenting two or more pieces of evidence, preventing any unauthorized third-party access.

Push notifications refer to automated messages sent by an application to a user to alert him or her of activity relating to the user.

[4] Sim-Swap fraud refers to the use of fraudulent sim cards to receive phone calls/text messages in order to by-pass an institution's two-factor authorization requirement, and ultimately gain access to its online platform.

Chart 1a: Bank Fraud Impairment to Average Pre-Tax Profits



The interquartile range of the ratio across banks ranges from the 25th (Q1) to the 75th percentile (Q3).

Source: Bank of Jamaica

When represented as a proportion of regulatory capital, average fraud losses remained consistently below 1.0 per cent of the system's regulatory capital per annum. On an institutional level, bank fraud related losses throughout the review period ranged between 0.1 per cent and 1.5 per cent of regulatory capital. Given the relatively low levels of impairment to institutional profits, fraud losses are unlikely to pose a significant threat to regulatory capital in the very near-term.

3. Conclusion

For the review period January 2018 to October 2021:

(1) Deposit-taking institutions observed a general downward trend in annual bank fraud related losses, concurrent with improved combative measures implemented by licensees. Additionally, overall bank fraud / money laundering risk exposures remained in the medium-low category throughout the review period;

(2) Bank fraud was largely concentrated in card services and among a few banks; and

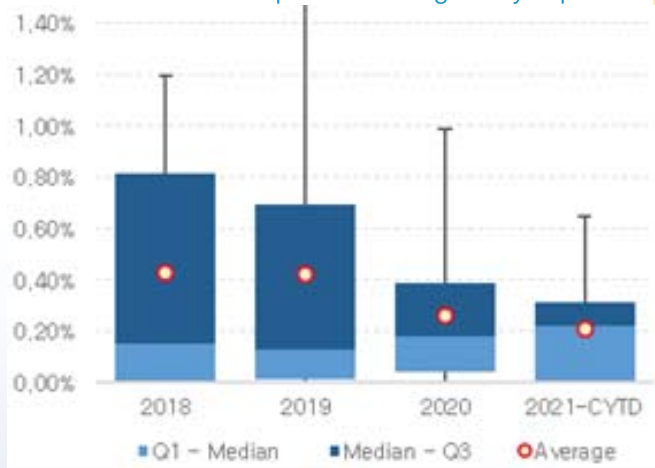
(3) When represented as a proportion of average pre-tax profits, accumulated bank fraud related losses accounted for an average of 2.0 per cent of institutional profits, and less than 1.0 per cent of system regulatory capital per annum.

Given the above, deposit-taking institutions are encouraged to continue to increase public education campaigns as part of multi-stakeholder efforts to improve the general levels of financial literacy among the populace, as well as conducting targeted campaigns aimed at the demographic segments prone to fraud.

Furthermore, given Jamaica's thrust to an increasingly digital society, curtailing losses and money laundering risks from card fraud and cyber-attacks will take on added importance. This, from operational and reputational standpoints for DTIs as well as from a financial inclusion and customer experience perspective for the customers of DTIs. Importantly, the Basel III reforms currently being implemented by BOJ are expected to require deposit-taking institutions to monitor and quantify operational risk and hold sufficient capital at an institutional level to absorb losses from bank fraud and other money laundering exposures.

Finally, given the general downward trend in specific categories of fraud, financial institutions will need to continue to be vigilant for innovations by fraudsters to circumvent the control measures they have put in place.

Chart 1b: Bank Fraud Impairment to Regulatory Capital



The interquartile range of the ratio across banks ranges from the 25th (Q1) to the 75th percentile (Q3).

Source: Bank of Jamaica

4.0 FINANCIAL SYSTEM SECTORAL EXPOSURE

This chapter examines the vulnerabilities of the financial system due to potential developments in the household, corporate and public sectors

4.1 Overview

DTIs' exposure to the household sector remained relatively stable and was in line with the historical average for the ten-year period 2011-2020. Notably, household non-performing loans as a share of total household loans were unchanged while household's debt servicing capacity improved marginally.

Consistent with the ongoing challenges associated with the COVID-19 pandemic, DTIs' exposure to the corporate sector and corporate sector loan quality declined for 2021. In contrast, in the context of a rebound in economic activity, public sector debt to GDP declined for the review period, reflecting a return to the pre-pandemic downward trajectory in the ratio.

Securities dealers' exposure to private sector debt decreased marginally, while loan quality improved for 2021. NDTFIs' exposure to equities and real estate assets remained relatively low during the review period. Meanwhile, the pension industry continued to have the highest exposure to investment arrangements.

4.2 Household debt and deposit-taking institutions' exposure

In 2021, household sector debt held by DTIs grew notably despite challenges caused by the ongoing COVID-19 pandemic. In real terms, household sector debt grew by 8.9 per cent for the year ended December 2021 relative to growth of 3.4 per cent for 2020 (see **Figure 4.1**).⁷⁶

The acceleration in the growth of household sector debt largely reflected an increase in mortgage loans issued by DTIs. For the year ended December 2021, mortgage loans grew by 15.0 per cent in comparison to growth of 10.1 per cent for the previous year. This occurred within the

context of some DTIs aggressively offering attractive financing in the mortgage market (see **Table 4.1**). Growth in household sector debt was also supported by an increase of 4.7 per cent in consumer loans, in contrast to the decline of 0.8 per cent recorded for 2020.

DTIs' exposure to the household sector remained relatively stable and was in line with the historical average for the ten-year period 2011-2020. Household debt to assets declined marginally to 25.3 per cent in 2021 from 26.1 per cent at end-2020, primarily due to the growth in assets outpacing household debt. Remittance inflows may have aided the growth in household assets (see **Box 4.1 Understanding remittance inflows to Jamaica: Its contribution to economic resilience and inherent risks**). The outturn compares favourably to a ten-year historical average of 24.4 per cent. In contrast, the household sector's debt as a share of DTI's credit portfolio increased to 62.4 per cent at end-2021 from 60.9 per cent at end-2020 and the historical average of 53.3 per cent (see **Figure 4.2**).

In relation to DTIs' loan quality, household non-performing loans as a share of total household loans remained stable at 4.3 per cent at end-2021 and was below the historical ten-year average of 4.9 per cent. The household NPL ratio remained stable within the context of continued credit risk mitigation strategies implemented by DTIs due to the negative impact of the COVID-19 pandemic on households' balance sheets.⁷⁷ Additionally, DTIs continued to maintain adequate coverage of NPLs. The ratio of loan loss provisions plus prudential provisioning to non-performing household loans exceeded 100.0 per cent for the review period (see **Figure 4.3**).

⁷⁶ Household debt incurred with DTIs is proxied by the sum of residential mortgage loans and consumer loans (which includes credit card receivables).

⁷⁷ These strategies include establishing sound and well-defined credit underwriting criteria as well as increased monitoring of the quality of credit portfolios.

Figure 4.1 Real growth in household debt and its sub-components for DTIs

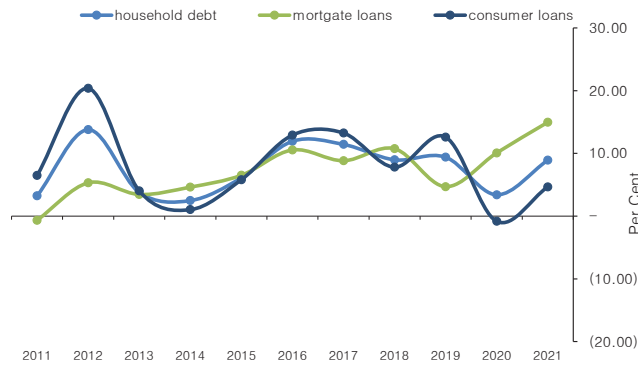


Figure 4.2 Household debt as a share of DTIs' loans & assets

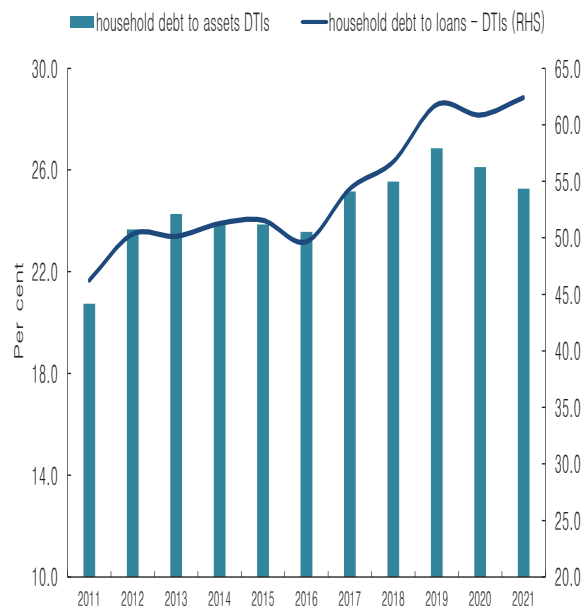


Figure 4.3 DTIs' household sector loan quality & loan loss provisioning to household sector NPLs

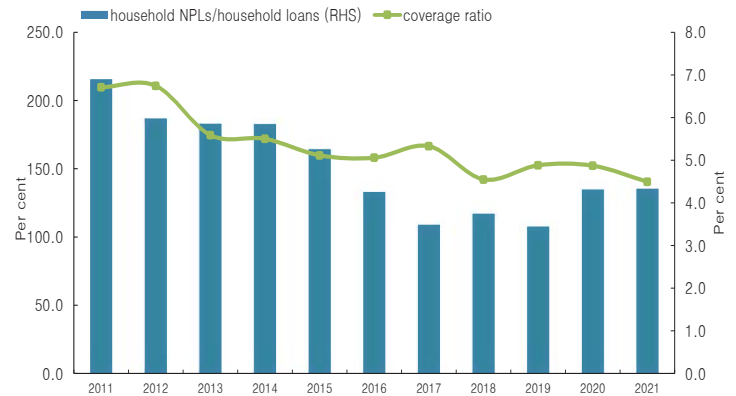
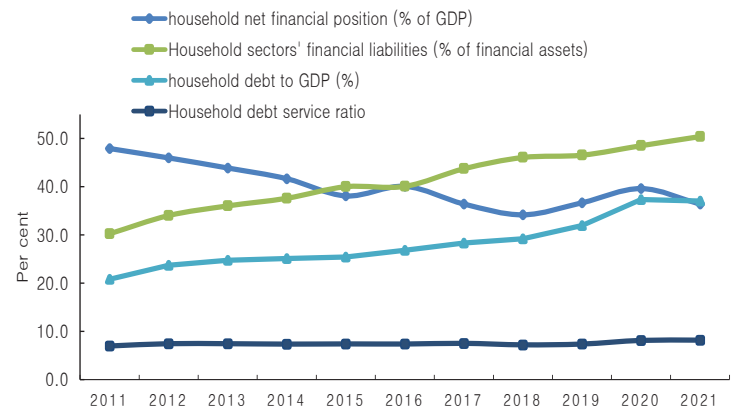


Table 4.1 Selected interest rates

Sectoral Interest Rates (per cent)	2017	2018	2019	2020	2021	Change*
Building societies						
Real Mortgage Loans Rate*	3.2	5.8	1.5	2.1	-0.1	-2.3
Mortgage Loans Rate	8.6	8.3	7.8	7.4	7.2	-0.3
Average Weighted Loan Rate	8.7	8.4	7.9	7.5	7.2	-0.3
Commercial banks						
Real Mortgage Loans Rate*	3.3	5.7	1.4	2.0	-0.3	-2.3
Mortgage Loans Rate	8.7	8.3	7.7	7.3	7.0	-0.3
Installment Credit Rate	12.4	11.4	11.0	10.7	10.7	0.0
Personal Credit Rate	24.0	21.5	21.4	20.9	20.8	-0.1
Commercial Credit Rate	12.2	10.5	9.9	9.4	9.3	-0.1
Average Weighted Loan Rate	14.6	13.5	12.5	11.8	11.5	-0.4
Merchant bank						
Personal Credit Rate	11.0	11.2	9.4	7.8	7.6	-0.2
Commercial Credit Rate	10.5	9.7	8.3	8.0	7.5	-0.5
Average Weighted Loan Rate	10.5	9.9	8.5	7.9	7.6	-0.4

Figure 4.4 Household sector indebtedness indicators



4.2.1 Household sector indebtedness

The debt servicing capacity of households, as measured by household debt to GDP, improved marginally in 2021. Specifically, the ratio of household debt to GDP improved by 0.3 percentage point to 37.0 per cent relative to 2020 but was well above the ten-year annual average of 27.4 per cent (see Figure 4.4).^{78,79} The slight improvement for 2021 was due to a faster pace of growth of 10.7 per cent in GDP relative to an increase of 9.7 per cent in household debt.⁸⁰ However, other household sector debt sustainability measures showed a general deterioration for 2021 when compared to the prior year (see Figure 4.4).⁸¹

4.3 Deposit-taking institutions' exposure to corporate sector debt

DTIs' exposure to the corporate sector, as measured by corporate sector debt to DTIs' assets, declined for 2021. This ratio declined by 2.5 percentage points to 15.9 per cent at end-2021 and largely reflected growth in DTIs' asset base as well as a slight contraction in lending to the corporate sector (see Figure 4.5).^{82,83} Notably, real corporate sector debt held by DTIs contracted by 2.5 per cent for 2021. This outcome was in contrast to growth of 2.7 per cent for 2020, and the ten-year average growth of 5.2 per cent. The contraction in corporate sector debt occurred within the context of the continued adverse impact of the COVID-19 pandemic on the economy. Lending to the corporate sector was lower in most economic sectors with the exception of *Mining, Transportation, and Distribution*. Notably, of the top five economic sectors, based on share of total loans, only *Distribution* recorded accelerated growth in loans relative to 2020 (see Figure 4.6).

⁷⁸ Total household debt is proxied by the sum of residential mortgage loans, consumer loans (which includes credit card receivables) and National Housing Trust loans.

⁷⁹ BOJ's projection for disposable income is computed as gross personal income less statutory deductions. Gross personal income is proxied as the sum of compensation to employees domestically and from the rest of the world as well as current transfers from rest of the world (which primarily includes remittances). Operating surplus of the household sector is excluded from personal income due to data availability.

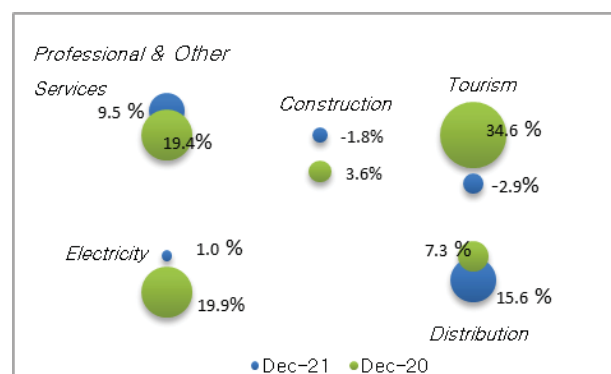
⁸⁰ GDP figures are at end-October 2021

⁸¹ The DSR for households is computed as follows:

Figure 4.5 Real growth in corporate debt held by DTIs & corporate debt as a share of DTIs' assets



Figure 4.6 Growth in DTIs' lending to the top five corporate sectors



$$DSR_{j,t} = \frac{i_{j,t}}{(1-(1+i_{j,t})^{-s_{j,t}})} * \frac{D_{j,t}}{Y_{j,t}}$$
 where $D_{j,t}$ denotes the total stock of household debt, $Y_{j,t}$ denotes aggregate household income available for debt service payments, $i_{j,t}$ denotes average interest rate on the existing stock of debt and $s_{j,t}$ the average remaining maturity across the stock of debt.

⁸² This ratio was below the historical average of 18.4 per cent for the past ten-years.

⁸³ Corporate sector debt includes loans for commercial purposes and notes & debenture holdings of DTIs.

Figure 4.7 Ratio of corporate sector NPLs to corporate sector loans for Top 5 sectors—DTIs

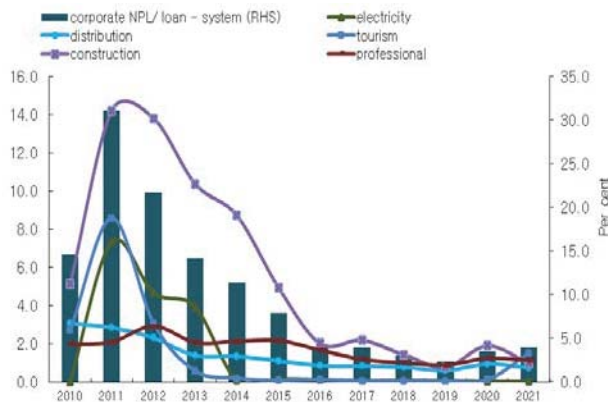


Figure 4.8 Corporate sector debt to corporate operating surplus

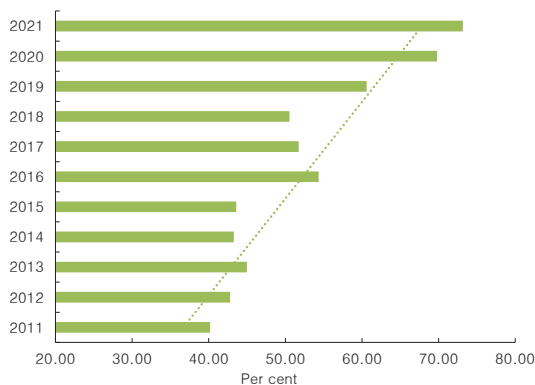
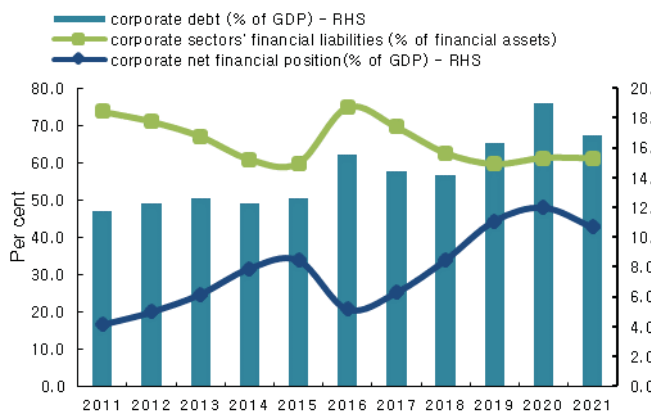


Figure 4.9 Other corporate sector indebtedness indicators



4.3.1 Corporate sector loan quality

Corporate sector loan quality within DTIs continued to decline for 2021. Specifically, corporate sector NPLs to total corporate sector loans marginally increased to 1.8 per cent at end-2021 from 1.6 per cent at end-2020 (see **Figure 4.7**). In particular, the NPL ratio for the Agriculture, Manufacturing, Transport and Tourism sectors increased for 2021. Of note, *Tourism* recorded the largest deterioration in loan quality of 3.1 percentage points while *Manufacturing* recorded the least of 0.03 percentage point.

4.3.2 Corporate sector indebtedness

Consistent with the ongoing challenges associated with the COVID-19 pandemic, the debt servicing capacity of the corporate sector declined during 2021. This was reflected in corporate sector debt relative to their operating surplus as well as the corporate sector net financial position as a share of GDP. Corporate sector debt relative to operating surplus increased to 73.2 per cent at end-December 2021 from 69.8 per cent at end-December 2020, reflecting a faster pace of contraction in operating surplus relative to corporate sector debt (see **Figure 4.8**). Furthermore, corporate sector net financial position as a share of GDP declined to 10.7 per cent from 12.0 per cent at end-2020. This result was underpinned by an increase in output. Additionally, corporate sector financial liabilities as a share of corporate sector assets was largely stable at 61.2 per cent at end-2021 relative to 61.3 per cent at end-2020 (see **Figure 4.9**).⁸⁴

⁸⁴ The financial assets of corporates include: deposits and retail repos (retail repos figure used is as at September 2021). Corporate

financial liabilities on the other hand include: loans for commercial purposes as well as notes & debenture holdings of DTIs (notes and

4.4. Public sector performance & indebtedness

Public sector debt to GDP decreased for the review period, reflecting a return to the pre-pandemic downward trajectory in the ratio. The ratio fell to 99.6 per cent at end-October 2021 from 106.5 per cent at end-December 2020 (see **Figure 4.10**).⁸⁵ This performance was influenced by the faster growth of nominal GDP relative to that of public sector debt.⁸⁶ The growth in the debt stock reflected increases in external and domestic debt of 7.2 per cent and 2.5 per cent, respectively (see **Figure 4.11**). A major contributor to the increase in the domestic dollar value of the external debt stock was revaluation, associated with the depreciation of the currency vis-à-vis the United States dollar (USD). For the domestic debt, the increase was mainly influenced by net financing inflows.

Similarly, the stability of government finances as measured by the fiscal stability ratio (FSR), improved to 0.99 at end-2021 from 1.13 at end-2020.⁸⁷ This performance was due to higher revenues & grants which contributed to a fiscal surplus, in contrast to a fiscal deficit for the previous year. In addition, there were improvements in the debt servicing to budgetary revenues and interest payments to GDP ratios as evidenced in declines of 13.8 percentage points and 0.5 percentage point, respectively. Furthermore, the external debt to exports of goods and services ratio fell by 70.9 percentage points for the review period. This performance was driven by an increase of 46.8 per cent in the exports of goods and services (see **Figure 4.12**).⁸⁸

Figure 4.10 Debt to GDP ratios

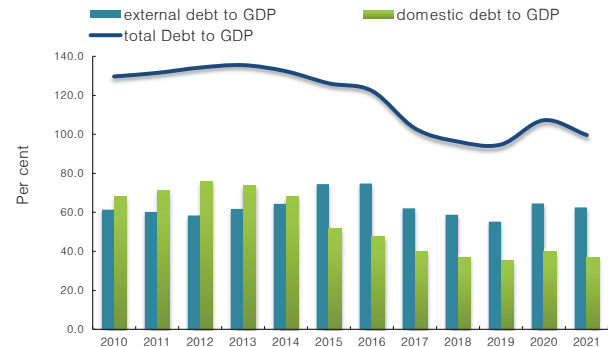
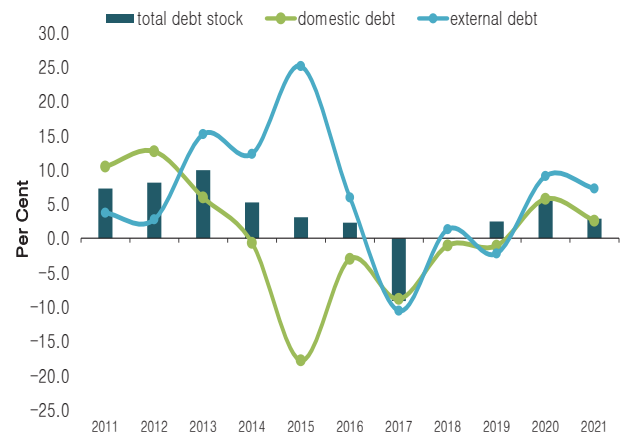


Figure 4.11 Growth in public sector debt stock



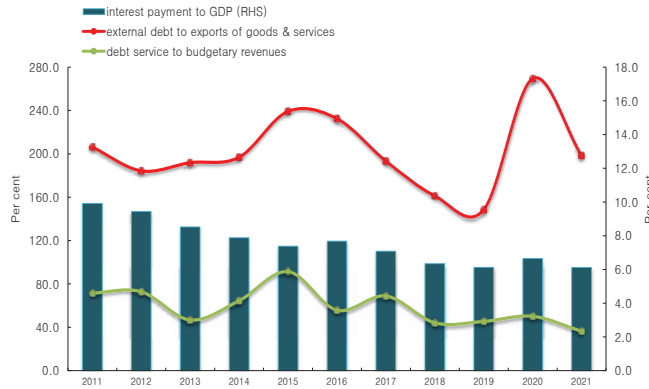
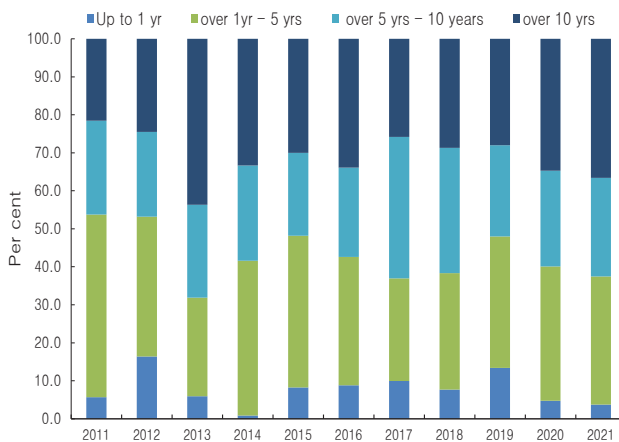
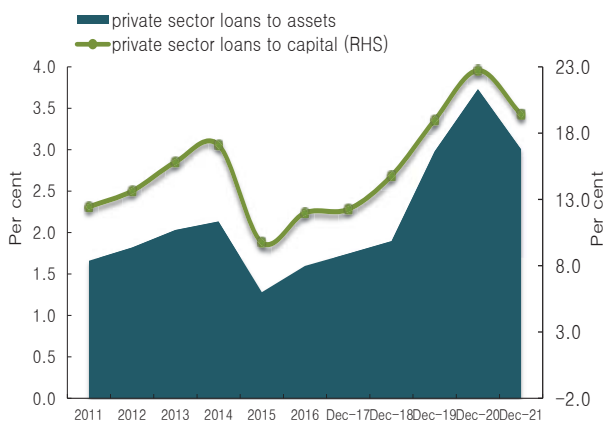
debentures figure used is as at December 2021). Notably, corporate financial assets do not capture large shares and other classes of corporate assets

⁸⁵ The latest available GDP data is at end-October 2021

⁸⁶ Public sector debt stock figures represent data up to October 2021 while GDP data for 2021 is based on projections from the Bank of Jamaica

⁸⁷ The FSR is computed as the ratio of the overall fiscal balance as a per cent of total revenue less 1 (one). The fiscal balance is ... The closer the FSR is to zero indicates more stable government finances.

⁸⁸ The exports of goods and services for 2021 is based on a projected figure.

Figure 4.12 Debt sustainability indicators**Figure 4.13** Public Sector domestic debt by maturity**Figure 4.14** Private sector loans to assets & capital for the 12 core securities dealers**Table 4.2** Share of public sector domestic debt by instrument type (%)

	Fixed rate	Variable rate	Non Interest Bearing Debt
2009	48.9	51.1	0.0
2010	59.3	40.7	0.0
2011	56.5	43.4	0.1
2012	56.0	43.9	0.1
2013	67.9	32.0	0.1
2014	67.7	32.2	0.1
2015	60.8	39.2	0.1
2016	59.6	40.4	0.1
2017	55.7	44.3	0.0
2018	62.3	37.7	0.0
2019	63.0	37.0	0.0
2020	76.1	23.9	0.0
2021	77.0	23.0	0.0

The maturity profile of domestic public debt showed a decline in refinancing risk over the review period.⁸⁹ In particular, the proportion of debt due to mature within 1 year declined to 3.7 per cent from 4.7 per cent the previous year. Similarly, refinancing risk for medium-term debt decreased marginally. Domestic public debt due to mature in 1 to 5 years as a portion of total public debt also declined to 33.7 per cent at end-October 2021 from 35.3 per cent at end-2020 (see **Figure 4.13**). Of note, domestic fixed rate instruments continued to account for the largest share of the total debt stock. In fact, the share of domestic fixed rate instruments as a share of the total debt stock increased to 77.0 per cent at end-2021 from 76.1 per cent at end-2020 (see **Table 4.2**).

⁸⁹ Refinancing risk is defined as the possibility that a borrower cannot refinance by borrowing to repay existing debt.

4.5. Non-deposit-taking financial institutions' exposure to private and public sector debt

4.5.1 Securities dealers' exposure to private sector debt

Securities dealers' exposure to private sector debt decreased marginally for the review period.^{90,91}

Private sector debt as a proportion of securities dealers' total assets declined to 3.0 per cent at end-December 2021 from 3.7 per cent at end-December 2020 (see **Figure 4.14**). Similarly, the ratio of securities dealers' holdings of private sector debt to capital fell to 19.4 per cent at end-2021 from 22.7 per cent at end-2020. This outturn reflected a decline in private sector loans as well as an increase in capital. Notably, of the twelve securities dealers, the number of institutions that had exposure to private sector debt remained at eight for end-December 2021 relative to end-December 2020.

Securities dealers' loan quality ratio, as by private sector NPLs to private sector loans improved to 0.8 per cent at end-December 2021. This compared to 2.4 per cent at end-December 2020 and a historical five-year average of 2.8 per cent (see **Figure 4.15**). This improvement was largely due to growth in total loans coupled with a significant reduction in NPLs.⁹² Similarly, the coverage ratio of securities dealers improved markedly to 135.9 per cent at end-December 2021 from 53.9 per cent at end-December 2020. This performance largely reflected the significant reduction in NPLs.

Figure 4.15 Private sector NPLs to total private sector loans & coverage ratio for securities dealers

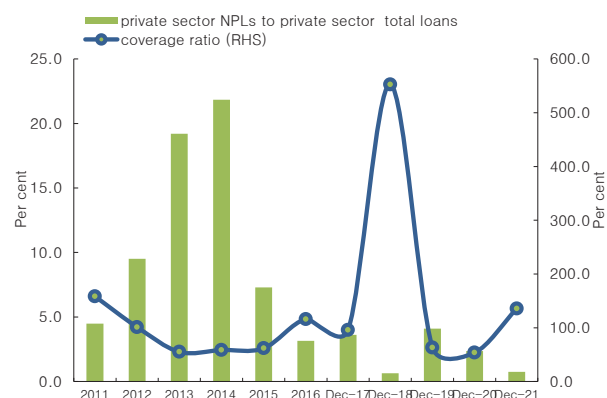


Figure 4.16 Investment in other assets for the DTIs, securities dealers & insurance

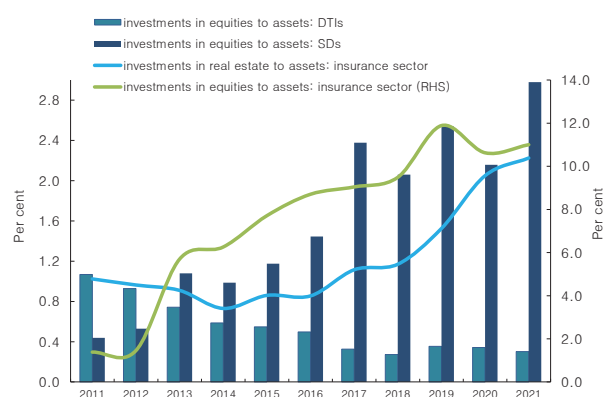


Table 4.3 Investment classes as a per cent of total assets

	pensions		industry			
	2016	Sep-17	Sep-18	Sep-19	Sep-20	Sep-21
Investments in Governments Securities to Assets (%) ^{1/}	30.4	26.1	25.0	20.6	22.3	21.4
Investments in Equities to Assets (%)	17.0	20.3	23.8	26.3	21.6	22.6
Investments in Real Estate to Assets (%)	4.8	4.0	3.8	3.6	4.4	4.3
Investment Arrangements to Assets (%) ^{2/}	36.6	38.0	36.9	37.4	37.5	38.1
Other Investments to Assets (%)	0.5	0.3	0.4	0.6	0.6	0.6
Total Asset values (J\$BN)	453.1	513.3	595.1	690.0	639.8	696.6

Notes

^{1/} Government securities includes Government of Jamaica securities and other

^{2/} An investment arrangement describes investments in deposit administration contracts and pooled funds.

90 Private sector loans include loans to corporate sector entities and personal (household) loans.

91 The twelve securities dealers include dealers whose business models are predominantly securities dealing activities and include the top 5 largest securities dealers'.

92 Total loans increased by 30.9 per cent and NPLs fell by 58.4 per cent for December 2021, relative to December 2020.

4.6 NDTFIs and DTIs exposure to real estate and equity

NDTFIs' exposure to equities and real estate assets remained relatively low during the review period. Specifically, for securities dealers and insurance companies, equity investments as a proportion of assets increased slightly to 3.0 per cent and 11.0 per cent, respectively, at end-December 2021. These outturns were relative to ratios of 2.0 per cent and 10.6 per cent, respectively at end-December 2020. As it relates to the insurance sector's exposure to real estate investments, the real estate investments to total assets ratio increased marginally to 2.2 per cent as at end-December 2021 from 2.0 per cent at end-December 2020. Of note, DTIs' investment in equities remained below 1.0 per cent of DTIs' assets base (see **Figure 4.16**).^{93,94}

4.8 Pension industry exposure to government securities, equities & real estate⁹⁵

At end-September 2021, the pension industry continued to have the highest exposure to investment arrangements relative to other investment classes.⁹⁶ The ratio of investment arrangements to total assets for the industry increased marginally by 0.6 percentage points to 38.1 per cent for the review period (see **Table 4.3**). At the close of the review period, investments in government securities and equities accounted for 21.4 per cent and 22.6 per cent of total assets, respectively, relative to 22.3 per cent and 21.6 per cent at end-September 2020. The slight portfolio shift away from investments in GOJ securities towards higher yielding investment classes could have been due to improved confidence in the equities market. For the review period, the pension fund industry's exposure to real estate and other investments was largely unchanged relative to end-September 2020.

⁹³ Real estate investments include only on-balance sheet positions for the insurance companies.

⁹⁴ DTIs are restricted from holding real estate for investment purposes. In addition, equity investments are limited to 10.0 per cent of regulatory capital.

⁹⁵ The data for the industry are as at end-September 2021.

⁹⁶ Investment arrangements consists of a pool of various investments including Deposits, Commercial Paper, Securities of Governments, Repurchase Agreements, Bonds and Debentures, Mortgage, Other Loans, Promissory Notes, Stocks and Shares, Real Estate, Derivatives, and other investments

BOX 4.1: UNDERSTANDING REMITTANCE INFLOWS TO JAMAICA: ITS CONTRIBUTION TO ECONOMIC RESILIENCE AND INHERENT RISK

Remittance inflows are defined as the portion of income earned in foreign economies by citizens or migrants working abroad which are sent to their country of origin based on incomes arising from temporary or permanent work arrangements.^[1] These remittance transfers include cash and noncash items that flow either through formal channels such as electronic wires or informal channels by way of cash or kind taken across country borders. Remittances are particularly important to several developing countries, including Jamaica. For 2021, remittance inflows to Jamaica accounted for approximately 23.6 per cent of GDP.

A typical remittance transaction via the formal channel takes place in three steps:

(i) The migrant sender pays the remittance to the sending agent using cash, check, money order, credit card, debit card, or a debit instruction sent by e-mail, phone, or through the Internet;

(ii) The sending agency instructs its agent in the recipient's country to deliver the remittance; and

(iii) The paying agent in Jamaica makes the payment to the beneficiary of the remittance transfer.

For settlement between money value transfer agents, in most cases, there is no real-time funds transfer. The balance owed by the sending agent to the paying agent is settled periodically through a commercial bank. The Bank of Jamaica maintains responsibility for the regulation and supervision of operations of money transfer and remittance agents/agencies in Jamaica.

In this capacity, the Bank conducted a thematic study on the level of remittance flows for the January 2019 to December 2021 period, with

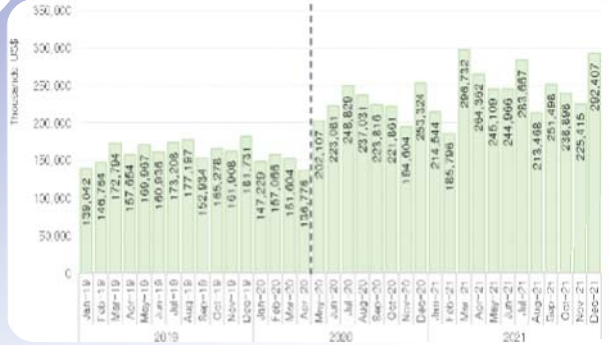
emphasis on inflows through principal agent locations and their affiliated Money Transfer Companies abroad. The study examined the characteristics of remittance inflows over time and a high-level assessment of the money laundering risks inherent in high-value and/or unusual transactions.

Throughout the January 2019 to December 2021 review period, remittance inflows to Jamaica increased by an average of 22.8 per cent (\$US498.7 million) per annum. Despite relatively lower global production and higher rates of unemployment following the onset of the COVID-19 pandemic, remittance inflows increased by 47.8 per cent (\$US65.3 million) in May 2020 relative to a much lower average monthly increase of 0.4 per cent in 2019 (see Figure 1). This significant increase in remittance inflows to Jamaica served as a substantive buffer against the adverse effects of the pandemic on wages, especially in key sectors such as tourism and entertainment. These sectors were more severely affected by containment measures implemented by the Government.

Remittance inflows by recipients since May 2020 averaged US\$234.8 per recipient. This was 15.9 per cent (US\$32.3) higher than the pre-pandemic average inflow of US\$202.5 in 2019. The average remittance per recipient since May 2020 is approximately five times Jamaica's minimum wage (J\$7 000 per week or US\$45.1).^[2] For the three-year period, there was a downward trend in the number of remittance recipients. In particular, the number of remittance recipients declined by an average of 10.7 per cent per annum to settle at 0.9 million recipients in 2021,

[1] Adams, Richard H., Jr., and John Page. 2003. "International Migration, Remittances, and Poverty in Developing Countries." World Bank Policy Research Working Paper 3179. Washington
[2] Average exchange rate for the as at December 2021 J\$155.15: US\$1.0.

Figure 1: Trend in Total Remittance Inflows (Monthly)



Source: Bank of Jamaica

from 1.2 million recipients in 2019 (see Figure 2). Of note, the pandemic’s impact was not limited only to the number of recipients in Jamaica but on the number of senders as well. The number of recipients of remittance inflows represented 46.6 per cent of Jamaica’s adult population (2.1 million) and approximately 73.4 per cent of the total labour force (1.3 million), which indicated the pervasive impact of these flows across the Jamaican economy.[3]

Figure 2: Trend in Total Receivers (Monthly)

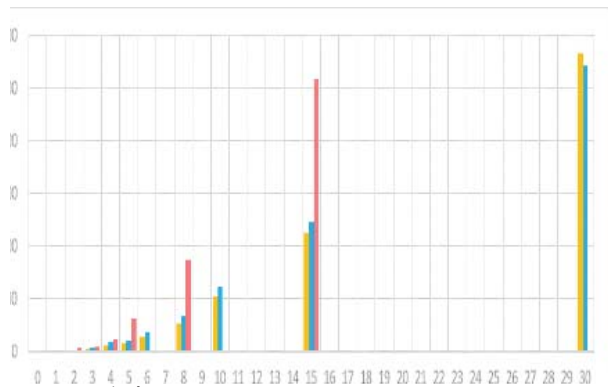


Source: Bank of Jamaica

In contrast, the volume of transactions rose considerably over the review period. In 2021, the number of transactions reflecting inflow of remittances increased by 12.9 per cent to 12.3 million, relative to the 9.7 million transactions in 2019. This was suggestive of an increase in the number of repeat transactions among recipients following the onset of the pandemic. In other words, although fewer persons benefitted from these unrequited transfers relative to pre-pandemic periods, those persons receiving remittances received at a higher frequency compared to the period preceding the pandemic.

This was reflected in a reduction in the average period of time between collections during 2021, relative to the preceding two years. Specifically, the data indicated a significant switch from a 30-day cycle to largely a 15-day and 8-day cycle between transactions (see Figure 3). The number of recipients conducting remittance transactions on 15-day and 8-day cycles rose by 42.3 per cent and 15.6 per cent, respectively.

Figure 3 Histogram of Daily Intervals between Transactions of Remittance Receipts



Source: Bank of Jamaica

Remittance inflows from the United States of America (USA), Great Britain (GB), Canada (CA) and Cayman Islands (KY) collectively accounted for 95.5 per cent of total inflows to Jamaica over the three-year period. The USA remained the major source of remittance inflows accounting for 69.2 per cent of total inflows to the island in 2021 compared to 64.5 per cent in 2019.

Cash remained the preferred method of disbursement among most recipients, accounting for 83.4 per cent (US\$2.5 billion) of total transactions in 2021. However, there was a gradual decline in the reliance on cash as a preferred mode of disbursement. This was due to a gradual increase in the preference of bank accounts for remittance disbursement (see Table 2). The share of remittance inflows through cash disbursements fell by 3.3 percentage points and 2.1 percentage points in 2020 and 2021, respectively. While the use of mobile wallets to access remittance inflows showed an increased, the penetration of this mode of disbursement was miniscule.

[3] Population and Labour force data on Jamaica were obtained from the October 2021 Labour Statistics published by the Statistical Institute of Jamaica (STATIN).

Table 2: Dispersion of Remittance by Payment Method

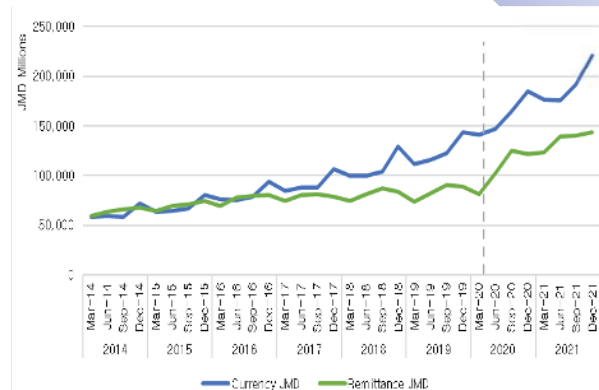
Year	Pay Method	Receivers	Total Value	Average Value	Maximum	Share
2019	Bank A/C	91,721	219,379,357	282	35,159	11.2%
	Cash	1,166,232	1,740,031,569	196	21,399	88.8%
	Cheque	1	1,949	1,949	1,949	0.0%
	Mobile Wallet	4	389	97	195	0.0%
	Total	1,257,958	1,959,413,264	203	35,159	100.0%
2020	Bank A/C	155,558	348,390,126	323	63,301	14.5%
	Cash	1,048,794	2,048,814,555	209	22,939	85.5%
	Cheque	4	7,479	1,870	2,524	0.0%
	Mobile Wallet	271	114,249	266	1,880	0.0%
	Total	1,204,617	2,397,326,409	220	63,301	100.0%
2021	Bank A/C	123,935	489,563,093	354	49,691	16.6%
	Cash	924,712	2,465,412,007	226	22,579	83.4%
	Cheque	1	2,902	1,451	1,451	0.0%
	Mobile Wallet	838	1,864,939	249	2,047	0.1%
	Total	1,049,486	2,956,862,941	240	49,691	100.0%

Source: Bank of Jamaica

Given the economic importance of remittance inflows to the Jamaican society, cash injection emanating from these activities has had a significant impact on the demand and level of currency in circulation. Trends in the level of currency notes in circulation juxtaposed against remittance inflows, represented in equivalent Jamaican dollars, highlighted a distinct positive correlation of 0.94 over the period 2014 to 2021 (see Figure 4). Recipients of remittance inflows receive the Jamaican dollar equivalent of remitted funds from principal agents of remittance services who in turn obtain currency notes from the banking system. It is through the banking system that the Bank of Jamaica issues and redeems domestic currency to keep currency in circulation sufficient to facilitate the level of economic activity. Consistent with this channel of currency demand, it was observed that the growth of currency in circulation accelerated in months following the first quarter of 2020 consistent with the influx of remittance inflows to the economy.

Though not empirically assessed, there remains a strong plausibility that remittance inflows have a causal influence on currency demand given its significance as a proportion of GDP. In relation to recipients, individuals accounted for the bulk (average 91.6 per cent per year) of total remittance inflows throughout the 2019 to 2021 period, relative to companies. Furthermore, individuals aged between 20 and 60 years old represented, on average, the majority of recipients accounting for 84.9 per cent of total value remittances per year.

Figure 4: Currency in Circulation Versus Remittance Inflows



Source: Bank of Jamaica

Of note, each decile within the age group [20-50] accounted for the largest share of remittance inflows over the three-year period. However, the 30-40 age decile accounted for the single largest share of inflows for each of the three years, averaging 24.6 per cent over the review years (see Table 3).

Table 3: Dispersion of Remittance Collection across Age Groups

	Receivers	Value	Volume	Average	Maximum	Shr
0-20	22,740	21,106,311	139,060	144.1	4,867.9	1.30
20-30	223,451	340,476,226	1,815,695	187.5	25,341.1	20.3
30-40	209,266	409,204,857	2,020,317	202.5	29,640.6	24.4
40-50	183,754	372,543,142	1,785,481	208.7	25,949.7	22.2
50-60	156,713	298,243,699	1,469,476	203.0	31,646.3	17.8
60-70	91,812	159,724,887	798,584	200.0	35,159.0	9.5
70-80	40,097	60,817,933	313,470	194.0	13,176.4	3.6
80&over	11,986	15,784,432	81,603	193.4	14,644.3	1.0
Total	939,819	1,677,903,486	8,423,686	199.2	35,159.0	100.0
0-20	21,217	24,529,980	143,718	162.1	5,695.4	1.10
20-30	232,403	465,007,111	2,222,863	209.2	51,121.5	20.1
30-40	221,449	569,068,791	2,557,131	222.5	34,985.9	24.6
40-50	191,975	514,328,292	2,253,491	228.2	63,301.3	22.2
50-60	167,646	417,973,986	1,899,377	220.1	54,287.9	18.1
60-70	102,275	226,328,225	1,054,280	214.7	37,462.9	9.8
70-80	42,938	78,086,942	370,951	210.5	16,705.4	3.4
80&over	11,780	17,798,821	82,229	216.5	14,755.8	0.8
Total	991,683	2,313,122,148	10,584,040	218.5	63,301.3	100.0
0-20	6,088	13,979,096	75,390	162.7	4,664	0.5
20-30	180,738	528,549,801	2,322,046	227.6	20,935	19.3
30-40	190,076	679,655,330	2,807,810	242.1	29,460	24.8
40-50	164,689	614,610,483	2,485,196	249.3	29,256	22.4
50-60	145,588	509,553,519	2,127,220	239.5	49,691	18.6
60-70	90,025	282,115,835	1,212,692	232.6	24,180	10.3
70-80	38,198	93,928,220	422,178	222.5	6,917	3.4
80&over	8,743	19,627,456	84,838	247.4	6,806	0.7
Total	822,145	2,742,019,540	11,517,370	238.1	49,691	100.0

Source: Bank of Jamaica

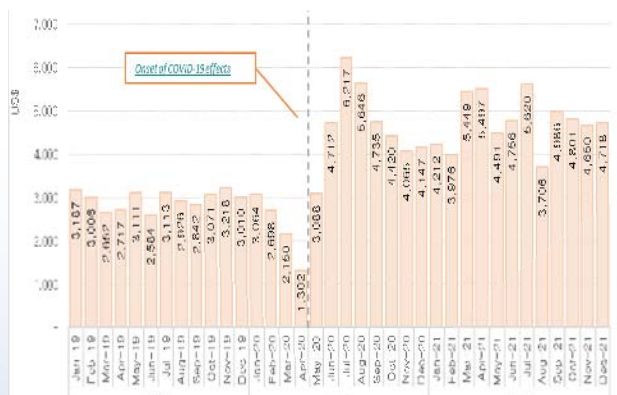
Information on remittance inflows also revealed a gender disparity over the three-years. Specifically, females collected in excess of 54.0 per cent of total remittance inflows relative to males. However, males, on average, received approximately US\$28.60 more than females over the review period.

The study also assessed money laundering risks associated with high value, unusual transactions spanning over the January 2019 to December 2021 period. High-value transactions were defined as those remittance inflows at or above the 99.9th percentile of the distribution curve. For the three-year period, these transactions accounted for 1.9 per cent (US\$138 million) of total remittance inflows and was US\$56.9 million in 2021.

Transactions found at the 99.9th percentile rose by an average of 26.7 per cent (US\$10.7 million) per annum over the review period. On average, high-value transactions rose to US\$4 503.0 following the onset of the pandemic in May 2020, relative to the average of US\$4 222.0 in the preceding period (see Figure 5).

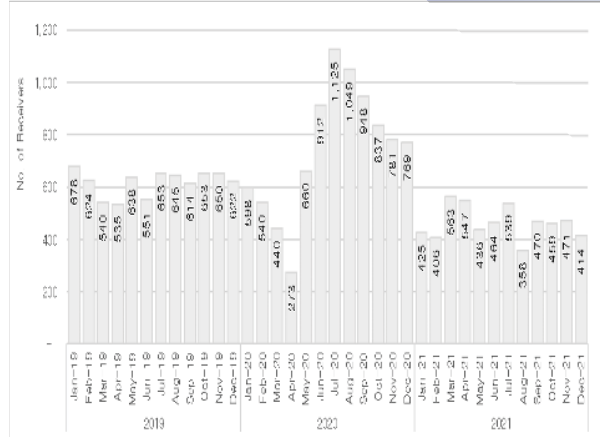
Additionally, there were notable increases in the number of recipients of high-value funds, seemingly in the peak periods of the pandemic during 2020, of which more than 90.0 per cent were individuals. However, the number of recipients of large value transactions fell below pre-pandemic levels in 2021 (see Figure 6).

Figure 5: Trend in Total Remittance Inflows [99.9th Percentile]



Source: Bank of Jamaica

Figure 6: Trend in Total Receivers [99.9th Percentile]



Source: Bank of Jamaica

While these transactions were deemed unusual, it should be noted that, on average, more than 70.0 per cent of high-value transactions were disbursed via bank accounts held with deposit-taking institutions, in which anti-money laundering measures remain robust.

Furthermore, high-value transactions were concentrated in the metropolitan areas of St. Andrew and St. Catherine, accounting for an average of 32.3 per cent (US\$16.5 million) of such transactions. This can be largely attributed to the level of economic activities found within these parishes.

The thematic review was useful in exploring the money laundering risks emanating from the remittance services industry. Remittance inflows represent a large share of Jamaica’s GDP and the recipients account for a substantial portion of the total labour force. The majority of remittance inflows originate from advanced economies such as the USA, Great Britain and Canada which collectively accounted for 92.3 per cent of inflows in 2021.

Considering the advanced systems for Anti-Money Laundering and Counter the Finance of Terrorism (AML/CFT) implemented within these territories, the potential risk from ML/TF within this segment of financial services is considered minimal. Furthermore, the trends in large value transactions (at and above the 99.9th percentile) which served as a proxy for unusual and potentially suspicious transactions, represented only 1.9 per cent of total remittance inflows in 2021 benefiting 4 298 recipients.

These transaction values averaged US\$4 550.0 in 2021 (US\$4 417.0 in 2020) corresponding to only two times Jamaica's minimum wage from a full year's employment. Furthermore, 86.8 per cent of large value transactions originated from the aforementioned three advanced territories. As such, large value transactions can be deemed a fairly low ML/TF risk for Jamaica. Considering the foregoing, the Bank does not perceive a significant risk of sanctions (blacklisting) or further disruptions in correspondent bank relations from developments within the remittance services market segment.

BOX 4.2: BANK OF JAMAICA'S FORAY INTO SUPTECH TO SUPPORT ITS ADOPTION OF A RISK-BASED SUPERVISORY

The full build-out and implementation of a risk-based supervisory framework is a critical success factor for the BOJ in ensuring the continued positive performance and long-term sustainability of the deposit-taking institution sector. This sector plays a central role in the facilitation of cross-border activities and in maintaining the correspondent banking relationships that are essential to the provision of transnational payments. However, like many other supervisors globally, the BOJ has confronted significant challenges in implementing a risk-based approach, including the limited availability of skilled AML/CFT supervisory resources.

The Caribbean Financial Action Task Force (CFATF) fourth round mutual evaluation report (MER) of Jamaica, which was published in January 2017, was critical of Jamaica's overall understanding of its ML/TF risks and the lack of a comprehensive national risk assessment (NRA) process to identify, assess and mitigate those risks. The report also included a recommendation that the BOJ and other competent authorities undertake thematic AML/CFT studies by sector and types of institutions to improve their understanding of sectoral risks.

Since the MER, the BOJ has completed several thematic reviews to deepen its understanding of sectoral risks in relation to bank fraud, cross-border financial flows, and the remittances sector. Building on the success of these reviews, the BOJ determined that a review of the internal controls of the DTIs would be a logical corollary and follow up exercise from a supervisory perspective. The BOJ appointed AML Analytics, a leading AML technology company, to conduct sanctions screening and transaction monitoring system thematic reviews of the DTI sector – the BOJ's first foray into the use of SupTech tools to support its supervisory and examination activities.

The recently completed thematic review has helped the BOJ to gain a better understanding of the way that specific ML/TF risks are being managed by the DTI sector and have provided new supervisory insights into the strengths and weaknesses of each DTI's processes and use of technology to monitor, mitigate and control its own AML-CFT risk-exposures.

Supervisory outcomes for the DTI sector are expected to continue to improve over time and the DTIs are already demonstrating a clearer understanding of the BOJ's sanctions screening requirements. Output from the thematic review has been directly incorporated into the DTI risk matrix, which will assist the BOJ in identifying at-risk DTIs for enhanced supervisory scrutiny and determine the scope of future on-site examinations.

Deploying SupTech tools in this thematic review has shown considerable promise in scaling and automating routine elements of the BOJ's supervisory work, thereby helping the BOJ to focus resources on tasks that require greater supervisory judgement and experience. It has also validated for the BOJ that SupTech tools can permit elements of supervisory examinations to be effectively carried out off-site, which has been instrumental in allowing the BOJ to maintain supervisory intensity during the COVID-19 pandemic when on-site 'in-person' examinations were not possible.

1. Introduction

The transition from a compliance-based to a risk-based approach to AML/CFT supervision is a significant undertaking that requires a substantial investment in enhancing the skills and capacity of supervisory staff, a deep understanding of inherent and residual ML/TF risks, and the development and integration of a comprehensive supervisory toolkit. Supervisors around the world face similar challenges in building a sufficient understanding of ML/TF risks that ensures limited supervisory resources are directed at the highest ML/TF risks.

Since the entry into force of the Banking Services Act in 2015, which introduced a significantly enhanced consolidated supervision framework in Jamaica, the Bank of Jamaica has continued to work to foster a supervisory culture and build the tools needed to effectively implement the risk-based approach. Through this box the BOJ seeks to share its experience in transitioning to a risk-based approach with its AML/CFT partners and stakeholders and, in particular, highlight how the BOJ has deployed thematic reviews that leverage supervisory technology (SupTech) tools to enhance its efficiency and effectiveness as a supervisor.

2. Transaction Monitoring System Thematic Review using Suptech

As part of its ongoing efforts to enhance its supervisory methodology, the BOJ launched an initiative, in partnership with AML Analytics, to conduct a Red Flag testing review of the transaction monitoring systems implemented by the DTIs. The aim of the project was to understand the effectiveness and efficiency of the DTIs' primary transaction monitoring systems, with particular attention placed on three principals' considerations:

- i. Were the rule's configuration and threshold settings effective, such that a red flag transaction would generate an alert?
- ii. Were the levels of alerts within operable levels? and
- iii. Was system performance in line with the BOJ's expectations?

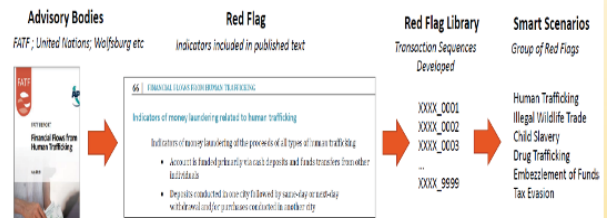
The transaction monitoring system thematic review involved the participation of the five above average-risk DTIs, which were identified based on the BOJ's risk matrix.

2.1 Testing Process

The Red Flag testing review began with an onboarding process to determine the formats in which Red Flag Transaction Sequences could be uploaded as a batch of transactions into the testing environment of the DTIs' Transaction Monitoring systems. Following the completion of the onboarding process, the full test was provided to the DTIs to run through their systems. Each of the five DTIs was tested simultaneously, but separately, in a format compatible with their screening system.

Red Flag indicators from regulatory publications in scope were consolidated into Smart Scenarios[1], to appropriately test typology coverage. The sources of Red Flags for the testing review included publications from the BOJ[2] and Financial Investigation Division (FID) in Jamaica, FATF, CFATF, UNODC and the Egmont Group (see Table 1).

Table 1: Red Flag Development



Source: Bank of Jamaica

The tests contained synthetic transaction sequences to mimic the exact transactional patterns of defined ML typologies with the intention to trigger one or more of the DTI's internal rules. Multiple Red Flag configurations were used to stress test the transaction monitoring systems with the use of test files consisting of transaction sequences of varying levels of value, volume and time bound parameters. Red Flags were not just challenged once, but multiple times with variation in the transaction sequences, which were created in such a way that each sequence was isolated from every other sequence (see Table 2).

Table 2: Example of a Red Flag Transaction Sequence

	GUID	DATE	VALUE	CURRENCY	TRANSACTION TYPE	DIRECTION
1 Transaction Sequence	abcd234	01-Jan-21	10,000	USD	CASH DEPOSIT - ATM	IN
	bcd1235	02-Jan-21	5,000	USD	DOMESTIC FUNDS TRANSFER	IN
	cdab1236	02-Jan-21	10,000	USD	CASH WITHDRAWAL	OUT
	dabc1237	03-Jan-21	5,000	USD	CASH DEPOSIT - ATM	IN
	abcd1238	04-Jan-21	5,000	USD	CASH DEPOSIT - ATM	IN
	bcd1239	05-Jan-21	5,000	USD	CASH DEPOSIT - BRANCH	IN
	cdab1240	06-Jan-21	20,000	USD	INTERNATIONAL FUNDS TRANSFER	OUT
	dabc1241	07-Jan-21	10,000	USD	CASH DEPOSIT - ATM	IN

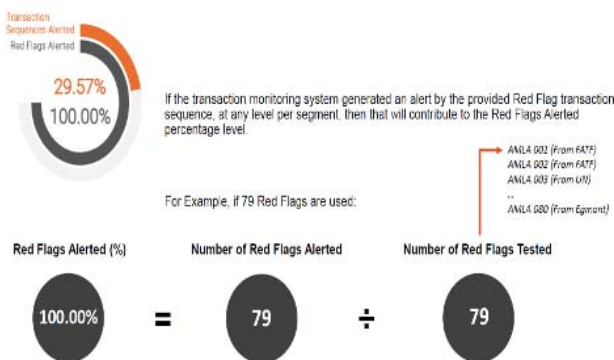
Source: Bank of Jamaica

[1] A Smart Scenario consists of multiple Red Flags that covers a range of suspicious transactional behaviour to emulate the typologies and characteristics of money laundering and illicit criminal activity, such as human trafficking, drug trafficking or illegal wildlife trade.

[2] Available at: <http://www.boj.org.jm/pdf/AML/CFT%20GN%20Mar%2009%20published.pdf>

Once the tests were completed, the DTIs were required to return the system output/result file containing all of the alerts generated by the system. This included the Globally Unique Identifiers (GUIs) that enabled the tracking of transactions that were sent and matched against, the account number alerted against, detection values, and the internal rule alerted against. The test results were then processed, analyzed and uploaded to the Red Flag reporting platform for further detailed analysis and peer comparison. In interpreting the test results, where a DTI's transaction monitoring system generated an alert by the provided Red Flag transaction sequence, then that would contribute to the Red Flags Alerted percentage level displayed in grey (see Table 3).

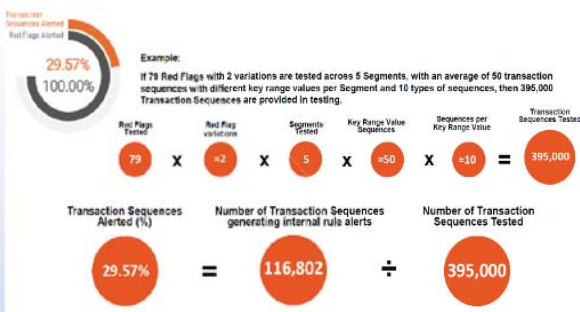
Table 3: Red Flags Alerted



Source: Bank of Jamaica

The orange value in Table 4 shows the percentage of Red Flag Transaction Sequences that have generated alerts against any of the transactions within that sequence across all key range values (e.g., the amount of a transaction or frequency of transactions) and all segments (e.g., individuals, small, medium and large businesses).

Table 4: Transaction Sequences Alerted



Source: Bank of Jamaica

Given the nature of the Red Flag tests, intentionally wide ranges of values for the transaction sequences were sent to the DTIs representing approximately 17.5 million transactions that needed to be tested. These ranges were intended to show where the DTIs started to return alerts and whether they would stop alerting after a certain point. It was therefore expected that a DTI would not return a 100 per cent score for all synthetic transaction sequences as this would demonstrate a filter with either very wide thresholds or no thresholds at all. Conversely, a 100 per cent score for the Red Flags Alerted would be considered ideal as this would demonstrate the DTI's ability to alert on all the known Red Flags within the scope of this test. The DTI should be able to show that it can successfully generate alerts whenever the combination of Red Flags comprising the Smart Scenario was ingested into its filter.

3.2 Key Outcomes

The Transaction Monitoring System Thematic Review was designed to assist with determining the effectiveness of DTIs' transaction monitoring systems to alert against a wide array of Red Flag indicators as identified in publications from globally recognized advisory bodies. The results of the review were not intended to be interpreted as positive or negative outcomes as each DTI has its own distinct risk appetite. However, by making comparisons between peer entities in the same jurisdiction, the results provide a holistic overview of the transaction monitoring systems' configuration to alert against the Red Flag typologies.

Of the five DTIs tested, 40.0 per cent returned what could be considered as a reasonable level and range of alerts. One DTI returned a 99.8 per cent score for the synthetically produced transaction sequences, which suggested that it would need to resolve an insurmountable volume of alert clearing and false positive administration. Another DTI failed to return a single alert on 70.0 per cent of the Red Flags and of those that were alerted, only 7.0 per cent of the transaction sequences sent within those Red Flags generated an alert. Further results revealed that one DTI only generated alerts against 0.11 per cent of the 'Drug Trafficking' Smart Scenario transaction sequences. This may have indicated an overly tight threshold setting which may need further investigation.

[1] A Smart Scenario consists of multiple Red Flags that covers a range of suspicious transactional behaviour to emulate the typologies and characteristics of money laundering and illicit criminal activity, such as human trafficking, drug trafficking or illegal wildlife trade.

[2] Available at: <http://www.boj.org.jm/pdf/AMLCFT%20GN%20Mar%2009%20published.pdf>

At the conclusion of the thematic review, the BOJ requested that the DTIs provide a formal written response to the test results and, if appropriate, outline any system improvement or remediation steps that will be required to enhance the systems alerting effectiveness, in terms of alerting capabilities with reference to match rates as well as the BOJ's expectations. While the thematic review was initially conducted on a project basis, testing on the remaining DTIs is being planned for Q3 2022. Re-testing of the DTIs that did not score as well as the rest of their peer group will also be carried out to confirm that remediation plans are leading to improved performance.

3.3 Improving Risk-Based Supervision Outcomes

Since the entry into force of the BSA in 2015, the BOJ has continued to advance its implementation of risk-based AML/CFT supervision. Supervisory effectiveness continues to improve and the conclusion of the NRA has allowed the BOJ to develop a more comprehensive understanding of ML/TF risks. A sophisticated risk-based off-site monitoring tool has been developed by the BOJ, but challenges remain in terms of the availability of skilled AML/CFT supervisory resources, which contributes to low levels of on-site examinations. The significant population of supervised entities under the BOJ's purview means that supervisory demands cannot be satisfied by increasing resources alone.

However, the use of off-site examination tools, particularly thematic reviews, has allowed the BOJ to monitor and better understand risks within the DTI sector and positively influence their behavior based on the review findings.

The recently completed transaction monitoring thematic review has helped the BOJ to gain a better understanding of the way that specific ML/TF risks are being managed by the DTI sector. The review has also provided new supervisory insights into the strengths and weaknesses of each DTI's processes and use of technology.

Supervisory outcomes for the DTIs are expected to continue to improve over time. Also, output from the thematic review has been directly incorporated into the DTI risk matrix, which will assist the BOJ in identifying at-risk DTIs for enhanced supervisory scrutiny and determine the scope of future on-site examinations.

This thematic review was one of BOJ's first foray into the use of SupTech tools to support its supervisory and examination activities. This approach has shown considerable promise in scaling and automating routine elements of the BOJ's supervisory work. Accordingly, this approach will help the BOJ to focus resources on tasks that require greater supervisory judgement and experience. Additionally, it has validated for the BOJ that the deployment of SupTech tools can permit elements of supervisory examinations to be effectively carried out off-site. This has been instrumental in allowing the BOJ to maintain supervisory intensity during the COVID-19 pandemic when on-site examinations were not possible.

3. The Way Forward

Increasing digitization in the financial sector that allows for the end-to-end digital delivery of financial services carries new risks from an ML/TF perspective. However, it also provides opportunities for supervisors to leverage powerful and innovative SupTech tools to support their supervisory efforts. Going forward, the BOJ has identified three priority workstreams to further integrate SupTech solutions into its risk-based supervisory approach and to share its experiences and lessons learned in this regard with other competent authorities in Jamaica:

- **Increasing Integration of Big Data Analytics into Supervisory Work** – The BOJ has established a new department with responsibility for undertaking big data analytics in support of its prudential and AML/CFT supervisory mandates. To date, the department has concluded a number of thematic reviews focused on specific areas of risk, including in relation to bank fraud, cross-border financial flows and the Jamaican housing market. The thematic reviews relied on advanced analytics conducted using large data sets drawn from supervisory returns, SWIFT data and other sources. The thematic reviews have resulted in improved supervisory outcomes, which are discussed in detail in **Box 3.3** (Bank Fraud and its implications for Money Laundering Risks in Jamaica) and **Box 4.1** (Understanding Remittance Inflows to Jamaica: Its Contribution to Economic Resilience and Inherent Risks).

The BOJ has also recently concluded a thematic review of the remittance sector, which in 2020 accounted for approximately 17.0 per cent of Jamaica's GDP. The review was introduced with the aim of identifying the ML risk exposure of the remittance sector using network, trend and pattern analysis of supervisory returns and transaction-level data to highlight areas of inherent ML vulnerability.

Transparency International's CPI was also incorporated in the analysis and used as a proxy for high-risk countries. Leveraging this expanded data set allowed the BOJ to interpret remittance flows in new ways (e.g., data perspectives on source jurisdictions at the sub-national level) and evaluate a range of typologies (e.g., high risk jurisdictions). The results of this thematic review have been disseminated to FMID to further inform its risk-based supervision of the sector and to the FID given the identification of five high risk typologies in the dataset.

The thematic reviews conducted to date have allowed the BOJ to examine large data sets related to identified areas of risk and apply unique supervisory insights that could not otherwise have been drawn. The BOJ continues to build out its data analytics capacity in support of its risk-based supervisory approach.

Future work will remain focused on specific areas of ML/TF risk. One area currently under consideration as the topic of a future thematic review is the shift by retail clients to internet banking platforms, a trend that has accelerated during the COVID-19 pandemic, and the implications that this trend has for DTIs given that it represents one of their most significant fraud exposures.

Expanding the use of SupTech Tools to Support Supervisory Efficiency – The lessons learned and insights gathered from recent thematic reviews have shown the value of SupTech tools in helping the BOJ improve its effectiveness as a supervisor and in enhancing supervisory outcomes. These tools are expected to become an increasingly important feature of the BOJ's supervisory framework moving forward. Follow-up testing will allow the BOJ to track DTIs' performance over time and validate whether remediation actions are having the desired effect.

The BOJ also continues to engage with third party providers of SupTech tools to identify solutions that could help the BOJ to automate its internal work processes to support its ongoing supervisory work. Additionally, the BOJ sees considerable potential in the role of SupTech tools not only in terms of enhancing its understanding of risks and enhancing supervisory outcomes, but also in improving its efficiency as a supervisor.

GLOSSARY

Automated Clearing House

A facility that computes the payment obligations of participants, vis-à-vis each other based on payment messages transferred over an electronic system.

Bid-ask Spread

The difference between the highest price that a buyer is willing to pay for an asset and the lowest price that a seller is willing to accept to sell it.

Central Securities Depository

An institution which provides the service of holding securities and facilitating the processing of securities transactions in a book entry (electronic) form.

Concentration Risk

The risk associated with the possibility that any single exposure produces losses large enough to adversely affect an institution's ability to carry out its core operations.

Consumer Confidence Index

An indicator of consumers' sentiments regarding their current situation and expectations of the future.

Counter-party Risk

The risk to each party of a contract that the counterparty will not live up to its contractual obligations. Counterparty risk is a risk to both parties and should be considered when evaluating a contract.

Credit Risk

The risk that a counterparty will be unable to settle payment of all obligations when due or in the future.

Disposable Income

The remaining income after taxes has been paid which is available for spending and saving.

Dollarization

The official or unofficial use of another country's currency as legal tender for conducting transactions.

Financial Intermediation

The process of channeling funds between lenders and borrowers. Financial institutions, by transforming short-term deposits or savings into long-term lending or investments engage in the process of financial intermediation.

Fiscal Deficit

The excess of government expenditure over revenue for a given period of time

Foreign Exchange Risk

The risk of potential losses which arise from adverse movements in the exchange rate incurred by an institution holding foreign currency-denominated instruments.

Funds Under Management/ Managed Funds

The management of various forms of client investments by a financial institution.

Hedging

Strategy designed to reduce investment risk or financial risk. For example, taking positions that offset each other in case of market price movements.

Interest Margin

The dollar amount of interest earned on assets (interest income) minus the dollar amount of interest paid on liabilities (interest expense), expressed as a per cent of total assets.

Interest Rate Risk

The risk associated with potential losses incurred on various financial instruments due to interest rate movements.

GLOSSARY

Intraday Liquidity

Credit extended to a payment system participant that is to be repaid within the same day.

Large Value Transfer System

A payment system designated for the transfer of large value and time-critical funds.

Liquidity Risk

The risk that a counterparty will be unable to settle payment of all obligations when due.

Net Open Position

The difference between long positions and short positions in various financial instruments.

Non-Performing Loans

Loans whose payments of interest and principal are past due by 90 days or more.

Off-Balance Sheet Items

Contingent assets and debts that are not recorded on the balance sheet of a company. They are usually noteworthy as these items could significantly affect profitability if realized.

Payment System

A payment system consist of the mechanisms - including payment instruments, institutions, procedures and technologies - used to communicate information from payer to payee to settle payment obligations.

Real-Time Gross Settlement System

A gross settlement system in which payment transfers are settled continuously on a transaction-by-transaction basis at the time they are received (that is, in real-time).

Repurchase Agreement (Repo)

A contract between a seller and a buyer whereby the seller agrees to repurchase securities sold at an agreed price and at a stated time. Repos are used as a vehicle for money market investments as well as a monetary policy instrument of BOJ.

Retail Payment System

An interbank payment system designated for small value payments including cheques, direct debits, credit transfers, ABM and POS transactions.

Stress Test

A quantitative test to determine the loss exposure of an institution using assumptions of abnormal but plausible shocks to market conditions.

Systemic Risk

The risk of insolvency of a participant or a group of participants in a system due to spillover effects from the failure of another participant to honour its payment obligations in a timely fashion.

