



FINANCIAL STABILITY REPORT 2022



FOREWORD

The maintenance of financial stability by the Bank of Jamaica (BOJ) primarily concerns the safeguarding of conditions which ensure the proper and efficient functioning of the financial system and, consequently, the promotion of real economic activity. The financial system consists of three components: institutions, markets and infrastructure.¹ These components interact with each other as well as with other participants in the system – such as households, nonfinancial corporations and the public sector – to allocate economic resources and redistribute financial risks.

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 2022 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-2022, except in some instances where data were only available for end-September 2022.

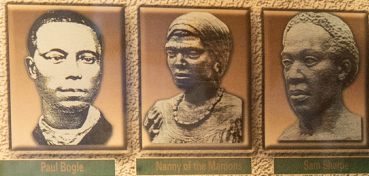
The Report covers:

- 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 contact@boj.org.jm.

¹ For the purpose of this report, financial institutions include deposit-taking financial institutions, securities dealers and insurance companies. Financial markets include foreign exchange, money and capital markets. Financial market infrastructure refers to payment and securities settlement systems.


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ABBREVIATIONS AND ACRONYMS

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

POS	Point-of-Sale	NPL	Non-Performing Loan
REER	Real Effective Exchange Rate		
ROA	Return on Asset		
ROE	Return of Equity		
RTGS	Real-Time Gross Settlement System		
RWA	Risk-Weighted Assets		
SD	Securities Dealer		
SIFI	Systemically Important Financial Institution		
The Bank	Bank of Jamaica		
VIX	Volatility Index		
WTI	West Texas Intermediate		

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Chairman



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*Deputy Governor,
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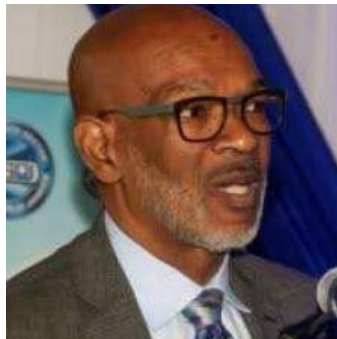
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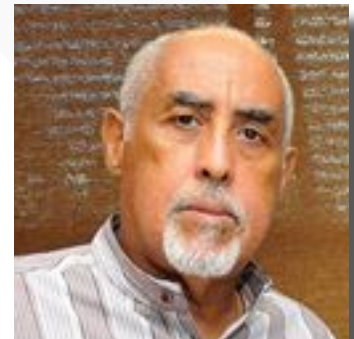
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FINANCIAL STABILITY OVERVIEW

The Jamaican economy recovered to its pre-pandemic level at the end of 2022. Consequently, there were improvements in several key macroeconomic indicators. However, owing to global developments, the risk profile of the economy began to shift as the normalisation of domestic economic activity coincided with a tightening of monetary conditions. Notwithstanding, the financial sector maintained adequate levels of capital and liquidity as well as strong asset quality ratios.

Macro-financial environment

The domestic economy is estimated to have grown in 2022 with quarterly GDP returning to pre-pandemic levels in the December 2022 quarter. Specifically, the economy grew by an estimated 4.5 per cent – 5.5 per cent for 2022, faster than the growth of 4.4 per cent recorded for 2021. The expansion of the economy was underpinned by the complete removal of the orders of the Disaster Risk Management Act (DRMA) in March 2022, which contributed to strong recovery in the tourism and manufacturing sectors. In the context of the growth in the economy, the unemployment rate fell to 6.6 per cent at July 2022 relative to 8.5 per cent at July 2021. Furthermore, there was a notable appreciation of the exchange rate for 2022, as well as an improvement in the fiscal balances.

Despite the ongoing conflict in Europe as well as COVID-19 surges in China, the global economy is estimated to have grown by 3.2 per cent during 2022. The expansion in economic activity was however accompanied by increased volatility in financial markets due to tightening of monetary policy amidst rising inflation.

While declining, annual inflation in Jamaica remained above the central bank's target range during 2022. This reflected the lingering effects of the pandemic as well as the ongoing war between Ukraine and Russia which contributed to supply chain disruptions and rising commodity prices. In order to curtail the second round effects of these shocks on domestic inflation, BOJ increased its policy rate by 450 basis points (bps) to 7.0 per cent during 2022. As a result of monetary

tightening both globally and locally, asset prices fell and resulted in fair value losses for financial institutions throughout the year. (see Chapter 2).

Within the context of a rebound in economic activity and consistent fiscal policy efforts to lower the debt burden, public sector debt to GDP continued on a downward trajectory during the year. Notably, public debt to GDP fell to 83.6 per cent at end-2022, largely reflecting the rapid expansion in nominal GDP despite a modest increase in the debt stock.

The performance of financial institutions was broadly positive. Deposit-taking institutions' (DTIs) liquidity and capitalization remained strong. However, DTIs' asset growth decelerated relative to the previous year. Additionally, operating costs for banks expanded noticeably, resulting in a moderation of the institutions' profitability despite an increase in revenue. Similar results were noted among non-deposit-taking financial institutions (NDTFIs) as asset growth decelerated for 2022. The ten largest securities dealers showed reduced profit margins but the profit margins for the insurance sector improved slightly for the year due to an increase in gross written premiums (see Chapter 3).

Financial System Sectoral Exposures

As a result of the rebound in the real economy, Jamaica's financial system sectoral exposures improved during 2022. Notably, personal loans continued to dominate the credit portfolio of DTIs, growing in real terms by 3.6 per cent for the year. Meanwhile, credit to the corporate sector remained stable, reflecting credit growth in all economic sectors with the exception of *Electricity*. This result was coupled with improved loan quality and debt sustainability metrics for both the household and corporate sectors.

Both DTIs and 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 the context of emerging inflation risks and resulting market volatility, composite indices of financial stress deteriorated but remained within the acceptable range. Both the Aggregate Financial Stability Index (AFSI) and Macro-Financial Index (MaFi) worsened for the year, reflecting falling asset prices and the high inflation environment. However, these indices remained well below the crisis threshold, indicating that, while risks were rising, they were tolerable.

Stress tests carried out to assess vulnerabilities to interest rate risks stemming from a downturn in the bond market and credit risks due to the impact of the slowdown in the external economy, pointed to a general resilience of the financial system. Due to their business model, securities dealers remained more vulnerable to interest rate risks, relative to DTIs. Notwithstanding, the sector's capital asset ratio (CAR) remained above the prudential benchmark in the context of the hypothetical shocks that were applied. DTIs were negatively affected by the credit risk stress test, but also remained adequately capitalized under both adverse and severe scenarios. Under the combined stress test conducted for DTIs, the sector's CAR declined but remained above the prudential minimum.

Vulnerability to spill over and contagion risks were moderate during 2022. Despite the high level of interconnectedness in the domestic interbank network, vulnerability to contagion risks remained low.

Interest rate and liquidity risk exposures increased across the financial system during 2022. DTIs' exposure to interest rate and liquidity risks increased during the year while exposures to credit and foreign exchange (FX) risk declined. Meanwhile, securities dealers' exposure to FX, interest rate and credit risks all increased during the review period. Securities dealers also recorded

reduced capital holdings due to declining asset prices, but their CARs remained well above the prudential requirement (see **Chapter 1**).

New Developments

The Bank has advanced plans towards the incorporation of climate related financial risks (CRFR) into its oversight framework. Phase One of the planned Climate Risk Project, began in December 2022 with the engagement of a consulting firm to begin the groundwork to develop supervisory capacity to assess these risks and to boost awareness among supervised entities. These efforts are geared towards effectively identifying, measuring and managing CRFR. Phase Two of this project will involve the conducting of climate related stress tests and the integration of CRFR management into macroprudential supervision and policy decision.

The Financial Deepening Implementation Group (FDIG) continued work on its mandate of developing deeper financial markets. Among the ongoing initiatives of the FDIG (comprising the BOJ, Financial Services Commission (FSC) and Jamaica Stock Exchange (JSE)) were efforts towards standardizing asset quality, via increased use of external credit ratings. As such the FDIG pursued regulatory reforms that would incentivize DTIs to seek external ratings. This includes, among other things, the BOJ's implementation of the BASEL III Capital Adequacy Framework which would afford DTIs lower capital adequacy requirements through better external ratings. The overall financial deepening initiative was bolstered by the ratification of new guidelines which allow listed companies to more efficiently issue additional securities. During 2022, the FDIG held several consultation meetings with private and public sector stakeholders to identify an additional set of near- and medium-term priorities to further deepen Jamaica's capital market and spur growth. In this regard, a draft framework

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

documenting the proposals was prepared towards end-2022 and will be finalized in 2023 after further review.

An assessment of bank fraud was carried out in 2022. The results indicated that since 2019, banking fraud has been on the decline, with the value of losses from this source falling from a high of \$1.3 billion in 2019 to \$0.7 billion in 2022. The decline in the losses from fraud can be attributed to combative measures that were implemented through the introduction of Europay, Mastercard and Visa (EMV) chip and pin technology, as well as multi-factor authentication. However, credit card related money laundering risks increased from medium-low in December 2019 to medium-high in November 2022. The curtailing of fraud and money laundering risks remains a key priority for financial institutions and the central bank in the context of Jamaica's advances towards a modern, digital economy and society.

During 2022, the FSC made progress in the work to implement International Financial Reporting Standard (IFRS) 17. The implementation of IFRS 17 will have implications for the insurance sector. It is expected to be implemented into quarterly filings for insurance companies for the first quarter of 2023. The implementation of this new reporting standard will also be accompanied by new capital requirements and market conduct regulations as well as amendments to investment regulations. In this regard, implementation of IFRS 17 will ensure that the domestic insurance industry's operations are in line with international best practices, which will serve to boost the reputation of the Jamaican economy while further mitigating risks.

At the beginning of 2023, the Minister of Finance & the Public Service announced the phased establishment of a new 'twin peaks' regulatory regime. The transition period for this new regime will be two years. This twin peaks regime will replace the current sector-by-sector regulatory approach. Under this new regulatory structure, BOJ will assume supervisory responsibility for DTIs as well as NDTFIs. The FSC will then be tasked with overseeing market conduct and consumer protection for all financial services providers,

which include DTIs, NDTFIs, cambios and remittance companies. The Governor of the BOJ was appointed Chairman of the reconstituted board of the FSC (see **Box 1: Twin Peaks Regulatory Regime**).

BOX 1: **Twin Peaks Regulatory Regime**

On January 23, 2023, the Minister of Finance and the Public Service, Dr. the Hon. Nigel Clarke announced the Government of Jamaica’s plan to transition to the “Twin Peaks” model of financial system regulation. The current sector-by-sector regulatory approach will be replaced by the twin peaks regime and as such the Bank of Jamaica will be responsible for the supervision of both Deposit-Taking Institutions (DTIs) and Non-Deposit-Taking Financial Institutions (NDFIs), while the FSC will oversee market conduct and consumer protection for all financial services providers.

What is the “Twin Peaks” model?

The twin peaks model of financial system regulation is a framework comprised of two regulatory authorities, each tasked with unique responsibilities. One “peak” represents the regulatory authority with responsibility for the prudential regulation of all financial institutions, while the other “peak” holds responsibility for regulating market conduct and consumer protection.

Within the context of increasingly complex and interconnected financial sectors, with large financial conglomerates and converging financial products, the twin peaks model aims to improve regulation by offering a more consolidated and comprehensive approach, than the sector-by-sector regulatory approach. The sector-by-sector approach describes the form of regulation which

currently exists in Jamaica whereby separate entities regulate sub-sectors of the financial system. That is, the DTI sector is regulated by the BOJ, the NDFI sector is regulated by the FSC, and responsibility for market conduct and consumer protection is shared between the two institutions.

Twin Peaks in the Jamaican financial system.

Under the twin peaks model, the BOJ will become a unified prudential regulator, tasked with supervising and regulating the entire financial sector, which includes both DTIs and NDFIs.¹ Consequently, the full gamut of micro-prudential and macro-prudential supervision will be consolidated within the BOJ. This new approach will engender a more extensive view of Jamaica’s financial landscape, spanning the banking, credit union, securities dealers, insurance, and pension industries.

As the unified regulator, the BOJ will be empowered to more effectively carry out its mandate of safeguarding financial stability. This is because the new structure aims to facilitate greater coordination in supervision, improved sharing of specialized knowledge across the supervisory spectrum, enhanced mitigation of regulatory gaps and arbitrage, and more consistent harmonized frameworks, among other functions.

The FSC on the other hand will become the regulatory authority with responsibility for market conduct and consumer protection, ensuring that the integrity of financial institutions’ operations is maintained. Some of these measures will include ensuring that financial institutions are engaging in fair and ethical practices, including the way sales and marketing activities are conducted; and

¹ Under the twin peaks model the BOJ will regulate commercial banks, building societies, merchant banks, micro-credit institutions,

insurance companies, securities deals, pension funds and, in due course, credit unions

ensuring compliance with laws and regulations governing consumer protection, and fraud.

Stages of Implementation

The transition to the twin peaks model is slated to be formalized in the year 2024/25 and will take place over the next 18-24 months. Its implementation will involve three components: interim management, legal reform and institutional restructuring and change management.

The interim management component of the transition is currently underway, as new appointments to the board and management of the FSC have been made. During this stage, the BOJ and the FSC will maintain their distinct regulatory roles while a framework for the merger of responsibilities is developed. The new board and management, along with help from consultants and multilateral partners, will facilitate this process.² Additionally, the legislative component will involve the drafting and implementation of relevant amendments to the FSC and BOJ Acts, among other legislation, and the institutional reform component will involve organizational reviews to decide on new structures and staffing arrangements.

To ensure a smooth transition to the twin peaks model, the BOJ has established a committee supported by five working groups. The key areas of focus for each group are (i) prudential supervision unification, (ii) legislative amendments processes and governance issues, (iii) human resources, (iv) technology and facilities management, and (v)

conduct regulation and consumer protection unification.

The BOJ is well-equipped to perform its current role of conducting prudential supervision and regulation at globally accepted standards, and is dedicated to enhancing its systems, structures and expertise to undertake its expanded mandate.

² Four members of BOJ's executive management team were appointed to the FSC's Board of Commissioners, with Governor Richard Byles being appointed chairman. Additionally, BOJ's Chief

Prudential Officer was appointed Executive Director (ED) of the FSC with other team members of the BOJ being seconded to assist the new ED.

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

During 2022, risks to financial system stability increased marginally as reflected in the performance of macro-financial indices of financial conditions. This occurred within a context of ongoing geopolitical tensions and heightened inflation globally which led to monetary policy tightening. As a consequence of this tightening, asset prices fell and resulted in fair value losses for financial institutions throughout the year. Notwithstanding, the financial sector continued to be profitable, liquid and adequately capitalized.

While inflationary pressures began to recede in late 2022, uncertainty relating to geopolitical tensions could cause inflation to remain high in 2023. Moreover, the probability of a recession in the United States (US) rose during 2022.

The results of the BOJ's stress tests showed that the financial sector remained resilient to adverse macro-financial shocks. Deposit-taking institutions and securities dealers were stressed under adverse scenarios involving rising bond yields, due to tightened monetary conditions, as well as deterioration in loan quality resulting from a recession in the US. Although there was a marginal decline in resilience due to the stresses applied, the financial system's robustness to these shocks was assessed to be manageable.

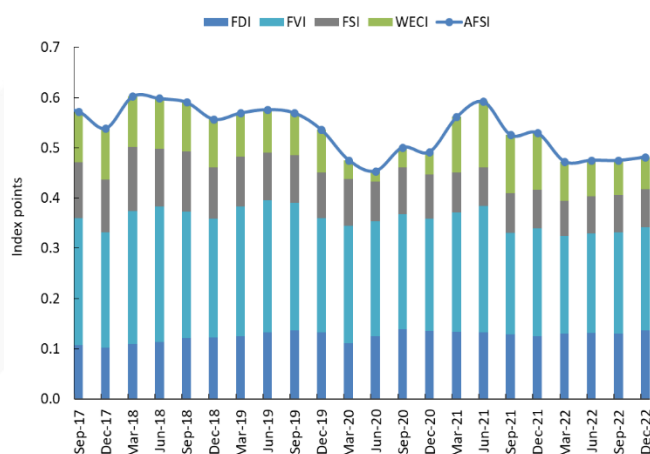
1.2 Macro-financial conditions in Jamaica

In the context of rising inflation and the ongoing uncertainty due to geopolitical tensions, composite indices of financial stress reflected a tightening of macro-financial conditions. The quarterly Aggregate Financial Stability Index (AFSI) declined to an average of 0.5 for 2022 from 0.6

for 2021, which indicated a downturn in financial sector stability (see **Figure 1.0**).¹ The

performance of the AFSI reflected decreases in two sub-indices: Financial Vulnerability and World Economic Climate. In particular, the outturn for the financial vulnerability sub-index reflected an increase in domestic interest rates. Meanwhile, the decline in the WECI was due to rising global inflation.

Figure 1.0 Aggregate financial stability index



Source: BOJ

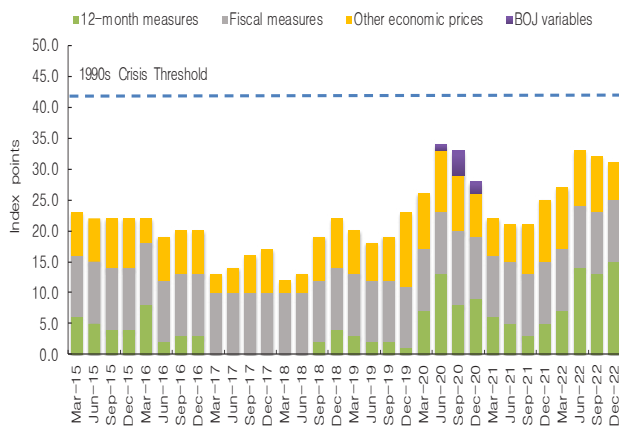
Note: The AFSI aggregates microeconomic, macroeconomic and international factors to form a single measure of financial stability. A higher value indicates increased financial stability while a lower value indicates deterioration in financial sector stability. Of importance, microeconomic data captures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

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_a

[nd_Forecasting_Financial_Stability_The_Composition_of_an_Aggregate_Financial_Stability_Index_for_Jamaica.pdf](#)

The Macro-financial Index (MaFI) deteriorated in 2022, reflected in an increase in the average index to 30.8 for 2022 from 22.3 for 2021 (see **Figure 1.1**). This worsening in the index reflected a slower rate of growth in the main JSE index and higher annual inflation, which are 12-month measures. Notwithstanding, the MaFI remained well below the financial crisis threshold value of 44.0 points.

Figure 1.1 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.

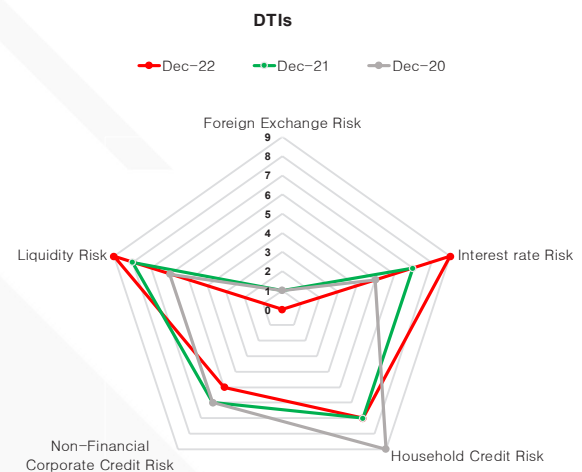
1.3 Evolution of financial risk exposures of financial institutions during 2022

For 2022, financial institutions' risk indicators showed mixed results relative to 2021. In particular, the financial risk exposure "cobweb", which measures annual average exposure to financial risks, showed that there were reductions in DTIs' exposure to non-financial corporate credit risk and foreign exchange risk. DTIs were however more exposed to interest rate and liquidity risks for 2022 while exposures to households were unchanged relative to 2021 (see **Figure 1.2**). Nonetheless, financial institutions remained

liquid, adequately capitalized and profitable (see **Chapter 3**).

Securities dealers' financial risk exposure "cobweb", with the exception of foreign currency risk reflected increases in risk exposures for the year ended September 2022, relative to 2021 (see **Figure 1.3**).² In particular, securities dealers were more exposed to foreign exchange risks due to an increase in foreign currency liabilities relative total liabilities. Furthermore, there was an increase in securities dealers' exposure to interest rate risks, as measured by changes in global bond yields.

Figure 1.2 Financial Risk Exposures of DTIs

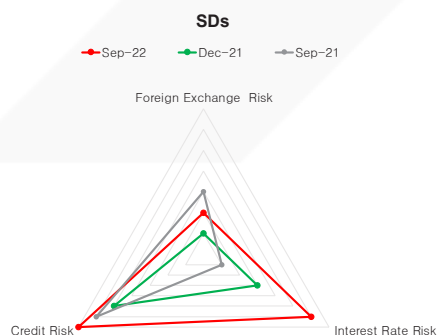


Source: BOJ

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 days/Assets; GOJ Global bond yields; T-bill rates (iii) Credit Risks – NPL/Total loans

² The analysis is based on a representative sample of twelve SDs.

Figure 1.3 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; Foreign currency liabilities to total liabilities (ii) Interest rate risks – Cumulative maturity gap of up to 30 days/Assets; Cumulative maturity gap of up to 90 days/Assets; GOJ Global bond yields; –Bill rates (iii) Credit Risks – NPL/Total loans

1.4 Emerging risk and vulnerabilities

Key risks to the Jamaican financial system in the near-term include the impact of further monetary policy tightening as well as the possible spillover effects to the domestic market from a recession in the US. In particular, sustained geopolitical tensions, especially the Russia-Ukraine crisis, could continue to have a deleterious effect on world grain and other commodity prices and, consequently, inflation globally. Additionally, a downturn in economic activity in the US, Jamaica's largest trading partner, could affect the domestic economy and the financial sector through various channels.

³ The GOJ Global Bond Composite Index was used to measure the changes in bond yields over the review period.

⁴ Of note, the sharp movements in GOJ bond yields coincided with the Federal Reserve announcement in early 2022, that it would radically shift its forward guidance to the effect, the policy rate would be substantially increased over time to fight inflation. In response, US treasury bill yields rose sharply during the year averaging a monthly increase of 19.9 bps for 2022 relative to an average increase of 4.8 bps the prior year.

The impact of a climate-related weather event is also an emerging risk that can affect the financial system. Climate analysts suggest that the risk of extreme weather conditions, including flooding, will increase with changing climatic conditions. These risks are of concern given Jamaica's strong dependence on *Tourism* as well as *Agriculture*, *Energy*, *Construction* and *Mining*. Even though not assessed in this report, the Bank has advanced plans toward the incorporation of climate-related financial risks into its oversight framework (see **Box 2: Assessing Climate-Related Risks in the Jamaican Financial System- An Update**).

Based on the foregoing, an assessment of an interest rate risk and a recession risk scenario was undertaken and the potential impact on financial institutions' balance sheets quantified.

1.5 Interest rate risk scenario

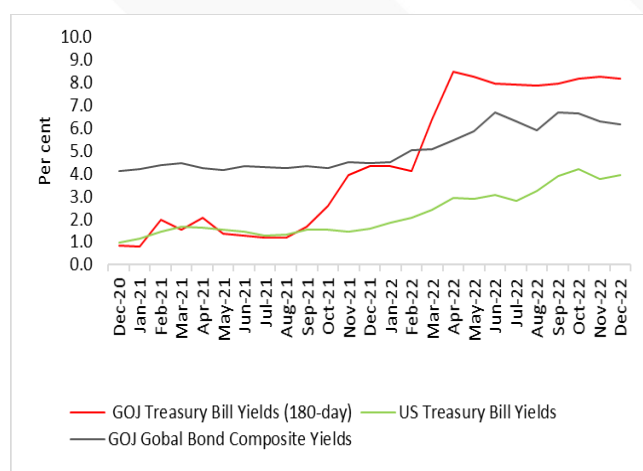
Within the context of higher global and domestic inflation, several central banks increased their policy rates. As such, bond yields generally trended upwards during 2022. In particular, GOJ bond yields rose by 171.7 bps for 2022, relative to an increase of 36.3 bps for 2021 (see **Figure 1.4**).^{3,4} The increases in bond yields and the corresponding reductions in prices, had a negative impact on the balance sheets of DTIs and securities dealers.⁵

For 2022, the domestic financial system remained largely exposed to both GOJ domestic and global bonds. DTIs' holdings of GOJ bonds, as a proportion of total investments, was 46.7 per cent at end-2022, relative to 48.3 per cent at end-2021. In this context, fair value losses incurred by DTIs amounted to 7.0 per cent of regulatory capital at end-2022, relative to losses of 4.7 per

⁵ Increases in bond yields negatively affect financial institutions' balance sheets through revaluation or fair value losses. In particular, when bond yields increase, this results in reductions in bond prices and consequently fair value losses. If the affected securities are sold during a period in which the price of these bonds are relatively low, this will result in realized losses and consequently lower profits. In addition, if institutions have insufficient buffer capital then this may result in reductions in financial institutions' capital base and may impact their capital adequacy. As such, it is important that financial institutions have sufficient capital in order to be resilient to these potential losses.

cent of capital at end-2021.⁶ For securities dealers, GOJ bond holdings represented 24.2 per cent of total investments at end-September 2022, compared to 38.3 per cent at end-2021. The securities dealers sector recorded fair value losses of 17.6 per cent of capital at end-September 2022, compared to losses of 2.8 per cent of capital at end-2021 (see Table 1.1). Notwithstanding the falling bond prices, financial institutions remained resilient to fair value losses.

Figure 1.4 Movement in selected sovereign bond yields



Bond prices are likely to continue to fall, albeit moderately, during 2023. The anticipated fall in bond prices will result from continued tightening of monetary policy in the US, if inflation continues to exceed the FED's target and economic activity remains strong.

⁶ Fair value loss is computed as the difference between the current/present market value of the securities and the acquisition cost of the securities.

Table 1.1 Revaluation effects due to rising bond yields-DTIs & SDs

Sector	Dec-21		Dec-22 ^{1/}	
	FV Loss/Gain (%) Capital	GOJ Bond holdings (%) Invest	FV Loss/Gain (%) Capital	GOJ Bond holdings (%) Invest
DTIs	-4.7	43.8	7.0	47.4
SDs ^{2/}	-2.8	38.3	17.6	24.2

^{1/} Due to data availability SD data for 2022 is as at end-September 2022

^{2/} Represents data for the top 12 core securities dealers

1.6 Recession risk scenario

Restrictive monetary adjustments were implemented in the US due to high inflation in these countries. Continued tightening of monetary policy in these countries could have a negative impact on the Jamaican economy as the US is a significant source of demand for Jamaican products and services, in particular tourism. As such, a recession in the US economy is likely to spill over to the Jamaican economy through reduced remittances and spending on tourism related products. In other words, a recession in the US could affect discretionary spending by visitors on Jamaica's tourism product, resulting in reduced profitability of players within the industry. Additionally, a recession in the U.S. can negatively impact the ability of overseas residents to service their debt obligations within Jamaica. Against this background, and given the exposure of Jamaican DTIs to these categories of lending, stress tests were conducted to assess the resilience of these financial institutions to a recession in the US.⁷

⁷ Based on leading indicators such as the US yield curve, the Federal Reserve estimated the probability of a recession in the United States (US) at 47.0 per cent as at end-2022.

1.7 Quantifying the impact of an interest rate risk scenario and a recession in the US

Against the background of uncertainty surrounding the future path of the domestic and external economies, a moderate and a severe scenario related to the impact of rising bond yields as well as a recession in the US on the balance sheet of financial institutions were contemplated. The stress tests in Table 1.2 were applied to the balance sheet of financial institutions based on data as at end-2022:⁸

Table 1.2 Stress testing shocks Scenarios

Risk/Scenario	RISK FACTORS	SHOCKS	
		MODERATE	ADVERSE
Credit Risk/Recession Scenario	Tourism - Increase in NPLs ^{4/}	29.0%	75.0%
	Overseas Residents -Increases in NPLs ^{4/}	30.0%	113.0%
	Tourism - Past due Loans Becoming NPLs	1.0%	1.0%
	Overseas Residents - Past due Loans Becoming NPLs	4.0%	7.0%
Interest Rate Risk/Oil shock Scenario	↑ Yields - Domestic	75 bps	200 bps
	↑ Yields - Foreign	50 bps	150 bps

1.8 Stress test assumptions and results for interest rate risk scenario

Interest rate risk stress tests were used to assess the impact of rising bond yields on DTIs' and securities dealers' CAR. The moderate scenario involved domestic and foreign bond yields rising by 75 bps and 50 bps, respectively. For the severe scenario, domestic and foreign bond yields were assumed to increase by 200 bps and 150 bps, respectively.⁹ As a result of related

⁸ Due to data availability, data for securities dealers were as at end-September 2022.

⁹ The two adverse scenarios utilized quarterly domestic and foreign interest rates from 2000 to 2022 to generate the relevant shock values. The moderate scenario uses the entire historical time series (distribution) to generate the shock value at the 95th percentile. Under the severe scenario, the data is stratified and only periods of financial stress are used to derive the applicable shocks.

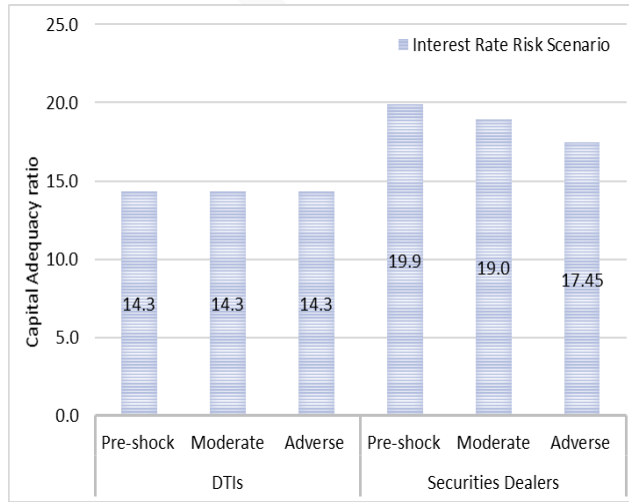
The rationale for using this methodology is that it is useful for capturing tail risk (i.e. high-impact events that have a small probability of occurring as predicted by a probability distribution).

shocks/increases in GOJ bond yields, the market value of these securities was computed and the derived fair value loss was deducted from available buffer capital. If the buffer capital was insufficient to cover losses, the residual fair value losses were deducted from statutory capital and the corresponding post-shock CAR re-calibrated.

The results of the interest rate risk assessment indicated that the balance sheets of financial institutions were generally resilient to the contemplated increases in GOJ bond yields under both scenarios.¹⁰ The post-shock CAR for the DTI sector was unchanged at 14.3 per cent under the moderate and severe scenarios, respectively. This resilience was largely due to the size of the sector's buffer capital and strong levels of regulatory capital. For the securities dealers, the post-shock CAR declined by 0.9 percentage point to 19.0 per cent and by 1.5 percentage points to 17.5 per cent under the moderate and severe scenarios, respectively (see Figure 1.5).

¹⁰ As a result of selected shocks/increases in yields, the new market value of these securities (GOJ bonds) are recalibrated using the price formula in excel. Next the fair value loss is derived and deducted from available buffer capital. However, if the buffer capital is insufficient to cover losses, the residual FV losses is deducted from statutory capital and the corresponding post-shock CAR is calibrated.

Figure 1.5 Interest rate risk stress test results showing post-shock CARs



Source: BOJ

1.9 Stress test assumptions and results for recession risk scenario (credit risk)

The credit risk stress test was used to determine the impact of a joint increase in NPLs and migration of performing loans (PLs) to non-performing for the *Tourism* and *Overseas Residents* sectors on the solvency of financial institutions due to a recession in the US. The moderate and severe credit risk scenarios utilized quarterly changes in the above-mentioned variables from 2000 to 2022. Under the moderate scenario, the migration of performing loans to NPLs and an increase in NPLs were based on the historical relationships between these variables as well as projected changes in GDP.¹¹ Under the severe scenario, the credit risk shock was generated at the 95th percentile on the changes in NPL and past due loans (PDLs) which migrate to NPLs.

¹¹ By extension, the relationship between GDP and non-performing loans (NPLs) was determined based on the following empirical equation:

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

Regarding the assumptions of the credit risk stress tests, all provisioning for new NPLs as well as loss from net interest income were initially deducted from the buffer capital of DTIs. If buffer capital was insufficient to absorb the losses, then the residual would impact the statutory capital base while risk-weighted assets (RWA) were adjusted for the increase in provisioning only.

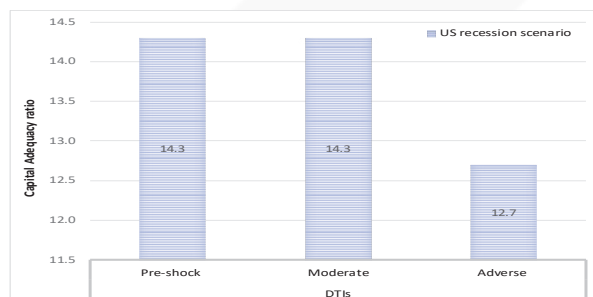
The results revealed that DTIs remained generally resilient to the anticipated shocks to NPLs and PLs. In particular, the DTI sector recorded a post-shock CAR above the regulatory minima under both the moderate and severe scenarios. However, the DTI sector experienced reductions in CARs in response to the combined shocks under the moderate scenario, which mostly reflected the impact of shocks to performing loans of overseas residents.¹²

The combined shocks to the overseas loan and tourism portfolios (under the moderate scenario) revealed that the CARs of the DTI sector would be unchanged at 14.3 percent (see Figure 1.6). Increased exposure to the tourism sector was the main factor contributing to the decline in the CAR for the DTI sector. In addition, post-shock CARs under the severe stress test indicated a decline of 1.6 percentage points to a post-shock CAR of 12.7 per cent.

The model suggested that the logit-transformed NPLs of each sector i follows an AR (1) process and is influenced by past GDP growth, with up to s lags.

¹² "Combined shock" refers to the simultaneous impact of an increase in NPLs coupled with a rise in PLs becoming non-performing.

Figure 1.6 Credit risk stress test results showing post-shock CARs – recession Scenario

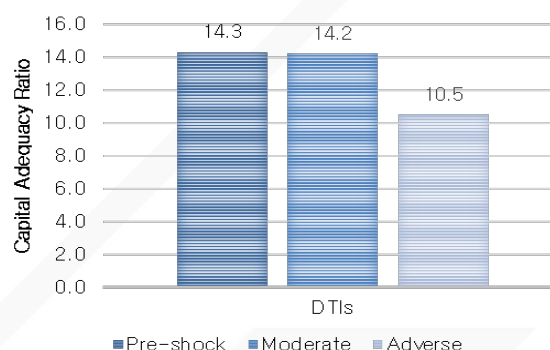


Source: BOJ

1.10 Stress test results for aggregate risk scenario

The combined risk assessment which is an aggregation of the interest rate and credit risk stress tests showed that the DTIs remained resilient under both scenarios. The post-shock CAR for the DTI sector declines by 0.1 percentage point to 14.2 per cent and 3.8 percentage points to 10.5 per cent under the moderate and severe scenarios, respectively (see **Figure 1.7**). Of note, shocks through the DTIs' credit channels have the greater impact on the post-shock CAR under both scenarios.

Figure 1.7 Aggregate risk stress test results showing post-shock DTI CARs



1.11 Contagion simulation on the interbank network

Spillover risks within the domestic financial system was low at end-2022.¹³ The index of contagion (IoC) highlighted that, although the domestic financial system remained highly interconnected, its vulnerability to contagion and spillover risks improved for the review period.¹⁴ At end-2022, the IoC signalled that, a defaulting institution would, on average, cause a 2.2 per cent loss in the capital of its counterparties relative to an average loss of 3.1 per cent at end-2021. The maximum capital loss caused by an institution was 6.7 per cent, compared to a minimum of 0.2 per cent. Notably, the results indicated that the strongest spillover risks emanated from intra-financial group relationships.

¹³ Due to data availability, data for securities dealers were as at end-September 2022. This stress scenario was conducted by ascertaining the impact of any one institution defaulting on its credit obligations and assuming that affected entities were only able to recover 70.0 per cent of their losses.

¹⁴ The index of contagion represents the average percentage of loss in other financial institutions' capital base due to the failure of the specific institution.

1.12 Summary of risk mitigation measures

Despite the increase in market risk during 2022, financial institutions, under the guidance of regulators, managed to weather the adverse impact of falling bond prices on their balance sheet positions. Throughout the year, regulatory supervisors heightened surveillance of the financial system in order to reduce the likelihood of capital impairment arising from falling asset prices. Some of the measures that were undertaken included requiring more frequent submission of specified reports and encouraging capital preservation. By extension, a few institutions opted to restrict capital distribution in order to prudently manage their exposure to market risk.

Regulatory authorities will continue to advance strategic initiatives geared towards mitigating risks to financial system stability. During 2023, Bank of Jamaica will continue to implement and operationalize key financial sector reforms including the Basel III Capital Adequacy Framework. This framework is geared toward requiring financial institutions to hold higher quantity and quality of capital. Additionally, the Bank will continue to advance work on developing frameworks for consolidated supervision, Special Resolution Regime for financial institutions and the Twin Peaks Model.¹⁵

For securities dealers, the Financial Services Commission (FSC) is in the process of developing a liquidity framework for dealers and updating its Capital Adequacy Framework. In addition, during 2022 the FSC implemented its Risk Based Supervisory (RBS) Framework ending its three-year implementation process with plans to expand its RBS framework even further in the future. The FSC also consulted on two additional guidelines, one aimed at curtailing market conditioning and improving disclosures around public offerings (Proposed Amendment to the Guidelines for Issuers of Securities), and another aimed at

improving financial disclosures for listed companies (the Financial Disclosure Guidelines).

¹⁵ [2022-BOJ-Annual-Report.pdf](#)

BOX 2: Assessing Climate-Related Risks in the Jamaican Financial System- An Update

Climate Risks, Opportunities and Implications

Climate change refers to the long-term adjustments in the earth's average climate patterns, including changes in temperature, precipitation and other weather-related events. The consequences of climate change are widespread and severe. Rising temperatures and changing precipitation patterns can lead to more frequent and intense natural disasters, such as: floods, droughts, wildfires etc. Changes in the timing and length of the growing season can impact food security and agricultural productivity. Rising sea levels and ocean acidification can lead to the displacement of coastal communities and the loss of marine biodiversity.

Addressing climate change requires collective action from governments, central banks businesses and individuals. These actions include reducing GHG emissions, transitioning to renewable energy sources, improving energy efficiency and implementing policies to encourage sustainable practices. The transition to more sustainable practices presents opportunities for the development and deployment of new innovative technologies, product diversification and job creation.

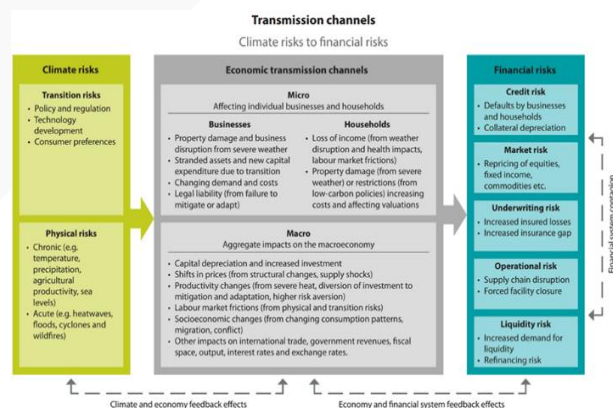
From Climate Risk to Financial Risk

¹ The Network for Greening the Financial System (NGFS) is a global network of central banks and supervisors committed to promoting the development of environmentally and financially sustainable practices in the financial sector and addressing climate-related risks.

The global transition towards net-zero emissions and the effects of climate change pose significant risks to businesses, households and the financial system. It is widely accepted that the most cost-effective approach to mitigating these risks is to take early and well-managed action to reduce greenhouse gas emissions. On the one hand, the need to rapidly transition to a low-carbon economy will create major challenges for many businesses (transition risks), while on the other hand the continued physical impact of a warming world can devalue assets and disrupt vital supply chains (physical risks).

Though the impacts of climate change may first be felt in sectors of the real economy, both physical and transition risks and opportunities can have financial ramifications (see **Chart 1.0**).

Chart 1.0 Transmission channels for climate risks from the NGFS¹



Source: NGFS

Financial supervisors and regulators are increasingly prioritizing climate risk management after recognizing the significant threats that climate change poses to the financial system. Consequently, climate-related risk is expected to become an essential component of the risk management strategies of financial institutions in

The NGFS was launched in 2017 with eight founding members and has since grown to over 100 members and observers from around the world.

the coming years. This means that financial institutions will need to proactively address physical and transition risks and integrate them into their risk management frameworks. Such actions will promote long-term operational sustainability and contribute to the overall stability of the financial system.

Climate Risk Project

Bank of Jamaica recognized that climate-related risks could translate into financial risks which would be material to its mandate of maintaining financial system stability. As such, the Bank is taking steps to incorporate the analysis of these climate-related financial risks into its routine surveillance of potential risks to financial system stability. BOJ has developed a 3-4 year-long work programme to advance its understanding and management of these risks, promote financial institutions’ understanding of CRFR and to ultimately assess their potential impact through climate risk stress testing.² The project, supported by Agence Française de Développement (AFD), is an interagency effort involving team members from BOJ, the Financial Services Commission, Jamaica Deposit Insurance Corporation (JDIC).

The project is being undertaken in two phases.

Phase One commenced in December 2022. The Bank engaged a consulting firm to: (i) identify CRFR in the Jamaican financial sector; (ii) build capacity in order to integrate CRFR into guidelines to develop a monitoring framework; and (iii) conduct due diligence and preparatory work for future stress testing and financial sector greening activities.

Phase Two will involve the conducting of climate-related stress tests and integration of the management of CRFR into prudential supervision

and macro-prudential policy making (see **Chart 2.0**).

Chart 2.0: Key Project Outcomes.



Source: Cambium Global Solutions.

²A climate stress test is a forward-looking exercise that assesses banks’ vulnerability to the effects of climate change, to better

understand the financial risks that the financial system faces from global warming and how banks’ business models could be affected.

2.0 MACRO-FINANCIAL DEVELOPMENTS

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

2.1 Overview

The global and domestic macro-financial environment displayed mixed results for 2022. Notwithstanding growth in most advanced economies, inflation remained high and there was increased volatility in global financial markets during 2022, the latter spurred by tightened monetary conditions. These developments occurred in the context of the Russia-Ukraine conflict and the lingering effects of the COVID-19 pandemic which disrupted supply chains and fuelled strong increases in international commodity prices.

The domestic economy continued to recover during 2022, which contributed to improved labour market conditions. However, the impact of higher international commodity prices led to inflationary pressures. In response, Bank of Jamaica tightened monetary policy in order to guide inflation back to the target range.

2.2 Global developments

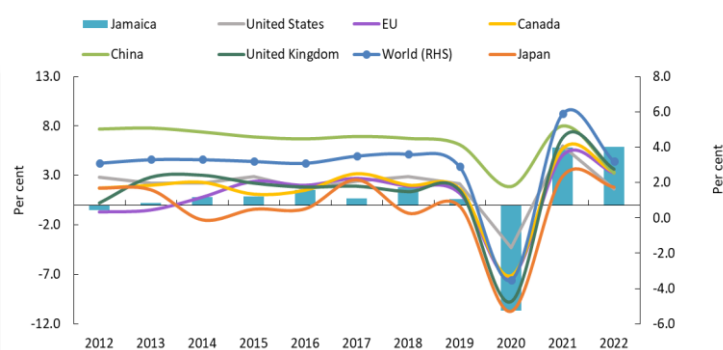
The performance of the global macro-financial environment for 2022 was mixed. There was deceleration in economic growth in most advanced economies. The lingering impact of the COVID-19 pandemic and the war between Russia and Ukraine contributed to supply chain disruptions, which led to inflationary pressures. As such, there was tightening of monetary policy globally.

The global economy was estimated to have grown by 3.2 per cent for 2022, relative to growth of 6.0 per cent for 2021.¹³ The growth in 2022 reflected the performances of advanced and emerging economies (see Figure 2.1). In particular, China grew by 3.2 per cent in 2022, following growth of 8.1 per cent in 2021. The

United States of America (USA), United Kingdom (UK), European Union (EU) and Canada also experienced lower growth ranging from 1.6 per cent to 3.3 per cent for 2022, relative to a range of 4.5 per cent to 7.4 per cent for 2021.

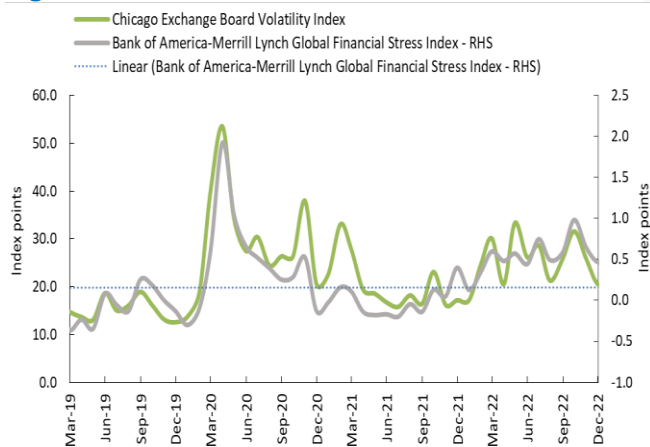
Continued disruptions in global supply chains, caused by the lagged effects of the Covid-19 pandemic and the conflict between Russia and Ukraine, fuelled substantial increases in international commodity (including oil) and shipping prices.¹⁴

Figure 2.1 GDP growth rates of selected countries



Source: IMF World Economic Outlook

Figure 2.2 International financial market indicators



¹³ See IMF World Economic Outlook Update October 2022.

¹⁴ West Texas Intermediate (WTI) oil prices increased by 38.8 per cent to an average of US\$94.29 per barrel for 2022, relative to an increase of 72.4 per cent for 2021.

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.

Figure 2.3 Selected domestic macroeconomic indicators

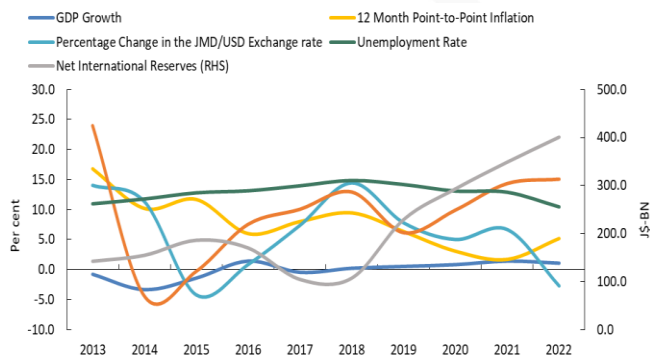
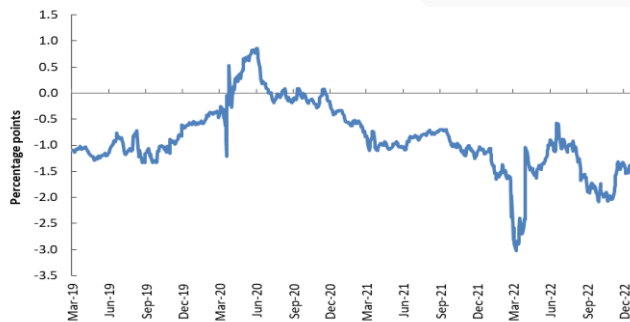
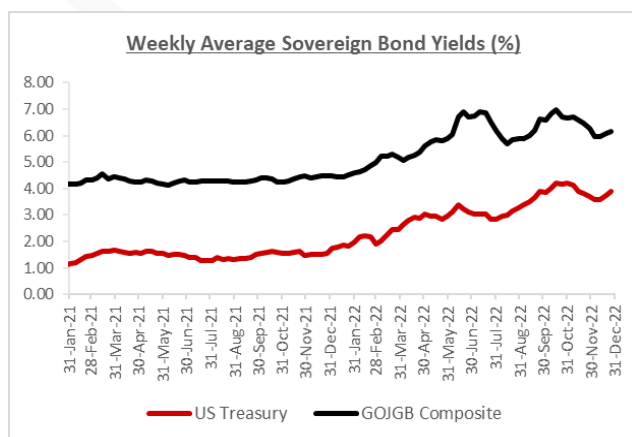


Figure 2.4 Spread between GOJ global bonds and EMBI+



Source: Bloomberg

Figure 2.5 Movement in Bond Yields



In their bid to fight the acceleration in inflation brought by the supply shock, central banks around the world tightened monetary policy in 2022. In particular, the Federal Reserve Board (FED) increased its target for the Federal Funds rate from 0 per cent to 0.25 per cent at the beginning of the year to 4.25 per cent to 4.50 per cent at the end. In response, US treasury bill yields rose substantially during the year. Concurrently, this resulted in increases in yields and declines in the prices of GOJ global bonds (see **Figure 2.5**). The FED also started the process of reducing the size of its balance sheet by reducing its holdings of Treasury securities and agency debt and agency mortgage-backed securities.

In the context of the monetary tightening by the major central banks, there was increased volatility in financial markets during 2022, which implied heightened financial stress. The higher volatility in global financial markets was reflected in increases in 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**).

There was a narrowing of the spread between GOJ Global Bonds composite yield (GOJGB) and the Emerging Market Bond Index (EMBI+) for the same period (see **Figure 2.4**). This narrowing reflected a relative improvement in the perception of GOJ global bonds as the Government of Jamaica continued to demonstrate sound management of its fiscal affairs.

2.3 Domestic environment

Domestic macroeconomic conditions also reflected mixed results for the review period. Jamaica's real GDP is estimated to have grown by 4.5 per cent – 5.5 per cent for 2022, relative to the growth of 4.4 per cent for 2021. This estimated growth largely reflected continued recovery in tourism and its affiliated services as well as increased production and distribution activities due to the removal of COVID–19 containment measures. The increased economic activity contributed to a fall in the unemployment rate by 0.5 percentage point to 6.6 per cent at July 2022, reflecting improved labour market conditions.

Annual point-to-point inflation increased by 2.1 percentage points to 9.4 per cent at end 2022, relative to the rate at end-2021. This was mainly due to the impact of the increases in international commodity and shipping prices.

In order to limit the effects of the international commodity price shock and to guide inflation back to the target range, Bank of Jamaica’s Monetary Policy Committee (MPC) reduced the level of monetary policy accommodation during 2022. In this regard, the policy interest rate was increased by 450 basis points to 7.0 per cent during 2022.¹⁵ As a consequence of higher interest rates, asset prices fell and resulted in fair value losses being reflected on the balance sheets of financial institutions throughout the year. The MPC also decided to continue containing the expansion in Jamaican Dollar liquidity and to take more actions to maintain stability in the foreign exchange market.

Within the context of the higher policy rate, select market interest rates generally increased in 2022. The weighted average yield on GOJ 180-day Treasury Bills increased to 8.18 per cent at end-2022 from 4.33 per cent at end-2021. Similarly, there were increases in the daily averages of private money market rates during the year. The weighted average deposit rate as at end-2022 was 1.62 per cent, an increase of 54 bps relative to end-2021. Conversely, the weighted average lending rate on bank loans to the private sector as at end-2022 was 11.74 per cent, a decline of 7 bps relative to end-2021.

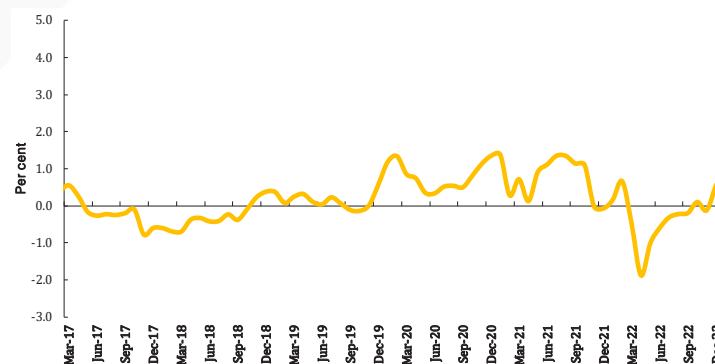
There was a widening of the GOJ Treasury Bill (TRE) spread for 2022.¹⁶ The average monthly TRE spread increased to 0.6 per cent from -0.08 per cent for 2021. This was due to a notable increase in the private money market rates relative to the 30-day T-Bill rate (see **Figure 2.6**). For 2022, the Jamaica Dollar appreciated by 2.0 per cent vis-à-vis the United States dollar, in

comparison to a depreciation of 8.7 per cent for 2021 (see **Figure 2.3**). This outturn was partly due to increased FX supply to the market as the tourism sector grew, as well as to more aggressive interventions by the BOJ through its Foreign Exchange Intervention and Trading Tool (B-FXITT) sale operations, direct sales to key entities and FX swap transactions.

2.4 Equity Market Performance

There was strong co-movement between the Jamaica Stock Exchange (JSE) and the Standard & Poor’s 500 (S&P 500) Index over the review period (see **Figure 2.7**). The S&P 500 index fell by 18.1 per cent while the¹⁷ JSE (Main) index decreased by 10.5 per cent over the review period. In this context, the correlation coefficient between the two indices was 0.6 for 2022, relative to 0.5 for 2021. The performance of the US and Jamaican equity markets were influenced by the more restrictive monetary policies by their central banks.

Figure 2.6 TRE Spread

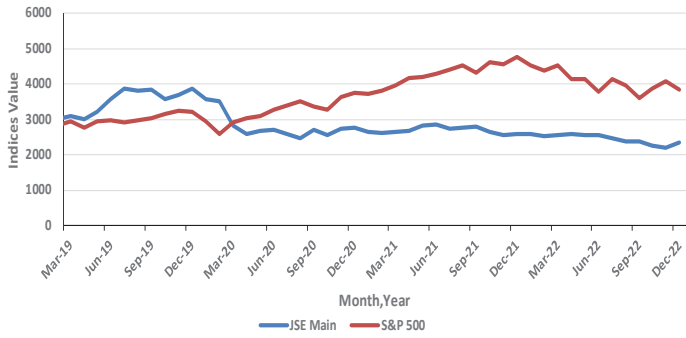


¹⁵ The Policy rate is the rate offered to deposit taking institutions on overnight placements with BOJ.

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

¹⁷ The S&P 500 is a market-capitalization-weighted index of the 500 largest publicly traded companies in the USA

Figure 2.7 Jamaica Stock Exchange (Main) index and S&P 500 index co-movement



3.0 FINANCIAL SYSTEM DEVELOPMENTS

This chapter describes the major developments in sub-sectors within the financial system.

3.1 Overview

In light of the post-pandemic recovery, the domestic financial sector remained resilient in 2022. However, DTIs' asset growth continued to be constrained by falling asset prices, which resulted in fair value losses for financial institutions throughout the year.¹ Notwithstanding, DTIs remained profitable, liquid, and adequately capitalized. Moreover, asset quality indicators improved.

Non-deposit-taking financial institutions grew moderately in the context of the recovery of the domestic economy, remained adequately capitalised and there were some indications that profitability in the sector improved. The available information for the year ended-September 2022, showed a moderate increase in on- and off-balance sheet funds under management. For the ten largest securities dealers the available information (to end-September 2022) indicated that their capital adequacy ratio remained generally stable and above prudential requirements.

The life and general insurance sub-sectors recorded increases in their asset base for 2022. Government securities continued to be dominant in the asset portfolio of the life insurance sub-sector. Of note, while the claims ratio for insurance companies increased in 2022, the sector's profitability increased substantially and it remained adequately capitalized.

The interbank funding network displayed significant interlinkages between the DTI sector and NDTFI sector and funding transactions among the sectors increased.

Activity in the JamClear®-RTGS largely recovered to pre-COVID-19 levels. JamClear®-RTGS transaction volumes grew by 17.8 per cent in 2022 to 3.3 million transactions.

For 2022, total transaction value in the JamClear®-CSD system increased by 69.4 per cent to \$21.9 trillion, which represented a system turnover of 6.7 times GDP. Retail payments activity expanded marginally relative to the previous year.

The value of cheques as a percentage of the total value of retail transactions continued to decline for the review period. Activity within the ACH system grew over the

review period, relative to the previous year. This was consistent with the BOJ's goal of reducing net settlement risk. Of significance, the Bank successfully began the phased Roll-Out of JAM-DEX in 2022, following the pilot phase in 2021

Deposit-taking institutions continued their efforts to reduce in-branch transactions in 2022. There were increases in the number of commercial banks' active ABM and POS terminals in 2022. The ratio of POS transactions to ABM withdrawals, remained generally stable at 0.83 at end-2022 relative to 0.84 at end-2021.

The degree of concentration risk, as measured by the large system concentration risk index (LSCRI), decreased in 2022 relative to the previous year. During 2022, the level of liquidity concentration within the JamClear®-RTGS system, as measured by the Herfindahl index, was unchanged relative to the previous year. For the review year, both the average monthly and overall value of transactions within BOJ's intraday liquidity facility reflected increases.

3.2 The financial system

In light of post-pandemic recovery efforts, the domestic financial sector remained resilient in 2022, as reflected by indicators of financial soundness (see Appendix: Table A.1).

However, asset growth for the financial system was constrained due to falling asset prices which resulted in fair value losses for financial institutions. In particular, the ratio of total financial institutions' assets to GDP, which is a measure of financial intermediation, declined to 242.9 per cent at end-2022 from 280.4 per cent at end-2021 (see **Box 3: Financial Deepening**). This decline reflected stronger growth in GDP relative to growth in financial system assets. The slower growth in financial system assets mainly reflected the performance of the DTIs and NDTFIs sector (see **Figure 3.1** and **Figure 3.2**).^{2,3}

¹ Within a context of heightened inflation globally, there was increased monetary policy tightening.

² DTIs include commercial banks, building societies and mutual funds. While NDTFIs include general and life insurance companies, securities dealers, pension funds, unit trusts and mutual funds.

3.3 Deposit-Taking Institutions

3.3.1 Deposit-taking institutions' balance sheet position

DTIs' asset growth decelerated for 2022 compared with the growth of the previous year. More specifically, DTIs' total assets grew by 6.6 per cent to \$2 452.3 billion at end-2022, relative to 13.6 per cent at end-2021. The slowdown in asset expansion reflected slower growth in both domestic and foreign currency assets. In particular, domestic and foreign currency assets grew by 6.1 per cent and 7.5 per cent at end-2022, relative to growth of 10.2 per cent and 19.9 per cent at end-2021, respectively. The slower growth in foreign assets reflected an increase of 25.7 per cent in DTIs' *Foreign Investments*, compared to growth of 31.5 per cent at end-2021.⁴ In contrast, *Domestic Investments* declined by 1.2 per cent during 2022, compared to an increase of 0.9 per cent in 2021. In contrast, *Loans, Advances and Discounts* grew by 12.9 per cent for the review period, compared to growth of 9.6 per cent for 2021.

A decomposition of DTIs' loan portfolio showed that domestic currency loans grew by 15.1 per cent, compared to 10.7 per cent for 2021. Foreign currency loans however grew by 4.4 per cent during 2022, relative to growth of 5.7 per cent for the previous review period. Concurrently, DTIs' holdings of *Liquid Funds* fell by 14.4 per cent, in contrast to the increase of 19.8 per cent for 2021.⁵

There were moderate shifts in DTIs' asset composition during 2022. Of note, there was a strong reduction in liquid funds and an uptick in the share of foreign investments on institutions balance sheets. In addition, *Loans, Advances and Discounts* continued to account for the largest share of DTIs' total assets (see Figure 3.3).

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

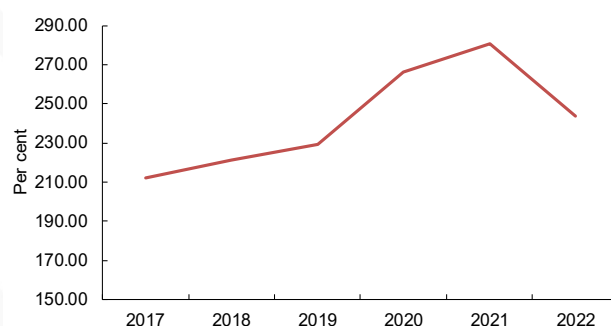
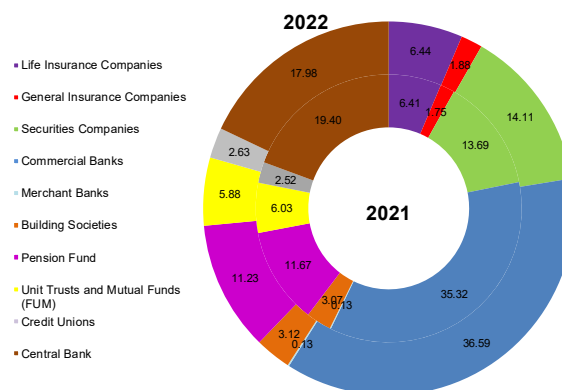


Figure 3.2 Distribution of financial system assets⁶



³ Total Financial Institutions assets includes the assets of commercial banks, building societies, FIA licensees, securities dealers, insurance companies and the Bank of Jamaica.

⁴ The deceleration in DTIs' foreign investments was primarily driven by a slowdown in DTIs' acquisition of foreign government securities, which increased by \$18.5 billion in 2022, relative to an increase of \$32.9 billion in 2021. This slower growth reflected the impact of increased fair value losses on these investments due to rising interest rates.

⁵ The decline in liquid assets was largely due to the impact of fair value losses on asset values over the review period ended 2022.

⁶ Assets are defined as total balance sheet assets.

Figure 3.3 Major components of DTIs' aggregate balance sheet

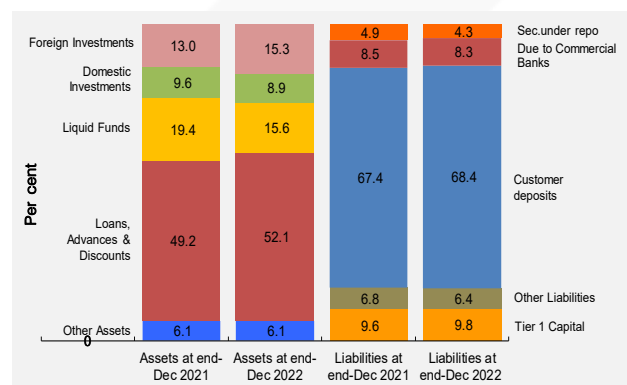
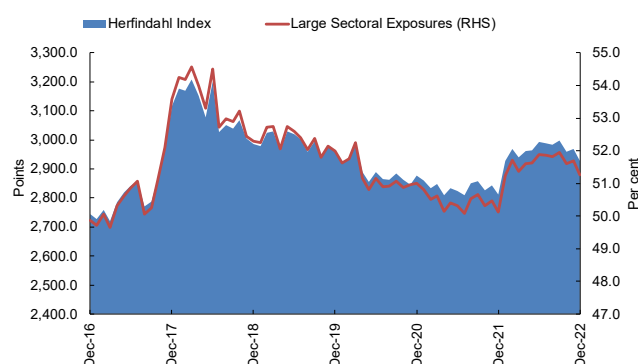


Figure 3.4 Concentration of DTIs' loan portfolio to private sector



In light of BOJ's adjustment to the foreign exchange net open position (FXNOP) limit, DTIs' exposure to foreign exchange risk, as measured by the ratio of DTIs' net open position (NOP) to capital, narrowed over the review period.⁷ The ratio of DTIs' NOP to capital reflected a short position of 10.0 per cent at end-2022, relative a

⁷ Effective 06 December 2021, BOJ revised the the limit on the foreign currency net open positions (FXNOP) of authorized dealers as follows: (1) For short positions, the limit will be 25 per cent of regulatory capital denominated in Jamaica Dollars, or JMD 7.0 billion, whichever is lower. (2) For long positions, the limit will be 15 per cent of regulatory capital denominated in Jamaica Dollars, or JMD 4.5 billion, whichever is lower.

short position of 16.9 per cent at end-2021.⁸ Institutions responded to the BOJ adjustment to the NOP regime by reducing long positions in some cases and by reducing the volume of their USD net sales in the case of others. These actions cumulatively reflected themselves in the aggregate short positions being generally smaller in 2022, relative to end-2021.

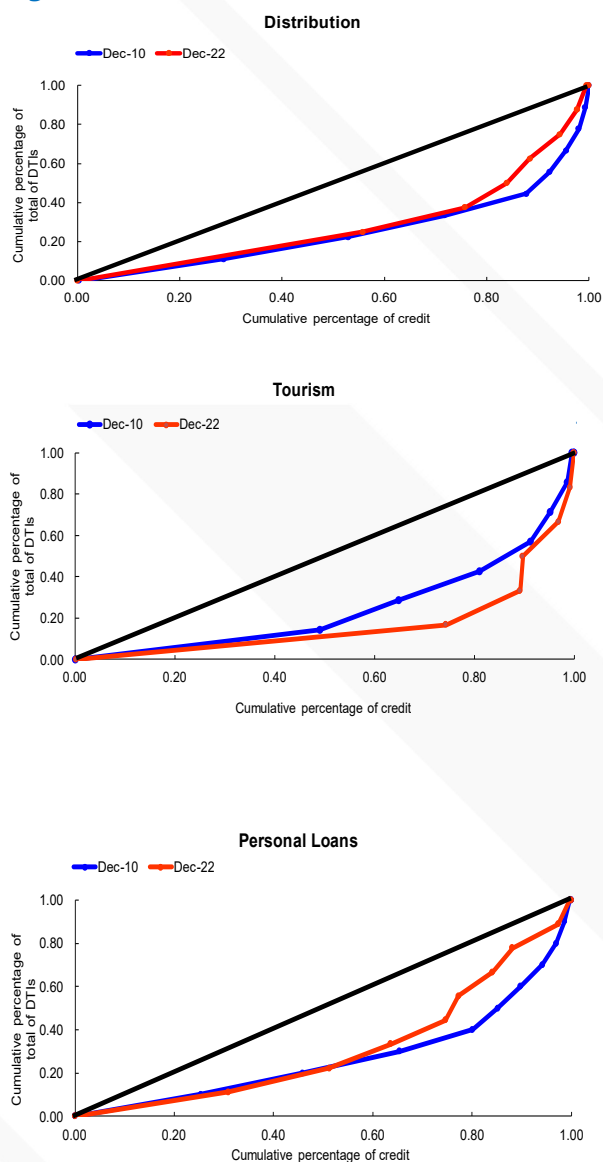
The sectoral concentration of DTIs' credit to the private sector, as measured by the Herfindahl-Hirschman Index (HHI), increased during 2022 (see Figure 3.4).⁹ This was primarily driven by an the *Manufacturing* sector, which experienced the largest growth in credit for the year. Notwithstanding, the domestic *Household* sector (personal loans) remained the largest credit exposure for DTIs, as the share of loans to this sector increased to 51.3 per cent for the review period, from 50.1 per cent for 2021.¹⁰

⁸ The average quarterly NOP to capital for 2022 decreased to a short position of 12.5 per cent relative to a short position of 22.3 per cent for 2021.

⁹ 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. Notably, the HHI increased by 4.2 per cent to 2 928.5 at end-2022, relative to end-2021.

¹⁰ "Household" is used to represent the "Personal Loans" line item which include mortgages to households.

Figure 3.5 Lorenz curve distribution of credit for DTIs



High levels of credit concentration among DTIs persisted for the review period. Three of the eleven DTIs continued to account for over 60.0 per cent of credit to the private sector. Specifically, at end-2022, three DTIs provided 62.5 per cent of the total credit to the private sector, albeit representing a decline of 0.9 percentage point relative to end-2021.¹¹ DTIs'

¹¹ Lorenz curve analysis subsequent to end-2010 is significant given the impact of the global financial crisis and the Jamaica Debt Exchange (JDX) on DTIs' loan portfolio.

concentration of exposures to the selected economic sectors declined over the review period, with the exception of the *Tourism* sector (see **Figure 3.5**).¹² However, most of DTIs' credit was concentrated in *Household, Distribution* and *Loans to Overseas Residents*.

DTIs' asset quality remained relatively unchanged over the review period. The ratio of non-performing loans (NPLs) to total loans, decreased marginally by 0.2 percentage point to 2.5 per cent at end-2022. More specifically, consistent with the recovery in the domestic economy, there was a decrease in the dollar value of NPLs by 2.8 per cent to \$32.1 billion for the review period, relative to an increase of 12.6 per cent for 2021 (see **Figure 3.6**). In this context, the NPL coverage ratio increased to 123.8 per cent at end-2022 from 107.0 per cent at end-2021.¹³ This outturn primarily reflected stronger growth in DTI provisions for the review period, relative to end-2021. In contrast, the loan loss provisioning rate, as measured by the ratio of loan loss provisions to total loans, remained relatively unchanged at 3.2 per cent at end-2022.¹⁴

¹² The Lorenz curves show the distribution of concentration in DTIs' credit portfolio. The further away the curve is from the line of equality (45-degree line), the greater the level of concentration. For instance, the Lorenz curves for the Construction, Distribution and Personal sectors at end-2022 indicate that there was a contraction in the distribution of credit to these sectors, relative to end-2010. Consequently, fewer DTIs are responsible for credit channeled to these sectors.

¹³ 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 IFRS plus prudential provisions for expected losses based on regulatory criteria as a ratio to NPLs.

¹⁴ Loan loss provisions represent the net new allowances that DTIs make in the period against bad or impaired loans. This is done based on their judgement as to the likelihood of losses. Under the International Financial Reporting Standards, it is calculated as provisions of impairment plus prudential provisions as a percentage of total loans.

Figure 3.6 NPLs in the DTI sector

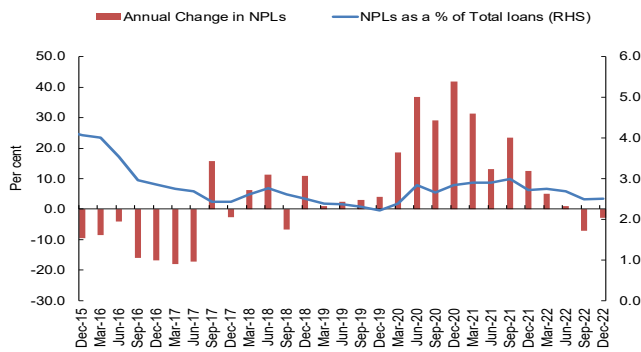
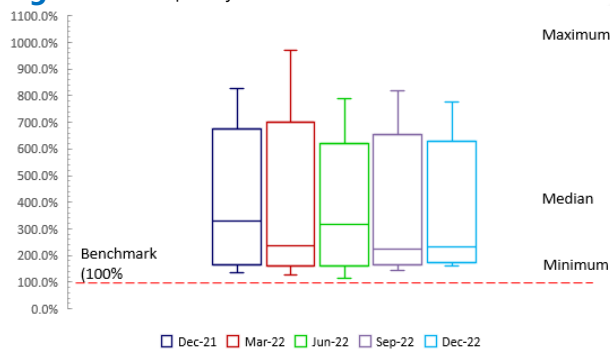


Figure 3.7 Liquidity conditions in the DTI sector



DTIs continued to maintain sufficient liquidity levels in compliance with the LCR requirements as outlined under the Basel III framework.¹⁵ However, the LCR for the sector declined by 51.4 percentage points to 181.7 per cent at end-2022. Similarly, the median LCR for the DTI sector declined to 232.0 per cent at the end of the review period, from 331.2 per cent at end 2021. The reduction in the LCR was primarily driven by stronger growth in DTIs’ net cash outflows relative to the growth in DTIs’ holdings of high-quality liquid assets (HQLA) (see **Figure 3.7**). Growth in DTIs’ HQLAs moderated, mainly due to the impact of fair value losses on asset values for the year ended 2022.

¹⁵ 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 (NCOFs). 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. The LCR is calculated as the ratio of HQLA to NCOFs.

Total liabilities for the DTI sector increased for 2022, with funding from deposits remaining the primary source of asset financing for DTIs. In particular, DTIs’ total deposits (including foreign currency deposits) increased by 8.1 per cent to \$1 675.3 billion. Deposits represented 78.3 per cent of total liabilities at end-2022, compared to 77.0 per cent at end-2021. Of note, the Jamaica Deposit Insurance Corporation, established in 1998, manages the Deposit Insurance Scheme to protect depositors and contribute to the confidence and stability in Jamaica’s financial system (see **Box 4: Jamaica Deposit Insurance Corporation – Deposit Insurance and You**). Concurrently, the loans to deposit ratio, which is a measure of financial intermediation, increased by 3.3 percentage points to 76.3 per cent at end-2022. This outturn also reflected an increase in DTIs’ exposure to liquidity risk.

Figure 3.8 Distribution of capital adequacy ratio

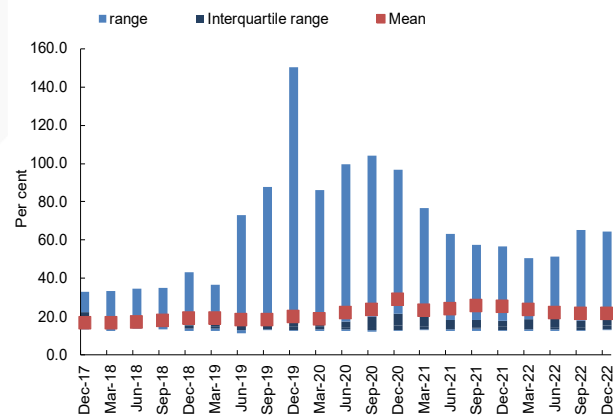


Figure 3.9 Decomposition of DTIs' ROE¹⁶

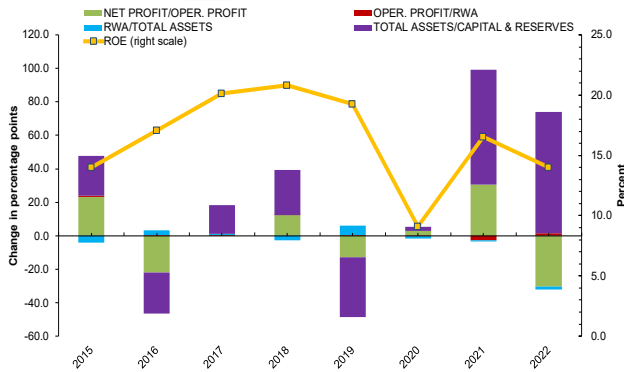


Figure 3.10 Distribution of DTIs' ROA

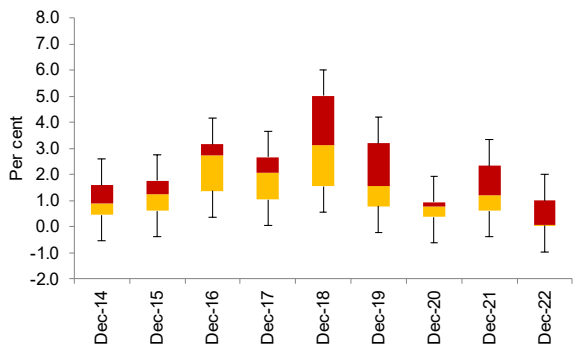
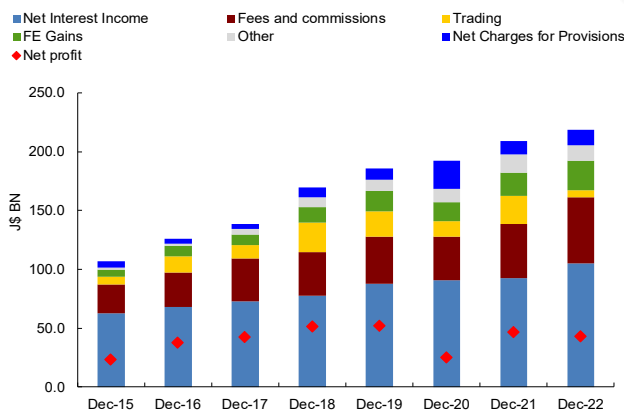


Figure 3.11 DTIs' sources of revenue, total provisions and net profit



¹⁶ 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.

All DTIs maintained strong capital positions during the review period, in accordance with regulatory capital requirements. The average CAR for DTIs increased to 23.0 per cent as at end-2022, from 21.5 per cent at end-2021, well above the regulatory benchmark of 10.0 per cent (see Figure 3.8). At the same time, the quality of DTIs' regulatory capital, as measured by the ratio of Tier 1 capital to total regulatory capital, improved by 0.8 percentage point to 95.3 per cent over the review period, relative to 94.5 per cent for 2021. In contrast, the ratio of retained earnings to capital, declined by 2.4 percentage points to 27.0 per cent at end-2022, from 29.4 per cent at end-2021. Notwithstanding, the ratio of Tier 1 capital to risk weighted assets was relatively unchanged at 13.8 per cent at end-2022, relative to end-2021.

3.3.2 Deposit-taking institutions' earnings and profitability

DTIs' profitability moderated over the review year, in light of elevated operating expenses. In particular, DTIs' net profits declined by 5.8 per cent to \$44.2 billion for 2022, from \$47.0 billion for the previous year. DTIs' operating income increased by 6.6 per cent to \$233.0 billion, from \$218.6 billion in 2021. Operating expenses however grew by 13.6 per cent to \$198.0 billion for the year from \$174.3 billion for the previous year.¹⁷ Consequently, operating profits declined by 20.6 per cent to \$34.9 billion for the review period, from \$44.0 billion for 2021. In addition, DTIs' provisions for loans and security losses increased by 11.1 per cent to \$12.9 billion for 2022, from \$11.6 billion for 2021.

A disaggregation of DTIs' net profits indicated that the deterioration in profit performance over the review period was influenced by a decline in non-interest income of 4.7 per cent (\$100.4 billion), compared to growth of 35.2 per cent

¹⁷ The growth in DTIs' operating expenses was mainly due to a 33.3 per cent increase in interest expenses for 2022, relative to an increase of 8.7 per cent for the previous period. A decomposition showed that the increase in operating expenses largely reflected an increase in interest payments on time deposits, which grew by 43.1 per cent at end-2022.

(\$105.3 billion) for the prior year. The reduction in non-interest income was driven by a 73.0 per cent (\$17.6 billion) contraction in *Dividends & Trading Profits on Securities*. Meanwhile, growth in operating expenses reflected a 32.7 per cent (\$6.7 billion) increase in interest expenses in 2022, relative to a growth of 9.2 per cent (\$1.6 billion) in 2021. The outturn for 2022 was mainly driven by a 38.4 per cent (\$3.9 billion) expansion in interest costs accrued on *Deposits*. In particular, the increase in interest costs on deposits reflected a rise in interest rates on time deposits during 2022. This increase was consistent with the tightening in monetary policy during the year.

Against the backdrop of declining nominal profits, profitability indicators for the DTI sector deteriorated. More specifically, the sector's return on equity (ROE) declined by 2.3 percentage points to 15.0 per cent for 2022. A decomposition of the ROE showed that this outturn was largely due to a significant decline in DTIs' leverage ratio. The total assets to equity ratio showed that DTIs' primary means of asset financing over the review period, was through the issuing of equity. In addition, the ROE decomposition showed increases in the net profit margin and risk-weighted assets density ratios. These results largely reflected a sharper decline in operating profit, relative to net profit, as well as stronger growth in DTIs' risk-weighted assets (see **Figure 3.9**).

Similarly, DTIs' return on assets (ROA) declined to 1.9 per cent for 2022, from 2.3 per cent for the previous year (see **Figure 3.10**). The decline in the ROA was primarily driven by reductions in *Trading and Other Income*. In contrast, DTIs' *Net Charges for Provisions, Fees and Commissions* and *Foreign Exchange Gains* increased for 2022 (see **Figure 3.11**). At the same time, DTIs' interest expenses grew by 33.3 per cent, due to increases in expenses on time deposits and borrowings from the Bank of Jamaica. In addition, DTIs' net interest margin, which is measured by the ratio of net interest income to average earning assets, increased marginally to 6.1 per cent for the review period, from 6.0 per cent for 2021.

3.4 Non-deposit-taking financial institutions

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

Non-deposit-taking financial institutions recorded moderate growth in total assets, consistent with the continuing recovery in the domestic economy. Specifically, the asset base of the NDTFI sector increased by 3.5 per cent to \$2 071.3 billion as at end-September 2022, but was well below growth of 9.7 per cent for the year ended-September 2021.¹⁸ The weaker performance in asset growth was largely due to the impact of falling assets prices which resulted in fair value losses for financial institutions. The assets of life insurance, general insurance and securities dealers grew by 3.6 per cent, 10.6 per cent and 6.3 per cent, respectively, for the year-ended September 2022.¹⁹ However, the asset base of pension funds declined by 0.8 per cent.

Securities dealers recorded the highest market share within the NDTFI sector. For the year ended-September 2022, the core securities dealers continued to reflect the highest market share of 41.9 per cent of NDTFIs' total assets compared to 40.8 per cent at end-September 2021.²⁰ Pension funds accounted for 33.4 per cent of NDTFIs' total assets relative to 34.8 per cent at end-September 2021. Life insurance and general insurance companies' proportions of NDTFI's total assets were 19.1 per cent and 5.6 per cent, respectively, at end-September 2022 which reflected increases relative to end-September 2021.

¹⁸ NDTFIs consist of securities dealers, pension funds, CIS, life insurance and general insurance companies.

¹⁹ CIS includes pooled funds and other assets, where other assets consist of derivatives, interest receivables, other receivables and other investments such as real estate.

²⁰ Core securities dealers refers to the twenty-nine listed securities dealers and data is available as at end-September 2022.

Figure 3.12 Major components of securities dealers' funds under management (FUM) assets

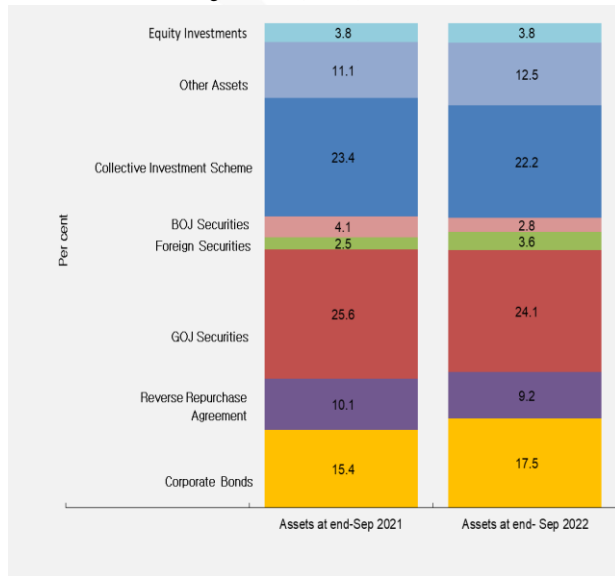


Figure 3.13 Securities dealers' regulatory capital, capital adequacy and primary ratios

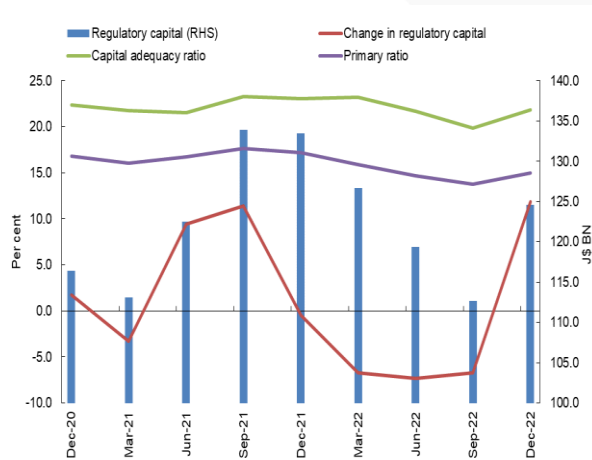
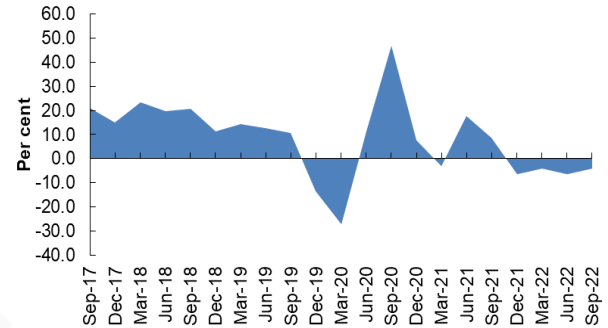


Figure 3.14 Foreign Currency Net Open Position (NOP) to Capital (exposure to foreign exchange risk)



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 2.6 per cent to \$1 390.5 billion at end-September 2022 relative to \$1 355.0 billion at end-September 2021 (see **Figure 3.12**). This growth was mainly influenced by increases in the value of *Short-term Deposits* and *Foreign Government Securities* by 55.5 per cent and 45.8 per cent to \$29.5 million and \$49.4 million, respectively. The asset base of the core securities dealers was \$868.2 billion at end-September 2022, relative to \$817.0 billion at end-September 2021.

The CAR of the ten largest securities dealers decreased marginally, by 1.2 percentage points to 21.9 per cent, but remained well above the prudential minimum of 10.0 per cent.²¹ These institutions' regulatory capital and risk-weighted assets declined by 6.7 per cent and 1.5 per cent to \$124.5 billion and \$57.0 billion, respectively,

²¹ For the remainder of the chapter, the analysis is based on a representative sample of ten securities dealers that comprise 94.4 per cent of the sector.

at end-2022, relative to end-2021(see **Figure 3.13**).²²

Securities dealers’ exposure to foreign exchange risk decreased significantly for the review period. In particular, the NOP to capital ratio of the sub-sector declined by 12.7 percentage points to a short position of 4.2 per cent at end-September 2022 (see **Figure 3.14**). This outturn was mainly due to a sharp decrease of 141.5 per cent in the dollar amount of their long NOP, as a result of reductions in asset prices due to monetary tightening globally.

Profitability indicators for securities dealers declined over the review period. For the year ended September 2022, the securities dealers’ ROA and ROE decreased to 0.9 per cent and 5.9 per cent from 2.3 per cent and 12.4 per cent, respectively, for the year ended 2021 (see **Figure 3.15**). Leverage, as measured by the total liabilities to total assets ratio, increased to 86.4 per cent as at end-2022, from 84.5 per cent at end-2021.

3.4.3 Insurance companies

The insurance sector’s asset base increased during 2022. Specifically, the sector’s asset base grew by 3.2 per cent to \$516.0 billion at end-2022. Life insurance companies accounted for 78.1 per cent of the insurance sector’s total assets, relative to 79.6 per cent at end-2021. Within the life insurance sub-sector, the assets of the two largest companies accounted for 82.5 per cent of the sub-sector’s asset base, relative to 83.6 per cent at end-2021. As it relates to general insurance companies, the two largest institutions accounted for approximately 38.2 per cent of the sub-sector’s asset base, relative to 37.7 per cent at end-2021.

The life and general insurance sub-sectors both recorded increases in their asset bases for 2022. More specifically, the asset base of life insurance and general insurance companies

increased by 1.4 per cent and 10.6 per cent, respectively, to \$403.1 billion and \$112.9 billion at end-2022 compared to asset growth of 8.2 per cent and 11.1 per cent, respectively, for 2021. The deceleration in asset growth of life insurance companies was largely influenced by a reduction in *Total Fixed Term Investments*, particularly, investments in GOJ bonds. For general insurance companies, the slowed growth in the asset base

Figure 3.15 Securities Dealers’ Return on Asset (ROA) and Return on Equities (ROE)

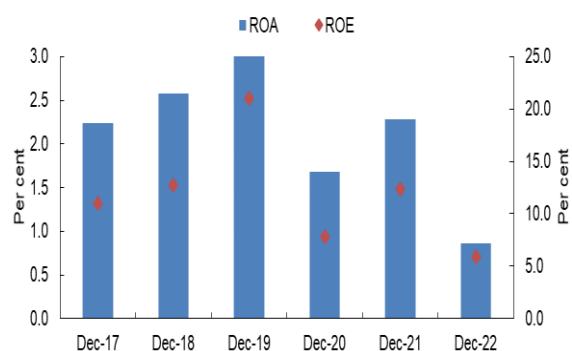
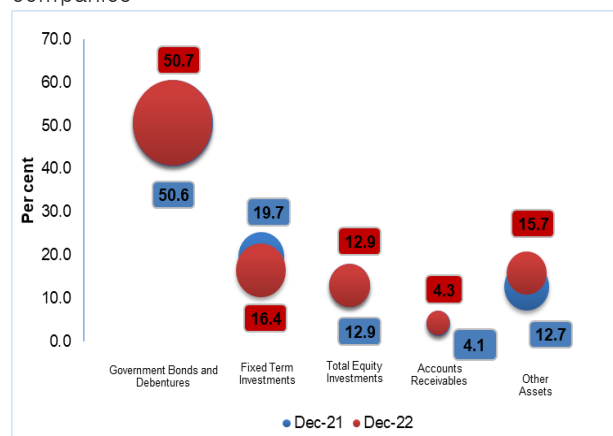


Figure 3.16 Distribution of assets of life insurance companies



²² Capital adequacy ratio is measured as the ratio of regulatory capital to risk-weighted assets.

Figure 3.17 Distribution of assets of general insurance companies

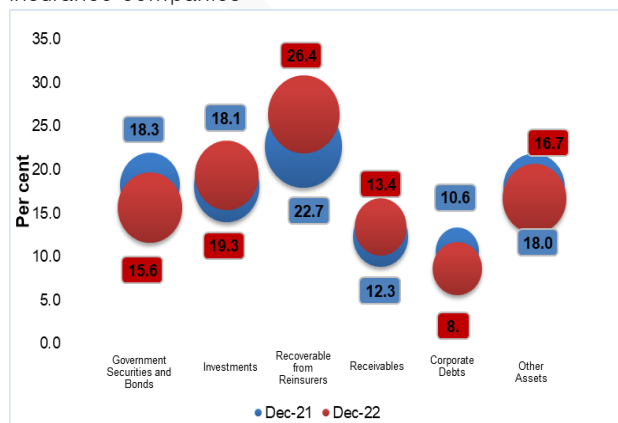


Figure 3.18 Premium income and growth of insurance sector

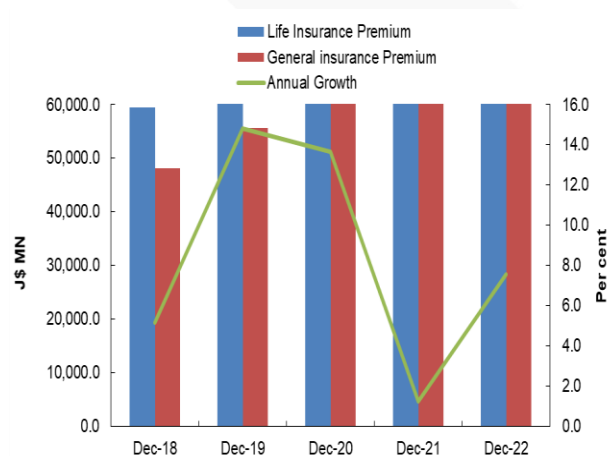


Figure 3.19 Earned premium, claims incurred and claims ratio of insurance sector

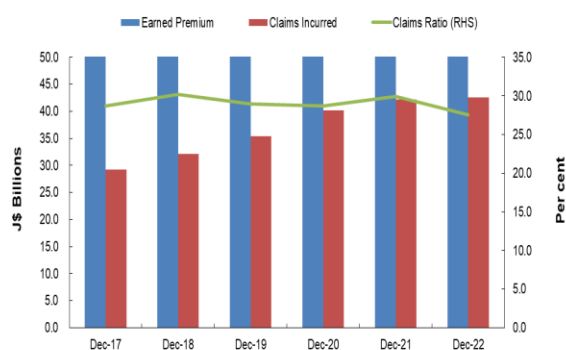
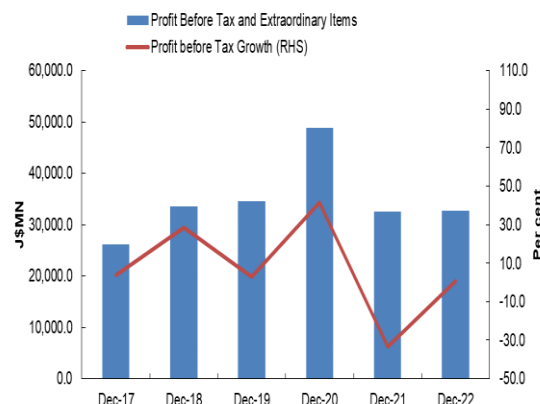


Figure 3.20 Growth in profit before tax for insurance companies



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. Specifically, *Government securities* accounted for 50.7 per cent of the life insurance sub-sector's total assets at end-2022, relative to 50.6 per cent at end-2021 (see **Figures 3.16**). For general insurance companies, *Recoverable from Reinsurers* accounted for the largest share (26.4 per cent) of total assets while *Investments* constituted the second highest share of the asset base accounting for 19.3 per cent at end-2022 (see **Figure 3.17**).

Insurance penetration remained low during the review period. In particular, insurance penetration, as measured by the ratio of gross premium to GDP, decreased to 3.1 per cent and 2.8 per cent for the life and general insurance companies, respectively, at end-2022, from 3.5 per cent and 3.0 per cent, at end-2021.^{23,24} Of note, total gross premiums for the overall insurance sector increased by 7.6 per cent to \$152.9 billion at end-2022 (see **Figure 3.18**). The insurance density, measured as the ratio of average gross premiums for the life and general

²³ Insurance penetration measures the importance of insurance activity relative to the size of the economy

²⁴ 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.

insurance sub-sectors to the country's total population size, remained at 23 336 at end-December 2022.

The claims ratio for general insurance companies fell during the review period. The ratio of claims incurred to premiums earned for the general insurance sector decreased by 2.3 percentage points to 27.6 per cent for 2022 (see **Figure 3.19**).^{25,26} This outturn was influenced by faster growth in earned premiums relative to claims incurred.

The insurance sector's profitability increased marginally over the review period. In particular, the sector's profit before tax increased by 0.7 per cent to \$32.8 billion for 2022 (see **Figure 3.20**).²⁷ There was an increase of 2.1 per cent in the total income earned for 2022, relative to a growth of 9.7 per cent for the prior year (see **Figure 3.21**). This growth in total income was largely influenced by an increase of 7.6 per cent in gross written premiums.

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) prudential benchmark of 150.0 per cent. At end-2022, the MCCSR of the sub-sector was 270.7 per cent.²⁸ Similarly, the general insurance sub-sector's Minimum Capital Test (MCT) remained above the prudential benchmark of 175.0 per cent. At the close of the review year, the MCT ratio of the sub-sector was 296.7 per cent.²⁹ Additionally, the average

solvency ratios for the life and general insurance sectors were 269.2 per cent and 131.4 per cent, respectively, as at end-2022 (see **Figure 3.22**).³⁰ Furthermore, there was a marginal increase in the ratio of capital to total assets to 23.0 per cent at end-2022, from 19.8 per cent at end-2021 (see **Figure 3.23**).

Furthermore, there was a marginal increase of 0.1 percentage point in the retention rate for the life insurance sub-sector to 98.5 per cent at end-2022.³¹ However, the general insurance companies' retention rate decreased by 20.4 percentage points to 31.9 per cent at end-2022 (see **Figures 3.24** and **3.25**).³²

Figure 3.21 Total income (GWP + investment income) of the insurance sector



²⁵ 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.

²⁶ The breakdown of data required for the calculation of this ratio is not available for life insurance companies.

²⁷ Annual profit before tax was calculated using the four quarter moving sum of these profits for 2022 for both insurance sub-sectors.

²⁸ The MCCSR measures an insurer's capital adequacy to meet its obligations to policyholders. It is calculated as the ratio of actual to required capital.

²⁹ The MCT Prescribed Capital Required ("PCR") assesses the riskiness of assets and policy liabilities and compares capital available to capital required. The MCT's benchmark was initially at 250.0 per cent in 2019 but was adjusted to 175.0 per cent effective December 2022.

³⁰ Solvency ratio examines a firm's ability to meet its long-term debts and obligations. It is the summation of capital and surplus, reserves and investments divided by total liabilities.

³¹ The retention rate is measured by the ratio of net premium written to gross direct premium written.

³² 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 3.22 Distribution of the solvency ratio of insurance companies

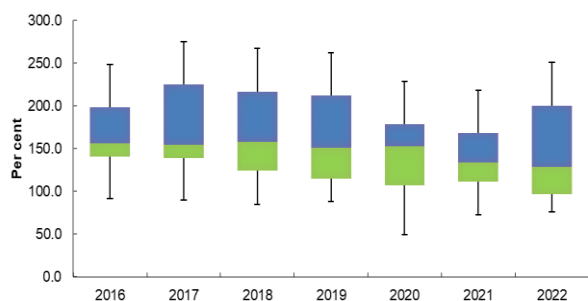


Figure 3.25 Retention rate general insurance companies

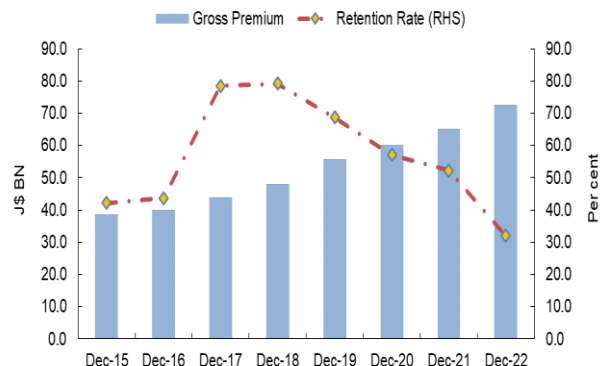


Figure 3.23 Capitalization of the insurance sector

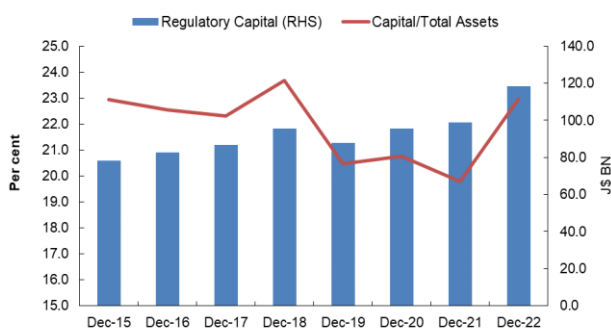
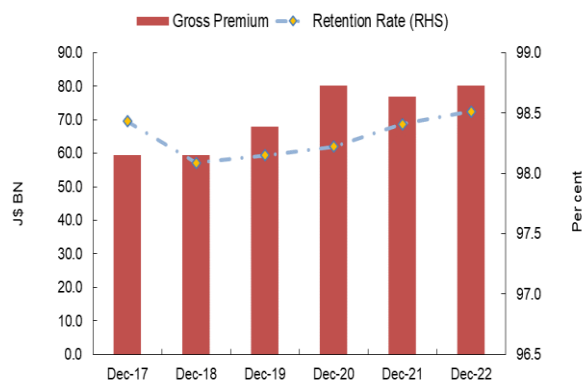


Figure 3.24 Retention rate of life insurance companies



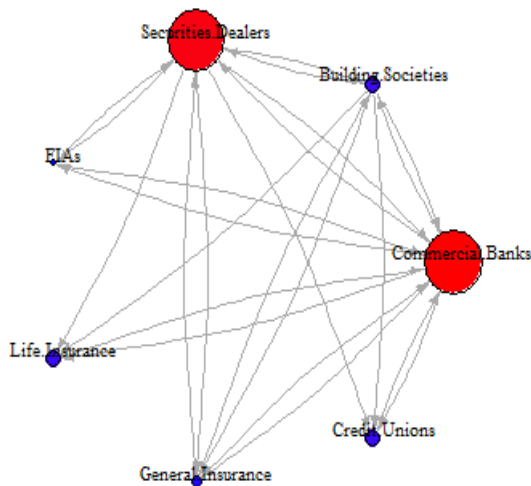
3.6 Interlinkages in the Financial System

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 relationships, as reflected in the number and size of the funding transactions (see **Figure 3.26**). This indicated that the financial system's susceptibility to direct and indirect interconnectedness risks remained high. At end-2022, five commercial banks and three securities dealers were the most central entities in the interbank funding network, which was similar to the outturn for end-2021. These eight institutions, included two pairs of financial groups (see **Figure 3.27**). Notably, there was an increase in participation by credit unions in the interbank market at end-2022, relative to end-2021.

DTIs' and securities dealers' funding transactions with each other increased during the year. This was reflected in the number of reciprocated funding relationships within the DTI and securities dealers interbank funding network at end-2022. More specifically, reciprocity was recorded at 54.7 per cent, a 4.0 percentage point increase

relative to end-2021.³³ Concurrently, density within the same network increased by 1.8 percentage points to 32.5 per cent at end-2022.³⁴ The systemic risk score (SRS) was 5.8 at end-2022, relative to 4.9 at the end of the previous year. Based on the outturn of the SRS, there was increased risks associated with the interbank funding network. This was due to more concentration of funding transactions in a few key financial institutions. In addition, there was an increase in the number of relationships within the interbank funding market. Further, domestic financial institutions continued to rely heavily on foreign entities for funding, particularly foreign group affiliates and correspondent banks. Against this background, the strong relationships between domestic and foreign group affiliates continued to be of concern. Furthermore, the concentration of interbank transactions in a few institutions remained as a potential source of risk within the financial system funding network.

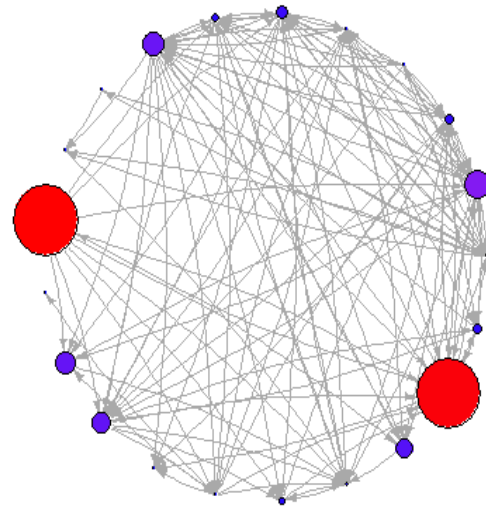
Figure 3.26 Network of gross credit exposures within the financial system at end-2022



³³ 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.

³⁴ Density measures the proportion of actual funding relationships in the system against the total number of potential funding relationships in the network.

Figure 3.27 Network of gross credit exposures between DTIs and SDs at end-2022



3.7 Payment system developments

3.7.1 Key developments in large value payments^{35,36}

Market activity in the JamClear®-RTGS generally improved for 2022. These results largely signalled a recovery to pre-COVID-19 levels. In particular, transaction values within the JamClear®-RTGS system increased by 63.5 per cent to \$34.5 trillion for 2022. The system turnover was 13.2 times GDP for the year, compared to 9.7 times GDP for the preceding year.^{37,38} Average monthly transaction values increased by 61.1 per cent to \$2.9 trillion for 2022, representing an average monthly turnover of 4.4 times monthly GDP.^{39,40}

³⁵ JamClear®-RTGS statistics include both JMD and USD denominated transactions.

³⁶ 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) and (Limited), Accountant General Department (AGD), Central Bank Digital Currency System and BOJ.

³⁷ Turnover is measured as the ratio of total transaction value as a percentage of GDP.

³⁸ System turnover (pre-Covid-19) was 6.1 times GDP for 2019

³⁹ The monthly GDP was derived based on the interpolation of quarterly nominal GDP using the quadratic match sum method.

JamClear®-RTGS transaction volumes grew by 17.8 per cent to 3.3 million transactions for 2022. Additionally, average monthly transaction volumes increased by 17.7 per cent to 278,613 transactions for 2022 (see Figure 3.28). Customer credit transfers (single and multiple) accounted for approximately 98.6 per cent of total transaction volumes, relative to 97.1 per cent for 2021.⁴¹ This performance was largely attributed to an increase in participant payments on behalf of household and corporate clients, which has been partly influenced by the onset of the COVID-19 pandemic.

For 2022, total transaction value in the JamClear®-CSD system increased by 69.4 per cent to \$21.9 trillion, which represented a system turnover of 6.7 times GDP.⁴² This improved performance was also reflected in an increase in the average monthly value of JamClear®-CSD transactions to \$1.8 trillion, for 2022, an average monthly turnover of 2.8 times monthly GDP. Additionally, overall volumes increased by 48.6 per cent to 83 931 transactions, for 2022, reflecting growth in securities settlement transactions.

Figure 3.28 JamClear®-RTGS monthly transaction values and volumes

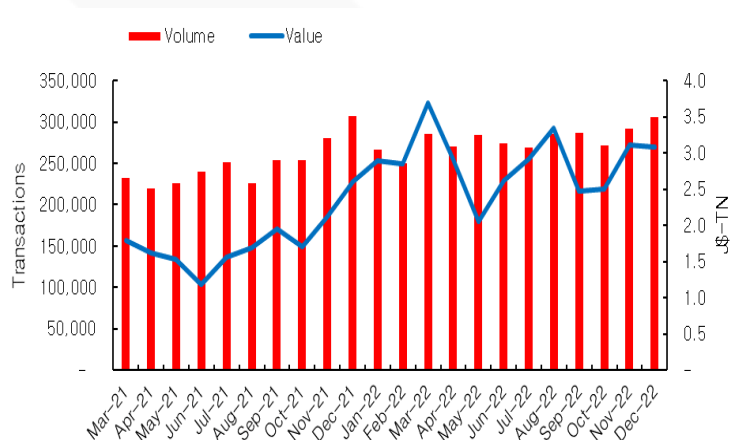


Figure 3.29 Automated Clearing House monthly transaction values and volumes

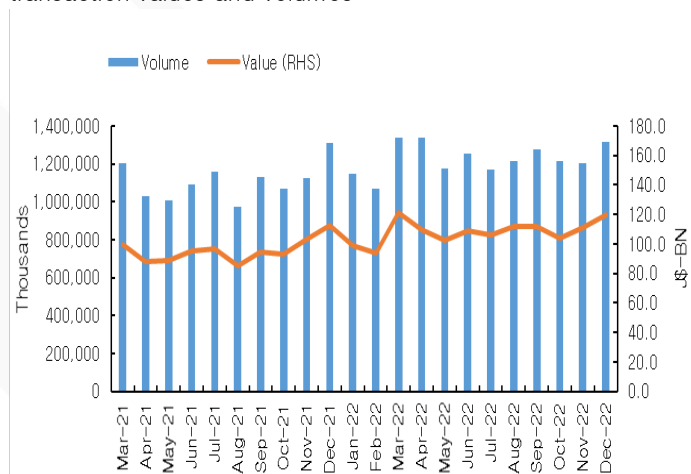
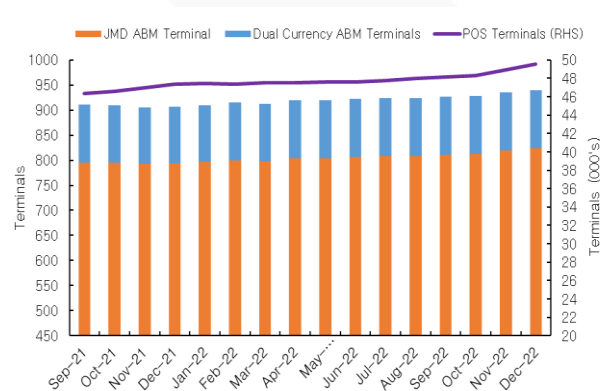


Figure 3.30 Number of active POS and ABM Terminals

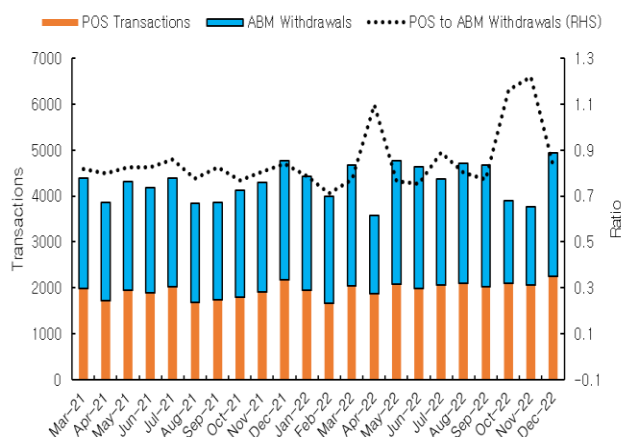


⁴⁰ JamClear®-RTGS overall value, as computed by Financial Stability Department, does not include general ledger (GL), Financial Institution Debit (FID) and Financial Institution Credit (FIC). These components were excluded in order to better capture RTGS values primarily related participant activity within the payment system

⁴¹ 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.

⁴² JamClear®-CSD statistics include both JMD and USD denominated transactions, and provides the authentic record of ownership of BOJ and GOJ securities.

Figure 3.31 POS transactions to ABM withdrawals



3.7.2 Key developments in retail payments⁴³

Retail payments activity expand for 2022.⁴⁴ Of note, average monthly transaction values grew to \$178 035 per person for 2022, from \$153 637 per person for the previous year. Concurrently, average monthly transaction volumes increased to 5.4 transactions per person for 2022 from 5.0 transactions per person for the previous year. Despite an uptick in the use of credit cards, debit cards continued to be the most utilized retail payment instrument and accounted for 58.4 per cent of the total number of retail payment transactions. This was driven by a 10.7 per cent increase in debit cards in circulation for 2022.⁴⁵ Despite an increase in online transactions, there was a notable decline in bank fraud related losses during 2022 (see **Box 5: Bank Fraud and the Implication for Money Laundering Risks in Jamaica**).

The value of cheques as a percentage of the total value of retail transactions continued to decline for the review period. The value of cheques as a

⁴³ All retail payments figure except cash data are per 1000 persons of working age (age 15 and older).

⁴⁴ Retail payments include cheque payments, debit and credit card payments and other electronic forms of payment.

⁴⁵ At the same time, debit and credit card fraud losses have declined over the period 2018 to 2022 (see Box 5: Bank Fraud and the Implication for Money Laundering Risks in Jamaica).

percentage of total transactions decreased to 20.9 per cent for 2022 from 24.3 per cent for 2021, driven by the sustained migration to electronic forms of payments from paper-based means of payments. There were increases of 2.7 per cent and 4.0 per cent in the value and volumes, respectively, of other electronic payments.⁴⁶

The Bank successfully began the Roll-Out of JAM-DEX in 2022 following the end of the pilot phase in 2021.⁴⁷ During 2022, two deposit-taking institutions operationalised their digital payment wallet platforms, which will be used to facilitate transactions involving JAM-DEX.

Automated Clearing House (ACH)⁴⁸

Activity within the ACH system grew over the review period, relative to the previous year. This performance was consistent with the BOJ's goal of reducing net settlement risk. Specifically, the total value of transactions processed by the ACH increased by 15.9 per cent to \$1.3 trillion for 2022.^{49,50} Of the total ACH transaction value for 2022, the share of cheques processed declined to 44.1 per cent or \$574.1 billion, relative to 50.3 per cent the previous year. Notwithstanding, the average monthly value of cheques increased to \$154 800 per transaction from \$144 430 per transaction for 2021 (see **Figure 3.29**). Additionally, total volume of ACH transactions increased to 14.7 million for 2022, from 12.9 million for 2021. This was primarily due to increases in direct credit and debit transactions as the number of processed cheques fell by 5.2 per cent for the review period.

⁴⁶ Other electronic payments include any transaction conducted without a card such as online transfers.

⁴⁷ JAM-DEX is a digital form of central bank-issued currency and is intended to be a complement to cash.

⁴⁸ 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.

⁴⁹ This performance was driven by 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.

⁵⁰ Commercial banks faced a charge of \$5 000.0 per transaction greater than and equal to the targeted ACH threshold of \$1.0 million.

Electronic payment channels offered by commercial banks

Commercial banks continued their effort to reduce in-branch transactions in 2022. This was reflected in an increase in the number of commercial banks' active ABM and POS terminals for the review year. Specifically, the number of active POS terminals grew by 4.6 per cent to 49 532, while the number of active ABM terminals increased by 3.9 per cent to 824 (see **Figure 3.30**). For 2022, the average monthly number of ABM withdrawals increased by 2.2 per cent to 2 357 transactions per 1 000 persons. Additionally, the average monthly POS transactions grew by 7.1 per cent to 2 017 transactions per 1 000 persons relative to the previous year.

The ratio of POS transactions to ABM withdrawals decreased marginally to 0.83 at end-2022 from 0.84 at end-2021. This relative stability reflected customers' continued preference for using the debit transactions channel (see **Figure 3.31**).

Figure 3.32 Large-value system concentration risk index

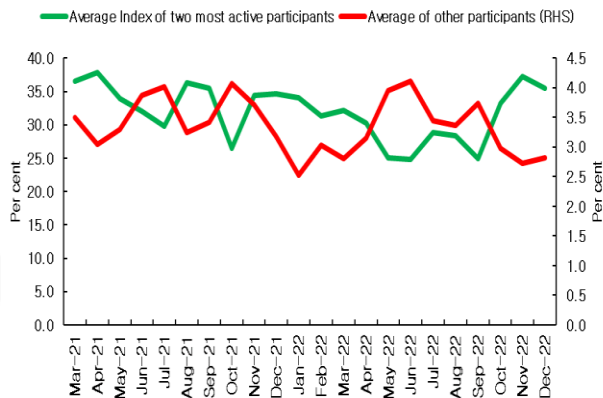


Figure 3.33 Herfindahl index of JamClear-RTGS payment activity

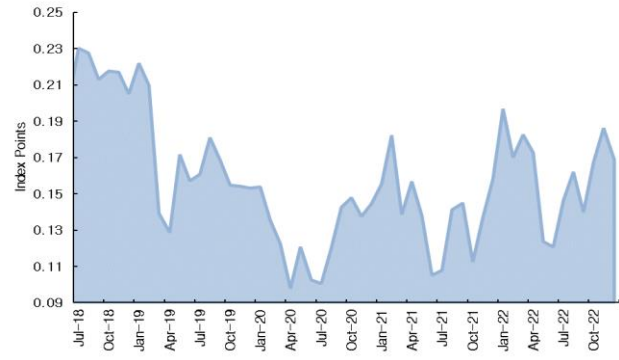


Figure 3.34 BOJ intraday repo facility monthly transaction value

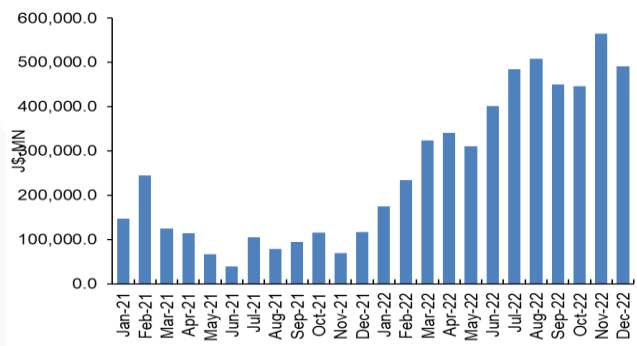
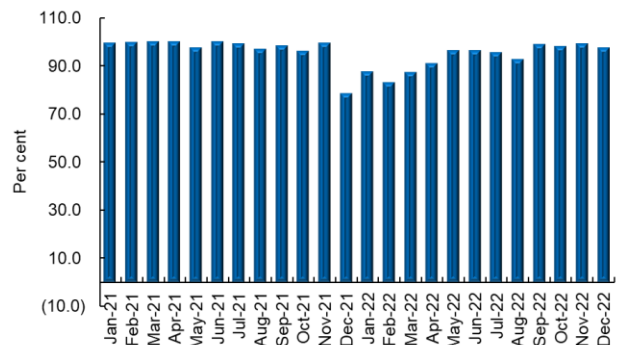


Figure 3.35 Share of BOJ intraday repos (values) demanded by the top four subscribers during 2021 & 2022



3.8 Concentration risk in the Large-value system⁵¹

The degree of concentration risk, as measured by the large system concentration risk index, decreased in 2022 relative to the previous year.⁵²

Notwithstanding, the two most active participants continued to dominate the share of payment activity, with both accounting for an average monthly share of 30.5 per cent of payment activity during 2022 relative to 34.6 per cent for 2021. Concurrently, the monthly average share of activity for other participants within the system declined to 3.2 per cent at end-2022 from 3.4 per cent at end-2021 (see **Figure 3.32**). This performance was driven by the removal of the waiver fee for beneficiary payments.⁵³

During 2022, the level of liquidity concentration within the JamClear®-RTGS system, as measured by the Herfindahl index, was unchanged relative to the previous year. In particular, the index averaged 0.2 for 2022, similar to 2021. This performance reflected the system's continued high levels of concentration (see **Figure 3.33**).⁵⁴ The improvement in the levels of concentration as indicated by the stability in the HHI and the lower LSCRI indicated a slight tempering of potential systemic risk within the Jamaican payment system. Nonetheless, the monitoring of systemically important financial institutions (SIFIs), especially

within the JamClear®-RTGS, should be maintained.

3.8.1 Liquidity risk Usage of BOJ's intraday liquidity facility⁵⁵

For the review year, both the average monthly and overall value of transactions within BOJ's intraday liquidity facility reflected noted increases (see **Figure 3.34**). This performance highlighted financial institutions' increased usage of the facility to reduce their exposure to liquidity risk via intraday and other repurchase agreement operations. The increased usage may also have been influenced by tighter monetary policy and financial market conditions during the year. Of note, for 2022, the average monthly and overall value of BOJ's intraday liquidity facility usage increased to \$393.9 billion and \$4.7 trillion, respectively, relative to \$109.5 billion and \$1.3 trillion for 2021. Similarly, the number of intraday liquidity transactions increased to 4 067 for 2022, relative to 1 092 for the previous review period. As it relates to the BOJ intra-day repo facility, in 2022, the top four institutions, on average, accounted for more than 90.0 per cent of the demand for funds (see **Figure 3.35**).

⁵¹ This measure is computed based on payments made and received by each bank as a share of overall payments for the system.

⁵² The LSCRI records the share of payment activity between:
a) the two most active participants in relation to all other participants; and
b) 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.

⁵³ On 2 May 2022, the waiver on these participant fees was removed and the revised JamClear® transaction fees applicable to customer payments and all other JamClear® transaction types, which were approved by the National Payments System Council (NPSC) in May 2020.

⁵⁴ Values of 0.2 and above indicate that the system is concentrated, while values below suggest that the system is competitive.

⁵⁵ 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.

BOX 3: **Financial Deepening**

During 2022, Bank of Jamaica continued to lead the advancement of Jamaica's Financial Deepening Agenda, in collaboration with key partners such as the Financial Services Commission (FSC) and the Jamaica Stock Exchange (JSE). These entities are members of the Financial Deepening Implementation Group, which was established in 2018 and tasked with overseeing and executing a programme of capital market deepening. During 2022, work continued on initiatives aimed at increasing transparency and price discovery in markets. In addition, further work was done to advance reforms that would expand the use of independent credit ratings.

Increasing Transparency and Price Discovery in Markets

BOJ continued to engage the JSE, FSC and the Ministry of Finance and the Public Service to implement projects and initiatives geared at improving the ecosystem for issuing, listing and trading of securities. In this context, during 2022, the FSC finalized consultations with the market regarding improving the ecosystem for issuing additional securities. Additionally, new guidelines were issued by the FSC that will facilitate an efficient registration requirement for listed companies that want to issue additional securities publicly. The new guidelines became effective on 15 August 2022. These guidelines are expected to result in a decline in the time taken by issuers to prepare documents

for registration as well as to reduce the processing time for applications.

The project to facilitate the trading of GOJ local securities on the JSE trading platform also progressed during 2022. The technical requirements to facilitate the interface of the JSE trading platform and the JamClear®-CSD were completed by BOJ, JSE and the platform providers¹. Following this important step, the project cost was finalized and the procurement processes began. This initiative is an important element of continued market development in Jamaica and is expected to enhance efficiency, transparency, promote market liquidity and enable greater information sharing.

Standardizing Asset Quality for Sound investments

The drive to standardize asset quality was centred on establishing a programme to expand the independent credit ratings of issuers of fixed-income securities. This programme was reinforced through different regulatory reforms which should incentivize the use of credit ratings. During 2022, BOJ and FSC continued to advance regulatory reforms which, when implemented, would create an incentive for the use of credit ratings. In March 2022, BOJ issued the Standard of Sound Practice on the Basel III Capital Adequacy Framework, signalling the reform's implementation. This reform should incentivize deposit-taking institutions to take advantage of the lower capital charges associated with better external ratings. The implementation of Liquidity Coverage Ratio and capital reform for DTIs should facilitate increased demand for and focus on rated securities by regulated entities. During the year, FSC advanced work on liquidity reform for the NDTFI's sector.

¹ The interface of the JSE trading platform with the JamClear -CSD is required to allow for the trading of GOJ domestic securities on the JSE platform.

and is expected to be finalized following further internal and external reviews and consultations.

Efforts to fill gaps in the credit rating infrastructure, particularly with respect to unsophisticated retail investors, continued in 2022. In this regard, the FSC finalized proposed amendments which were subsequently incorporated in a wider ongoing consultation for additional amendments to the Guidelines for Issuers of Securities. The FSC will issue a market advisory following the completion of the ongoing consultation process. It is anticipated that the amendments will be implemented in 2023.

Developing a New Package of Reforms to Deepen Jamaica's Capital Market

In 2022, BOJ commenced the process of identifying a new set of reforms and initiatives to further develop Jamaica's capital market in the short- to medium term. The BOJ led a series of consultation meetings with public and private sector stakeholders to ascertain the remaining gaps, near-term opportunities and transformative initiatives that would further deepen the capital market. This stakeholder engagement process was complemented with additional research, in order to further incorporate global best practices and knowledge regarding market development.

For 2023, the Financial Deepening 2.0 agenda will deliberately shift focus from the initial reforms which sought to improve the ecosystem and will pursue an explicit agenda to accelerate financial intermediation. These market-deepening reforms will also seek to encourage the efficiency of the monetary policy transmission in the financial sector. Additionally, the agenda will incorporate appropriate measures to anticipate and mitigate the associated risk of market development. A draft framework document of the proposed initiatives was prepared during the final quarter of 2022

BOX 4: Jamaica Deposit Insurance Corporation – Deposit Insurance and You

What is Deposit Insurance?

Deposit insurance is a key component of a country's financial system safety net that contributes to the promotion and maintenance of financial system stability. Deposit insurance assures depositors access to their insured deposits in full or in part, if their bank fails. This reduces the incentive for depositors to cause runs on banks due to real or perceived bank failures or financial system crises. Jamaica is among the over 145 jurisdictions around the world that have established some form of an explicit deposit insurance system.¹

Jamaica's Deposit Insurance Scheme

The Jamaica Deposit Insurance Corporation (JDIC, the Corporation) was established by the Deposit Insurance Act (DIA), 1998, following financial sector crisis in Jamaica in the mid-1990's. The principal objects of the JDIC are to develop and manage a deposit insurance

scheme (DIS) to protect depositors from the risk of loss of their deposits up to a prescribed coverage limit, in the event their deposit-taking institution (DTI) fails.² To effect its mandate, the Corporation, *inter alia*, manages the Deposit Insurance Fund (DIF, the Fund). The Fund is made up of the initial authorized capital of the Government of Jamaica of \$1 million; annual premium income levied on the value of the insurable deposit of the members (licensed DTIs) of the DIS; interest on investments; and other income.³ Additionally, in keeping with rules which may be prescribed the Corporation, can act as a receiver or liquidator of an insolvent DTI or its holding company or subsidiary.

Key features of the DIS are as follows:

- i. Membership in the Deposit Insurance Scheme – The DIA makes it mandatory for all DTIs licensed by the Bank of Jamaica to become members of the DIS. The current membership of the DIS includes all commercial banks (8), building societies (2) and merchant bank (1). The DIS is funded by the DTI sector. Deposit insurance premiums are paid by all the DTIs on an ex-ante basis into the Deposit Insurance Fund.⁴ Premiums are calculated on the insurable deposit base of each DTI and paid annually and are therefore not an expense of depositors.

¹ The International Association of Deposit Insurers reported that as at July 2019, 145 jurisdictions have instituted some form of explicit deposit insurance up from 12 in 1974. <https://www.iadi.org/en/about-iadi/deposit-insurance-systems/>

² The DIA defines deposit as "a sum of money paid on terms under which the sum will be repaid, with or without interest or a premium, and either on demand or at a time or in circumstances agreed by or on behalf of the person making the payment and the person receiving it..."

³ Insurable deposits are the total deposits held by a DTI less interbank and Government deposits or Government Institutions deposits, therefore these deposits held by these institutions are not covered under the DIS.

⁴ Ex ante Funding refers to the regular collection of Premiums, with the aim of accumulating a fund to meet future obligations and cover the operational and related costs of the Deposit Insurer contrasted with ex post funding in which funds to cover deposit insurance obligations are only collected from surviving banks after a bank failure.

- ii. Monitoring and Risk Assessment – The monitoring of actual and potential risks that DTIs may pose to the viability of the DIF, is a critical function of the Corporation in the execution of its mandate.
- iii. Management and Use of the Fund – The JDIC’s management of the DIF is underpinned by a prudent and robust framework to ensure the growth and preservation of the capital fund by investing in safe and sufficiently liquid investment instruments. This fund is the source from which the JDIC will make payments to insured depositors if their DTI fails, or to offer temporary financial assistance with security, by making loans or advances to facilitate the restructuring of a DTI. These restructuring transactions may include mergers and acquisitions or purchase and assumption transactions, where some or all of the assets of the failed DTI and some or all of its liabilities, including its deposits are assumed by/ transferred to a viable DTI, which removes the need for a liquidation and payout of insured depositors.

Coverage Limit & Scope of Coverage

The coverage limit and scope of coverage are expressly provided in the DIA and are consistent with the DIS’s public policy objectives and related design features. The Coverage Limit was last reviewed and increased in August 2020 to \$1.2 million from \$600,000.⁵ At the coverage level of \$1.2 million, 96.8 per cent of the total deposit accounts in the system were fully covered as at December 31, 2022. This aligns with international standards as recommended

⁵ The IADI recommends that periodic reviews of the Coverage Limit should be conducted at least every five (5) years.

by the International Association of Deposit Insurers (IADI)⁶ which recommends, “*the coverage level that fully protects most retail depositors is determined to range upwards from 90–95 percent of the number of total depositors.*”

Under the DIS, deposit insurance coverage is determined on a per depositor, per ownership category and per institution. For the purpose of deposit insurance, ownership categories include individual (single owner), joint, trust, nominee, sole trader, company, and partnership accounts. Of note, deposit accounts held in foreign currencies are also covered under the DIS, however, deposit insurance payment is made in Jamaican currency.⁷

The coverage rules also recognize the beneficiaries in “pass-through accounts/custodian accounts”. These are pooled accounts established to hold customer funds in trust by licensed payment service providers with a DTI. In keeping with the JDIC coverage rules, the beneficiaries of custodian accounts are separately covered from any other deposits, they maintain in any other ownership categories with the same DTI.

What happens if a DTI fails?

Where the Supervisor of Banks/ Bank of Jamaica, determines that a DTI is no longer viable (has failed) and revokes its license, the JDIC has a statutory obligation to ensure every depositor has prompt access to their insured deposits. Payment of depositors’ funds is automatic and will be made based on the records of the failed DTI and the DIS coverage rules. Depositors are not required to submit a claim to the JDIC.

The deposits of the failed DTI may be transferred to another viable DTI, consequent to a purchase

⁶ In their March 2013 Paper titled “Enhanced Guidance for Effective Deposit Insurance Systems”.

⁷ Deposit insurance payments are made at the Bank of Jamaica weighted average exchange rate as at the date of failure.

and assumption transaction or a merger; or in the event of a liquidation. Payments of insured deposits will then be made directly to each depositor using a range of available payment disbursement options. Regardless of the decided restructuring/ resolution transaction, the JDIC shall ensure all insured deposits are protected and made available to each depositor up to the coverage limit of \$1.2 million.

Public Education Initiatives

It is essential that the public be informed on an ongoing basis about the benefits and limitations of Jamaica's Deposit Insurance System.

The JDIC, in keeping with its public policy objectives of protecting depositors and contributing to financial system confidence and stability, maintains a robust public education and awareness programme of continuously educating depositors, other financial consumers, key stakeholders and the wider public regarding protection under the DIS. The Corporation uses various communication tools and ongoing campaigns to reach diverse target audiences and also collaborates with other members of the financial system safety net to deliver public education information and integrate the unbanked into the formal system, in keeping with the Government's financial inclusion thrust.

BOX 5:

Bank Fraud and the Implication for Money Laundering Risks in Jamaica

During 2022, the Bank of Jamaica, as Competent Authority for all deposit-taking institutions, updated the thematic study on banking fraud within the banking sector. The ongoing update of the study was in an effort to deepen the Bank's understanding of the risks, threats and vulnerabilities associated with the level of money laundering (ML) risks derived from fraudulent activities. The study examined the ways in which the DTI system's exposure to money laundering risks emanating from bank fraud evolved throughout the January 2018 to November 2022 period¹.

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. 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).

Methodology

The Bank Fraud assessment was informed by survey responses submitted to the BOJ 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 November 2022 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);

¹ Of note, information conveyed in the Bank Fraud assessment was premised on an overall DTI system submission rate of 87.2 per cent

for the review period. This is reflective of an upward trend in institutional year-over-year compliance rate.

5. Fraudulent Loans – supplying false information when applying for (lender) or 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.

Of note, effective May 2022, fraud data collection was later expanded to include the reasons for each fraud type, as well as demographics, including the gender and age of the victim.

Findings

Deposit-taking institutions reflected a general decline in annual bank fraud related losses, following bolstered combative measures.

Throughout the January 2018 to November 2022 period, DTIs, on average, reported bank fraud losses to the tune of \$0.9 billion per annum, representing over 13 628 fraud incidences. There was also an average year-over-year decline of 11.0 per cent over the review period.

Annual bank fraud losses peaked at \$1.3 billion in 2019, 5.5 per cent higher than losses of \$1.2 billion in 2018. However, fraud losses fell by a substantive 36.9 per cent to \$0.8 billion in 2020. This was followed by a further 10.7 per cent and 2.0 per cent to \$0.7 billion in 2021 and at November 2022, respectively (see **Chart 1a**). The reduction in losses can be linked to the improved effectiveness of combative measures employed by DTIs to lower fraud losses. These measures included the introduction of EMV chip and pin technology post-

² 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

2018 as well as the introduction of multi-factor authentication and expanded use of push notification features.² These features were increasingly adopted by DTIs to preserve the more vulnerable banking products; debit and credit cards.

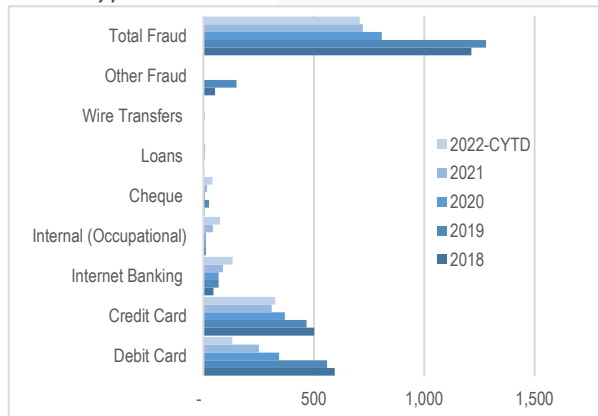
Among fraudulent activities reported over the review period, card fraud was the most prevalent (comprising debit and credit card fraud. These accounted for, on average, 81.4 per cent (or \$0.8 billion) of fraud losses. Of note, the downward trend in the value of fraud losses over the review period was directly related to card-related fraud trends (see **Chart 1a**). Credit card fraud losses, over the review period, represented 42 per cent of accumulated losses, while debit card fraud losses accounted for 40 per cent.

Notably, while remaining more prevalent, card fraud losses displayed notable declines. Specifically, debit card fraud losses reflected an annual average decline of approximately 30 per cent (\$115.8 million) throughout the review period. At end-November 2022, debit card fraud losses computed at \$0.1 billion, vis-à-vis, \$0.6 billion in 2018. Credit card fraud losses also reflected notable annual average declines to \$0.3 billion at November 2022 from \$0.5 billion in 2018.

Though substantially lower, the third highest fraud exposure among reporting institutions was internet banking, which averaged \$0.08 billion per annum, accumulating to \$0.4 billion over the review period. Additionally, though maintaining a strong media presence, internal (occupational) fraud remained relatively low, on average, accounting for 4 per cent (\$29 million) of total fraud losses per annum.

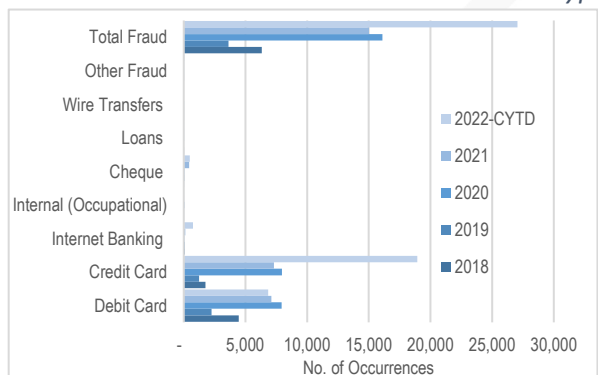
application only after successfully presenting two or more pieces of evidence, preventing any unauthorized third-party access. Push notifications refer to automated messages sent by an application to a user to alert him or her of activity relating to the user.

Chart 1a: Trend in Annual Bank Fraud Losses by Fraud Type



Source: BOJ

Chart 1b: Trend in Annual Bank Occurrences by Fraud Type



Source: BOJ

Bank fraud was largely concentrated in card services among a few banks. Fraud losses were highly concentrated in a few reporting institutions with two (2) DTIs collectively accounting for an average of 69.1 per cent (\$0.7 billion) of total bank fraud losses per annum. The extent of fraud related losses among these institutions was associated with their exposure to debit and credit card fraud and, to a lesser extent, internet banking fraud. Of note, card present fraud, on average, accounted for more than 70 per cent of fraud losses across impacted banks, with the exception of one bank, whose exposure was heavily

influenced by internet banking fraud. Most banks with significant exposure to debit and credit card fraud reflected noticeable declines in fraud losses over the review period. This was attributable to the implementation of EMV chip and pin technology post-2018, which as rolled out to larger segments of their respective customer bases began to mitigate against card present fraud risks. The introduction of multi-factor authentication and expanded use of push notification features also helped in reducing fraud losses.

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, on average, 33 per cent for the DTI sector in 2022. 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.³

Card not Present, Skimming/Counterfeit Cards, and Third-Party Transfers were the more prevalent forms of fraud. In May 2022, the BOJ provided an updated instrument for surveying fraud occurrences across the DTI sector to include demographic data.

Based on the updated survey instrument, for the period May 2022 to November 2022, card fraud (debit and credit cards) was largely as a result of “Card not Present,” that is, card used in the absence of its owner (or originally issued card), totaling \$136.9 million, followed by skimming/counterfeit cards which amounted to \$28.1 million.

Internet banking fraud was the third highest reporting fraud type for the period, accumulating losses of \$58.2 million. This was mainly a result of

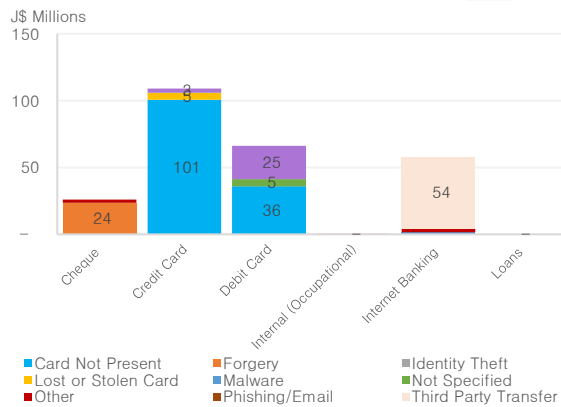
³ Sim-Swap fraud refers to the use of fraudulent sim cards to receive phone calls/text messages in order to by-pass an

institution’s two-factor authorization requirement, and ultimately gain access to its online platform.

fraudulent third-party transfers, representing approximately 92.8 per cent (\$54 million) of these losses (see **Chart 1c**).

Fraudulent cheques, though less prevalent, accounted for losses totaling \$23.7 million. The remaining fraud types were minimal.

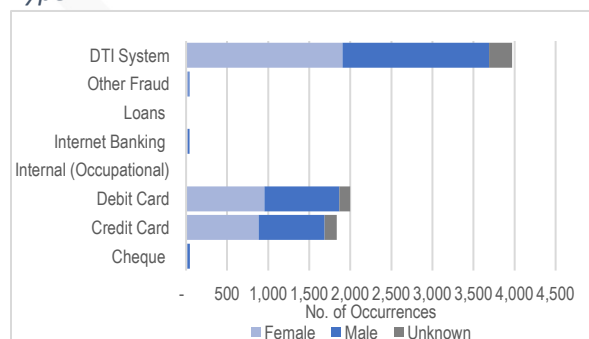
Chart 2c: Dispersion of Bank Fraud by Reason



Source: BOJ

Fraud reports for the last two quarters of 2022 revealed that fraud victims were almost even among genders. Preliminary data obtained from deposit-taking institutions in 2022, pointed to a marginal bias towards females, with approximately 51.6 per cent (1 905 instances) of total fraud occurrences (see **Chart 1d**). These occurrences were a result of card fraud, largely driven by debit card fraud.

Chart 3d: Dispersion of Fraud Victims by Fraud Type

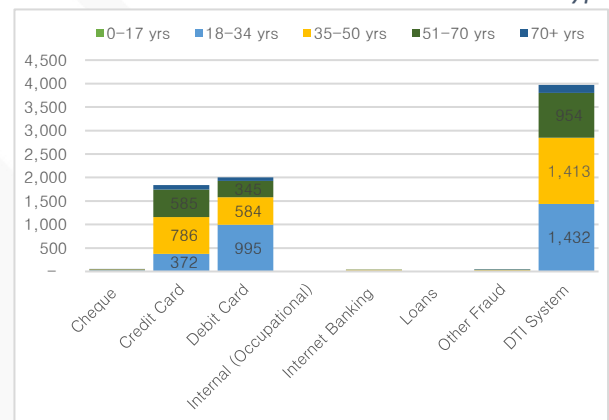


Source: BOJ

Approximately 95.7 per cent (3 779 instances) of fraud occurrences were recorded between the ages of 18 years and 70 years (18 to 34yrs – 36.1per cent; 35 to 50yrs – 35.6 per cent; 51 to 70yrs – 24.0 per cent). While there was no disparity among these age groups in the total number of fraud occurrences, there were notable target preferences in relation to credit card fraud and debit card fraud (see **Chart 1e**).

For the CY to November, those aged between 18 and 34 years were the main victims of debit card fraud. Persons aged between 35 and 50 years were largely the target of credit card fraud.

Chart 4e: Dispersion of Vulnerable Age Groups by Fraud Type



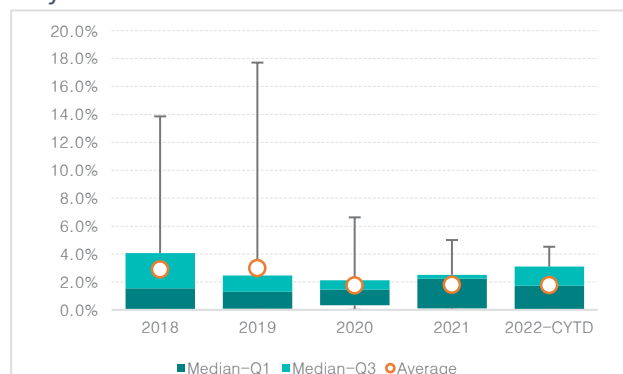
Source: BOJ

Bank fraud losses accounted for a small portion of institutional pre-tax profits for most deposit-taking institutions. In line with the general decline in dollar value bank fraud losses displayed across deposit-taking institutions, impairment to institutional profits for the review period was reduced to an average of 1.8 per cent as at November 2022, from 2.9 per cent for 2018. For 2020, the ratio of fraud losses to pre-tax profits declined by 1.3 percentage points to 1.7 per cent but increased to 1.8 per cent as at November 2022.

Additionally, throughout the January 2018 to November 2022 review period, institutional fraud

as a share of profits, attained its highest ratio in 2019 of 17.7% per cent (see Chart 1f). However, for the CY to November 2022, institutional fraud losses as a share of profits represented no more than 4.5 per cent, attesting to a notable fall-off in fraud losses over the past four years.

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



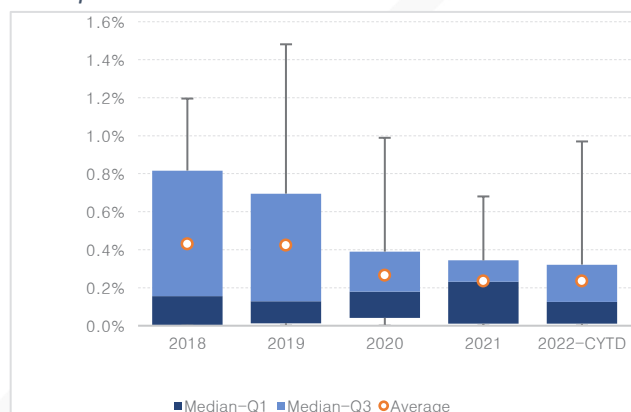
The interquartile range of the ratio across banks ranges from the 25th (Q1) to the 75th percentile (Q3).

Source: BOJ

When represented as a proportion of regulatory capital, average fraud losses remained consistently below 1.0 per cent of system 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 (see Chart 1g).

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.

Chart 1g: Bank Fraud Impairment to Regulatory Capital across DTI's



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

Source: BOJ

Bank Fraud and Money Laundering Risk Exposures in Jamaica

The Bank's Fraud study featured a money laundering risk assessment. This assessment entailed Bank Fraud Money Laundering Risk matrices based on each fraud type's vulnerability to, and threat of money laundering risk.⁴ The study also featured the ways in which DTIs' exposure to money laundering risks emanating from bank fraud evolved throughout the January 2018 to November 2022 review period.

Assumptions

The following assumptions were made throughout the conduct of the Bank Fraud assessment:

1. Given that bank fraud potentially serves as a predicate offence for money laundering, risks associated with these offences can emanate from similar sources. Consequently, similar controls and/or

⁴ The Bank Fraud Matrix is a two-dimensional heat map used to highlight the sources of money laundering risks to the financial system. Each bubble, the size of which corresponds to the accumulated losses is positioned on the heat-

map based on the two coordinates (threat and vulnerability) thereby spatially depicting the level of exposure to money laundering risks.

frameworks may be implemented to mitigate these exposures; and

2. The incidence and severity of fraudulent risk was considered directly proportional to the threat and vulnerability of money laundering risk.

Methodology

Vulnerability ratings were assessed based on accumulated losses per fraud type while threat ratings were assessed based on the frequency of occurrences of fraudulent activities throughout the review period.

Vulnerability Ratings:

- i. Accumulated losses were expressed as a percentage of weighted average regulatory capital for the banking system; and
- ii. These ratios were then assigned their respective money laundering vulnerability rating, ranked between Low and High, based on criteria boundaries formulated using the latest system’s capital adequacy ratio.

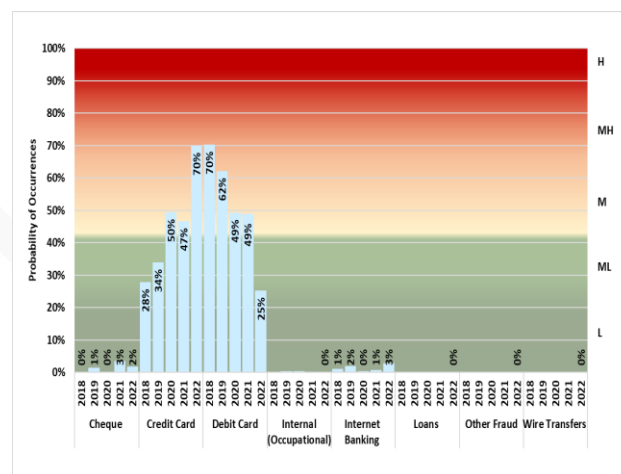
Threat Ratings:

- i. A five-point range between Low and High was determined based on the probability of occurrences per bank fraud type; and
- ii. Money laundering threat exposures were then assigned a rating based on the frequency range within which the fraud type occurred.

Overall bank fraud money laundering risk exposures remained medium-low throughout the four-year period, followed by an increase to medium risk in November 2022. Throughout the January 2018 to November 2022 review period, credit and debit card fraud reflected the highest threat exposures to money laundering among reported fraud types, at medium-high and medium-low risks, respectively (see **Chart 2**). This was on account of the high frequency of card

frauds comparable to other fraud types, on average, collectively accounting for 97 per cent of total fraud occurrences. Remaining fraud types exhibited low levels of threat to money laundering from bank fraud over the period.

Chart 2: Trend in Bank Fraud Money Laundering Threat



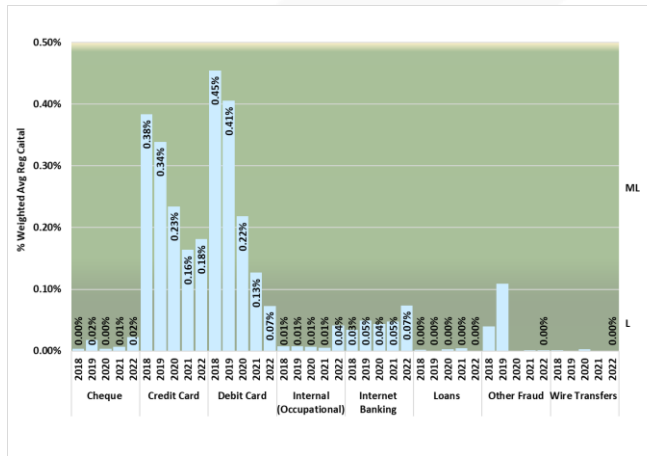
Source: BOJ

However, over the review period, the threat levels for debit card transactions subsided considerably, from a probability of 70 per cent to 25 per cent. This was owing to the implementation and adoption of EMV chip/pin technology and multi-factor authentication across most banks.

Similarly, debit and credit card fraud presented highest vulnerability to money laundering risk among fraud types at medium-low risks. Notably, this measure also reflected a downward trend in exposures over the review period.

The downward trend in money laundering vulnerability for debit and credit card fraud was reflected in lower annual dollar value losses by approximately 30 per cent and 10 per cent, respectively. Lower dollar value losses were attributable to less frequent, lower value occurrences as institutions bolstered combative measures (see **Chart 3**).

Chart 3: Trend in Bank Fraud Money Laundering Vulnerability



Source: BOJ

When combined, the overall money laundering risk for bank fraud remained medium-low, followed by an uptick to medium in the CY to November 2022 (see Table 1). There was a notable increase in money laundering risk associated with credit card fraud from medium to medium-high, owing to higher threat levels subsequent to 2019, despite a decline in vulnerability levels as measured by losses incurred.

The remaining fraud types reflected low money laundering risks for the review period.

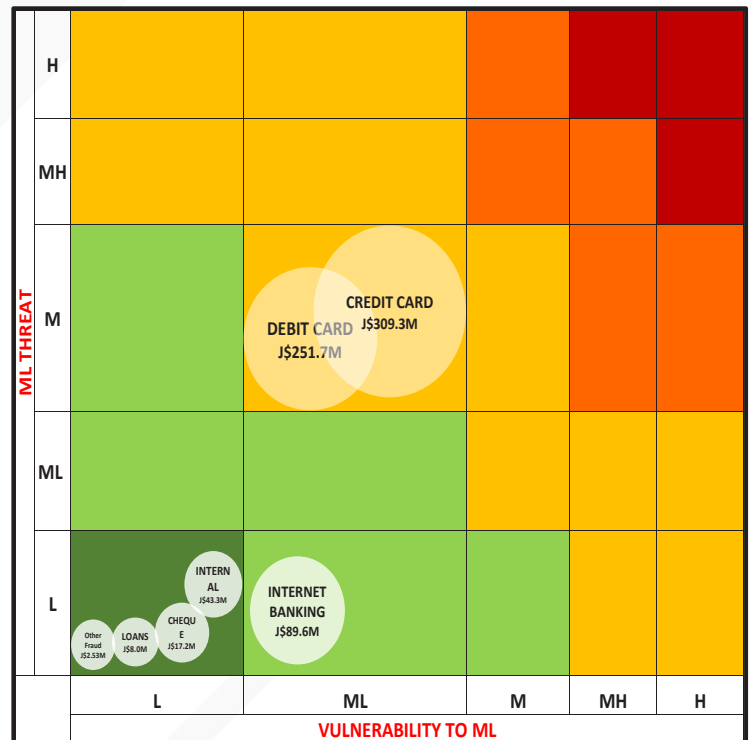
Table 1: Trend in Overall Bank Fraud Money Laundering Risk by Fraud Type

Risk Exposure	2018	2019	2020	2021	2022 CYTD
Cheque	L	L	L	L	L
Credit Card	M-L	M-L	M	M	M-H
Debit Card	M	M	M	M	M-L
Internal (Occupational)	L	L	L	L	L
Internet Banking	L	L	L	M-L	M-L
Loans	L	L	L	L	L
Other Fraud	L	M-L	L	L	L
Wire Transfers	L	L	L	L	L
System	Bank				
Fraud Risk	M-L	M-L	M-L	M-L	M

Source: BOJ

Money laundering risk exposures related to credit card fraud increased subsequent to 2019.

Chart 4: Bank Fraud Heat Map - December 2021



Source: BOJ

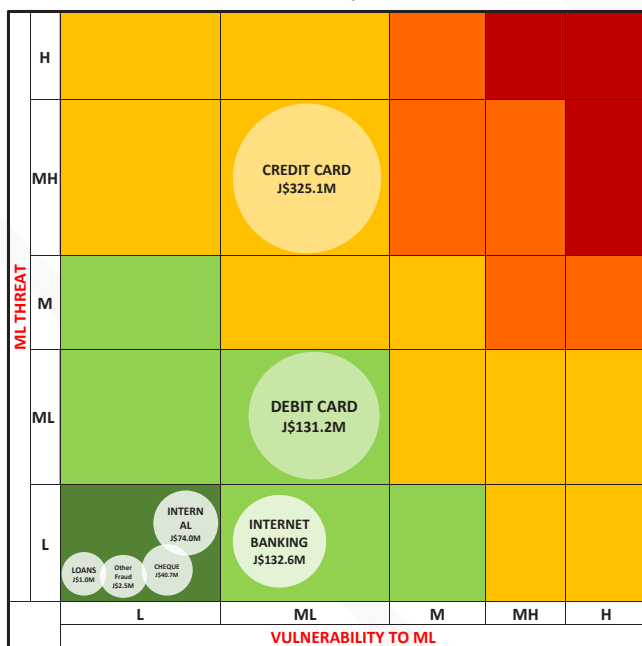
Relative to December 2021, there was a notable increase in credit card related money laundering risk from medium to medium-high risk in 2022 (see **Chart 5**). This increase in risk was largely driven by a higher threat rating, associated with the frequency of fraud, from medium to medium-high risk.

Conversely, debit card money laundering risk declined to medium-low from medium throughout the review period. Of note, there was a significant reduction in threat levels after December 2019.

Fraudulent cheques and loans featured minimal risk with low levels of threat and vulnerability to money laundering. Based on the existing trend, these activities are likely to remain benign in the short- to medium-term.

Relatively low levels of internal fraud were reported for the review period. However, there was an increase from 2021 to 2022.

Chart 5: Bank Fraud Heat Map – November 2022




Source: BOJ

Conclusion

For the review period January 2018 to November 2022:

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. Card fraud was the most frequent fraud type throughout the review period, largely on account of credit card fraud. Internet banking fraud presented the third highest exposure;
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 per cent of system regulatory capital per annum;
4. Relative to December 2019, there was a notable increase in credit card related money laundering risk from medium to medium-high risk, as at November 2022, owing to higher money laundering threat levels;
5. Debit card fraud money laundering risk declined to medium-low risk as at November 2022, due to a general downward trend in exposures as institutions bolstered their respective combative measures by way of EMV chip and pin technology as well as multi-factor authentication measures; and
6. The remaining fraud types were considered lower risk for the period.

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. DTIs should also conduct targeted campaigns aimed at 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 take on added importance, from operational and reputational standpoints. Importantly, the Basel III reforms currently being implemented by BOJ are also 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.

4.0 FINANCIAL SYSTEM SECTORAL EXPOSURE

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

4.1 Overview

While DTIs' exposure to the household sector rose above the ten-year historical average, households' non-performing loans as a share of total household loans and households' debt servicing capacity improved in 2022.

DTIs' exposure to the corporate sector remained stable, while corporate sector loan quality improved for 2022. Public sector debt to GDP declined for the review period, reflecting consistent fiscal policy efforts to lower the Government's debt burden.

Securities dealers' exposure to private sector debt increased marginally, while their overall loan quality improved for 2022. NDTFIs' exposure to equities and real estate assets remained relatively low during the review period. The pensions industry continued to have the highest exposure to investment arrangements.

4.2 Household debt and deposit-taking institutions' exposure

In 2022, household sector debt held by DTIs continued to grow, reflecting the impact of the rebound in economic activity. In real terms, household sector debt grew by 3.6 per cent for 2022, relative to growth of 2.4 per cent for 2021 (see Figure 4.1).⁷⁶

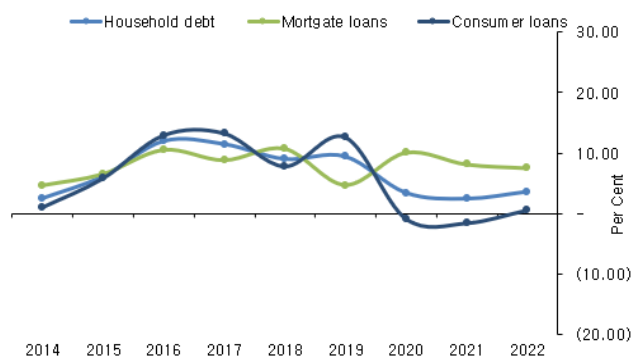
The acceleration in the growth in household debt largely reflected an increase in consumer loans issued by DTIs. For 2022, consumer loans grew by 0.6 per cent in contrast to a decline of 1.6 per cent for 2021. Mortgage loans grew by 7.5 per cent, albeit, at a slower pace than the previous year's growth of 8.1 per cent. This occurred within the context of continued attractive financing options offered by DTIs in the mortgage market

(see Table 4.1 and Box 6: Assessment of Residential Mortgages Disbursed by Deposit-taking Institutions).⁷⁷

DTIs' exposure to the household sector for 2022 rose above the ten-year historical average (2012–2021). Household debt to total assets increased to 26.8 per cent at end-2022, from 25.3 per cent at end-2021. This was primarily due to the growth in household debt outpacing total assets. The outturn for 2022 compared favourably with the ten-year historical average of 24.8 per cent. Similarly, DTIs' household sector debt as a share of its credit portfolio increased to 61.8 per cent at end-2022, from 57.3 per cent at end-2021, above the historical average of 54.4 per cent (see Figure 4.2).

There was an improvement in the household sector loan quality for 2022. The household sector's non-performing loans as a share of total household loans declined to 4.0 per cent at end-2022, from 4.3 per cent at end-2021. DTIs continued to maintain adequate coverage of NPLs for the household sector. More specifically, the DTI sector's loan loss provisions plus prudential provisioning to non-performing household loans ratio exceeded 100.0 per cent for the review period (see Figure 4.3).

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



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

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

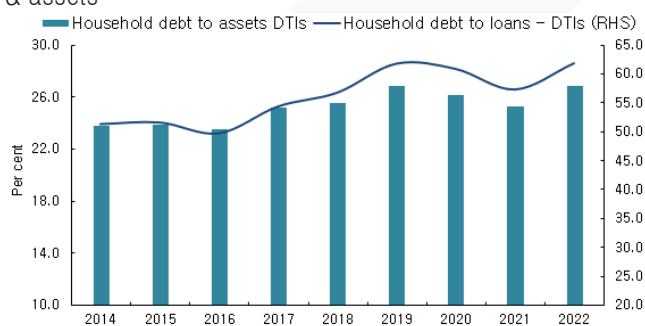


Figure 4.3 DTIs' household sector loan quality & loan loss provisioning to household sector NPLs

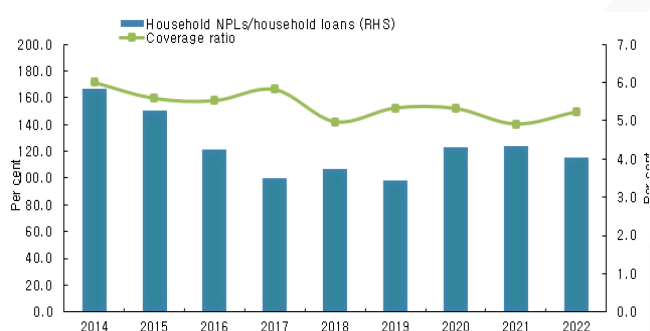


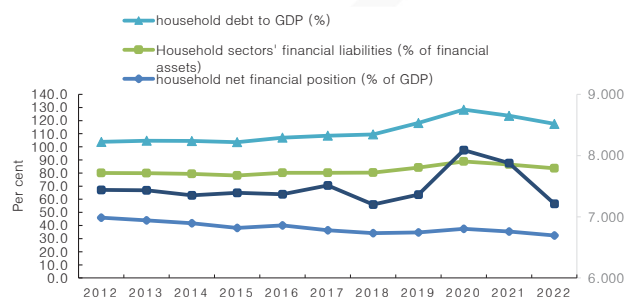
Table 4.1 Selected interest rates

Sectoral Interest Rates (per cent)	2019	2020	2021	2022	Change*
Building societies					
Real Mortgage Loans Rate*	1.5	2.1	-0.1	-2.0	-1.9
Mortgage Loans Rate	7.8	7.4	7.2	7.2	0.0
Average Weighted Loan Rate	7.9	7.5	7.2	7.3	0.1
Commercial banks					
Real Mortgage Loans Rate*	1.4	2.0	-0.3	-2.8	-2.6
Mortgage Loans Rate	7.7	7.3	7.0	6.2	-0.8
Installment Credit Rate	11.0	10.7	10.7	11.9	1.3
Personal Credit Rate	21.4	20.9	20.8	38.4	17.6
Commercial Credit Rate	9.9	9.4	9.3	8.5	-0.8
Average Weighted Loan Rate	12.5	11.8	11.5	11.7	0.2
Merchant bank					
Personal Credit Rate	9.4	7.8	7.6	8.6	1.0
Commercial Credit Rate	8.3	8.0	7.5	8.5	1.0
Average Weighted Loan Rate	8.5	7.9	7.6	8.6	1.0

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

Figure 4.4 Household sector indebtedness indicators



4.2.1 Household sector indebtedness

The debt servicing capacity of households, as measured by the ratio of household debt to GDP, improved in 2022. Specifically, the ratio of household debt to GDP decreased by 3.1 percentage points to 33.9 per cent, relative to 2021 (see **Figure 4.4**).^{78,79} The improvement reflected a faster pace of growth in nominal GDP relative to the increase of 8.2 per cent in household debt.⁸⁰ However, other household sector debt sustainability measures showed general deterioration for 2022, when compared to the prior year (see **Figure 4.4**).

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, remained relatively stable during 2022. This ratio increased marginally by 0.5 percentage point to 21.7 per cent at end-2022, and reflected slightly faster growth in lending to the corporate sector compared to the growth of DTIs' asset base (see **Figure 4.5**).^{81,82} Notably, lending to each of the top five economic sectors grew, with the exception of *Electricity* (see **Figure 4.6**).⁸³ In real terms, corporate sector debt held by DTIs

household sector is excluded from personal income due to data availability.

⁸⁰ The nominal GDP figure is estimated for December 2022

⁸¹ This ratio was below the historical average of 19.5 per cent for the past ten-years.

⁸² Corporate sector debt includes loans for commercial purposes and notes & debenture holdings of DTIs.

⁸³ The top five economic sectors are determined based on share of total loans.

contracted by 0.2 per cent, for 2022, in contrast to growth of 0.8 per cent for 2021.

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

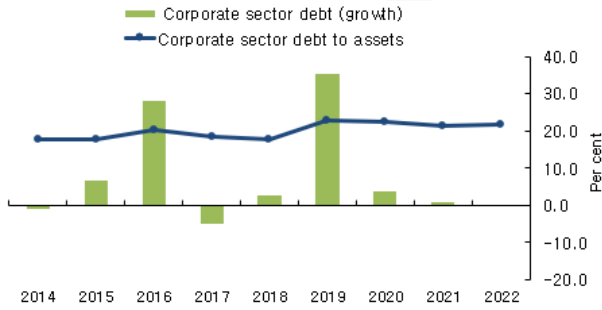


Figure 4.6 Growth in DTIs' lending to the top five corporate sectors

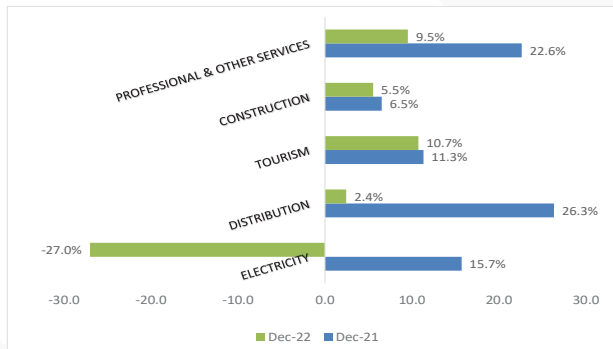


Figure 4.7 Ratio of corporate sector NPLs to corporate sector loans for Top 5 sectors-DTIs

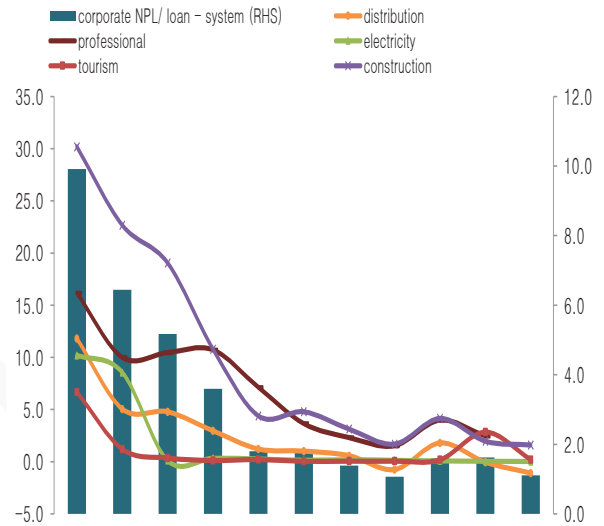


Figure 4.8 Corporate sector debt to corporate operating surplus

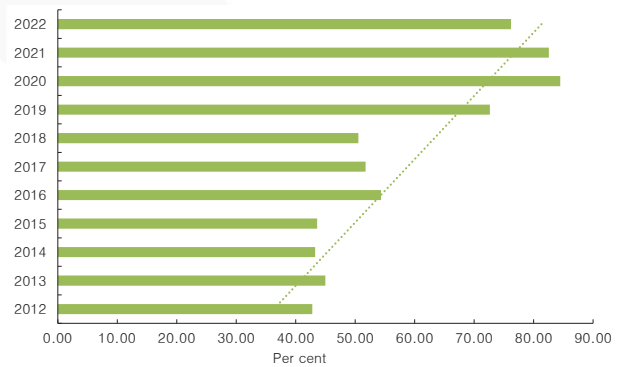
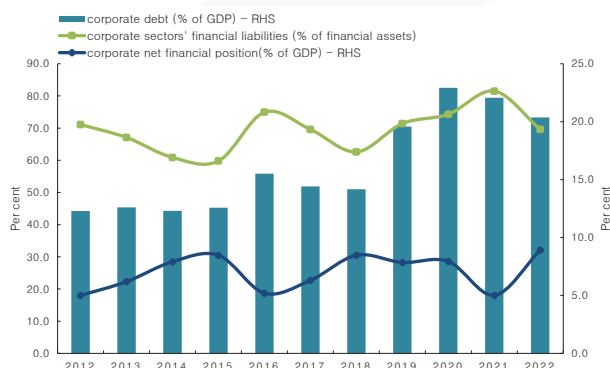


Figure 4.9 Other corporate sector indebtedness indicators



4.3.1 Corporate sector loan quality

The quality of DTIs' corporate sector loans improved for 2022. Corporate sector NPLs to total corporate sector loans ratio fell to 1.1 per cent at end-2022, from 1.6 per cent at end-2021 (see Figure 4.7). The NPL ratio for all sectors, with the exception of *Manufacturing* and *Professional and Other Services*, declined for the year. Of note, *Entertainment* recorded the largest improvement of 1.5 percentage points in loan quality, while *Professional and Other Services* recorded the largest deterioration of 0.2 percentage point.

4.3.2 Corporate sector indebtedness

The debt servicing capacity of the corporate sector improved during 2022. The corporate sector debt to operating surplus ratio declined to 76.2 per cent at end-2022, from 82.6 per cent at end-2021. This outturn reflected a faster pace of growth in operating surplus relative to corporate sector debt (see Figure 4.8). Furthermore, corporate sector net financial position as a share of GDP increased to 8.7 per cent, from 5.0 per cent at end-2021. This was largely the result of an increase in corporate sector assets. Corporate

sector financial liabilities as a share of corporate sector assets declined to 70.0 per cent from 81.5 per cent at end-2021, reflecting a faster pace in the growth of assets (see Figure 4.9).⁸⁴

4.4. Public sector performance & indebtedness

Within the context of the rebound in economic activity and consistent fiscal policy efforts to lower the debt burden, public sector debt to GDP continued on a downward trajectory during the review period. The ratio fell to 83.6 per cent at end-November 2022, from 98.7 per cent at end-December 2021 (see Figure 4.10). This performance reflected the faster growth of nominal GDP relative to the growth in public sector debt.⁸⁵ The growth in the public sector debt stock reflected an increase of 2.5 per cent in the domestic debt stock and a decline of 1.3 per cent in external debt (see Figure 4.11).

Similarly, the stability of government finances as measured by the fiscal stability ratio (FSR), improved to 0.95 at end-2022 from 0.99 at end-2021.⁸⁶ This performance was due to higher *Revenues & Grants* which contributed to a larger fiscal surplus relative 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 2.9 percentage points and 0.3 percentage point, respectively. Furthermore, the external debt to exports of goods and services ratio fell by 56.7 percentage points for the review period. This performance was driven by an increase of 37.5 per cent in the exports of goods and services (see Figure 4.12).⁸⁷

⁸⁴ The financial assets of corporates include: deposits and retail repos. Corporate financial liabilities on the other hand include: loans for commercial purposes as well as notes & debenture holdings of DTIs (notes and debentures figure used is as at December 2022). Notably, corporate financial assets do not capture large shares and other classes of corporate assets

⁸⁵ Public sector debt stock figures represent data up to November 2022 while GDP data for 2022 is based on projections from the Bank of Jamaica

⁸⁶ 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 was based on figures at end-November 2022 and was reported at JMD \$39,952.5 million. The closer the FSR is to zero indicates more stable government finances.

⁸⁷ The exports of goods and services for 2022 was based on a projected figure.

Figure 4.10 Debt to GDP ratios

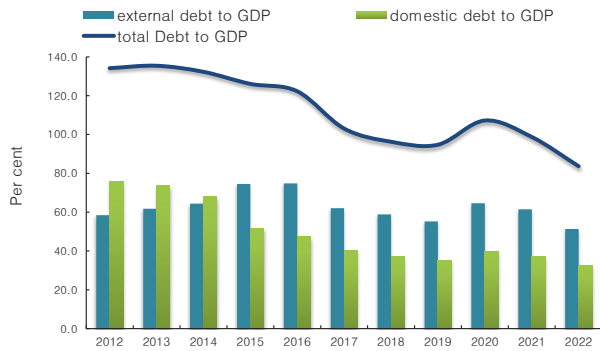


Figure 4.13 Public Sector domestic debt by maturity

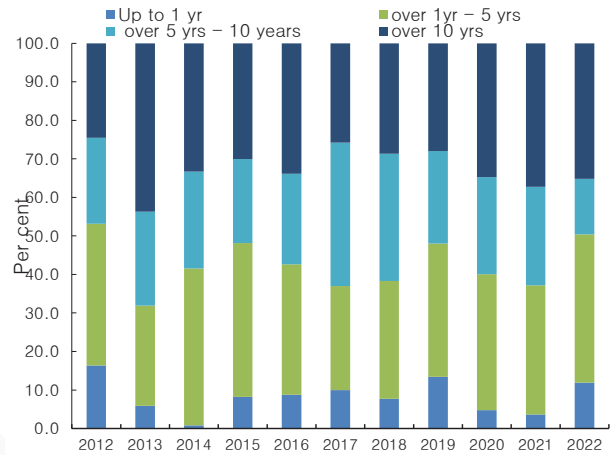


Figure 4.11 Growth in public sector debt stock

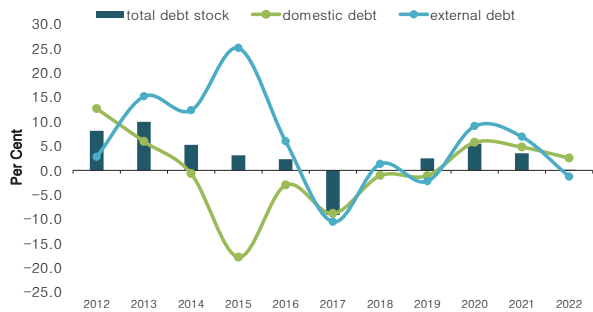


Table 4.2 Share of public sector domestic debt by instrument type (%)

	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	77.5	22.5	0.0
2022	78.0	22.0	0.0

Figure 4.12 Debt sustainability indicators

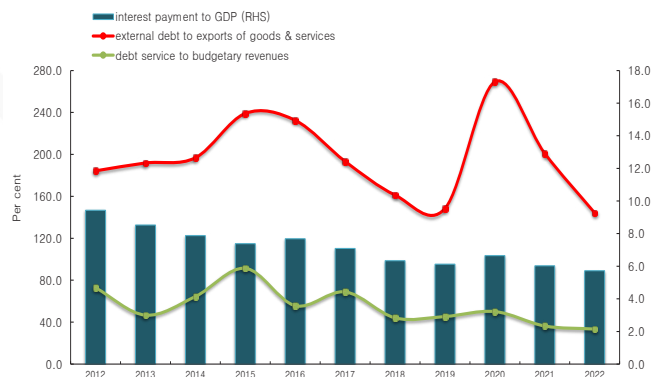
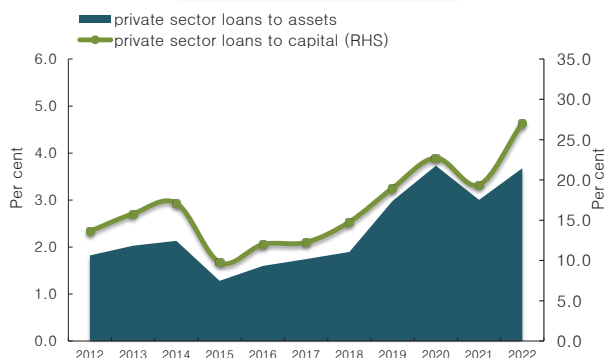


Figure 4.14 Private sector loans to assets & capital for the 10 core securities dealers



Refinancing risk, indicated by the maturity profile of GOJ's domestic public debt, normalised in 2022.⁸⁸ The proportion of debt due to mature within 1 year increased to 11.9 per cent from 3.6 per cent the previous year.⁸⁹ Similarly, domestic public debt due to mature in 1 to 5 years as a portion of total public debt increased to 38.5 per cent at end-November 2022, from 33.5 per cent at end-2021 (see **Figure 4.13**). Of note, domestic fixed rate instruments continued to account for the largest share of the total debt stock. Domestic fixed rate instruments as a share of the total debt stock increased to 78.0 per cent, at end-November 2022, from 77.5 per cent at end-2021 (see **Table 4.2**).

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 increased during 2022.^{90,91} Private sector debt as a proportion of securities dealers' total assets

⁸⁸ Refinancing risk is defined as the possibility that a borrower cannot refinance by borrowing to repay existing debt.

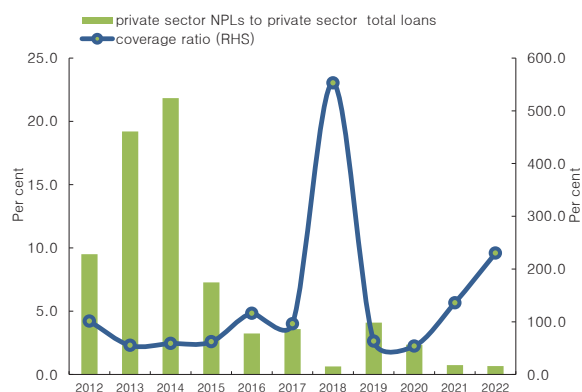
⁸⁹ The average proportion in this bucket over the period 2015 to 2020 was 8.8 per cent.

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

increased to 3.7 per cent at end-2022, from 3.0 per cent at end-2021 (see **Figure 4.14**). Similarly, the ratio of securities dealers' holdings of private sector debt to capital rose markedly to 27.0 per cent at end-2022, from 19.4 per cent at end-2021. This outturn reflected an increase in private sector loans and a decline in capital. Notably, of the ten securities dealers examined, the number of institutions that had exposure to private sector debt declined to seven at end-2022, compared to eight at end-2021.

Securities dealers' loan quality ratio, as measured by private sector NPLs to private sector loans, improved for 2022. This ratio declined marginally to 0.7 per cent at end-2022, from 0.8 per cent at end-2021, and compared favourably to a historical five-year average of 2.3 per cent (see **Figure 4.15**). The improvement in 2022 was largely due to growth in total loans coupled with a slight reduction in NPLs.⁹² Similarly, the NPL coverage ratio of securities dealers improved markedly to 230.0 per cent at end-September 2022 from 135.9 per cent at end-2021. This performance largely reflected a significant increase in loan loss provisions.

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



⁹¹ The ten 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 9.3 per cent while NPLs fell by 3.9 per cent at end-September 2022, relative to end-2021.

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

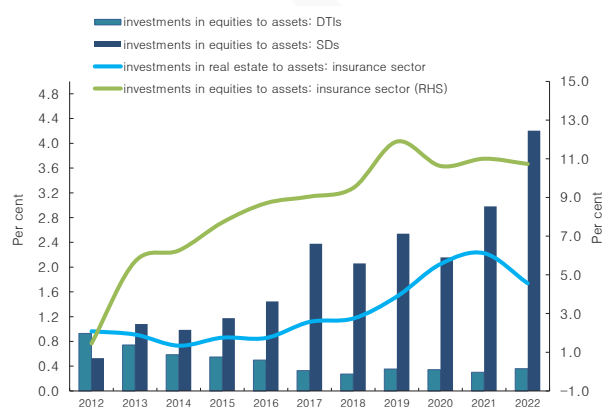


Table 4.3 Investment classes as a per cent of total assets pensions industry

	Sep-18	Sep-19	Sep-20	Sep-21	Sep-22
Investments in Governments Securities to Assets (%) ^{1/}	25.0	20.6	22.3	21.4	20.5
Investments in Equities to Assets (%)	23.8	26.3	21.6	22.6	22.0
Investments in Real Estate to Assets (%)	3.8	3.6	4.4	4.3	4.6
Investment Arrangements to Assets (%) ^{2/}	36.9	37.4	37.5	38.1	39.1
Other Investments to Assets (%)	0.4	0.6	0.6	0.6	0.4
Total Asset values (J\$BN)	595.1	690.0	639.8	696.6	690.9

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. At end-2022, securities dealers' and insurance companies' equity investments as a proportion of assets were 4.2 per cent and 10.7 per cent, respectively, relative to 3.0 per cent and 11.0 per

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 and equity investments are limited to 10.0 per cent of regulatory capital. In addition, for collective investment schemes illiquid assets, such as real estate, should not exceed 15 per cent of the net assets value in the CIS fund.

cent at end-2021. The insurance sector's exposure to real estate investments, as measured by the ratio of real estate investments to total assets, decreased marginally to 1.7 per cent as at end-2022, from 2.2 per cent at end-2021. Of note, DTIs' investment in equities remained below 1.0 per cent of DTIs' assets base (see **Figure 4.16**).^{93,94}

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

At end-September 2022, 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 1.0 percentage point to 39.1 per cent at end-September 2022 (see **Table 4.3**). In particular, at end-September 2022, investments in government securities and equities accounted for 20.5 per cent and 22.0 per cent of total assets, respectively, relative to 21.4 per cent and 22.6 per cent at end-September 2021. The slight change in the portfolio composition, which reflected increased investments in other asset classes, occurred within the context of reduced GOJ bond offerings. At end-September 2022, the pension fund industry's exposure to real estate and other investments was largely unchanged relative to end-September 2021.

⁹⁵ The data for the industry were as at end-September 2022 due to availability of data.

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 6: **Assessment of Residential Mortgages Disbursed by Deposit-taking Institutions**

Towards the end of 2019, there were growing concerns about the potential for a bubble in the housing market.¹ Considering this, in 2020, the Bank assessed the housing market to ascertain a fair representation of price trends in key market segments. The findings of this initial assessment determined that residential property prices had climbed considerably but were underscored by economic fundamentals, therefore, confirming the absence of a bubble. However, adverse macroeconomic conditions due to the pandemic were expected to result in a deceleration of housing prices.

In March 2022, Bank of Jamaica conducted a survey of the DTI sector's level of activity in the residential real estate market, in an effort to ascertain the level of credit risk exposure within the sector and the potential for future shortfalls in collateral value.

¹ During 2019, developments led or facilitated by the Government of Jamaica resulted in 11,682 housing starts across Jamaica, an increase of 200 per cent relative to the previous year. Notwithstanding the impact of the COVID-19 pandemic on economic growth, in 2021, the NHT spent in excess of \$57 billion on the provision of housing solutions, representing the largest programmed expenditure in its history. This followed the provision of over 23,000 housing starts targeted for delivery by March 2021. Demand side initiatives saw the offering of greater mortgage financing for prospective homeowners, ranging from 100 per cent to 110 per cent of the sale price (Source: JIS, PIOJ).

1. Method and Data

The survey captured data on mortgages disbursed for the period January 2019 to December 2021. Loan level data included the type of property purchased, the occupancy status, the county and parish location, the original mortgage amount issued, the outstanding mortgage amount as at March 31, 2022, the performance status of the mortgage facility, and the value of the property as at March 31, 2022 (or the most recent valuation).

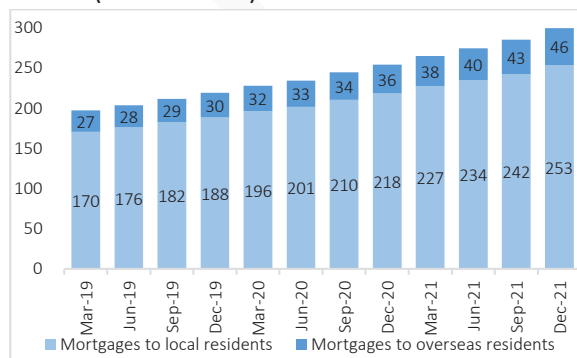
In total, 13,812 records were collected across 10 DTIs (the remaining licensee did not issue residential mortgages during the reporting period). Following the exclusion of 2,757 records due to incomplete responses for some values, the dataset employed for the analysis included 11,055 mortgages.²

2. Overview of Mortgage Lending

At the end of 2021, mortgage lending accounted for 26.4 per cent (\$299.4 billion) of total DTI loans, up from 24.0 per cent (\$197.0 billion) at end-March 2019. The growth in mortgages was evident in lending to both local and overseas customers, most of whom obtained funding to acquire property in Jamaica (see Figure 1).

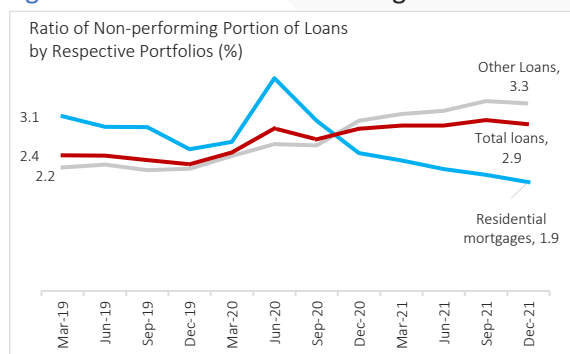
² Limitations experienced during the assessment largely included incomplete survey instruments due to the inability of some licensees to provide property values, parish locations, and occupancy statuses of some properties. There was also the possibility of ambiguous reporting of property types that could be classified under multiple property categories. As a result, where property values and parish locations were not provided (n = 2,757), these records were excluded from the assessment.

Figure 1 Stock of Total Mortgages in the DTI Sector (2019 – 2021)³



Since mid-2020, asset quality among mortgage facilities improved sharply relative to the overall loan portfolio (see Figure 2).

Figure 2 Share of Non-Performing Loans

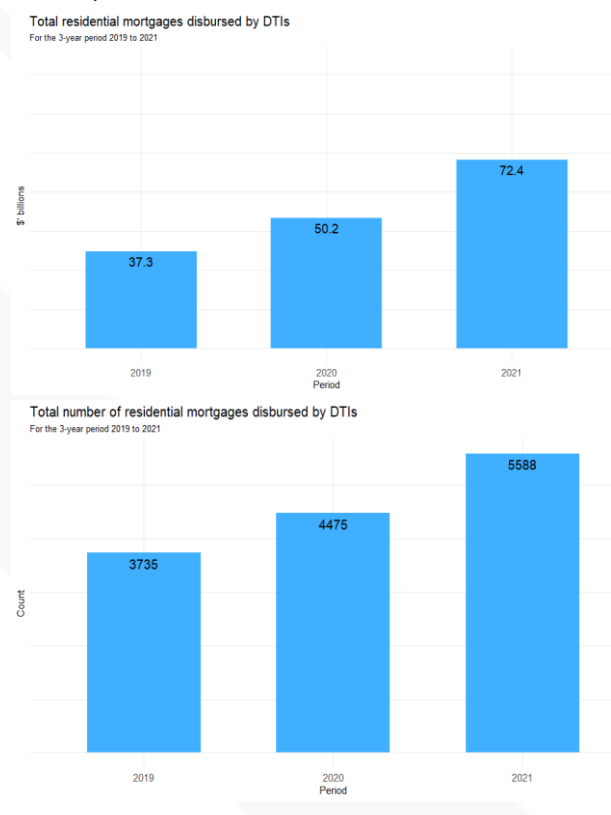


3. Survey Results

Total mortgages issued by DTIs increased to \$72.4 billion for 2021 compared with \$37.3 billion for 2019, which reflected annual growth of 44.2 per cent and 34.6 per cent during 2021 and 2020, respectively (see Figure 3). Growth in the value of new mortgages was commensurate with increased volumes of mortgages issued, which rose to 5,588 mortgages in 2021, compared with 3,735 mortgages in 2019. Sharp increases in mortgage disbursements were observed in a few commercial banks during 2021

with waning activity observed in other institutions. Total property values of residential real estate financed by DTIs over the period also rose to \$105.2 billion, reflecting annual growth of 45.1 per cent and 29.2 per cent during the 2021 and 2020 periods, respectively. Of the \$159.9 billion in mortgages disbursed during the three-year period, \$121.8 billion remained outstanding as at March 31, 2022.

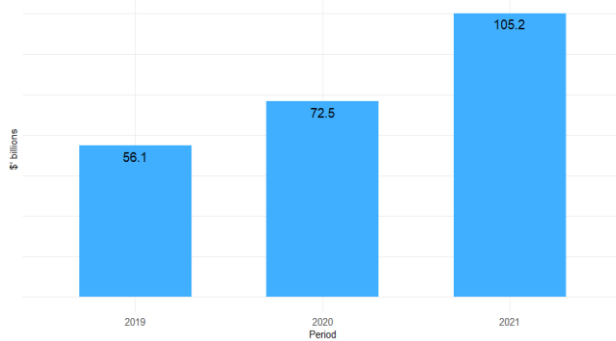
Figure 3 Total Residential Mortgages Disbursed and Values of Properties Financed by DTIs (2019 – 2021)



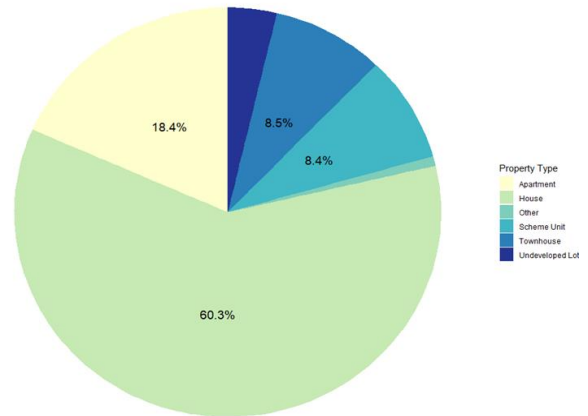
³ Mortgages to overseas residents represent facilities issued to a person who has a predominant centre of economic interest

outside of Jamaica, and who operates or intends to operate outside of Jamaica for a year or more (irrespective of nationality). Properties purchased may be located in or outside of Jamaica.

Total value of residential properties financed by DTIs
For the 3-year period 2019 to 2021



Composition of Mortgages Disbursed
During 2020



During 2020 and 2021, mortgage demand was strongest for houses (\$40.3 billion or 55.6 per cent of total mortgages issued in 2021, compared with \$30.2 billion or 60.2 per cent of total mortgages issued in 2020) (see Figure 4). However, during 2021, there was increased demand for the financing of apartments (\$15.4 billion or 21.3 per cent in 2021, compared with \$9.2 billion or 18.4 per cent in 2020) and scheme units (\$6.5 billion or 9.0 per cent in 2021, compared with \$4.2 billion or 8.4 per cent in 2020), commensurate with the greater supply of these property types to the market.

Figure 4 Composition of Mortgages Disbursed by Property Type (2020 - 2021)

Similarly, mortgage concentrations were observed in the main urban areas of Kingston & St. Andrew (\$83.3 billion or 52.1 per cent of total mortgages issued), St. Catherine (\$23.9 billion or 14.9 per cent of total mortgages issued), St. Ann (\$14.8 billion or 9.3 per cent of mortgages issued), and St. James (\$13.9 billion or 8.7 per cent of total mortgages issued). Notwithstanding, in 2021, higher effective demand was seen in the more rural parishes of Hanover and St. Mary (see Figure 5).

Composition of Mortgages Disbursed
During 2021

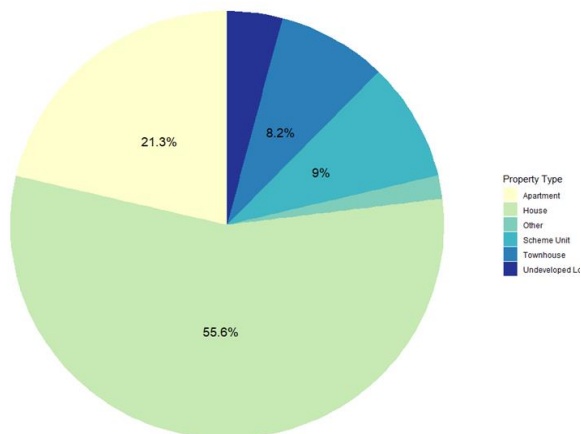
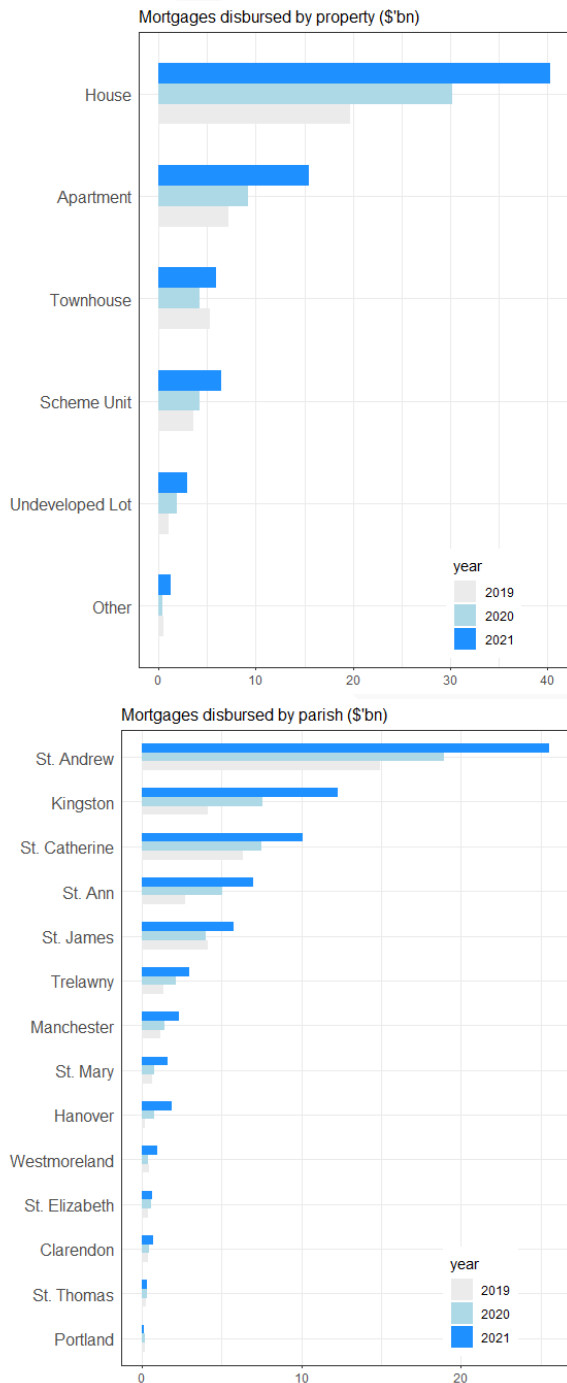


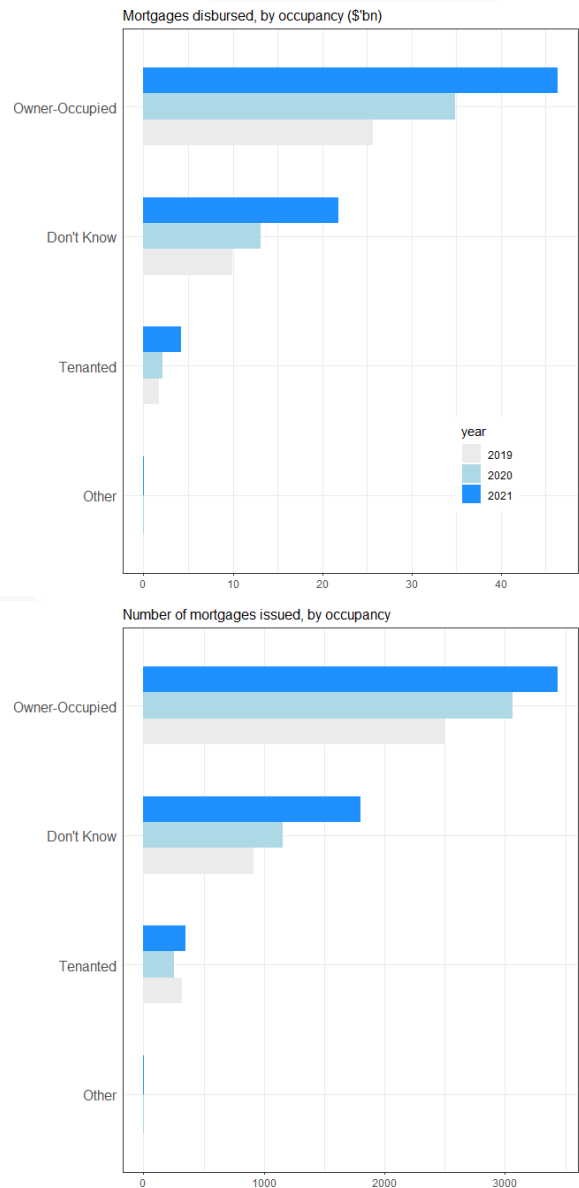
Figure 5 Mortgages Disbursed by Property Type and Parish (2019 – 2021)



Over the 3-year period, the greater share of mortgages was disbursed for owner-occupancy (\$106.8 billion or 66.8 per cent of total mortgages issued). Notably, an uptick in purchases of rental properties was observed in

2021, alongside an increase in unknown occupancy status for several facilities (see Figure 6).

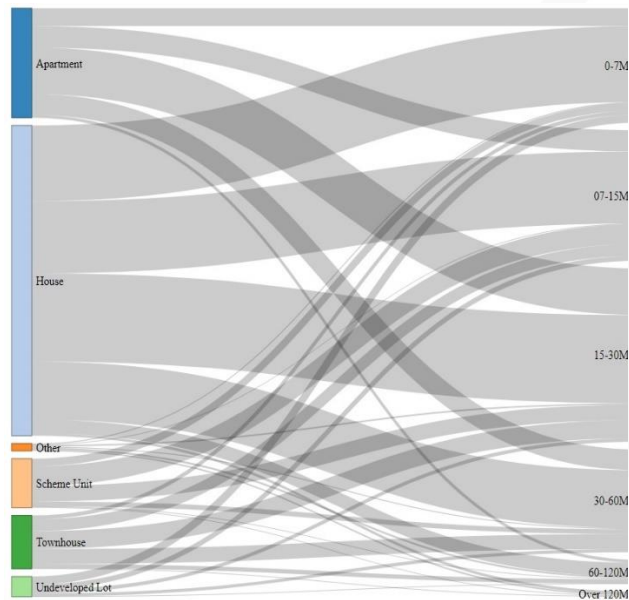
Figure 6 Mortgages Disbursed by Occupancy Status (2019 – 2021)



In aggregate, acquisition of houses and apartments was mainly financed from DTIs. Average value of mortgages issued by DTIs were largely in the range of \$15 - \$30 million. Outlier purchases of properties in excess of \$60 million were spread across all institutions, suggesting

low concentration in high-value real estate. Across all price ranges, the greater share of loan funding was to acquire houses. DTIs financed the purchase of apartments, largely, within the range of \$15 - \$30 million. Scheme units were largely priced less than \$15 million. This was consistent with the affordable housing solutions established in the parish of St Catherine, and indicative of joint financing arrangements with other institutions namely the National Housing Trust (see Figure 7).

Figure 7 Mortgage Supply by Property Type and Price Range⁴

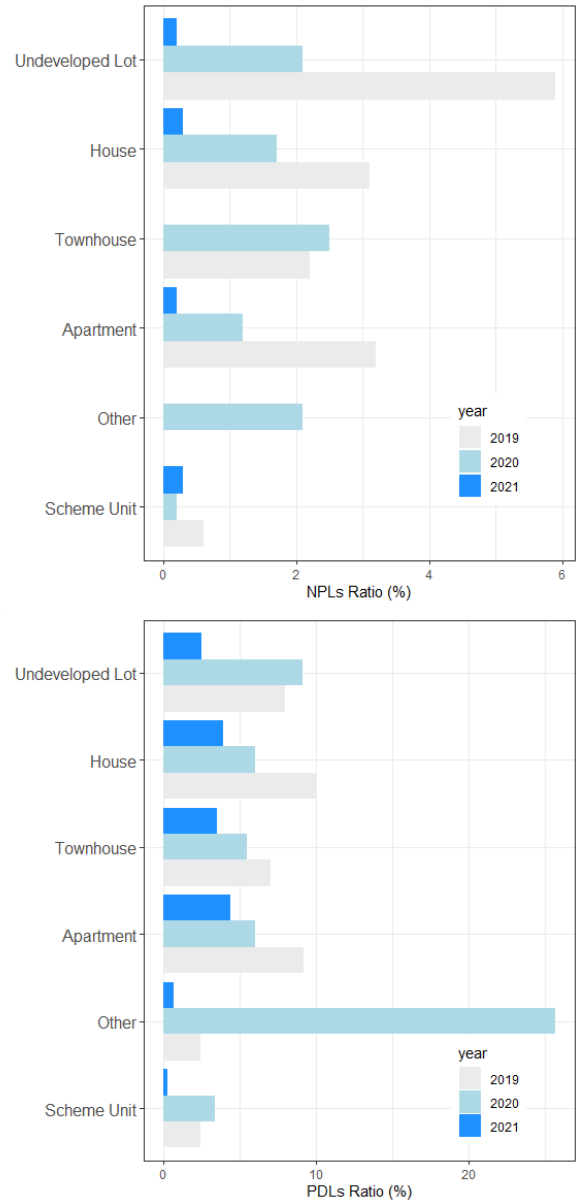


As at March 31, 2022, the credit quality of mortgages disbursed during the 3-year period was high, with over 93.0 per cent of these facilities reported as performing. By property type, non-performance was highest among loans issued in 2019 for the acquisition of undeveloped lots (5.9 per cent were non-performing), apartments (3.2 per cent were non-performing), houses (3.1 per cent were non-performing), and

⁴ The flow diagram in Figure 7 represents the flow of mortgages issued to acquire the specified property types within the specified average price ranges. The width of each stream represents the total value of mortgages in the flow.

townhouses (2.2 per cent were non-performing). However, past due facilities by property type were notably higher (mainly among houses and apartments) in the context of the heightened credit risk environment prompted by the pandemic (see Figure 8).

Figure 8 Credit Quality of Mortgages Issued During 2019 – 2021, by Property Type⁵



⁵ The past due outturn for Other properties in 2020 was driven by few large valued facilities issued to acquire properties in rural Jamaica. Notwithstanding, these facilities were sufficiently collateralized in the event of any losses.

By parish, delinquencies were highest in the more rural areas of Jamaica; mainly in St. Elizabeth, Westmoreland, and St. Mary (see Figure 9). However, total mortgages issued to these parishes represented a mere 4.4 per cent (606 borrowers) of total mortgages disbursed during the 3-year period, suggestive of a fairly low appetite by DTIs, in general, for risk exposures to these areas. Conversely, there were indications of increased non-performance among loans issued following the pandemic (2021), primarily in Manchester, St. Catherine, and St. Andrew. Past due performance in the main residential areas of St. Andrew and St. Catherine hovered about the average for the portfolio of mortgages (5.4 per cent of total mortgages issued).

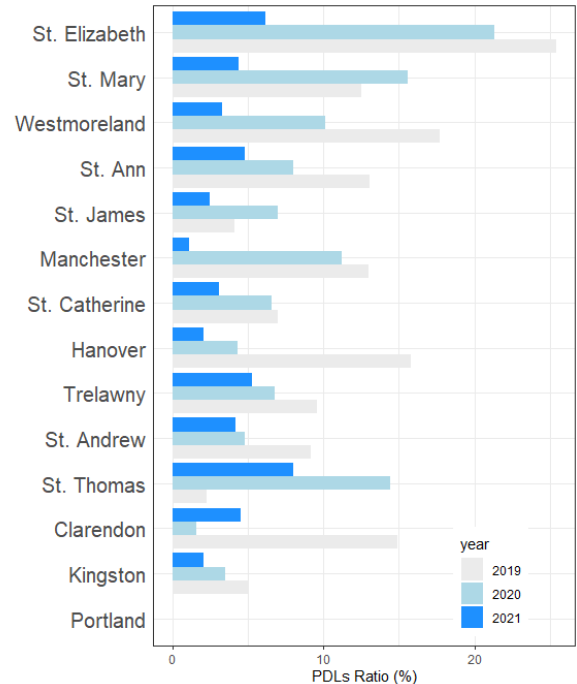
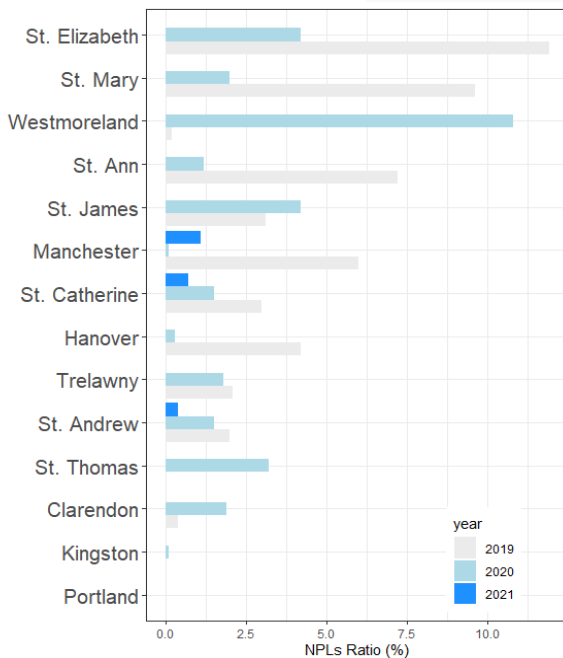
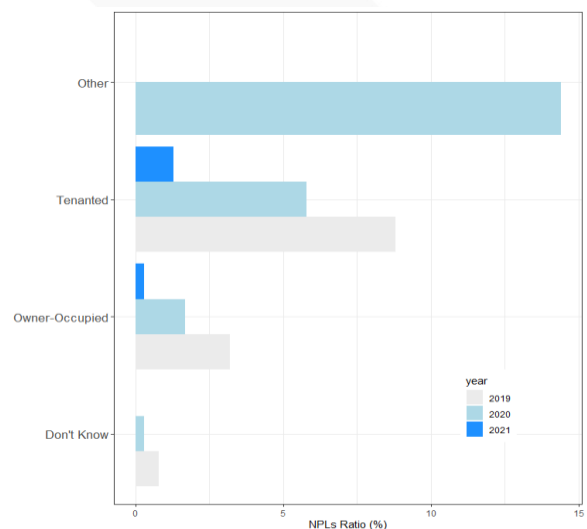


Figure 9 Credit Quality of Mortgages Issued During 2019 – 2021, by Parish



There were indications of increased delinquencies among tenanted properties, primarily for mortgages issued during 2021. Non-performance and past due states of rented properties were the highest across the identified occupancy statuses, consistent with the higher credit risk posed by properties with low owner concern (see Figure 10).

Figure 10 Credit Quality of Mortgages Issued During 2019 – 2021, by Occupancy Status



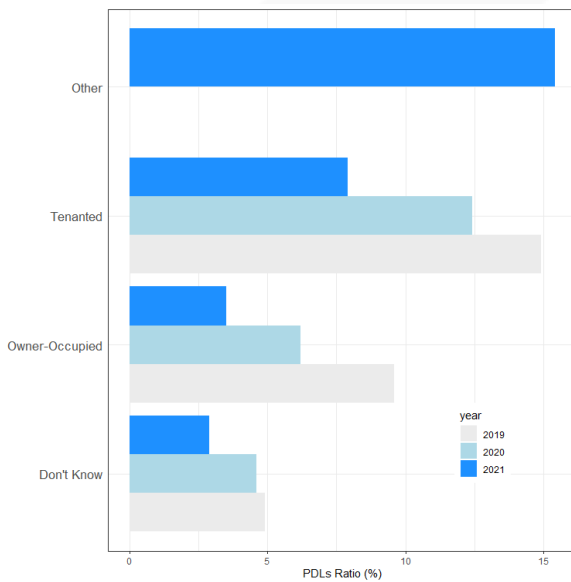
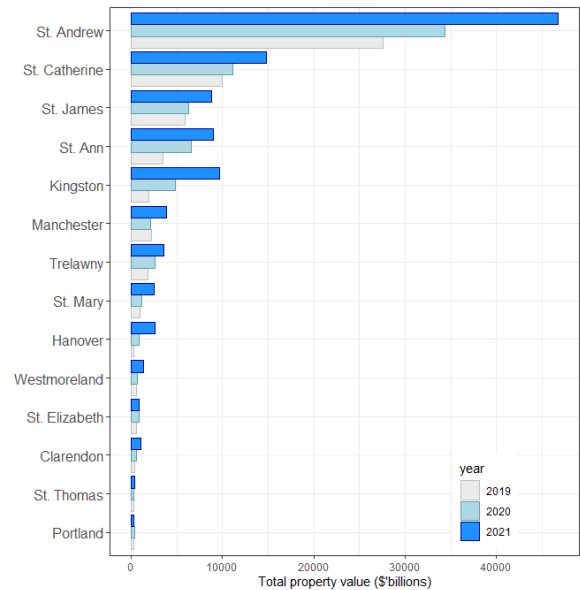
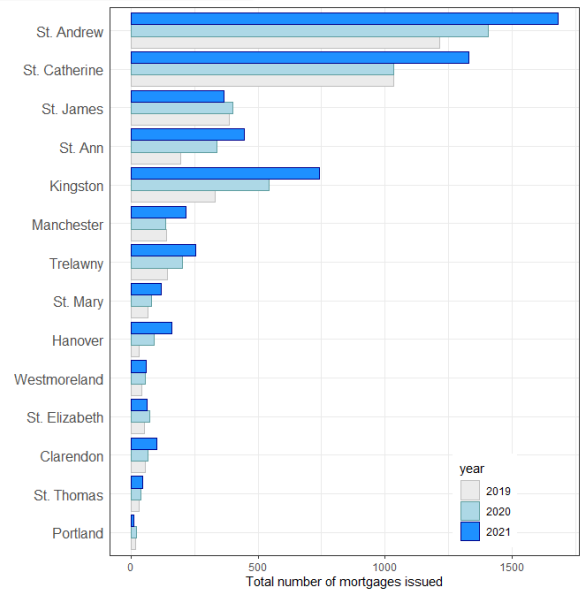


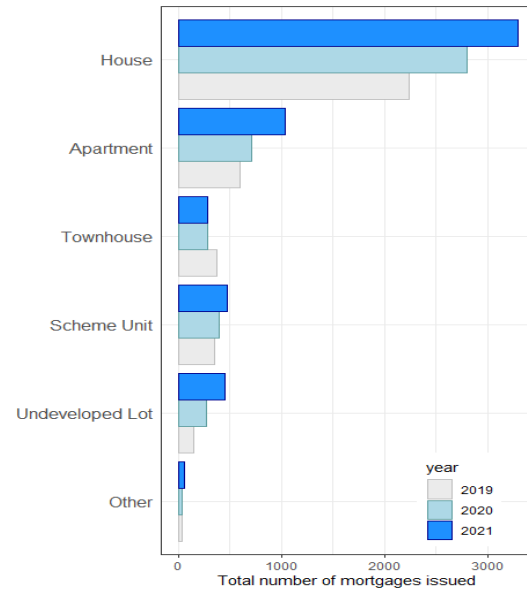
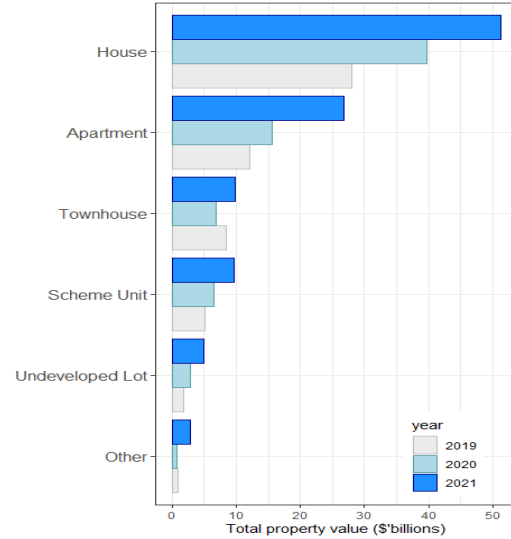
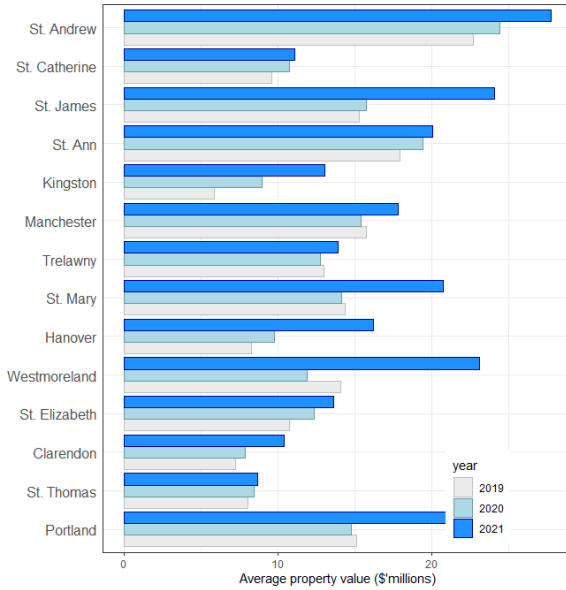
Figure 11 Average Property Values for Mortgages Issued During 2019 – 2021, by Parish



4. Analysis of Property Values and Loan-To-Value Ratios

In aggregate, property values were highest in the more urban parishes (Kingston & St. Andrew, St. Catherine, St. James, and St. Ann), which also saw the highest effective demand during the three-year period. On average, properties in St. Andrew, St. Ann, and St. James were valued between \$17.5 - \$25 million, with similarly valued but less demanded properties recorded in St. Mary, Portland, and Manchester. There were sharp increases in the average property value for properties in Westmoreland, St. James, Portland, St. Mary, and Hanover. In 2021, residential property prices in these parishes reflected average growth of 62.0 per cent. On the other hand, over the same period, the growth in property values in St. Thomas and St. Catherine were benign (see Figure 11).





The larger share and volume of mortgages from DTIs were provided for houses followed by apartments, both of which showed an increasing trend over the review period (see Figure 12). Among varying property types, the average price for houses were among the lowest. Additionally, excluding undeveloped lots which reflected fairly stable property values, the price of houses reflected the lowest rate of growth over the three-year period. Conversely, the average value of townhouses and apartments (mainly in the corporate area), reflected notable price appreciation, particularly during 2021⁶.

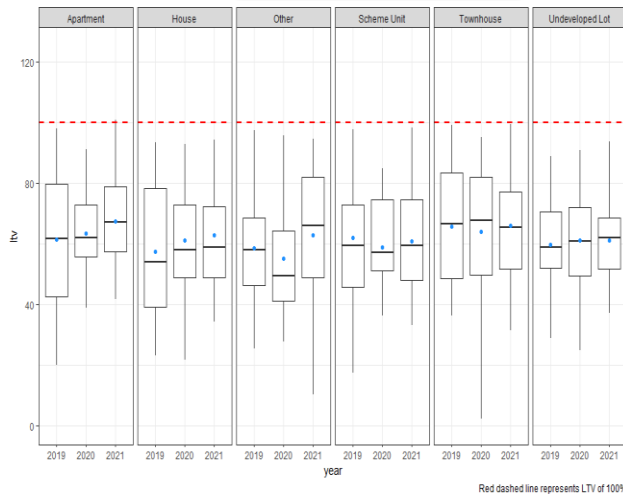
Figure 12 Average Property Values for Mortgages Issued During 2019 – 2021, by Property Type

While average Loan-to-Value (LTV) ratios for townhouses remained stable and higher relative to that of houses during the three-year period, average LTV ratios for apartments showed marked increases between 2019 and 2021 (see Figure 13). The rising average LTV ratios across higher demanded apartments and houses occurred in the context of greater financing being offered by licensees amidst the competitive mortgage market.

⁶ Between 2019 and 2021, the average value of townhouses rose by 52.4 per cent to \$34.6 million in 2021 (\$22.7 million in 2019).

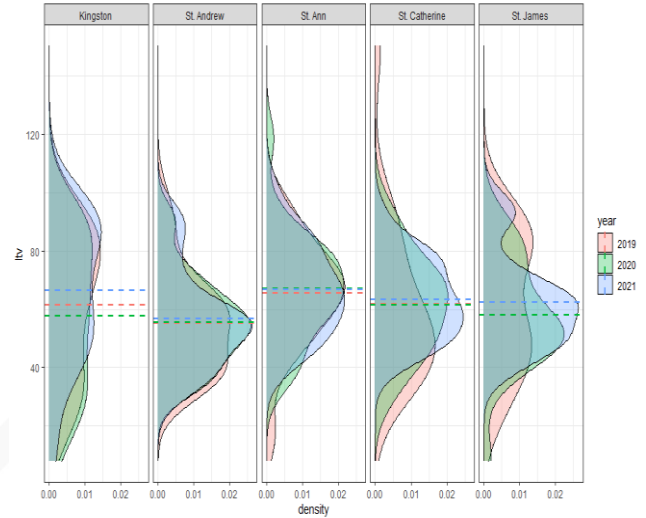
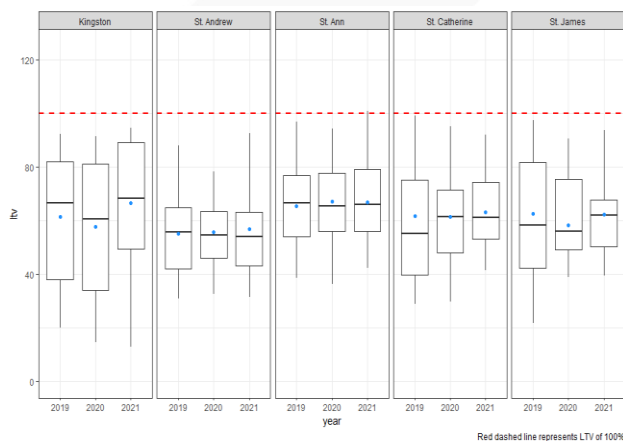
Similarly, the average value of apartments appreciated by 28.7 per cent to \$26.0 million in 2021 (\$20.2 million in 2019).

Figure 13 Distribution of Loan-to-Value Ratios During 2019 – 2021, by Property Type



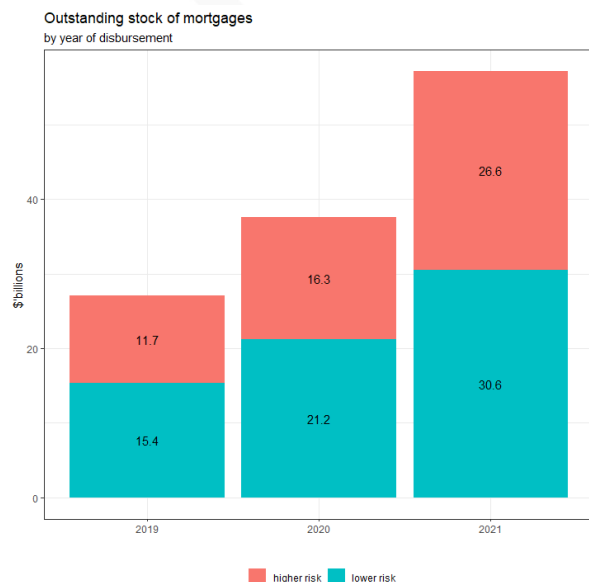
The average LTV ratios reflected some increase over the three-year period across the top five parishes receiving residential mortgages. However, the distribution of LTV ratios was distinctly different across these parishes. The distribution of LTV ratios for St. Ann, St. Andrew, and Kingston were more uniform across time (see Figure 14). However, in 2021, LTV ratios for top-parishes except for Kingston (which were widely dispersed) were closer to being normally distributed.

Figure 14 Distribution of Loan-to-Value Ratios During 2019 – 2021, by Parish



Of the \$121.8 billion in mortgages outstanding as at March 31, 2022, mortgages with LTV ratios in excess of 80 per cent accounted for \$54.6 billion (44.8 per cent), most of which were originally disbursed in 2021 (48.7 per cent of total mortgages disbursed during the three-year period) (see Figure 15). By performance, 1.5 per cent (\$0.8 billion) of mortgages with LTV ratios above 80 per cent were non-performing (mainly with LTV ratios in the range of 80-90 per cent), similar to the performance of the overall portfolio (1.5 per cent of total mortgages disbursed during the three-year period). This suggests that the rate of delinquency among mortgages may not be influenced by the level of credit risk exposure (as reflected in higher LTV ratios); although where claims on the collateral become necessary, DTIs may incur losses due to the smaller buffer in property values.

Figure 15 Distribution of Higher Risk Mortgages Issued During 2019 - 2021



Notwithstanding, total property values for these loans exceeded the outstanding loan amounts, which indicated that collateral coverage would be sufficient to meet capital shortfalls in the event of loan defaults.

5. Stress Scenario

Under a hypothetical stress scenario, DTIs remained resilient in its capacity to absorb losses emanating from a sharp decline in property values and increased delinquencies in growing lending segments. Under the hypothetical stress scenario of 50.0 per cent of performing facilities disbursed for the purchase of houses and apartments entering non-performing status, further dampened by a 30.0 per cent reduction in property value, capital adequacy for the sector remained adequate with a post-shock CAR of 13.7 per cent. This represented a marginal


⁷ Under the Revised Minimum Capital Requirements Framework, exposures secured by residential properties are risk weighted in accordance with the material dependency of the servicing of the loan facility on cash flows generated by the property, as well as the LTV ratio of the facility. Contingent on specific qualitative requirements, risk weights can range from 0 per cent to 150 per

cent, with facilities with LTVs above 80 per cent being risk weighted 50 per cent to 105 per cent. This compares with the capital requirements of the legacy (Basel I) regime, which required the application of a standard risk-weight of 50 per cent for all first legal, owner occupied, residential real estate exposures, and a risk-weight of 100 per cent for all other real estate exposures.

6. Conclusion

The findings of the 2019 housing prices assessment concluded that property prices had climbed considerably, underscored by economic fundamentals. Within this context, mortgage lending continued to account for an increasingly larger share of total DTI loans; however, credit risk remains low as performance among mortgages remained strong, with low levels of past due facilities. Survey results indicate that houses – mainly in St. Catherine and Kingston & St. Andrew – were the most demanded property type, followed by apartments in St. Andrew. On average, LTV ratios reflected increases across residential property types as well as across parishes.

However, with the continued implementation of the Basel III Minimum Capital Requirements framework for supervised entities, increasing LTV ratios among new mortgage facilities will add to the capital burden of licensees due to the higher risk-weighting applied to certain exposures secured by real estate under the revised capital framework.⁷ Additionally, with tenanted properties become more dominant due to the rise of short-term rentals, the risk of capital loss will be of increasing concern; particularly where these exposures cannot be clearly identified. This will have implications for the comprehensive management of risk in the mortgage segment, to the extent that borrowers are dependent on cash flow from rental income



generated by these properties to support loan repayments.

Notwithstanding, the greater share of mortgage financing being provided by DTIs at the loan level, on average, substantially higher property values relative to outstanding mortgages underscored the strength of the underlying collateral associated with these loan facilities.

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.
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.

APPENDIX

Table A.1 Quarterly Financial Soundness Indicators for DTIs

Indicator (%)	Categories	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22
Core Indicators										
Regulatory capital to risk-weighted assets	Capital adequacy	14.3	14.3	14.3	14.4	14.2	14.3	14.1	13.8	14.3
Tier 1 capital to risk-weighted assets	Capital adequacy	13.5	13.5	13.4	13.6	13.4	13.3	13.3	13.0	13.6
Non-performing loans (net) to capital	Capital adequacy	-2.6	-0.8	-0.2	0.0	-1.0	-1.7	-2.6	-3.2	-3.2
Non-performing loans to total loans	Assets quality	2.8	2.9	2.9	3.0	2.9	2.8	2.7	2.5	2.5
Return on assets	Earnings & Profitability	0.6	0.4	0.9	0.6	0.3	0.4	0.5	0.5	0.4
Return on equity	Earnings & Profitability	4.2	2.6	6.6	4.7	2.5	3.4	4.5	3.8	3.5
Interest margin to income	Earnings & Profitability	41.7	43.7	39.1	42.5	44.7	44.7	37.0	-6.0	-7.3
Non-interest expenses to income	Earnings & Profitability	22.8	22.7	19.4	19.6	23.4	22.5	17.6	17.2	17.9
Liquid assets to total assets	Liquidity	23.8	21.3	21.8	22.1	21.9	23.3	24.0	22.4	21.4
NOP to capital	Sensitivity to Market Risk	-26.0	-23.9	-21.2	-21.5	-15.5	-19.2	-13.1	-8.0	-10.0
Encouraged Indicators										
Capital to assets	Capital adequacy	13.6	13.4	13.3	12.9	12.4	12.2	12.2	11.8	12.6
Trading income to total income	Earnings & Profitability	23.4	15.5	27.5	21.9	13.9	12.7	11.9	12.4	9.8
Personnel expenses to non-interest expenses	Earnings & Profitability	31.1	29.9	32.5	29.6	29.1	30.5	29.9	29.2	28.3
Spread between lending & deposits rates ^{1/}	Earnings & Profitability	10.3	10.2	10.2	10.1	10.0	10.0	10.0	10.0	10.0
Deposits to total (non-interbank) loans	Liquidity	132.5	133.8	135.3	136.3	137.1	136.3	136.9	133.0	131.3
Foreign-currency-denominated loans to total loans	Foreign Exchange risk	21.4	21.7	22.1	21.1	20.6	19.7	18.9	18.3	19.1
Foreign-currency-denominated liabilities to total liabilities	Foreign Exchange risk	37.7	37.7	38.3	37.7	38.3	39.4	38.7	40.1	39.7
Household debt to GDP	Household sector leverage	26.8	27.5	27.4	26.3	26.2	25.8	25.4	25.3	25.1

Notes:

^{1/} Weighted by assets size

Table A.2 Quarterly Financial Soundness Indicators for SDs and ICs

Indicator (%)	Categories	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22
A. Securities Dealers ^{1/}										
Regulatory capital to risk-weighted assets	Capital adequacy	22.3	21.8	21.5	23.3	23.1	23.2	21.7	19.9	21.9
Tier 1 capital to risk-weighted assets	Capital adequacy	18.0	17.9	16.5	17.9	19.1	21.2	19.8	19.1	20.2
Non-performing loans (net) to capital	Capital adequacy	0.3	1.0	0.8	0.7	0.5	0.7	1.0	1.0	0.8
Non-performing loans to total loans	Assets quality	2.4	2.6	2.5	1.4	0.8	0.6	0.9	0.7	0.7
Return on assets	Earnings & Profitability	0.7	0.6	0.9	0.6	0.3	0.2	0.4	0.1	0.2
Return on equity	Earnings & Profitability	4.6	3.9	5.5	3.9	1.6	1.1	2.9	1.1	1.1
Interest margin to income	Earnings & Profitability	18.3	18.2	18.2	21.2	19.1	21.7	11.3	14.5	11.5
Non-interest expenses to income	Earnings & Profitability	37.0	37.5	34.6	34.5	47.6	49.9	37.6	38.9	41.3
Liquid assets to total assets	Liquidity	14.6	14.9	14.0	15.3	13.4	13.1	13.1	13.5	13.2
NOP to capital	Sensitivity to Market Risk	7.8	-3.0	17.6	8.5	-6.4	-4.0	-6.4	-4.2	-3.3
B. General Insurance										
Net premium to Capital	Capital adequacy	22.9	24.0	25.0	22.8	23.4	12.3	21.5	17.5	18.4
Capital to Assets	Capital adequacy	25.5	24.5	22.4	23.1	23.5	22.3	20.8	21.9	23.1
(Real estate + unquoted equities + debtors) to total assets ^{2/}	Assets quality	32.9	33.2	38.6	36.1	34.4	37.0	42.4	40.7	39.2
Receivables to gross premiums	Assets quality	219.1	204.5	179.2	230.9	262.2	244.0	193.3	267.7	308.3
Equities to total assets	Assets quality	2.8	2.8	2.5	2.5	2.6	2.4	2.2	2.1	2.1
Net technical reserves to net claims paid in last 3 years	Reinsurance & actuarial issues	328.9	357.2	344.9	350.6	306.6	243.6	268.7	208.0	231.5
Risk retention ratio (net premium to gross premium)	Reinsurance & actuarial issues	41.5	38.4	26.9	34.9	43.3	18.6	20.9	25.8	34.3
Gross premium to number of employees J\$(000)	Management Soundness	10.8	12.0	18.4	13.2	10.7	13.3	21.0	14.1	11.5
Assets per employee J\$(000)	Management Soundness	77.0	78.5	87.9	87.1	84.7	90.5	98.1	95.3	92.7
Net Claims to net premium (loss ratio)	Earnings & Profitability	55.8	63.3	59.5	62.2	68.7	72.3	65.4	66.3	62.4
Total expenses to net premium (expense ratio)	Earnings & Profitability	94.5	96.2	84.0	93.6	102.4	168.8	103.2	118.7	89.4
Combined ratio (loss + expense ratio)	Earnings & Profitability	150.4	159.5	143.5	155.8	171.2	241.1	168.6	184.9	151.8
Investment Income to net premium	Earnings & Profitability	12.3	8.5	9.7	9.2	13.0	11.8	13.6	14.2	18.9
Return on Equity	Earnings & Profitability	5.2	3.0	5.3	3.5	4.6	-0.7	1.8	2.9	5.2
Liquid assets to total liabilities	Liquidity	63.9	67.8	65.6	64.8	67.8	70.5	69.1	67.4	70.2
C. Life Insurance										
Capital to technical reserves	Capital adequacy	104.9	104.9	102.2	110.1	111.1	114.9	118.8	128.4	138.1
(Real estate + unquoted equities + debtors) to total assets	Assets quality	5.8	6.4	6.4	6.8	6.6	6.9	7.0	7.3	6.2
Receivables to gross premiums	Assets quality	62.0	89.2	85.4	87.6	73.5	92.4	89.5	87.7	79.5
Equities to total assets	Assets quality	5.0	5.4	5.8	5.6	6.3	6.1	6.0	5.2	4.9
Net technical reserves to net premium paid in last 3 years	Reinsurance & actuarial issues	674.1	678.2	685.1	656.6	650.2	629.2	610.1	583.1	565.8
Risk retention ratio (net premium to gross premium)	Reinsurance & actuarial issues	97.9	98.7	98.5	97.9	98.5	98.8	98.6	98.5	98.2
Gross premium to number of employees J\$(000)	Management Soundness	11.6	9.0	9.3	9.6	11.3	9.6	9.8	10.5	10.9
Assets per employee J\$(000)	Management Soundness	188.6	190.6	193.1	195.6	202.9	202.4	201.6	201.4	204.4
Expenses to net premium (expense ratio)	Earnings & Profitability	60.6	43.2	47.2	38.0	39.4	42.4	40.8	37.5	47.4
Investment Income to investment assets	Earnings & Profitability	3.3	1.7	2.5	1.7	2.4	1.4	1.2	1.0	2.3
Return on Equity	Earnings & Profitability	10.6	4.0	3.7	8.0	7.0	5.1	4.0	6.0	6.6
Liquid assets to total liabilities	Liquidity	21.1	23.5	22.7	22.2	24.9	22.7	24.2	24.8	30.4

Notes:

^{1/} Includes the twelve securities dealers that makes up 70.0 per cent of the market^{2/} Data revised to include "Recoverable from Reinsurers" as debtors

Table A.3 Annual Sectoral Indicators of Financial Development

Sub-sector	Indicator	Dec-15	Dec-16	Sep-17	Sep-18	Sep-19	Sep-20	Sep-21	Sep-22
Pensions	Types of pension plans								
	Total number of defined benefit plan	107	106	99	98	93	88	87	84
	Total number of defined contribution plan	308	304	300	295	288	290	286	255
	Pension fund assets/total financial assets (%)	11.5	12.0	12.8	13.7	14.5	12.6	11.8	11.4
	Pension fund assets/GDP (%)	22.4	25.2	27.6	29.9	32.8	33.3	31.5	26.4
Foreign exchange markets	Adequacy of foreign exchange (reserves in months of imports)	5.9	5.8	6.3	5.8	7.7	6.2	8.3	4.0
	Foreign exchange reserves as ratio to short-term external debt (%)	527.2	277.3	658.9	594.5	683.9	184.3	188.9	177.7
Collective investment scheme	Local unit trust and mutual funds (J\$BN) ^{4/}	136.4	181.2	211.5	266.9	332.8	331.3	360.1	344.1
	Number of local unit trust and mutual funds	12	13	14	18	19	19.0	19.0	19.0
	Local unit trust and mutual funds/total financial assets (%)	4.3	5.0	5.3	6.1	7.0	6.3	6.1	5.7
	Overseas mutual funds (value of units held by Jamaicans)US\$MN	200.9	223.0	258.6	275.5	293.1	306.9	341.5	247.6
	Overseas mutual funds/total financial assets (%)	0.7	0.8	0.8	0.9	0.8	0.8	0.8	0.8
Sub-sector	Indicator	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-20	Dec-21	Dec-22
Banking	Total number of DTIs	11	11	11	11	11	11	11	11
	Number of branches and outlets	165	165	165	157	157	161	163	163
	Number of branches/thousands population	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.06
	Bank deposits/GDP (%)	47.1	50.4	52.7	55.1	55.1	68.6	70.0	64.1
	Bank assets/total financial assets (%) ^{1/}	36.8	37.1	37.3	38.1	37.8	38.3	38.9	40.5
	Bank assets/GDP (%)	71.8	77.9	80.4	83.4	85.3	101.6	104.1	93.8
Insurance	Number of insurance companies ^{2/}	16	17	16	17	15	15	17	18
	Gross premiums/GDP (%)	4.8	5.1	5.3	5.3	5.3	7.0	6.4	5.9
	Gross life premiums/GDP (%)	2.5	2.8	3.1	2.9	3.1	4.0	3.5	3.1
	Gross non-life premiums/GDP (%)	2.3	2.3	2.2	2.4	2.2	3.0	3.0	2.8
	Insurance assets/GDP (%)	21.1	21.0	20.8	20.6	20.2	22.9	21.9	19.8
	Insurance assets/total financial assets (%)	10.7	10.5	9.6	9.6	9.0	8.6	8.2	8.5
Mortgage	Mortgage assets/total financial assets (%) ^{3/}	8.4	8.4	6.4	7.7	7.8	8.0	8.1	8.7
	Mortgage assets/GDP (%)	16.4	17.6	13.7	16.9	17.5	21.2	21.6	20.1
Securities Dealers	Total number of securities dealers	29	32	32	31	30	30	29	29
	Securities dealer's/total financial assets (%)	16.6	15.8	15.0	13.8	14.0	13.8	13.8	14.3
	Securities dealer's assets/GDP (%)	32.5	33.3	32.3	30.2	31.6	36.6	37.0	33.2
Credit Union	Total number of credit unions	37	37	29	26	29	26	25	25
	Credit union's assets/total financial assets (%)	2.7	2.4	2.6	2.5	2.6	2.6	2.5	2.7
	Credit union's assets/GDP (%)	5.3	5.1	5.6	5.6	5.8	6.9	6.8	6.1
Capital markets	Number of listed securities (equities) ^{5/}	64	68	66	73	63	87	70	69
	Number of new issues (equities) ^{6/}	1	7	8	15	7	6	2	2
	Market capitalization/GDP (%)	36.9	39.7	55.9	69.6	91.3	83.7	83.7	83.7
	Value traded/market capitalization (%)	2.8	3.5	3.4	4.7	4.3	4.9	4.9	4.9

Notes:

^{1/} Financial system assets include assets for banks, insurance companies, credit unions, securities dealers, pension funds, unit trust FUM and mutual funds.

^{2/} There are six life insurers and eleven general insurers. Of the eleven general insurers, two are not operational.

^{3/} Includes data for building societies, commercial banks & National Housing Trust

^{4/} Unit trust portfolios are composed mainly of fixed income securities, equities and real estate investments

^{5/} Includes Junior market listings

^{6/} Includes preference shares

^{7/} Government of Jamaica bonds



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