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

Aside from the supervision of banks, the 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, in particular banks, 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 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 Financial Stability Report 2014 provides an assessment of the main financial developments, trends and vulnerabilities influencing the stability of Jamaica’s financial system during the year. The Report covers:

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

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

1 Financial institutions include inter alia banks, securities firms, insurance companies, unit trusts, mutual funds and pension funds. Financial markets include inter alia foreign exchange, money and capital markets. Financial infrastructure refers to payment and settlement systems.
1. Financial Stability Overview

Macroeconomic Environment

During 2014, risks to domestic financial stability remained tempered against the background of a broadly favorable domestic and international economic environment. Global growth remained moderate while conditions in the global financial markets were relatively stable despite intermittent periods of volatility, associated with concerns regarding global recovery, geo-political tensions and continued falloff in oil prices.

Domestic macroeconomic risks declined in the context of improvements in key macroeconomic variables, especially strengthening in domestic liquidity conditions due to enhancements to the Bank’s liquidity facilities. In addition, domestic financial markets also exhibited improved performance for 2014, with the stronger liquidity conditions contributing to noticeably lower rates in the domestic money market during most of the year.

Furthermore, macro-prudential risk emanating from the household, corporate and public sector remained subdued in 2014. In particular, debt to assets ratios for all three sectors as well as the debt-to-income ratio for the household sector remained below pre-crisis average levels.

Concurrently with the improvements in the domestic economy, the Bank’s macro-prudential indicators showed broadly positive movements during the year. Notably, credit-to-GDP gap measures indicated a general reduction in leverage risk relative to 2013. In addition, there were strong improvements as it relates to the Bank’s measures of insolvency and default risks. The Micro-prudential Indices (MiPIs) for the building societies and FIA licensees also improved on average relative to the prior year.

Conversely, there was a marginal increase in market risk measures.

Further, stress test results based on counterparty exposures revealed that at end-2014, securities dealers and commercial banks, the two largest sub-sectors, showed increased susceptibility to contagion shocks relative to the close of the previous year.

Global Environment

Risks to financial stability from the global economy and financial markets moderated throughout 2014. Global financial markets reflected lower uncertainty and weaker volatilities across a range of asset classes in the context of continued monetary policy easing in several advanced and emerging economies.

Improved conditions in international financial markets had positive implications for financial stability in Jamaica, as some non-deposit taking financial institutions (NDTFI) had greater scope for portfolio diversification through access to a wider range of foreign investments. This was in the context of the BOJ’s lifting of the cap on foreign currency investments for securities dealers and collective investment schemes (CIS) to 7.5 per cent from 5.0 per cent effective 1 July 2014 and given the impending phasing down of retail repos in the broker-dealer industry.

In addition, increased investor confidence in GOJ global bonds was reflected in the decline in the spread between the Jamaica Global Bond Index (GOJGB) and the Emerging Markets Bond Index (EMBI+) in 2014. Nonetheless, global growth remained relatively unchanged for 2014, reflecting uneven recovery in several advanced and emerging economies. Recovery in the USA was the strongest...
and occurred in the context of improved labour market conditions leading to increased consumer expenditure and investment.

**Domestic Financial System Developments**

The asset base of the Jamaican financial sector expanded while the sector recorded healthy financial soundness indicators. The growth in the asset base contributed to a gradual increase in the depth of financial intermediation in Jamaica, as measured by total financial institution assets as a share of GDP, largely reflecting the performance of the commercial banks, FIA licensees and NDTFI sub-sectors. The ratio increased by 6.2 percentage points for 2014 to 191.1 per cent at the close of the year.

Regarding key financial soundness indicators, the deposit taking institution (DTI) sector showed continued positive performance in terms of profitability, asset quality and capital adequacy indicators. SDs and insurance companies, however, reflected deterioration in profitability indicators.

As it relates to solvency levels, insurance companies reflected improvement in capital adequacy while the SDs sector showed deterioration due to increased holdings of foreign currency denoted assets. Nonetheless, in a context of improved liquidity conditions, liquidity indicators for both the DTIs and NDTFIs signaled improvement.

Of note, regarding institutional contribution to systemic risk within the financial sector, there was an increase in the number of Domestic Systemically Important Bank (D-SIB) groups to three during the review period relative to two for the previous year. Furthermore, the interconnectedness of the interbank network increased relative to the prior year reflecting increased net credit exposures of securities dealers to commercial banks.

**Financial System Exposures**

During 2014, the balance sheets of DTIs reflected reduced exposure to household and corporate sector debt. The decline in vulnerability of the DTIs to the household sector was also reflected in improved loan quality in both sectors.

The reduced exposure to household debt was largely driven by slower growth in consumer loans, and to a lesser extent mortgage loans, partly reflecting higher interest rates on personal credit. The slower pace of growth in corporate sector lending was reflected in most economic sectors with the exception of Manufacturing, Tourism, Distribution and Professional & Other Services.

In terms of public sector debt, there was reduced exposure to GOJ investments by many financial institutions during 2014. The decline in exposure occurred in the context of the GOJ substantially reducing its presence in the domestic bond market.

**Risk Assessment of the Financial System**

Financial institutions were generally robust in response to hypothetical market, credit and liquidity shocks examined during 2014 largely due to continued strong capital positions. Furthermore, financial institutions’ post-shock CAR outturns generally remained above the regulatory minimum in response to these hypothetical stress test scenarios.

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1 Total financial institutions’ assets include the assets of commercial banks, building societies, FIA licensees, securities dealers and insurance companies, credit unions, CIS and pension funds.
DTIs’ and SDs’ exposure to liquidity risk moderated during 2014 against the background of stronger Jamaica Dollar liquidity conditions during the year, while these institutions also showed reduced exposure to interest rate risk. Nonetheless, DTIs’ and SDs’ net open positions increased during the year, increasing these institutions’ exposure to foreign exchange risks. The increased exposures contributed to continued resilience of these financial institutions to hypothetical depreciations of the Jamaica Dollar vis-à-vis the U.S. dollar, while there was increased susceptibility to appreciation shocks during the review period.

**Payment System Developments**

The improvement in domestic liquidity conditions aided in effectively reducing liquidity and credit risks within the payments and settlement systems during the year. Furthermore, the average value and volume of cheque transactions declined during the year in the context of the continued migration of activities to real-time means of payment. As such, activities in the JamClear-Real Time Gross Settlement (RTGS) system increased in value during 2014. The migration to real-time means of payment coincided with the reduction in the value threshold limit of the Automated Clearing House (ACH) which resulted in a reduction in settlement risk. Nonetheless, liquidity concentration risk persisted throughout the payment and settlement system during 2014. At the same time, growth in the use of electronic payments instruments remained strong during the review period.

**Outlook**

Anticipated strengthening in domestic economic recovery and aggregate demand should bolster financial institutions’ profitability performance during 2015. Capital adequacy levels have been above statutory requirements and institutions are expected to continue to maintain adequate capital positions during 2015.

Global risks to the stability of the financial system include the reversal of oil prices, changing monetary policy in the USA and political risks in the Euro-area. As such, the country remains vulnerable to a reversal in oil prices; in particular this would have negative implications for inflation performance, the current account of the balance of payments as well as foreign exchange market conditions. In addition, the ongoing retail repo reform within the broker-dealer industry is anticipated to reduce overall systemic risk. Continued strong surveillance of the industry is imperative in the context where trading in the Government domestic bond market remains relatively thin.
2. Macro-Financial Risks

2.1 Overview

The Bank’s macro-prudential indicators showed broadly positive movements during 2014. Notably, the financial stability cobweb reflected average improvements to the ‘global environment’, ‘financial markets’ and ‘capital and profitability dimensions’. Additionally, the Aggregate Financial Stability Index (AFSI) and the Banking Stability Index (BSI) increased on average reflecting positive developments in select macroeconomic variables and a more favourable financial position of the banking sector. Additionally, the Micro-prudential Indices (MiPIs) for the building societies and FIA licensees improved on average while the MiPI for commercial banks remained unchanged on average relative to the prior year. Concurrently, the credit-to-GDP gap measures indicated a general reduction in leverage risk relative to the previous year. Similarly, insolvency risk, as measured by the z-score, declined mainly due to increased profitability. However, there was deterioration in the Macro-financial Index (MaFI) on average mainly reflecting a decline in the 12-month growth in private sector credit.

Default risk, as measured by the distance to default and exposure at default, declined significantly for the review period. Financial markets exhibited improved performance for 2014. The TRE spread fell significantly reflecting improved liquidity conditions in the context of enhancements to the Bank’s liquidity facilities. Furthermore, the risk appetite and Amihud indices for the foreign exchange and stock markets improved relative to the prior year reflecting increased liquidity. However, interconnectedness of the interbank network increased relative to the prior year reflecting increased net credit exposures of securities dealers to commercial banks.

2.2 Global Developments

Global GDP growth is estimated at 3.4 per cent for 2014 reflecting uneven recovery in several advanced and
emerging economies (see Figure 2.1). In particular, faster growth was evidenced in the USA and the UK while the Euro area rebounded from two consecutive years of recession. Further there was deceleration in growth in Japan and China. The slowdown in economic activity in China significantly impacted the global demand for oil; coupled with an increase in oil supplies predominantly from non-Organisation of Petroleum Exporting Countries, in particular the USA, oil prices fell during the second half of 2014 to $53.27 per/bbl at end-2014 from $95.44 per/bbl at the start of the year.

Global financial markets reflected lower uncertainty and lower volatilities across a range of asset classes relative to previous years in the context of continued monetary policy easing in several advanced and emerging economies. This performance was reflected in the Bank of America Merrill Lynch Global Financial Stress Index (BAML-GFSI) as well as the Chicago Board Options Exchange Volatility Index (VIX) (see Figure 2.2). Notwithstanding the improvements in both indices, global financial markets experienced intermittent periods of volatility associated with concerns regarding global recovery, geo-political tensions, lower oil prices, the ending of monetary easing in the USA as well as the risk of the spread of the Ebola virus.

Further, sovereign default and liquidity risks, as reflected in sovereign credit default swap (CDS) prices and spreads, increased for selected countries during the review period (see Figure 2.3 and Figure 2.4). In particular, CDS prices and spreads increased for Ukraine and Russia reflecting the impact of geo-political tensions arising from conflicts

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1 See IMF World Economic Outlook April 2015.
2 Recovery in the USA was the strongest, prompting the gradual removal of monetary stimulus in the form of the quantitative easing (QE3) policy. This occurred in the context of improved labour market conditions leading to increased consumer expenditure and investment. Growth in the UK and the Euro area mainly reflected the impact of expansionary monetary policy measures.
3 Slower growth in Japan mainly reflected weak domestic demand in the context of an increase in a consumption tax in April which offset stronger public investment and improved export growth. The deceleration in expected growth in China mainly reflected lower property investment, slower credit growth and weak industrial demand.
between Ukrainian authorities and pro-Russian separatists in Ukraine. Additionally, concerns regarding fiscal and debt sustainability in the context of lower global oil prices for Venezuela, as well as debt default by Argentina, were reflected in the increased prices and spreads. On the other hand, CDS prices and spreads for Portugal, Spain and Greece continued to decline consistent with the improvements in the growth prospects following fiscal consolidation in these jurisdictions.

Improved conditions in international financial markets had positive implications for financial stability in Jamaica, especially in the context of the BOJ’s lifting of the cap on foreign currency investments for securities dealers and collective investment schemes (CIS) to 7.5 per cent from 5.0 per cent effective 1 July 2014. These institutions would have access to a wider range of foreign investments thereby benefiting from portfolio diversification.

### 2.3 Domestic environment

For 2014, there were improvements in the domestic macroeconomy. This mainly reflected improvements in key macroeconomic variables, positive effects of the country’s passing the quarterly reviews under the EFF programme, a favourable sovereign outlook by Standard & Poor’s ratings agency and improvements in liquidity conditions. Of note, there were improvements in the level of GDP growth, inflation, current account of the balance of payments and fiscal positions and the net international reserves (NIR) (see Figure 2.5). The economy is estimated to have grown by 0.5 per cent for 2014 relative to growth of 0.2 per cent for the

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4 Subsequent to the decision by President Vladimir Putin to support pro-Russian separatists, both the US and EU imposed sanctions which hindered access to foreign financing. This lead to increased demand for state aid from companies, which in addition to falling oil prices increased the risk of fiscal and debt sustainability for Russia.

5 Argentina was prevented from paying interest due on outstanding debt by the pre-defined interest date. This was as a result of a court ruling in the US which required Argentina to first repay investors who chose not to accept previous debt restructurings.

6 Standard & Poor’s rating agency revised Jamaica’s outlook on the long-term sovereign credit ratings to positive from stable in the context of the country’s passing of the EFF and continued economic progress.
previous year. In addition, the inflation rate for the review period declined to 6.4 per cent relative to 9.4 per cent in the previous year. This decline reflected the significant fall in global oil prices which partly offset the impact of severe drought conditions on the cost of agricultural goods.

Additionally, the pace of depreciation of the Jamaica Dollar vis-à-vis the United States dollar decelerated for 2014 relative to the previous year. This partly reflected reduced net demand for foreign exchange following the issuance of a global bond by the Government in July 2014 for US$800 million. Against this background, there was an increase in the NIR of US$0.99 billion to US$2.0 billion at end-2014. The current account deficit of the balance of payments also declined by 12.8 per cent to US$1 150.82 million. The improvement in the current account deficit was largely due to the fall in oil prices as well as the depreciation of the Jamaica Dollar vis-à-vis the United States dollar. Regarding the fiscal deficit, improvements generally reflected tighter fiscal consolidation by the Government in the context of lower than budgeted tax revenue.

2.4 Cobweb measure of financial stability

Risks to financial stability were reduced during 2014 as reflected in the BOJ’s measures of financial stability. In particular, the financial stability “cobweb” diagram indicated that, on average, risks from the ‘global environment’, ‘financial markets’ and ‘capital and profitability’ dimensions declined relative to 2013 while risks to the ‘domestic environment’ and ‘funding and liquidity’ dimensions remained unchanged (see Figure 2.6).

Of note, the ‘global environment’ largely reflected favourable growth and lower unemployment rates for OECD countries while the financial markets reflected improvements in the stock market, the change in the 180-day Treasury bill rate as well as the foreign exchange bid-ask spread.
2.5 Financial Imbalances

2.5.1 Aggregate Financial Stability Index (AFSI)
The Aggregate Financial Stability Index (AFSI) improved during the review year recording a quarterly average increase to 0.71 for 2014 relative to a quarterly average of 0.62 for 2013 (see Figure 2.7). This was driven by a reduction in the financial vulnerability sub-component of the AFSI reflecting positive developments in key macroeconomic variables such as the inflation rate and the current account deficit to GDP.

2.5.2 Macro-Financial Index (MaFI)
On the other hand, the Bank’s Macro-Financial Index (MaFI) deteriorated during 2014 to a quarterly average of 15.0 points when compared to a quarterly average of 12.0 points for 2013 but remained well below the 1996-1998 financial crisis threshold value of 44.0 points (see Figure 2.8). This outturn largely reflected average deterioration in the 12-month growth in private sector credit, the impact of which was partly offset by average improvements in the M2-to-NIR and BOJ credit to the banking sector-to-GDP indicators.

2.5.3 Banking Stability Index (BSI)
The Banking Stability Index (BSI) measured by the BOJ indicated reduced risks to the stability of the banking system for 2014 (see Figure 2.9). This was driven primarily by average improvements in asset quality, capital adequacy, profitability, liquidity and foreign exchange risk indicators. In particular, non-performing loans to total loans recorded

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7 The BOJ macro-financial and micro-prudential indices of the banking sector are monitored via a non-parametric approach to signal banking sector crisis. The signal is based on scores for each indicator, which is computed based on the number of standard deviations of each indicator from its ‘tranquil period’ mean value. The tranquil period refers to an eight quarter period of relative stability that precedes the beginning of a signaling window. The scores range from 0 to 5 with a score of 5 representing the most severe signal. Banking sector vulnerability at a point in time is determined by the trend in the aggregate score (or index) over the previous eight quarters (signaling window).
further declines during 2014 while the capital adequacy ratio (CAR) for the banking system steadily improved. Other component indicators of the BSI reflecting improvement were liquid assets to total assets, liquid assets to total deposits, net open position to Tier 1 capital, return on assets (ROA) and return on equity (ROE).

2.5.4 Micro-prudential Indices

The BOJ’s micro-prudential indices (MiPIs) generally improved over the review period relative to 2013. Of note, the average MiPI of the building societies and FIA licensees improved, declining to respective averages of 11.0 points and 1.0 point for 2014 relative to averages of 20.0 points and 9.0 points for 2013. Further, the average MiPI for the commercial banks remained unchanged at 16.0 points for 2014. The performance of the MiPIs for building societies and FIA licensees largely reflected lower signals as a result of average improvements in balance sheet and profitability indicators (see Figure 2.10 and Figure 2.11).

Of note, for building societies, there were improvements in the weighted ratios of investments to assets, deposits and repos to assets, loans to capital, deposits to assets, non-interest income to assets, and interest income to assets. The impact of these improvements were partly offset by increased signals from the ‘Other’ category. In particular, there was deterioration in foreign exchange liabilities to foreign exchange assets and foreign exchange deposits to foreign exchange assets. Regarding the FIA licensees, there were improvements in investments to assets, loans to capital, employees’ salaries to assets and interest income to assets indicators.

The average performance of the MiPI for the commercial banks reflected improvements in asset quality and profitability indicators which were offset by deterioration in balance sheet indicators (see Figure 2.12). Specifically, there were average improvements in non-performing loans to total loans, non-performing loans to assets, reserves for loan losses to assets, and net income to assets. Average

*The Z-score was adjusted relative to previous publications to reflect amendments to the methodology to more adequately account for monthly profits.

Note: The Z-score (insolvency risk) index is used as a measure of a bank’s financial soundness. The Z-score is used to capture the likelihood of a bank’s earnings in a given year becoming low enough to eliminate the bank’s capital base and thus, the likelihood of the bank becoming insolvent. A higher Z-score implies a lower probability.

The Conditional Value-at-Risk (CoVaR) is a measure of the degree of risk externalities that a single institution can place on the financial system. Delta CoVaR is an estimate of how much the system’s large loss increases because of institution i’s stress. When Bank i contributes to systemic risk, its CoVaR would be very low (a large negative number).
deterioration was recorded in capital to assets and deposits to asset indicators.

2.5.5 Credit-to-GDP relative to long-term trend

There was reduced risk of excessive leverage within the domestic financial system during the review period. This occurred in spite of improved Jamaica Dollar liquidity conditions in the money market which provided resources for DTIs to further extend credit. Specifically, the total credit-to-GDP, private sector credit-to-GDP and total credit and investment-to-GDP declined relative to their long term trends during 2014 (see Figure 2.13). In fact, private sector credit grew at a slower pace during 2014 relative to the previous year and was below the lower threshold standard value of 2.0 percentage points (see Figure 2.14). Public sector credit declined, particularly during the third quarter of 2014, mainly reflecting a reduction in fiscal dominance within the local economy in the context of the Government’s global bond issue. Concurrently, DTI lending activity increased marginally during the period to 9.7 per cent at end-2014 relative to 9.5 per cent at end-2013.

2.5.6 Z-score index of Insolvency Risk

The vulnerability of the DTIs to insolvency risk declined for the review period. In particular, the Z-score index for the DTI sector reflected an average monthly increase of 11.1 points to an average monthly value of 30.7 points for 2014 relative to the previous year (see Figure 2.15). This improvement was mainly attributable to an average increase in profits, capital as well as a reduction in the volatility of assets. In particular, a large institution contributed significantly to these improvements for 2014.

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9 The Basel Committee on Banking Supervision (BCBS) has proposed a threshold range of two to ten percentage points for the private sector credit to GDP gap in the determination of countercyclical capital buffer.
10 The leverage ratio is calculated as total assets divided by capital.
11 The Z-score (insolvency risk) index is calculated as:
   \[ z = \frac{\text{RORAC} + C/A}{\text{STD DEVIATION}(\text{RORAC})} \]
   where RORAC is the bank’s return on risk adjusted capital, C/A is its regulatory capital to asset ratio and \( \text{STD DEVIATION}(\text{RORAC}) \) is its standard deviation of return on assets computed over the sampling period. The Z-Scores are weighted based on the relative total assets of the sectors.
2.6 Externalities: Interconnectedness

2.6.1 Conditional Value-at Risk (Co-VaR) Assessment\textsuperscript{12,13}

For 2014, the VaR of the financial system, comprising the four publicly listed DTIs and four publicly listed NDTFIs increased (see Figure 2.16). The outturn mainly reflected a significant increase in stock market volatility. Delta CoVaRs for the review period, which measures an institution’s contribution to systemic risk, indicated that on average the NDTFIs contributed the most to the risk in the system for the eight year sample period (see Figure 2.17).\textsuperscript{14} For 2014, NDTFI 1, NDTFI 2 and NDTFI 3 recorded the highest average delta CoVaRs. These institutions combined represented approximately 48 per cent of the market on average.

2.6.2 Contingent Claims Analysis: Distance to Default

For the review period, the vulnerability of DTIs and NDTFIs to default risk, as measured by the distance to default, declined (see Figure 2.18).\textsuperscript{15} This suggests that the market anticipates DTI and NDTFI assets to be sufficient enough to repay debt obligations over the time horizon. In particular, the distance-to-default for DTIs increased to 17.1 at end-2014 relative to revised estimates of 7.5 at end-2013. This improvement mainly reflected a decrease in the implied volatility of assets as well as an increase in the market value of assets. Additionally, the distance-to-default for NDTFIs increased to 25.2 at end-2014 relative to revised estimates of

\begin{equation}
\Delta \text{CoVaR}_{i}^{\text{cont}} = \text{CoVaR}_{i}^{\text{cont}} + \text{VaR}_{j} - \text{CoVaR}_{j}^{\text{cont}} + \text{VaR}_{\text{median}}
\end{equation}

\textsuperscript{12}The Conditional Value-at-Risk (CoVaR) is a measure of the degree of risk externalities that a single institution can place on the financial system. It measures the VaR of the system when institution i is at its VaR or stressed level. When Bank i contributes to systemic risk, its CoVaR would be very low (a large negative number). The CoVaR for institution i is derived from the one (1) per cent quantile regressions of weekly system returns on the VaR of institution i and other financial and macroeconomic variables.

\textsuperscript{13}Delta CoVaR is an estimate of how much the system’s large loss increases because of institution i’s stress. It is the CoVaR of the system conditional on institution i being at its VaR (stress) level minus the CoVaR of the system conditional on institution i being at its median (normal) level,

\begin{equation}
\Delta \text{CoVaR}_{i}^{\text{cont}} = \text{CoVaR}_{i}^{\text{cont}} + \text{VaR}_{j} - \text{CoVaR}_{j}^{\text{cont}} + \text{VaR}_{\text{median}}
\end{equation}

\textsuperscript{14}The average relates to the seven year period 2007 to 2014.

\textsuperscript{15}Default barrier = short-term + \frac{1}{2}(long-term liabilities)
15.5 at end-2013. This improvement was primarily influenced by reduced volatility of assets.

2.6.2 Interbank Market

During 2014, the securities dealers, insurance companies and building societies were generally net lenders in the inter-bank market, as measured by positive net exposures-to-capital, while commercial banks continued to be the largest net borrowers (see Figure 2.19). The SDs also continued to show the largest counterparty exposures during 2014. These institutions had the largest net exposures on average for the year in terms of both dollar value and as a proportion of their capital base.  

In particular, SDs’ net credit exposure as a share of capital in relation to the commercial bank sub-sector increased to 33.6 per cent at end-2014 relative to 15.4 per cent at end-2013 (see Figure 2.20 and Figure 2.21). Additionally, general insurance companies recorded the second largest net exposures albeit smaller relative to the end of the prior year. Of note, net credit exposure to commercial banks as a share of capital for the general insurance companies declined to 13.5 per cent at end-2014 relative to 14.0 per cent at end-2013.

2.7 Externalities: Common Exposures

2.7.1 Financial Market indicators

In the context of largely positive macroeconomic developments, domestic financial markets exhibited increased performance during 2014. The Bank’s Composite Indicator of Systemic Stress (CISS) declined on average to 0.32 for 2014 relative to a monthly 0.34 for 2013 (see Figure 2.22). This largely represented improvements in the money market, the impact of which was partly offset by deterioration in foreign exchange market conditions.

Following the national debt exchange (NDX) in 2013, trading of domestic bonds on the secondary market has remained thin (see Figure 2.23). As a result, yields on GOJ domestic Benchmark Investment (BMIs) Notes stayed

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16 A large exposure is one that exceeds 10.0 per cent of a lending bank’s regulatory capital at the end of a period.
relatively stable during the year. On the other hand, increased investor confidence in GOJ global bonds was evidenced by the country’s lowest coupon for a long-term international bond at 7.625 per cent in addition to an upward revision to the size of the transaction. This confidence was also reflected in the decline in the spread between the Jamaica Global Bond Index (GOJGB) and the Emerging Markets Bond Index (EMBI+) in 2014 (see Figure 2.24).

In the context of refinements to the Bank’s Enhanced Liquidity Management Framework (ELMF) during the second half of 2014, liquidity risks in the money market were significantly reduced. Of note, the TRE spread declined by 320 basis points (bps) for the review period relative to the prior year as counterparty risk declined (see Figure 2.25). The impact of the ELMF as well as the Bank’s offerings of special open market operation (OMO) instruments was also reflected in the Money Market Risk Appetite Index (MMRAI). Specifically, the MMRAI declined to 2.8 points at end-2014 relative to 4.3 points at end-2013, reflecting a lower risk appetite in the overnight market given attractive alternative options available to investors (see Figure 2.26).

For 2014, the foreign exchange market exhibited lower volatility relative to the prior year. This was influenced by a reduction in the pace of depreciation partly reflecting improved foreign exchange supply and investor confidence. Against this background, the RAI for the foreign exchange market declined for 2014 relative to 2013 indicating a lower risk appetite consequent on a decline in activity in the market (see Figure 2.26). Concurrently, this lower volatility was reflected in the Amihud Index which declined for 2014 indicative of greater liquidity in the foreign exchange market

17 In an effort to provide greater predictability to the provision of liquidity to DTIs, the Bank increased the limits on the Standing Liquidity Facility (SLF) and the Bi-Monthly Repurchase Operations (BRO). The Bank doubled the limit on the SLF for each DTI and satisfied all bids under the BRO rather than apportion based on the relative asset size of each DTI. Additionally, the Bank increased the interest rates on the liquidity facilities to align with market-determined interest rates and prevent arbitrage and unnecessary risk-taking by institutions.
(see Figure 2.27). Improvements in liquidity conditions were also reflected in lower costs of executing transactions as the monthly bid-ask spread declined to an average of 0.5 percentage point relative to 0.7 percentage point for 2013 (see Figure 2.28).

Despite the general improvements in key economic variables during 2014, the stock market continued to exhibit weak performance. The Jamaica Stock Exchange (JSE) Main Index declined by 5.3 per cent for 2014 relative to a decline of 12.5 per cent recorded for the prior year. However, liquidity conditions in the stock market improved as evidenced by the performance in the Amihud Index of stock market depth (see Figure 2.29). The index recorded an average decline to 0.27 for 2014 when compared to 0.34 for 2013 mainly reflecting higher traded volumes for 2014. Increased liquidity was also reflected in the JSE RAI which increased to negative 0.08 in 2014 relative to negative 0.21 for 2013 (see Figure 2.26).

2.7.2 Exposure to sovereign debt default risk

Sovereign debt default risk of the financial system declined over the review period. Of note, the ratio of holdings of GOJ total debt to total capital was approximately 104.5 per cent, 72.0 per cent, 73.7 per cent, 446.8 per cent, 243.5 per cent for commercial banks, FIA licensees, building societies, securities dealers and life insurance companies, respectively, at end-2014. These exposures represent respective declines of 22.3 percentage points, 14.0 percentage points, 30.3 percentage points and 30.0 percentage points for the commercial banks, FIA licensees, building societies and securities dealers, respectively, relative to end-2013 (see Figure 2.30). The declines in sovereign default risk reflected lower holdings of GOJ debt as well as a steady increase in capital. On the other hand, exposures for the life

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18 The probability of default is estimated using a logit-model with data from 36 countries over the period 1986 to 2005. It evaluates the likelihood of a debt-rescheduling event contingent on developments in the macro-economic environment.

19 The credit risk exposure (CRE) is a product of the holding of GOJ total debt by institutions, the probability of default (PD) and the loss given default (LGD).
insurance companies increased by 7.1 percentage points relative to end-2013 reflecting a larger decline in capital compared to the decline in holdings of GOJ debt.

Similarly, BOJ’s estimate of the probability of sovereign debt default declined over the review period to 4.7 per cent at end-2014 relative to 7.5 per cent end-2013. Further, the exposure of the financial system to sovereign credit risk, as measured by credit risk exposure (CRE), also declined for 2014. The CRE for commercial banks, FIA licensees, building societies, securities dealers and life insurance companies declined as a per cent of capital to 3.4 per cent, 2.4 per cent, 2.4 per cent, 14.6 per cent and 8.0 per cent, respectively, for the review period. This compares to 6.6 per cent, 4.5 per cent, 5.4 per cent, 24.8 per cent and 12.3 per cent for commercial banks, FIA licensees, building societies, securities dealers and life insurance companies, respectively, at end-2013 (see Figure 2.31).
Box 2.1 Interconnectedness in the Caribbean: The Jamaican Financial System

1.0 Motivation
Against the background of the global financial crisis and the significant cross-border spill-overs which ensued, the BOJ agreed to participate in a regional initiative to develop a financial Interconnectedness Map which was commissioned in 2013 by CARICOM central bank governors with assistance from the International Monetary Fund (IMF) and the Inter-American Development Bank (IDB). The project objectives were (i) to identify factors creating regional financial stability risks due to interconnections, (ii) to determine the resilience of the regional financial system to macroeconomic shocks and (iii) to strengthen the current policies and practices of the financial stability network.

This Interconnectedness Map is intended to show the intra-regional financial exposures of banks and insurance companies (ICs) for each of the participating countries under the following three interconnections:
- To other financial sectors and sovereigns,
- To selected countries, and
- To selected economic sectors considered important for the region.

The assessment in this Box captures the gross assets and liabilities of domestic banks and ICs to regional and global financial sectors and sovereigns as well as to other economic sectors for the period end-June 2013.

2.0 Regional and Global Sectors
As at end-June 2013, Jamaican banks and ICs on aggregate recorded significant gross claims on the United States, Europe and Canada and to a lesser extent to countries in the region (see Figure 1.0). Gross claims of Jamaican banks and ICs on banks and sovereigns in the United States, Europe and Canada on aggregate totaled $102.1 billion Jamaican Dollars over the period. On the other hand, gross claims on regional sovereigns and banks on aggregate were relatively small totaling $11.0 billion. Further disaggregation indicated that the banks had greater exposure totaling $98.1 billion Jamaican Dollars or 107.4 per cent of regulatory capital, mainly reflecting exposures to global banks (see Figure 2.0a). This could be mainly attributable to the fact some Jamaican banks are a sub-set of a global parent company. These exposures were largely deposits held with overseas banks and indicated the vulnerability of the Jamaican banks to default events in these global jurisdictions. Concurrently, Jamaican ICs were vulnerable to Barbados, the United States, Other Caribbean and the Rest of the World accounting for $14.7 billion or 25.0 per cent of capital (see Figure 2.0b). Notably, these asset exposures mainly reflected sovereign loans and debt securities.

Figure 1.0: Gross claims on regional and global sectors by Jamaican banks and ICs

Figure 2.0 (a): Gross claims on regional and global sectors by Jamaican banks

Notes: Nodes represent countries weighted based on GDP per capita (US$) while links represent the connections between countries weighted by the size of gross asset exposures. Arrows pointing away from a node represent the assets of a node while arrows pointing towards a node represents the liabilities of a node.
3.0 Other Economic Sectors

On aggregate, Jamaican banks and ICs were significantly concentrated in central bank assets, households and the residential real estate sectors across the region as at end-June 2013 (see Figure 3.0). In particular, this vulnerability was concentrated in banks with combined exposures of $483.6 billion or 529.1 per cent of regulatory capital (see Figure 4.0a). To a lesser extent, Jamaican banks’ gross asset concentrations across the region to the Tourism, Construction and Other NBFI sectors totaled $143.0 billion or 156.5 per cent of regulatory capital. Jamaican ICs were heavily exposed to central bank assets for the period under review in the form of investments in Bank of Jamaica Certificate of Deposits (CDs). These investments accounted for $11.3 billion or 19.2 per cent of capital (see Figure 4.0b).

Notes: Links are weighted by the size of gross asset exposures. Arrows pointing away from a node represent the assets of a node while assets pointing towards a node represents the liabilities of a node.
3. Financial System Developments

3.1 Overview

The asset base of the Jamaican financial sector expanded while the sector recorded healthy stability indicators. The DTI sector showed continued positive performance in terms of profitability, capital adequacy and liquidity. Asset quality also improved within the DTI sector, with the NPL ratio declining to 4.9 per cent, at end 2014, relative to 5.4 per cent, the end of the previous year.

Within the NDTFI sector, improvement in securities dealers’ performance was seen in terms of asset growth. However, a sharp increase in holdings of risk weighted foreign-currency denoted assets resulted in a decline in capital adequacy and increased sensitivity to foreign exchange risk. The insurance sector expanded while maintaining satisfactory capital adequacy and solvency levels. Furthermore, an assessment of consolidated banking groups showed an increase in systemic risk given that the number of Domestic Systemically Important Bank (D-SIB) groups increased to three relative to two in the previous year.

3.2 The Financial System

There was improvement in the depth of financial intermediation in Jamaica during 2014, as measured by total financial institutions’ assets as a share of GDP (see Figure 3.1). The ratio increased marginally to 191.1 per cent at end-2014 relative to 184.9 per cent at end-2013. This increase in the ratio during 2014 was primarily due to faster growth in the financial system’s asset base relative to growth in GDP. In contrast, this indicator decreased for Barbados to 214.8 per cent at end-2014.

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1 Total financial institutions’ assets includes the assets of commercial banks, building societies, FIA licensees, credit unions, securities dealers, insurance companies, pension funds, mutual funds and unit trusts.

2 DTIs include commercial banks, building societies and FIA licensees.

3 Assets are defined as total balance sheet assets.
relative to 220.3 at the end of the previous year (see Figure 3.1). The outturn for Barbados was due to a decline in financial institutions’ assets as well as GDP growth. However, Barbados maintained its position as the country with the highest depth of financial intermediation in the Caribbean. The depth of financial intermediation in Trinidad and Tobago remained relatively constant at 162.5 per cent at end-2014 relative to 163.0 per cent at end-2013.

3.3 DTIs and Credit Unions

3.3.1 Market share of DTIs and Credit Unions

Commercial banks remained dominant within the DTI sector. Market share of commercial banks and FIA licensees increased to 70.2 per cent and 2.7 per cent during 2014, relative to 69.9 per cent and 2.4 per cent, respectively, for 2013. However, the market share of building societies and credit unions declined by 0.3 percentage point and 0.2 percentage point to 20.0 and 7.2 per cent, respectively (see Figure 3.2).

3.3.2 DTIs balance sheet position

All DTI sub-sectors recorded growth in asset base during 2014. DTIs’ total assets grew by 10.8 per cent to $1,152.3 billion during 2014 relative to growth of 10.6 per cent the previous year. The asset growth for the review year was due primarily to a 24.6 per cent increase in holdings of Investments. Growth in this category reflected growth in foreign investments of 61.6 per cent, the impact of which was partially offset by a decline of 1.6 per cent in domestic investments (see Figure 3.4). The decrease in domestic investments largely reflected reductions in the holdings of GOJ domestic bonds. In addition, Loans, Advances & Discounts increased by 6.6 per cent, which reflected an increase of 9.9 per cent in domestic loans and a decline of 3.9 per cent in foreign currency loans. Loans,

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4 Credit union assets are as at end-September 2014.
Advance & Discounts comprised the largest share of DTIs’ asset base, despite falling to 48.1 per cent at end-2014 relative to 50.0 per cent at end-2013 (Figure 3.5). The ratio of foreign currency loans to total loans declined to 21.9 per cent at end-2014, relative to 24.2 per cent at end-2013. Concurrently, DTIs net open position to capital increased by 2.0 percentage points to 12.3 per cent.

DTIs continued to have considerable exposure to the domestic household sector, as this sector represented the DTIs’ largest exposure to the private sector during 2014. Household sector loans as a proportion of total loans increased by 0.6 percentage point to 51.5 per cent at end-2014 (see Table 3.1). Moreover, the Herfindahl-Hirschman Index (HHI), used to measure concentration in private sector lending increased by 2.1 per cent to 2 898.2 at end-2014 (see Figure 3.6). In addition, the DTIs’ other significant exposures in the lending market were to Distribution (10.3 per cent), Tourism (6.1 per cent), Transport (5.8 per cent), and Construction (5.7 per cent) at end-2014 (see Table 3.1).

DTIs’ asset quality as measured by NPLs as a share of total loans, continued to improve during 2014. This development was largely due to a 2.2 per cent decline in NPLs relative to a decline of 10.5 per cent the previous year (see Figure 3.7). In addition, the NPL coverage ratio increased to 104.7 per cent at end-2014 from 95.7 per cent at end-2013 and remained well above the requirement under the international accounting standards. This increase was characteristic of the performance of all the DTI sub-sectors and was reflected in an increase in the median coverage ratio to

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5 The Herfindahl-Hirschman Index (HHI) is an indicator used to measure concentration. In this case, it is used to measure loan concentration within the private sector and 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.

6 NPL coverage ratio measures a bank’s ability to absorb potential losses from its non-performing loans. It is calculated as provision for impairment under the IFRS plus prudential provisions for expected losses based on regulatory criteria as a ratio to NPLs.
Figure 3.9  Distribution of NPL coverage ratio in the domestic DTI sector (min, max and median)

Figure 3.10  Liquidity conditions in the DTI sector

Figure 3.11  DTI funding sources as a share of total liabilities as at end-2014 and end-2013

13.3 per cent relative 7.2 per cent at end-2013 (see Figure 3.8 & Figure 3.9). Loan loss provisions as a percentage of total loans increased to 5.3 per cent at end-2014, relative to 5.2 per cent at end-2013 (see Figure 3.8). However, a decomposition of asset quality by sector showed that NPLs continued to be concentrated within Personal Loans. More specifically, NPLs related to this category accounted for 56.8 per cent of total NPLs, relative to 44.6 per cent, the previous year.

DTIs maintained adequate levels of liquidity for 2014 in regards to the minimum statutory requirements. Liquid asset reserves in excess of the minimum statutory requirements increased by 115.4 per cent for 2014, relative to a decline of 17.7 per cent for the previous year. Similarly, the ratio of liquid assets to total assets increased to 28.2 per cent at end-2014 from 23.6 per cent at the close of the previous year. The increase in the ratio was due mainly to DTIs’ faster pace of growth in liquid assets relative to the asset base, particularly within the building societies’ sub-sector (see Figure 3.10). This was largely due to enhanced liquidity provision by the Bank through its major liquidity facilities during 2014. Notwithstanding, funding from deposits continued to represent DTIs’ main source of asset financing. Total deposits increased by 6.9 per cent to $683.8 billion, representing 69.9 per cent of total liabilities at end-2014 relative to 73.7 per cent at end-2013 (see Figure 3.11). In addition, total deposits as a share of loans increased marginally to 123.4 per cent at end-2014 relative to 123.1 per cent at end-2013. This indicated relative stability in funding risk over the review period (see Figures 3.11 and 3.12).

The capital adequacy ratio (CAR) for DTIs increased during 2014. Of note, the median CAR increased to

7 DTIs are required to hold reserves amounting to 26.0 per cent of their average liabilities in the form of liquid assets at the Bank of Jamaica.
15.9 per cent at end-2014 relative to 15.5 per cent at end-2013 (see Figure 3.13). The quality of regulatory capital, as measured by the ratio of Tier 1 capital to total regulatory capital, improved to 121.7 per cent at end-2014 relative to 102.4 per cent at end-2013. This performance largely reflected an increase in non-distributable retained earnings which remained the largest component of Tier 1 capital at end-2014 accounting for 48.2 per cent relative to 47.9 per cent in 2013. Furthermore, the Tier 1 capital to risk weighted assets ratio also increased to 16.7 per cent, from 16.2 per cent the previous year.

3.3.3 DTIs’ earnings and profitability

At end-2014, the DTIs recorded net profits of $23.0 billion reflecting an increase of 14.3 per cent relative to that which obtained at end-2013 (see Figures 3.14 and 3.18). Similarly, the sector’s return on equity (ROE) increased by 0.8 percentage point to 13.5 per cent for the year. A decomposition of the ROE showed increases in the operating margin, the risk weighted assets density ratio and the equity multiplier (see Figure 3.15).  

In addition, DTIs’ return on assets (ROA) increased marginally to 2.0 per cent at end-2014 from 1.9 per cent at end-2013 (see Figure 3.17). The performance of the ROA was buoyed by an increase in net interest income for DTIs which increased to $65.0 billion at end-2014 relative to $62.5 billion at end-2013. This reflected an increase in interest income of 6.8 per cent for 2014, which largely reflected growth in Loans Advances & Discounts. The impact of this growth was partially offset by an increase of 30.9 per cent in interest expenses for 2014, primarily as a result of an increase in borrowing expenses (see Figures 3.18 to 3.20). However, net interest margin for DTIs was 8.2 per cent

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\[ \text{Operating margin} = \frac{\text{Net Profit}}{\text{Gross Income}} \]

\[ \text{Risk weighted assets density ratio} = \frac{\text{Risk weighted assets}}{\text{Total assets}} \]

\[ \text{Equity multiplier} = \frac{\text{Total assets}}{\text{Capital & reserves}} \]

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\[ Operating margin is equal to Net Profit/Gross Income. The risk weighted assets density ratio is calculated as risk weighted assets/total assets. Equity multiplier is equal to total assets/capital & reserves. \]
3.4 Non-Deposit-Taking Financial Institutions (NDTFIs)

The asset base of NDTFIs increased for 2014. The sector’s asset base expanded by 10.3 per cent for 2014 relative to 7.1 per cent growth for 2013. The expansion in the sector’s total assets was influenced by increases in assets of all the subsectors, namely, life insurance companies, general insurance companies, securities dealers, collective investment schemes (CIS) and pension funds (see Figure 3.3 & Figure 3.23). Within the NDTFI sector, the asset base of CIS reflected the sharpest acceleration for the review year. Growth in the assets of CIS accelerated to 73.8 per cent for 2014, relative to 23.8 per cent the previous year. In addition, the growth of securities dealers’ asset base was 4.4 per cent, for 2014, relative to growth of 2.2 per cent for the previous year. The asset base of life insurance companies and general insurance companies grew by 7.6 per cent and 3.6 per cent, respectively, relative to growth rates of 18.9 per cent and 6.3 per cent the previous year. At end-2014, securities dealers, pension funds and life insurance companies accounted for 41.1 per cent, 25.0 per cent, and 19.6 per cent, respectively, of NDTFI market share.

3.4.1 Securities Dealers

Securities dealers’ asset base closed 2014 at $545.9 billion, relative to $522.8 billion, the prior year. The growth in the asset base largely reflected expansion of 105.5 per cent in Liquid Funds which was primarily attributable to growth in foreign currency holdings. However, the impact of the increase in Liquid Funds was partially offset by 8.6 per cent fall in Loans, Advances & Discounts (85.2 per cent). A decomposition of securities dealers’ asset base showed

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9 Net interest margin is equal to net interest income/average earning assets.
that Liquid Funds accounted for 8.8 per cent at end-2014, relative to 4.5 per cent at end-2013.

Regarding off-balance sheet assets, the funds under management (FUM) of the major securities dealers decreased to $794.1 billion at end-2014 relative to $797.6 billion at end-2013 (see Figure 3.24).\(^{10}\) The sector’s decline in FUM for 2014 was driven by a reduction in holdings of assets classified as Other Assets as well as a decline in public sector debt.

Risk weighted assets of the securities dealers grew by 3.6 per cent to $307.1 billion at end-2014 (see Figure 3.22). This performance influenced a decline of 0.7 percentage point in the sector’s CAR to 21.1 per cent at end-2014 (see Figure 3.25). Similarly, the sector’s primary ratio measured as regulatory capital to total assets, decreased by 0.5 percentage points to 12.5 per cent at end-2014. This was largely due to growth in the total asset base of the major securities dealers of 5.0 per cent to $518.9 million. Regulatory capital increased by 0.4 per cent to $64.7 million.

Securities dealers’ sensitivity to foreign exchange risk increased throughout most of 2014. The sector’s foreign currency net open position to capital ratio increased to 12.9 per cent at end-2014, relative to 9.6 per cent at end-2013. This performance largely reflected the sector’s increased holdings of foreign currency-denoted assets in the context of continued depreciation of the Jamaica Dollar against the US dollar during the review period, as well as an increase in the cap on foreign currency investments (see Figure 3.26 and Table 3.4A).

For 2014, there was a deterioration in securities dealers’ profitability indicators. The sector’s ROA and ROE decreased by 0.2 percentage point and 0.7 percentage

\(^{10}\) Major securities dealers are the thirteen largest securities dealers that account for 95.1 per cent of total securities dealers’ assets.
points, respectively, to 1.2 per cent and 8.9 per cent (see Figure 3.27 and Table 3.3).

The sector’s leverage ratio, which is measured as total liabilities divided by total assets, increased marginally by 0.5 percentage point to 87.2 per cent at end-2014. This increase was due to faster growth in total liabilities during the review period. However, the ratio of the sector’s holdings of liquid assets to current liabilities increased to 11.2 per cent at end-2014 relative to 5.8 per cent at the end of the previous year.

### 3.4.2 Insurance Companies

The insurance sector continued to be dominated by life insurance companies, which accounted for 81.4 per cent of the sector’s assets. The life insurance sub-sector consists of four companies with the two largest companies accounting for 63.6 per cent of the sub-sector’s total assets as at end-2014. The general insurance sub-sector consists of nine companies with the two largest companies accounting for 36.0 per cent of the sub-sector’s assets.

Similar to DTIs, there was growth in the insurance sector’s asset base despite weak economic conditions. For 2014, asset growth for the insurance sector was 6.9 per cent, lower than growth of 16.2 per cent for 2013 (see Figure 3.28). In particular, there were respective increases in the asset base for life and general insurance companies of 3.6 per cent and 7.6 cent, respectively. For life insurance companies, asset growth was driven predominantly by an increase in Total Fixed Term Investments of 14.3 per cent. The increase in the asset base of general insurance companies was influenced by growth of 6.9 per cent in Total Investments.

Investments in government securities accounted for 54.3 per cent of the total assets of insurance companies, relative to 58.2 per cent in the previous year. Government securities accounted for 59.7 per cent and 30.7 per cent of life insurance assets and general
insurance assets, respectively, at end-2014, relative to 64.4 per cent and 32.1 per cent at end-2013 (see Figures 3.29 and 3.30). As at end-2014, the share of real estate, unquoted equities and debtors in total assets for the life insurance and general insurance sub-sectors increased to 83.0 per cent and 36.3 per cent, respectively, relative to 78.1 per cent and 35.9 per cent, the previous year, representing elevated asset risk for the sector.\(^\text{11}\)

Despite growth in the sector’s asset base, insurance penetration continued to be low in 2014 (see Figure 3.31 and Table 3.5).\(^\text{12}\) Insurance penetration for life insurance companies marginally decreased by 0.2 percentage point to 2.7 per cent of GDP at end-2014. In contrast, insurance penetration for general insurance companies increased by 0.1 percentage point to 2.2 per cent of GDP at end-2014 relative to end-2013. These developments suggest that the market continues to be relatively underdeveloped and was further indicated by an insurance density which remained flat at 0.001 per cent at end-2014 relative to end-2013.\(^\text{13}\)

The total gross written premium (GWP) income of insurance companies increased by 6.2 per cent to $75.2 billion for 2014, relative to an increase of 16.5 per cent for 2013 (see Figure 3.32). For general insurance companies, the GWP increased by 14.9 per cent to $34.3 billion at end-2014, compared to a decline of 0.2 per cent to $79.1 million for the life insurance sub-sector.

Claims incurred by the life insurance subsector increased by 4.7 per cent for 2014, relative to growth of

\(^{11}\) The existence of potentially impaired assets, real estate, unquoted equities and debtors are asset classes within the insurance sector which have the largest probability of being impaired. This is largely due to the fact that real estate and unquoted equities are illiquid assets, while debtors exposes the sector to credit risk.

\(^{12}\) Insurance penetration is defined as ratio of premium volume to GDP. It measures the importance of insurance activity relative to the size of the economy.

\(^{13}\) Insurance density is the ratio of total gross premiums to total population.
For 2014, the insurance sector’s profitability indicators were mixed relative to the previous year. The ROA and ROE of the life insurance sector decreased to respective values of 3.6 per cent and 14.8 per cent at end-2014, relative to values of 9.2 per cent and 35.2 per cent at end-2013. Similarly, the ROA for the general insurance sector increased to 5.6 per cent while the ROE increased marginally to 16.4 per cent at end-2014, relative to 5.5 per cent and 16.1 per cent, at the end of the previous year. The increase in the general insurance sector’s profitability resulted from an increase in net premium earned as well as a decrease in underwriting expenses. Concurrently, the combined operating ratio
The capital adequacy and solvency of the insurance companies remained at adequate levels during 2014. In particular, the sector’s median solvency ratio, as measured by available capital to total liabilities, increased to 153.0 per cent relative to 150.9 per cent the prior year (see Figure 3.36). There was also an increase in the ratio of capital to total assets to 20.6 per cent at end-September 2014 from 19.5 per cent at end-2013 (see Figure 3.37). In addition, the net premium to capital ratio for the insurance sector declined to 18.2 per cent at end-2014, relative to 21.3 per cent at the end of the previous year, reflecting an improvement in the sector’s risk profile due to the reduction in retained indemnity risk. All life insurance companies surpassed the minimum regulatory capital requirements with respect to the Minimum Continuing Capital and Surplus Requirements (MCCSR) ratio. The MCCSR ratio for the life insurance sub-sector was 235.4 per cent in comparison to the minimum requirement of 150.0 per cent. Similarly, all general insurance companies exceeded their minimum capital regulatory requirement of a Minimum Capital Test (MCT) ratio of 250.0 per cent. The MCT ratio for the general insurance sub-sector was 278.1 per cent.

The re-insurance retention ratio exhibited mixed results for the review period. At end-2014, the retention ratio for life insurance companies declined marginally to 98.0 per cent relative to 98.3 per cent at end-2013. In contrast, general insurance companies’ retention ratio

16 The combined operating ratio is a financial measure of insurance underwriting (core) profitability and is expressed as the total of claims costs, commissions and management expenses as a percentage of premiums.

17 Net premium is used as a proxy for the risk the insurer retains after reinsurance.

18 The 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 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.
decreased to 47.0 per cent at end-2014 from 58.6 per cent the prior year (see Figures 3.38 & 3.39).

3.5 Banking Groups

3.5.1 Domestic Systemically Important Banking Groups (D-SIB)

A D-SIB framework was used to analyze the systemic importance of financial groups in Jamaica which include DTIs and their affiliate securities dealers and insurance companies. A working definition is used for this analysis to determine the specific threshold that defines a financial group as a D-SIB (see Bramer and Gischer, 2012).\(^\text{19}\) The methodology assesses the significance of financial groups based on size, interconnectedness, complexity, and non-substitutability. Each category has an equal weight and a financial group is deemed to be of systemic importance if it has a total score higher than 0.4.\(^\text{20}\) The results showed that the number of D-SIB groups increased to three at end-2014, relative to two at end-2013. At end-2014, NCB group attained the highest score of 1.27, while BNS group and Sagicor group attained scores of 0.94 and 0.45, respectively. NCB group scored higher than BNS group in all categories, but the larger differences were in the categories of ‘interconnectedness’ and ‘complexity’ which mainly reflected differing levels of interconnectedness and trading activity between their insurance affiliates and securities dealers affiliates, respectively. The increased score of systemic relevance attained by Sagicor group at end-2014 was largely due to its acquisition of RBC commercial bank. This higher score was mainly due to increases in the ‘size’ and ‘non-substitutability’ categories. Of note, at end-2013, NCB group and BNS group, were found to be systemically important using this framework.

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20 See Box 3.1 for further details.
3.5.2 Interconnectedness in the Interbank Market

The standard measure of connectivity in the interbank market shown by the interrelationship matrix continued to reflect relatively sparse interconnection due to a concentration of liquidity, particularly within the D-SIBs. The end-quarter average number of relationships between DTIs in Jamaica increased to 5 for 2014, from 4 for 2013, with the maximum possible number of relationships being 300.\(^{21}\) In addition, the end-quarter average connectivity in the banking system increased to approximately 1.7 per cent during 2014, relative to 1.5 per cent for 2013, for the 25 financial institutions assessed (see Figure 3.40).\(^{22}\) Despite the low connectivity within the interbank market, six DTIs remained extremely vulnerable to their subsidiaries. These institutions recorded an average net exposure of $2.4 billion for 2014 or 177.5 per cent of average net exposure. Meanwhile, the three DTIs that form part of the D-SIB groups had a higher average net exposure to their subsidiaries of $5.8 billion. In addition, there was an increase in the average end-quarter value of net exposures among DTIs and SDs (see Figure 3.41). During 2014, the average quarterly net exposure was $1.4 billion relative to $586.1 million in 2013.\(^{23}\)

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\(^{21}\) The number of relationships refers to the number of financial institutions with which a particular DTI or securities dealer conducts interbank transactions.

\(^{22}\) The connectivity for each institution is calculated as the number of relationships with the other institutions relative to the maximum number of relationships (24 in this case). It thus ranges between 0 per cent and 100.0 per cent. The average connectivity is the average for all institutions.

\(^{23}\) This includes the exposure of institutions to their subsidiaries.
Figure 3.39 General Insurance retention ratio; %

Table 3.2 Systemic Importance of Jamaican Banking Groups

<table>
<thead>
<tr>
<th>Rank</th>
<th>Institution Name</th>
<th>Size</th>
<th>Interconnectedness</th>
<th>Non-Substitutability</th>
<th>Complexity</th>
<th>TOTAL SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NCB Group</td>
<td>0.27</td>
<td>0.41</td>
<td>0.31</td>
<td>0.30</td>
<td>1.27</td>
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<td>2</td>
<td>BNG Group</td>
<td>0.21</td>
<td>0.28</td>
<td>0.29</td>
<td>0.15</td>
<td>0.94</td>
</tr>
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<td>3</td>
<td>Sagicor Group</td>
<td>0.15</td>
<td>0.06</td>
<td>0.08</td>
<td>0.35</td>
<td>0.45</td>
</tr>
<tr>
<td>4</td>
<td>JNBS Group</td>
<td>0.09</td>
<td>0.03</td>
<td>0.11</td>
<td>0.19</td>
<td>0.31</td>
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<td>5</td>
<td>JMMB Group</td>
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<td>0.03</td>
<td>0.03</td>
<td>0.33</td>
<td>0.07</td>
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<tr>
<td>6</td>
<td>FCB Group</td>
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<td>0.10</td>
<td>0.07</td>
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</tr>
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<td>0.05</td>
<td>0.05</td>
<td>0.20</td>
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<td>FGB Group</td>
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<td>0.01</td>
<td>0.04</td>
<td>0.03</td>
<td>0.10</td>
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<tr>
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<td>GLI Group</td>
<td>0.04</td>
<td>0.00</td>
<td>-</td>
<td>0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>10</td>
<td>Other</td>
<td>0.05</td>
<td>0.04</td>
<td>0.01</td>
<td>0.05</td>
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</tbody>
</table>

Total Sum: 1.00 1.00 1.00 1.00 4.00

indicates importance within a category
indicates overall systemic importance

Figure 3.40 Debtor and creditor positions in DTIs and securities dealers 24

Figure 3.41 Interbank exposure ratios end-quarter average for 2014 25

---

24 Points in the chart represent the end-quarter average for individual institutions for 2014.

25 Points indicate individual institutions.
### Table 3.3 Financial Soundness Indicators for Deposit-Taking Institutions

<table>
<thead>
<tr>
<th>Indicator (%)</th>
<th>Categories</th>
<th>Dec-13</th>
<th>Mar-14</th>
<th>Jun-14</th>
<th>Sep-14</th>
<th>Dec-14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Indicators</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulatory capital to risk-weighted assets</td>
<td>Capital adequacy</td>
<td>15.1</td>
<td>16.0</td>
<td>16.0</td>
<td>16.1</td>
<td>15.9</td>
</tr>
<tr>
<td>Tier 1 capital to risk-weighted assets</td>
<td>Capital adequacy</td>
<td>15.5</td>
<td>16.3</td>
<td>16.1</td>
<td>16.2</td>
<td>16.0</td>
</tr>
<tr>
<td>Non-performing loans (net) to capital</td>
<td>Capital adequacy</td>
<td>14.8</td>
<td>12.4</td>
<td>13.1</td>
<td>11.1</td>
<td>11.4</td>
</tr>
<tr>
<td>Non-performing loans to total loans</td>
<td>Assets quality</td>
<td>5.4</td>
<td>4.9</td>
<td>5.1</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Return on assets</td>
<td>Earnings &amp; Profitability</td>
<td>0.8</td>
<td>0.5</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Return on equity</td>
<td>Earnings &amp; Profitability</td>
<td>5.1</td>
<td>3.7</td>
<td>3.2</td>
<td>3.8</td>
<td>3.9</td>
</tr>
<tr>
<td>Interest margin to income</td>
<td>Earnings &amp; Profitability</td>
<td>54.6</td>
<td>53.5</td>
<td>51.3</td>
<td>49.3</td>
<td>50.7</td>
</tr>
<tr>
<td>Non-interest expenses to income</td>
<td>Earnings &amp; Profitability</td>
<td>28.9</td>
<td>26.2</td>
<td>26.1</td>
<td>24.6</td>
<td>24.8</td>
</tr>
<tr>
<td>Liquid assets to total assets</td>
<td>Liquidity</td>
<td>23.6</td>
<td>25.0</td>
<td>27.4</td>
<td>26.5</td>
<td>28.2</td>
</tr>
<tr>
<td>Duration on assets - Domestic Bonds</td>
<td>Sensitivity to Market Risk</td>
<td>1.7</td>
<td>1.4</td>
<td>1.5</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Duration on assets - Global Bonds</td>
<td>Sensitivity to Market Risk</td>
<td>2.6</td>
<td>2.2</td>
<td>3.0</td>
<td>3.1</td>
<td>2.8</td>
</tr>
<tr>
<td>NOP to capital</td>
<td>Sensitivity to Market Risk</td>
<td>6.7</td>
<td>10.0</td>
<td>18.1</td>
<td>12.5</td>
<td>18.8</td>
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<tr>
<td><strong>Encouraged Indicators</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital to assets</td>
<td>Capital adequacy</td>
<td>15.0</td>
<td>14.9</td>
<td>14.5</td>
<td>14.7</td>
<td>14.8</td>
</tr>
<tr>
<td>Trading income to total income</td>
<td>Earnings &amp; Profitability</td>
<td>9.0</td>
<td>9.7</td>
<td>11.0</td>
<td>15.1</td>
<td>10.7</td>
</tr>
<tr>
<td>Personnel expenses to non-interest expenses</td>
<td>Earnings &amp; Profitability</td>
<td>40.3</td>
<td>39.1</td>
<td>39.8</td>
<td>37.5</td>
<td>37.8</td>
</tr>
<tr>
<td>Spread between lending &amp; deposits rates</td>
<td>Earnings &amp; Profitability</td>
<td>13.6</td>
<td>13.7</td>
<td>13.4</td>
<td>13.1</td>
<td>12.8</td>
</tr>
<tr>
<td>Customer deposits to total (non-interbank) loans</td>
<td>Liquidity</td>
<td>138.1</td>
<td>138.4</td>
<td>140.7</td>
<td>137.8</td>
<td>138.4</td>
</tr>
<tr>
<td>Foreign-currency-denominated loans to total loans</td>
<td>Foreign Exchange risk</td>
<td>26.1</td>
<td>25.0</td>
<td>24.5</td>
<td>24.1</td>
<td>23.5</td>
</tr>
<tr>
<td>Foreign-currency-denominated liabilities to total liabilities</td>
<td>Foreign Exchange risk</td>
<td>38.2</td>
<td>37.2</td>
<td>38.0</td>
<td>37.5</td>
<td>37.5</td>
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<tr>
<td>Net open position in equities to capital</td>
<td>Foreign Exchange risk</td>
<td>22.1</td>
<td>21.4</td>
<td>21.1</td>
<td>20.7</td>
<td>20.8</td>
</tr>
<tr>
<td>Household debt to GDP</td>
<td>Household sector leverage</td>
<td>16.4</td>
<td>16.4</td>
<td>16.6</td>
<td>16.6</td>
<td>20.9</td>
</tr>
<tr>
<td>Residential real estate loans to total loans</td>
<td>Exposure to real estate</td>
<td>23.2</td>
<td>23.6</td>
<td>23.6</td>
<td>23.8</td>
<td>24.1</td>
</tr>
<tr>
<td>Commercial real estate loans to total loans</td>
<td>Exposure to real estate</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
</tbody>
</table>

**Notes:**

1/ Deposit-taking Institutions (DTIs) include commercial banks FIA licensees and building societies.

2/ Weighted by assets size.

3/ Represents data for building societies only.
<table>
<thead>
<tr>
<th>Indicator (%)</th>
<th>Categories</th>
<th>Dec-13</th>
<th>Mar-14</th>
<th>Jun-14</th>
<th>Sep-14</th>
<th>Dec-14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Securities Dealers</strong>&lt;sup&gt;1/&lt;/sup&gt;</td>
<td>Regulatory capital to risk-weighted assets</td>
<td>Capital adequacy</td>
<td>21.7</td>
<td>21.5</td>
<td>21.8</td>
<td>20.4</td>
</tr>
<tr>
<td></td>
<td>Tier 1 capital to risk-weighted assets</td>
<td>Capital adequacy</td>
<td>18.6</td>
<td>18.0</td>
<td>18.2</td>
<td>16.5</td>
</tr>
<tr>
<td></td>
<td>Non-performing loans (net) to capital</td>
<td>Capital adequacy</td>
<td>1.6</td>
<td>1.9</td>
<td>1.5</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Non-performing loans to total loans</td>
<td>Assets quality</td>
<td>19.2</td>
<td>24.8</td>
<td>24.1</td>
<td>24.6</td>
</tr>
<tr>
<td></td>
<td>Return on assets</td>
<td>Earnings &amp; Profitability</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Return on equity</td>
<td>Earnings &amp; Profitability</td>
<td>3.4</td>
<td>2.8</td>
<td>3.2</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td>Interest margin to income</td>
<td>Earnings &amp; Profitability</td>
<td>35.7</td>
<td>32.5</td>
<td>29.8</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td>Non-interest expenses to income</td>
<td>Earnings &amp; Profitability</td>
<td>28.0</td>
<td>28.8</td>
<td>26.8</td>
<td>26.1</td>
</tr>
<tr>
<td></td>
<td>Liquid assets to total assets</td>
<td>Liquidity</td>
<td>8.9</td>
<td>10.5</td>
<td>12.8</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Duration on assets - Domestic Bonds</td>
<td>Sensitivity to Market Risk</td>
<td>2.4</td>
<td>1.9</td>
<td>2.0</td>
<td>1.9</td>
</tr>
<tr>
<td></td>
<td>Duration on assets- Global Bonds</td>
<td>Sensitivity to Market Risk</td>
<td>3.2</td>
<td>4.5</td>
<td>5.1</td>
<td>4.8</td>
</tr>
<tr>
<td></td>
<td>NOP to capital</td>
<td>Sensitivity to Market Risk</td>
<td>9.6</td>
<td>14.2</td>
<td>21.1</td>
<td>23.9</td>
</tr>
<tr>
<td><strong>B. General Insurance</strong></td>
<td>Net premium to Capital</td>
<td>Capital adequacy</td>
<td>26.0</td>
<td>24.1</td>
<td>24.0</td>
<td>21.4</td>
</tr>
<tr>
<td></td>
<td>Capital to Assets</td>
<td>Capital adequacy</td>
<td>28.3</td>
<td>29.0</td>
<td>28.5</td>
<td>28.5</td>
</tr>
<tr>
<td></td>
<td>(Real estate + unquoted equities + debtors) to total assets</td>
<td>Assets quality</td>
<td>35.9</td>
<td>35.8</td>
<td>33.4</td>
<td>33.4</td>
</tr>
<tr>
<td></td>
<td>Receivables to gross premiums</td>
<td>Assets quality</td>
<td>44.6</td>
<td>51.4</td>
<td>46.1</td>
<td>43.1</td>
</tr>
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<td></td>
<td>Equities to total assets</td>
<td>Assets quality</td>
<td>1.7</td>
<td>1.8</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td></td>
<td>Net technical reserves to net claims paid in last 3 years</td>
<td>Reinsurance &amp; actuarial issues</td>
<td>433.1</td>
<td>421.9</td>
<td>361.8</td>
<td>418.6</td>
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<td>Risk retention ratio (net premium to gross premium)</td>
<td>Reinsurance &amp; actuarial issues</td>
<td>58.6</td>
<td>49.2</td>
<td>37.1</td>
<td>47.0</td>
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<tr>
<td></td>
<td>Gross premium to number of employees J$ (000)</td>
<td>Management Soundness</td>
<td>6.1</td>
<td>7.0</td>
<td>9.7</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>Assets per employee J$ (000)</td>
<td>Management Soundness</td>
<td>48.6</td>
<td>49.7</td>
<td>52.6</td>
<td>52.5</td>
</tr>
<tr>
<td></td>
<td>Net Claims to net premium (loss ratio)</td>
<td>Earnings &amp; Profitability</td>
<td>40.9</td>
<td>57.2</td>
<td>51.6</td>
<td>62.2</td>
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<tr>
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<td>Total expenses to net premium (expense ratio)</td>
<td>Earnings &amp; Profitability</td>
<td>80.8</td>
<td>89.5</td>
<td>82.4</td>
<td>110.3</td>
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<td>Combined ratio (loss + expense ratio)</td>
<td>Earnings &amp; Profitability</td>
<td>121.7</td>
<td>146.7</td>
<td>134.0</td>
<td>172.5</td>
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<td>Investment Income to net premium</td>
<td>Earnings &amp; Profitability</td>
<td>18.4</td>
<td>16.6</td>
<td>16.8</td>
<td>20.0</td>
</tr>
<tr>
<td></td>
<td>Return on Equity</td>
<td>Earnings &amp; Profitability</td>
<td>8.6</td>
<td>6.6</td>
<td>9.4</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td>Liquid assets to total liabilities</td>
<td>Liquidity</td>
<td>76.8</td>
<td>84.2</td>
<td>82.6</td>
<td>80.6</td>
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<td><strong>C. Life Insurance</strong></td>
<td>Capital to technical reserves</td>
<td>Capital adequacy</td>
<td>93.4</td>
<td>88.6</td>
<td>75.0</td>
<td>75.1</td>
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<td>(Real estate + unquoted equities + debtors) to total assets</td>
<td>Assets quality</td>
<td>78.1</td>
<td>78.4</td>
<td>82.7</td>
<td>82.3</td>
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<td>Receivables to gross premiums</td>
<td>Assets quality</td>
<td>34.6</td>
<td>37.0</td>
<td>52.9</td>
<td>65.4</td>
</tr>
<tr>
<td></td>
<td>Equities to total assets</td>
<td>Assets quality</td>
<td>1.6</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
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<tr>
<td></td>
<td>Net technical reserves to net premium paid in last 3 years</td>
<td>Reinsurance &amp; actuarial issues</td>
<td>934.0</td>
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<td>Risk retention ratio (net premium to gross premium)</td>
<td>Reinsurance &amp; actuarial issues</td>
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<td>98.4</td>
<td>97.8</td>
<td>98.0</td>
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<td></td>
<td>Gross premium to number of employees J$ (000)</td>
<td>Management Soundness</td>
<td>6.6</td>
<td>5.9</td>
<td>5.0</td>
<td>5.1</td>
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<td>Assets per employee J$ (000)</td>
<td>Management Soundness</td>
<td>125.1</td>
<td>131.7</td>
<td>128.8</td>
<td>132.0</td>
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<td></td>
<td>Expenses to net premium (expense ratio)</td>
<td>Earnings &amp; Profitability</td>
<td>39.8</td>
<td>43.9</td>
<td>56.7</td>
<td>56.3</td>
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<td>Investment Income to investment assets</td>
<td>Earnings &amp; Profitability</td>
<td>2.8</td>
<td>2.2</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td></td>
<td>Return on Equity</td>
<td>Earnings &amp; Profitability</td>
<td>5.2</td>
<td>1.1</td>
<td>1.2</td>
<td>1.4</td>
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<td>Liquid assets to total liabilities</td>
<td>Liquidity</td>
<td>14.1</td>
<td>14.5</td>
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<td>20.3</td>
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<td></td>
<td>Duration on assets - Domestic Bonds</td>
<td>Sensitivity to market risk</td>
<td>1.6</td>
<td>1.8</td>
<td>1.6</td>
<td>1.3</td>
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<tr>
<td></td>
<td>Duration on assets- Global Bonds</td>
<td>Sensitivity to market risk</td>
<td>4.4</td>
<td>5.2</td>
<td>6.4</td>
<td>6.7</td>
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</table>

**Notes:**

<sup>1/</sup> Includes the top-12 securities dealers.
### Table 3.5 Sectoral Indicators of Financial Development

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Indicator</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
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<tbody>
<tr>
<td><strong>Banking</strong></td>
<td>Total number of DTIs</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Number of branches and outlets</td>
<td>173</td>
<td>173</td>
<td>166</td>
<td>165</td>
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<tr>
<td></td>
<td>Number of branches/thousands population</td>
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<td>0.06</td>
<td>0.06</td>
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<td></td>
<td>Bank deposits/GDP (%)</td>
<td>41.7</td>
<td>44.5</td>
<td>45.1</td>
<td>44.4</td>
</tr>
<tr>
<td></td>
<td>Bank assets/total financial assets (%)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>34.9</td>
<td>36.6</td>
<td>37.2</td>
<td>35.8</td>
</tr>
<tr>
<td></td>
<td>Bank assets/GDP (%)</td>
<td>63.8</td>
<td>66.2</td>
<td>67.8</td>
<td>69.5</td>
</tr>
<tr>
<td><strong>Insurance</strong></td>
<td>Number of insurance companies</td>
<td>14</td>
<td>14</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Gross premiums/GDP (%)</td>
<td>4.5</td>
<td>4.6</td>
<td>5.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Gross life premiums/GDP (%)</td>
<td>2.3</td>
<td>2.4</td>
<td>2.9</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Gross non-life premiums/GDP (%)</td>
<td>2.2</td>
<td>2.3</td>
<td>2.1</td>
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<tr>
<td></td>
<td>Insurance assets/GDP (%)</td>
<td>18.8</td>
<td>19.6</td>
<td>21.0</td>
<td>20.7</td>
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<tr>
<td></td>
<td>Insurance assets/total financial assets (%)</td>
<td>10.0</td>
<td>10.3</td>
<td>10.8</td>
<td>11.0</td>
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<tr>
<td><strong>Pensions</strong></td>
<td>Types of pension plans</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td># Defined Benefit plan</td>
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<td>116</td>
<td>111</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td># Defined Contribution plan</td>
<td>347</td>
<td>347</td>
<td>333</td>
<td>319</td>
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<tr>
<td></td>
<td>Pension fund assets/total financial assets (%)</td>
<td>12.2</td>
<td>12.4</td>
<td>11.9</td>
<td>11.4</td>
</tr>
<tr>
<td></td>
<td>Pension fund assets/GDP (%)</td>
<td>22.3</td>
<td>22.4</td>
<td>21.6</td>
<td>22.2</td>
</tr>
<tr>
<td><strong>Mortgage</strong></td>
<td>Mortgage assets/total financial assets (%)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4.1</td>
<td>4.3</td>
<td>4.5</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>Mortgage assets/GDP (%)</td>
<td>8.7</td>
<td>7.8</td>
<td>8.2</td>
<td>8.2</td>
</tr>
<tr>
<td><strong>Securities Dealers</strong></td>
<td>Total number of securities dealers</td>
<td>31</td>
<td>29</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Securities dealers/total financial assets (%)</td>
<td>21.7</td>
<td>21.5</td>
<td>20.2</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td>Securities dealer's assets/GDP (%)</td>
<td>39.6</td>
<td>39.0</td>
<td>36.8</td>
<td>35.4</td>
</tr>
<tr>
<td><strong>Credit Union</strong></td>
<td>Total number of credit unions</td>
<td>43</td>
<td>43</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Credit union's assets/total financial assets (%)</td>
<td>3.2</td>
<td>3.0</td>
<td>3.0</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>Credit union's assets/GDP (%)</td>
<td>4.8</td>
<td>5.4</td>
<td>5.4</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Foreign exchange markets</strong></td>
<td>Adequacy of foreign exchange (reserves in months of imports)</td>
<td>4.7</td>
<td>3.3</td>
<td>3.2</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>Foreign exchange reserves as ratio to short-term external debt (%)</td>
<td>196.8</td>
<td>278.7</td>
<td>144.0</td>
<td>207.7</td>
</tr>
<tr>
<td><strong>Capital markets</strong></td>
<td>Number of listed securities (equities)&lt;sup&gt;3&lt;/sup&gt;</td>
<td>55</td>
<td>50</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Number of new issues (equities)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>6</td>
<td>4</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Number of new issues (bonds)&lt;sup&gt;5&lt;/sup&gt;</td>
<td>19</td>
<td>24</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Value of new issues (equities) J$Bn</td>
<td>3.0</td>
<td>0.4</td>
<td>45.0</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td>Value of new issues (bonds) J$Bn</td>
<td>105.1</td>
<td>77.8</td>
<td>1.7</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Market capitalization/GDP (%)</td>
<td>48.9</td>
<td>44.7</td>
<td>34.6</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>Value traded/market capitalization (%)</td>
<td>3.4</td>
<td>3.1</td>
<td>3.7</td>
<td>6.3</td>
</tr>
<tr>
<td><strong>Collective investment funds</strong></td>
<td>Unit trust funds under management (J$BN)&lt;sup&gt;6&lt;/sup&gt;</td>
<td>32.4</td>
<td>49.7</td>
<td>58.0</td>
<td>111.0</td>
</tr>
<tr>
<td></td>
<td>Number of unit trusts</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Unit trust FUM/total financial assets (%)</td>
<td>1.4</td>
<td>2.1</td>
<td>2.2</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td>Mutual funds (value of units held by Jamaicans)US$MN</td>
<td>164.5</td>
<td>122.0</td>
<td>165.0</td>
<td>177.0</td>
</tr>
<tr>
<td></td>
<td>Mutual funds/total financial assets (%)</td>
<td>0.6</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Notes:**

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

2/ Includes data for building societies, commercial banks & National Housing Trust

3/ Includes Junior market listings

4/ Includes preference shares

5/ Government of Jamaica bonds

6/ Unit trust portfolios are composed mainly of fixed income securities, equities and real estate investments
Box 3.1 Domestic Systemically Important Banking Institutions (D-SIBs)

D-SIBs are banks or banking groups that are of such size, market importance and interconnectedness that their distress or failure would cause significant dislocation in the domestic financial system as well as adverse economic consequences. It is therefore important that these institutions be monitored and measures be put in place to reduce the probability and impact of a D-SIB failure.

In October 2012, the Basel Committee finalized its supervisory framework regarding D-SIBs, which is expected to come into effect on 01 January 2016. The D-SIB framework involves a set of principles on the assessment methodology and the higher loss absorbency (HLA) requirements for banks identified as D-SIBs. The principles adopted by the Committee regarding the D-SIB framework allow for appropriate national discretion in the methodology used to assess the degree to which banks are systemically important in a domestic context. The purpose of this discretion is in order to accommodate structural characteristics of the domestic financial system, while recognizing that a local authority is best placed to evaluate the impact of failure on the domestic financial system.

The HLA requirement for D-SIBs as specified by the Committee should be commensurate with the degree of systemic importance as identified by the assessment methodology.

The D-SIB framework currently being used by the Bank follows the methodology outlined in Brämer and Gischer (BG) 2012, which assesses the significance of banks based on several key categories including but not limited to size. BG closely follows the Basel Committee’s recommendations for assessing D-SIBs. Categories include:

- **Size**: focuses on a bank’s interaction with the domestic sector and uses balance sheet total assets.
- **Interconnectedness**: uses loans to financial corporations and deposits from financial corporations.
- **Non-Substitutability**: assesses whether it will be difficult for customers, outside of the financial industry, to find an alternate supplier should a bank cease providing a service, with indicators such as credit to households, credit to non-financial corporations, credit to general government, credit to community service organizations, and credit to non-profit institutions.
- **Complexity**: assesses the impact on systemic stability from the failure of a bank with more complex business structures by looking at trading securities, which includes speculative short-term assets and investment securities, which includes financial assets available for sale and assets held to maturity.

Given that the Committee’s framework is ‘principles-based’ and does not define a specific threshold value to determine D-SIBs, a working definition is used for this analysis (see Bramer and Gischer, 2012). The size, interconnectedness, non-substitutability and complexity categories each has an equal weight of 25 per cent, and the indicators within each category are also equally weighted. A bank is deemed to have systemic importance if it has a category score value higher than 0.1 or a total score higher than 0.4 thus placing emphasis on scores for individual categories as well as on the total score.

The framework can be used to analyze the systemic importance of individual banks as well as consolidated...
banking groups, which may include securities dealers and insurance companies.

The score for bank $i$ for period $j$ is computed as follows:

$$SCORE_{ij} = \frac{A_{ij}}{\sum_i A_{ij}} + \frac{(LFC_{ij} + DFC_{ij})}{(\sum_i LFC_{ij} + \sum_i DFC_{ij})}$$

$$+ \frac{(LH_{ij} + LNFC_{ij} + LGG_{ij} + LCS_{ij})}{(\sum_i LH_{ij} + \sum_i LNFC_{ij} + \sum_i LGG_{ij} + \sum_i LCS_{ij})}$$

$$+ \frac{(TS_{ij} + IS_{ij})}{(\sum_i TS_{ij} + \sum_i IS_{ij})}$$

where, $A$ represents total resident assets, LFC represents loans to financial corporations, DFC represents deposits from financial corporations, LH represents loans to households, LNFC represents loans to non-financial corporations, LGG represents loans to the general government, LCS represents loans to community service and non-profit organizations, TS represents trading securities and IS represents investment securities.

The policy implications of identifying D-SIBs in Jamaica should include the implementation of measures to reduce the probability of failure of these institutions compared to non-systemic institutions as well as limit their ability to become even more systemically important. These could include supplementary capital requirement for D-SIBs, structural measure such as caps on counterparty exposure and other requirements related to size or market capitalization. Adoption of such measure will require consideration and weighing of macro-financial risks including the probability of default of the D-SIBs.
The Jamaican financial sector’s stock of assets at end-2014 was $3 474.3 billion (or 224.9 per cent of GDP) and comprised six broad segments. These segments along with their asset base are the Central Bank ($505.8 billion), deposit-taking institutions ($1 152.3 billion), insurance companies ($319.2 billion), pension funds ($331.6 billion), public financial institutions ($34.4 billion) and other financial intermediaries ($1 131.1 billion).

The financial sector is dominated by deposit taking institutions (DTIs) and other financial intermediaries (OFIs). DTIs accounted for 33.2 per cent of financial sector assets or 74.6 per cent of GDP while OFIs accounted for 32.6 per cent of financial assets or 73.2 per cent of GDP. DTIs, which are regulated by the Bank of Jamaica (BOJ), comprise commercial banks ($808.4 billion), FIA licensees ($31.0 billion) and building societies ($230.6 billion). Credit unions ($82.4 billion) are regulated by the Registrar of Co-operatives although regulations to enable prudential oversight by the BOJ are at an advanced drafting stage. OFIs, regulated by the Financial Services Commission (FSC), comprise broker-dealers ($546.0 billion), mutual funds ($20.3 billion), unit trusts ($1.3 billion), and assets under management ($563.5 billion). The FSC also regulates the insurance and pension fund industries.

In 2004, the asset share of OFIs surpassed that of DTIs for the first time (see Figure 1.0 and Figure 2.0). Since then, the asset shares of the financial system segments have remained relatively constant. DTIs’ assets and liabilities to OFIs have remained below 6.0 percent of total DTI assets during 2014, indicative of modest counterparty contagion risks. However, ownership of broker-dealers, which are predominantly held by DTIs, is not reflected in these figures. At end-2014, approximately 89.0 percent of broker-dealers formed a major part of DTI group structures which underscores the systemic importance of broker-dealer activities. Against this backdrop, the Banking Services Act (2014) facilitates BOJ’s consolidated supervision of financial groups. In addition, Jamaica authorities are currently developing a comprehensive strategy for crisis management and resolution frameworks, centered on DTIs and broker-dealers.

The main risks emanating from the broker-dealer segment arise from the reliance on borrowing very short-term funds from retail clients and institutional investors (“retail repos”) to take proprietary positions in primarily long-term government securities. Liquidity and maturity transformation as measured, for example, by the ratio of short-term assets (less than three months) to short-term liabilities was 30.2 per cent at end-2014. To address the systemic risks from broker-dealer activities, the Government of Jamaica (GOJ) has committed to reform the broker-dealer industry, which will entail the phase-down of the “retail repo” business model and the restructuring of the prudential capital and liquidity regime to counter significant market, interest rate and liquidity

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1 Assets under management is representative of off-balance sheet funds managed by broker-dealers, unit trusts, insurance companies, credit unions, building societies, merchant banks and pension funds.

2 Data for pension funds, unit trusts and mutual funds are not available for the full review period.
risks associated with this business model. In addition, the securities backing “retail repos” will be transferred to a Trust arrangement for actively safeguarding the beneficial interest of “retail repo” clients. However, despite measures to mitigate these risks, the retail repo business activity may not be considered shadow banking per se. Instead, their activity is virtually banking by issuing deposit-like instruments to fund long-term assets. Therefore, given that securities dealers are not regulated as banks, risks still exist if they continue to operate as quasi-banks. Furthermore, legislation was passed in Parliament at end-2013 to allow for the establishment of CIS which would facilitate the transfer of market, interest rate and liquidity risks to individual investors from the balance sheets of the broker-dealers.³

Regarding the remaining OFI sub-sectors, which include assets under management (AUM), unit trusts and mutual funds, the asset share for each sub-sector generally increased over the period 2006 to 2014 (see Figure 3.0). Furthermore, assets under management as a share of OFIs’ assets, the largest sub-sector of OFIs, increased significantly over the review period to 49.8 per cent at end-2014.

In regard to the whole financial sector, the asset shares of the broker-dealers and AUM sub-segments in Jamaica are substantial and reflect large common exposure to GOJ securities, so the systemic implication from potential instability impacting these sub-sectors could be considerable.

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³ Consequently, the Unit Trusts Act and attendant Unit Trust Regulations were repealed by section 40 of the Securities (Amendment) Act, 2013; while the Mutual Fund Regulations were repealed by Regulation 56 of the Securities (Collective Investment Schemes) Regulations. Existing unit trusts schemes and mutual funds have until end-2014 to transition to the CIS Regulations.
4. Financial System Sectoral Exposures

4.1 Overview

Macro-prudential risk emanating from the household, corporate and public sectors remained broadly subdued in 2014, reflecting continued weak economic conditions. In particular real annual growth in household, corporate and public sector debt remained below pre-global financial crisis average levels.

Furthermore, despite the provision of several liquidity facilities by the Central Bank, DTIs’ and NDTFIs exposures to household and corporate sector debt, as measured by debt to assets declined for 2014. Additionally, loan quality ratios for the household and corporate sectors continue to show a trend improvement for DTIs mainly reflecting loan-write offs. On the other hand, NDTFIs recorded a deterioration in loan quality relative to 2013, mainly reflecting the operations of two institutions.

Notwithstanding a reduction in sovereign default risk in 2014 relative to 2013, DTIs and NDTFIs recorded lower exposures to public sector debt. The decline in exposure occurred in the context of the GOJ substantially reducing its presence in the domestic bond market.

4.2 Household debt and DTIs’ exposure

In spite of the provision of several liquidity facilities by the central bank in part to aid financial institutions in extending credit, growth in household sector credit incurred with DTIs decelerated for 2014. Real annual growth in household sector debt slowed to 2.5 per cent relative to a 3.8 per cent increase for the previous year. Additionally, real annual growth in household sector debt was notably below the pre-global financial crisis levels reflecting continued low demand conditions (see Figure 4.1).

The slower expansion in real household sector credit was mainly driven by consumer loans as mortgage credit remained fairly stable. Specifically, real consumer loans grew at a slower pace of 1.0 per cent for 2014 relative to 4.0 per cent the prior year. This partly reflected

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

higher interest rates on personal credit, weak disposable income and high levels of unemployment.\(^3\)\(^4\) On the other hand, real mortgage debt grew by 4.6 per cent relative to 3.5 per cent expansion the prior year. This growth occurred within a context of lower mortgage rates among building societies and commercial banks during the review period (see Table 4.1).

Consistent with a slower pace of growth in household sector debt, DTIs’ exposure to the household sector as measured by household debt to assets declined marginally for 2014. This ratio fell to 23.8 per cent, relative to 24.3 per cent at end-2013, mainly reflecting the performance of the commercial banks (see Figure 4.2). The decline in vulnerability of the DTIs to the household sector was also reflected in improved loan quality, albeit marginally. Specifically, household non-performing loans (NPLs) as a share of total household loans for DTIs declined to 5.8 per cent at end-2014 relative to 5.9 per cent at end-2013, reflecting a faster pace of increase in household debt relative to household NPLs. The improvement in the ratio was reflected across all DTI sub-sectors with the exception of the commercial banks, (see Figure 4.3). Moreover, the performance of the ratio for 2014 was partly influenced by continued net loan write-offs.\(^5\) Specifically, for 2014, net loan write-offs amounted to $1.8 billion, a 23.7 per cent increase in comparison to the previous year.

Notably, DTIs’ household coverage and capital ratios showed mixed results for 2014 relative to 2013.\(^6\) The household coverage ratio deteriorated marginally to 171.9 per cent for 2014 from 174.9 per cent at end-2013, reflecting a faster pace of growth in NPLs relative to provisioning (see Figure 4.4). The capacity of banks to withstand losses arising from NPLs, as measured by the ratio of household

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\(^3\) Commercial mortgage loan rate declined to 9.89 per cent at end-2013 from 9.90 per cent at end-2012.

\(^4\) Real GDP grew by 0.5 per cent for 2014 relative to growth of 0.2 per cent for 2013. The unemployment rate decreased to 13.7 per cent from 15.3 per cent in 2013. Regarding disposable income, it is estimated that real disposable income declined by 1.1 per cent for 2014.

\(^5\) Net loan write-offs is computed as charge-off loans less bad loans recovered.

\(^6\) Coverage ratio is measured as the ratio of loan loss provisions plus prudential provisioning to non-performing household loans.
sector NPLs to regulatory capital, however remained flat at 13.6 per cent at end-2014 relative to end-2013.

4.2.1 Household sector performance

The debt servicing capacity of the household sector, as measured by the ratio of total real household debt to real disposable income, is estimated to have deteriorated by 2.4 percentage point to 66.9 per cent at end-2014 relative to end-2013 (see Figure 4.5). Additionally, the debt servicing ratio was notably well above the pre-crisis level by 26.8 percentage points, consistent with the weak performance of the domestic economy. The deterioration for the review period was attributable to a faster pace of growth in real household sector debt of 3.9 per cent relative to growth of 0.2 per cent in disposable income for the year.

4.3 Corporate sector debt and DTIs’ exposure

Real growth in corporate sector debt held by DTIs declined to 2.2 per cent for the review period relative to real growth of 0.5 per cent for 2013 and an average real growth of 8.9 per cent for the 5-year pre-global financial crisis period (see Figure 4.6). This could be partly due to increased weighted average rates on loans for commercial purposes (see Table 4.1). By extension, this weaker pace of growth mainly reflected the impact of lending for private commercial purposes as this category represented 95.3 per cent of total corporate sector loans at end-2014. More specifically, the slower pace of growth in corporate sector lending was reflected in most economic sectors with the exception of Manufacturing, Tourism, Distribution and Professional & Other Services (see Figure 4.7). Furthermore, DTIs’ vulnerability to the corporate sector as measured by corporate sector debt to assets declined marginally to 17.4 per cent at end-2014 (see Figure 4.8).

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7 Total household debt is proxied by the sum of residential mortgage loans, consumer loans (which includes credit card receivables) and National Housing Trust loans.
8 Disposable income for 2014 was based on BOJ’s projection and has been revised due to a change in methodology. It 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. Current transfers and operating surplus of the household sector is excluded from personal income due to data availability.
9 Prior to the global financial crisis in 2008, the debt serving capacity of the household sector averaged 40.1 per cent for the period 2003-2007.
10 Corporate sector debt includes loans for commercial purposes, loans to other financial institutions and notes & debenture holdings of DTIs.
11 Vulnerability is measured as the ratio of corporate sector debt to assets.
4.3.1 Corporate sector loan quality

There was a moderate improvement in the loan quality ratio for the corporate sector for 2014. The ratio of corporate sector NPLs to total corporate sector loans declined to 5.2 per cent at end-2014, relative to 6.4 per cent at end-2013 (see Figure 4.9). The improvement in the asset quality ratio for the corporate sector was mainly reflected in the loan portfolio of all three DTI sub-sectors. In examining the delinquency rate by sector, the loan quality ratio for all economic sectors with the exception of Agriculture, Transportation, Entertainment and Professional Services improved for 2014 relative to the previous year. Notably, there were strong improvements in the ratios for Manufacturing, Construction and Electricity, Gas & Water (see Figure 4.10).

4.3.2 Performance of companies listed on the Jamaica Stock Exchange (JSE) for 2014

Consistent with weak economic growth, and stronger returns on foreign currency and money market investments, the JSE Main Index declined by 5.3 per cent for 2014 relative to a decline of 12.5 per cent at end-2013 (see Figure 4.11). The expectation of further depreciation of the Jamaica Dollar increased the attractiveness of foreign currency investments, relative to other investment options. Specifically, the monthly returns on the JSE Index averaged negative 0.4 per cent while those on the money market securities and capital gains on foreign currency investments averaged 0.7 per cent and 0.6 per cent, respectively. The decline in the index was however, lower relative to 2013. This was influenced by positive macro-economic developments including improved sovereign credit rating, a substantial increase in Jamaica’s ranking in the World Bank Doing Business Report as well as the achievement of the fiscal and monetary targets and benchmarks under the EFF supported programme.

For 2014, the risk profile of listed corporate sector entities’ as measured by the financial leverage ratio declined marginally by 2.3 percentage point to 80.5 per cent relative
Companies within Communications and Finance remained highly leveraged while companies within Retail and Other recorded the lowest leverage ratios for the review period. Specifically, the ratio for Communications and Finance was 168.3 per cent and 83.9 per cent, respectively at end-2014 from 159.8 per cent and 85.3 per cent at end-2013 (see Figure 4.12). The ratio for Retail and Other averaged 39.5 per cent at end-2014 relative to 40.1 per cent recorded the prior year.

Despite weak domestic economic activity, overall profitability of listed companies increased slightly for 2014 relative to the previous year. In particular, the asset utilization ratio for listed companies as measured by average return on assets (ROA) increased to 5.4 per cent at end-2014 from 5.1 per cent at end-2013, reflecting the performance of companies mainly within Other and Finance (see Figure 4.13). Notably, Manufacturing, Retail and Conglomerate recorded lower ROA relative to the previous year. Notwithstanding posting improved ROA for 2014, Communications continued to record the lowest ROA, primarily as a result of the operation of one entity. In addition, the ratio of net profits to revenues for listed entities grew in 2014 relative to 2013. This ratio increased to 24.4 per cent from 19.8 per cent at end-2013. Retail, Conglomerate and Finance continued to record the highest profit margin ratios while Communications and Manufacturing recorded the lowest ratios (see Figure 4.14).

The weighted price to earnings (P/E) ratio for listed companies deteriorated in 2014 relative to 2013. At end-2014, the weighted P/E ratio across the sectors averaged 1.2 relative to a ratio of 1.9 at end-2013 (see Figure 4.15). With the exception of Finance and Manufacturing, all sectors recorded P/E ratios below 1.0. Notably, Communications recorded the lowest P/E ratio of 0.08x largely due to the operations of one entity which recorded negative earnings per share.

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12 Financial leverage ratio is measured as the ratio of total liabilities to total assets. A debt to asset ratio in excess of 65.0 per is typically associated with excessive debt. Notably, the two insurance companies were delisted during 2013.

13 Generally, a higher P/E ratio indicates that investors are expecting higher earnings growth in the future.
The solvency ratio, for listed companies remained relatively high. At end-2014, the capital to asset ratio increased marginally to 19.5 per cent relative to 17.2 per cent at end-2013 (see Figure 4.16). Of note Communication recorded a negative ratio and was due to the operations of one entity as this institution’s liabilities exceeded its asset position.

There was an improvement in the ratio of operating expenses to net revenues in 2014. This ratio declined to 46.3 per cent for listed entities in 2014 relative to 64.8 per cent in 2013. The decline was mainly attributed to declines in expenses due to cost containment by listed entities. Notably, with the exception of Conglomerate and Retail, all listed sectors recorded lower efficiency ratios relative to end-2013. This was reflected in a decline in the median value of listed sectors relative to the previous year (see Figure 4.17).
4.4. Public sector debt & DTIs’ exposure

DTIs’ exposure to public sector debt declined in 2014 relative to 2013. The decline occurred in a context where the GOJ remained largely absent from the bond market. Furthermore, the reduction in DTIs’ exposure to public debt was reflected in a decline in the ratio of public sector loans and securities to assets to 13.8 per cent at end-2014, relative to 15.5 per cent at end-2013 (see Figure 4.18). The performance for 2014 was mainly influenced by a 1.3 per cent decline in DTIs’ holdings of public sector securities for the review period.

4.4.1 Public sector indebtedness & performance

Public sector debt as a share of GDP declined to 132.4 per cent at end-2014 from 135.3 per cent at end-2013, reflecting a slower pace of growth in public sector debt relative to GDP (see Figure 4.19). For 2014, the domestic debt stock declined by 0.7 per cent, while external debt grew by 12.3 per cent (see Figure 4.20). This compared to respective growth rates of 5.9 per cent and 15.2 per cent for 2013. The decline in the domestic debt stock primarily reflected the amortization of three USD Benchmark Investment notes during the year.

The fiscal stability (FSR) ratio which captures the stability of government finances improved marginally in 2014. Of note, the FSR stood at 1.0 at the close of the review period, relative to a ratio of 1.1 at end-2013. This performance occurred against the background of curtailment in expenditure which resulted in a lower fiscal deficit relative to the previous year. As it relates to other debt sustainability indicators, there were mixed results for 2014. In particular, interest payment to GDP improved while debt servicing to budgetary revenues and external debt to exports of goods and services deteriorated (see Figure 4.21).

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15 The Government continued to reduce its presence in the domestic market in 2014. Notably, there were no debt issuance for 2014 relative to two and twenty four instruments in 2013 and 2012, respectively.

16 Exposure to public sector debt is measured by public sector loans and securities as a share of DTIs assets. Public sector comprises Public Entities and Central Government.

17 The FSR is computed as the ratio of overall fiscal balance to total revenue less 1 (one). The closer the FSR is to zero indicates more stable government finances.
The sustainability of the debt profile of the GOJ deteriorated for 2014. More specifically, the proportion of domestic debt due to mature in 5 years or less increased to 41.6 per cent at end-2014 from 31.9 per cent at end-2013, reflecting increased refinancing risk for the Government (see Figure 4.23). Additionally, domestic fixed & variable rate instruments as a share of the total debt stock remained virtually flat at 67.7 per cent and 32.2 per cent, respectively (see Figure 4.22).

4.5. Non-deposit-taking financial sector exposure
4.5.1 Private sector debt & securities dealers’ exposure

The exposure of the twelve largest SDs to private sector debt remained low during 2014. The ratio of private sector debt to assets for the SDs declined marginally to 2.0 per cent at end-November 2014 relative to a ratio of 2.1 per cent at end-2013 (see Figure 4.24). Notably, of the twelve SDs, only seven institutions had exposure to private sector debt. Private sector debt held by SDs as a proportion of capital stood at 15.3 per cent at end-November 2014 which represented a decline of 0.5 percentage point, relative to end-2013. This was due mainly to a larger increase in capital relative to private sector debt.

SDs’ loan quality ratio, as measured by private sector NPLs to private sector loans, increased to 24.6 per cent at end-November 2014, relative to 19.2 per cent at end-2013 (see Figure 4.25). The deterioration in the loan quality ratio for the top twelve SDs, largely reflected the operations of one institution. However, the coverage ratio for SDs improved marginally to 58.1 per cent at end-2014 relative to 55.2 per cent at end-2013 (see Figure 4.25). This increase was due to a faster pace of increase in loan loss provisioning relative to NPLs.

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18 Private sector loans include loans to corporate sector entities and personal (household) loans.
4.5.2 Public sector debt & securities dealers’ exposure

Within a context of the impending retail-repo phase-down as well the reduced presence of the GOJ in the domestic bond market, SDs’ exposure to public sector debt declined for 2014. The ratio of public sector debt to assets fell to 34.5 per cent at end-2014 from 39.4 per cent at end-2013 (see Figure 4.24). Similarly, public sector debt holdings to capital declined steadily to 271.8 per cent at end-2014 from 298.4 per cent at end-2013. However, the ratio was significantly higher than the ratio of 76.1 per cent for DTIs at end-2014.

4.5.3 Public sector debt & insurance sector exposure

Similar to the SDs, exposure to public sector debt declined for the insurance sector for 2014. The ratio of public sector debt holdings to assets fell to 47.0 per cent at end-2014 relative to 54.5 per cent at end-2013 (see Figure 4.25). Of note, this ratio was 48.8 per cent and 39.3 per cent for the life and general insurance companies, respectively, at end-2014 relative to respective ratios of 58.3 per cent and 39.7 per cent at end-2013. As a proportion of capital, public sector debt holdings for the insurance sector declined to 202.6 per cent at end-2014 relative to a ratio of 236.7 per cent at end-2013, mainly influenced by the life insurance sector (see Figure 4.26).

4.6 Other asset exposures

The insurance sector’s exposure to equities and real estate investments continued to be relatively small compared to their exposure to public sector debt. For 2014, the ratios of equity investments to assets and real estate investments to assets for the insurance sector was 6.3 per cent and 0.7 per cent, respectively, in contrast to ratios of 5.7 per cent and 0.9 per cent at end-2013. In comparison, the exposure of SDs to equity investments declined to 1.0 per cent relative to 1.1 per cent at end-2013, reflecting the operations of one major institution. The DTIs, on the other hand, recorded a decline in their ratio of equities investments to assets to 0.6 per cent at end-2014 relative to 0.7 per cent at end-2013.

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19 Public sector debt is measured as the sum of public sector loans and public sector securities, while exposure is defined as public sector debt as a proportion of assets.
per cent from 0.7 per cent at the close of the prior year (see Figure 4.29).

4.7 Pension industry exposure to governments securities, equities & real estate 20,21
Relative to other investment classes, the pension industry continued to record higher exposures to Investments in Governments Securities as well as Investment Arrangements (see Table 4.2).22,23,24 At end-2014, exposure to Investments in Governments Securities and Investment Arrangements was 40.5 per cent and 29.5 per cent, respectively. This compares to values of 42.5 per cent and 29.0 per cent, respectively, at end-2013. For the same period there was a slight decline in exposure to equities investments to 9.3 per cent from 9.8 per cent at the end-2013. This could be attributed to increased investor uncertainty in the domestic economy during the review period. However, pension fund exposure to real estate remained virtually flat at 5.8 per cent at end-2014 relative to end-2013.

20 The data for the industry represents data for the pension fund as at end-September 2013.
21 Governments securities includes Government of Jamaica securities and other sovereign securities from the US, UK and Canada.
22 Pension industry refers to private pension plans within the regulatory oversight of the Financial Services Commission.
23 Exposure is computed as a per cent of total assets.
24 Investment arrangement includes investments in deposit administration contracts and pooled funds.
### Table 4.2 Investment classes as a per cent of total assets
pensions industry

<table>
<thead>
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<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>Investments in Governments Securities to Assets (%)&lt;sup&gt;1/&lt;/sup&gt;</td>
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<td>42.5</td>
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<td>Investments in Equities to Assets (%)</td>
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<td>10.3</td>
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<td>9.3</td>
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<td>Investments in Real Estate to Assets (%)</td>
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<td>5.8</td>
</tr>
<tr>
<td>Investment Arrangements to Assets (%)&lt;sup&gt;2/&lt;/sup&gt;</td>
<td>25.9</td>
<td>26.9</td>
<td>29.0</td>
<td>29.5</td>
</tr>
<tr>
<td>Other Investments to Assets (%)</td>
<td>11.6</td>
<td>11.8</td>
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</tr>
<tr>
<td>Total Asset values (J$bn)</td>
<td>283.0</td>
<td>294.1</td>
<td>307.1</td>
<td>341.4</td>
</tr>
</tbody>
</table>

**Notes**

<sup>1/</sup>Governments securities includes Government of Jamaica securities and other sovereign securities from the US, UK, and Canada.

<sup>2/</sup>An investment arrangement describes investments in deposit administration contracts and pooled funds.
5. Risks Assessment of the Financial Sector

5.1 Overview

During 2014, stress test results showed that DTIs remained robust to hypothetical liquidity, market, foreign exchange and credit shocks against the background of continued strong capital positions. Furthermore, exposure to credit risk decreased for 2014 in the context of continued improvement in loan quality and provisioning ratios for DTIs. Liquidity risk moderated during the year due to stronger Jamaica Dollar liquidity conditions and in a context of improved levels of excess reserves relative to end-2013. There was also reduced exposure to interest rate risk, partly reflective of declines in domestic bond duration factors during the review period. However, DTIs’ net open positions (NOPs) increased during 2014, increasing the sector’s exposure to foreign exchange risk.

NDTFIs also continued to be resilient to hypothetical market and liquidity shocks during 2014. In particular, securities dealers showed decreased exposure to interest rate and liquidity risks while there was increased exposure to foreign exchange risks during the review period.

Furthermore, stress test results based on counterparty exposures revealed that at end-December 2014, securities dealers and commercial banks, the two largest sub-sectors, showed increased susceptibility to contagion shocks relative to end-2013.

5.2 Aggregate stress test assessment for DTIs

Aggregate stress test results improved during 2014 largely due to reduced exposure to interest rate risk as well as stronger capital positions during the year (see Figure 5.1).

At the same time, based on the performance of key credit and

1 Aggregate stress tests assess the simultaneous impact of increases in interest rates, currency depreciation, credit quality deterioration as well as deposit outflows on institutions’ CARs. In Figure 5.1 the size of each node is scaled in proportion to the total value of exposure arising from scenarios involving credit risk (100.0 per cent of past due performing loans (0-3 months) becoming non-performing), foreign exchange risk (10.0 per cent depreciation in the JMD/USD exchange rate) and interest rate risk (1100 bps/100 bps & 275 bps/15 bps increase in interest rates on domestic/foreign rate sensitive assets and liabilities, respectively) at end-2014 and end-2013.
liquidity risk indicators, DTIs’ exposure to credit and liquidity risks declined while large increases in the NOP contributed to increased vulnerability to foreign exchange risk (see Figure 5.2). Nonetheless, DTIs remained resilient to hypothetical liquidity, foreign exchange, market and credit shocks during the year.2

### 5.3 Liquidity funding risk assessment for DTIs

Against the background of strengthening in Jamaica Dollar liquidity conditions, the liquidity risk exposure of the DTIs declined during 2014. This performance was evidenced by improvement in several measures of liquidity risk during the year. In particular, the statutory liquidity ratio of the sector increased steadily during the year to 31.5 per cent at end-2014 relative to 25.6 per cent at end-2013. Furthermore, DTIs’ reserves of liquidity in excess of those prescribed by the Bank increased steadily during 2014 and were above levels recorded for the previous year (see Figure 5.3).3

Conversely, there was deterioration in the ratio of short-term assets to short-term liabilities for the FIA licensees and building society sub-sectors during 2014 relative to the previous year (see Figure 5.4). The ratio for the FIA licensees sub-sectors declined by 10.7 percentage points to 9.9 per cent while the ratio for the building society sub-sector declined by 71.0 percentage points to 25.3 per cent. However, the ratio for the commercial banks remained relatively unchanged at 40.0 per cent at end-2014, relative to the close of the previous year. In addition, the loans-to-deposit ratio for the DTI sector declined marginally by 0.2 percentage point to 73.0 per cent at end-2014 relative to the close of the previous year (see Figure 5.5). At the same time, this ratio remained below 100.0 per cent, indicative of continued viability in meeting short-term liquidity needs. Regarding funding

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2 In Figure 5.2, a darker shade for an indicator represents a stronger signal (signals range from 0 to 5) and a worsening in indicator performance.

3 On 16 December 2013, the BOJ introduced the Standard Liquidity Facility (SLF) to improve the efficiency of its liquidity provision activities through repurchase arrangements. Furthermore, on 04 August 2014, the limit on the SLF for each DTI doubled, thereby increasing the total funding available to DTIs to J$7.3 billion from J$3.65 billion that was set in December 2013.
sources, deposits continued to account for the dominant share of DTIs’ funding base. Nonetheless, deposits as a proportion of total funding declined to 78.4 per cent at end-2014 relative to 82.3 per cent at end-2013.

In contrast, ‘repos’ as a source of total funding and ‘other funding’ liabilities as a share of total funding increased to 10.1 per cent and 11.6 per cent, respectively, at end-2014 relative to 6.6 per cent and 11.2 at end-2013. As it relates to funding risk stress tests results, all DTIs were adequately capitalised to absorb losses associated with hypothetical declines in deposits during 2014. For example, following an assumed 10.0 per cent decline in average deposits, the post-shock CARs for all DTIs remained above the regulatory benchmark of 10.0 per cent.4 There was also an increase in the inter-quartile range of post-shock CARs for the system during 2014. This performance is indicative of reduced vulnerability of DTIs to liquidity funding risk during the review period (see Figure 5.6).

5.4 Market risk assessment of DTIs

All DTI sub-sectors reflected an increase in the Jamaica Dollar value of foreign currency securities held during 2014. This performance mainly reflected currency revaluations due to the continued depreciation in the domestic currency (see Figure 5.7). Against this background, foreign currency securities as a share of the total investment portfolio increased to 51.0 per cent and 56.7 per cent at end-2014 for the commercial banks and building societies, respectively, relative to 38.3 and 40.6 at end-2013. The FIA licensees sub-sector continued to hold the largest proportion of their portfolio in foreign currency securities. At end-2014, foreign currency securities accounted for 94.5 per cent of the investment portfolio of the FIA licensees sub-sector. During

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4 The ‘hair cuts’ (per cent loss in value) applied in the stress testing framework on liquidating each category of assets are items in course of collection (10.0 per cent), non-liquid investments (25.0 per cent), accounts receivables (25.0 per cent), loans & advances (25.0 per cent), fixed assets (50.0 per cent) and other assets (50.0 per cent). The resultant hypothetical losses are written off against the capital buffers first and then statutory capital.
2014, perception of DTIs’ stability as reflected in equity prices, improved relative to the previous year. This improvement was reflected in the trend decline in the median implied volatility of assets for publicly-listed DTIs. In addition, there was a narrowing of the inter-quartile range of the implied volatility of assets for publicly-listed DTIs relative to end-2013 (see Figure 5.8).

Duration on domestic bonds declined during 2014, underscoring lower DTI exposure to interest rate risk on these securities relative to 2013. The duration of domestic bonds held by DTIs decreased to 1.12 at end-2014 relative to 1.73 at end-2013, reflecting the impact of increased holdings of shorter tenured domestic securities by the building societies sub-sector. On the other hand, there was a trend increase in the duration on foreign bonds. The duration on foreign currency securities increased to 2.81 at end-2014 relative to 2.12 at end-2013 (see Figure 5.9). Additionally, there was reduced volatility in the foreign exchange market particularly during 2014 (see Figure 5.10). This reduced volatility along with the lower duration of domestic currency securities resulted in a lower inter-quartile range of DTIs’ VaR estimates relative to 2013 (see Figure 5.11).

5.5 Interest rate risk assessment for DTIs

During 2014, interest rate risk stress tests showed reduced vulnerability to interest rate shocks for DTIs. The median quarterly post-shock CAR of DTIs improved during 2014 relative to the previous year following a hypothetical increase in interest rates (see Figure 5.12). Nonetheless, all DTIs were adequately capitalised to absorb losses associated with large but plausible hypothetical increases in interest rates, with all DTIs remaining above the 10.0 per cent CAR prudential benchmark. Furthermore, DTIs were also robust to hypothetical interest rate declines during 2014.

*The VaR was adjusted relative to previous publications to reflect amendments to the methodology.
5.6 Foreign exchange risk assessment for DTIs

DTIs’ NOP increased by 84.3 per cent to the equivalent of US$181.2 million at end-2014 relative to the end of the prior year (see Figure 5.13). The NOP to capital ratio for the DTI sector increased to 18.8 per cent at end-2014 relative to 10.3 per cent at end-2013, reflective of increased foreign currency risks, particularly during the first half of the year. The increase in the NOP for 2014 was largely observed for commercial banks.

However, DTIs’ foreign currency exposure to non-foreign currency earners declined during the review period relative to the previous year. In particular, loans to non-foreign exchange earners as a proportion of total foreign currency loans declined to a quarterly average of 14.4 per cent for 2014 compared to an average of 16.4 per cent for 2013. Furthermore, DTIs’ loans to non-foreign exchange earners amounted to the equivalent of J$16.7 billion at end-2014 relative to J$21.9 billion at end-2013 (see Figure 5.14).

DTIs remained generally resilient to hypothetical depreciation of the Jamaica Dollar vis-à-vis the U.S. dollar during 2014, as institutions were adequately capitalized to absorb losses associated with these shocks. For example, subsequent to a hypothetical 30.0 per cent depreciation, the average median post-shock CARs across all DTIs was higher during 2014, relative to the average median post-shock CARs for 2013 (see Figure 5.15). The reduced susceptibility of the DTI sector to the hypothetical depreciation shock for 2014 largely reflected the impact of long net open positions for a number of these institutions during the year. Building societies remained most resilient to the shocks applied for 2014, with a higher quarterly average post-shock CAR for the

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5 Long position in foreign currency assets include all currencies converted to US dollars.
6 Shocks are applied first to the exchange rate between the Jamaica Dollar and the US dollar. The corresponding exchange rates of the Jamaica Dollar vis-à-vis the Euro, the Canadian dollar, and the Pound Sterling are then incorporated based on historical correlations with the selling rate for the US dollar between the January and May 2003 foreign exchange crisis period.
sub-sector relative to 2013. Commercial banks also showed reduced exposure to the exchange rate depreciation shocks, with the average median post-shock CARs and average quarterly post-shock CARs of these institutions increasing relative to 2013. FIA licensees exhibited increased exposure to the exchange rate depreciation shocks relative to 2013. Nonetheless, the post-shock CARs of these institutions remained above the 10.0 per cent prudential benchmark during for the review period. In addition, DTIs remained resilient to the range of hypothetical appreciation shocks considered over the review period.

5.7 Credit risk assessment of DTIs

DTIs’ exposure to credit risk declined during 2014. The loan quality ratio, as measured by the ratio of NPLs to total loans for the sector, declined to 4.9 at end-2014 relative to 5.4 per cent at end-2013 and reflected improvement in the ratios for the commercial bank and building society sub-sectors. The building societies sub-sector reflected the most pronounced improvement in loan quality, driven by a substantial decline in the NPLs, with the NPLs to total loan ratio declining to 5.3 per cent at end-2014 relative to a ratio of 6.4 per cent at end-2013. For the commercial bank sub-sector, the ratio declined to 4.9 at end-2014 relative to 5.2 at end-2013. This occurred despite a marked fall in the write-off ratio, measured as loan write-offs as a per cent of total loans, to 1.1 per cent at end-2014 relative to 1.8 per cent at end-2013 and was well below the five-year historical average of 1.7 per cent. In addition, the loan quality ratio for the FIA licensees sub-sector declined marginally for the year, totalling 1.0 at end-2014 relative to 1.7 at end-2013 (see Figure 5.17).\(^7\)

Against the background of strong declines in NPLs for the commercial banks and building societies for 2014, the provisioning ratios for both sub-sectors increased to respective values of 111.5 per cent and 81.0 per cent at end-2014 relative to 103.7 per cent and 67.2 per cent at end-2013.

\(^7\) Write-off rate is computed as the ratio of “charged off assets” for the year to “loans, advances & discounts (net of provisions)”. 

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**Figure 5.15** Foreign exchange risk stress test results for DTIs (Scenario: Impact on CAR of 30.0 per cent depreciation)

**Figure 5.16** Credit risk exposure for DTIs at end-2014

(Scenario: 100.0 per cent write-off of past due loans less than 3 months)

**Figure 5.17** Provisioning rates for DTIs and write-off rates for non-performing loans for commercial banks
Also, the provisioning ratio for the FIA licensees increased to 143.2 per cent at end-2014 relative to 169.0 per cent at end-2013. In addition, the maximum ratio of NPLs to capital recorded across all DTIs also decreased sharply to 32.3 per cent at end-2014 from 92.0 per cent at end-2013.

Furthermore, there was a marked narrowing of the inter-quartile range of NPLs to capital for DTIs, which underscored a lower exposure to credit risk. This ratio decreased to fall within an inter-quartile range of 11.6 per cent to 22.2 per cent at end-2014 relative to higher values of 11.7 per cent to 24.8 per cent at end-2013 (see Figure 5.18).

Stress test results at end-2014 showed that each sub-sector was adequately capitalized to absorb a hypothetical 30.0 per cent increase in NPLs (see Figures 5.16 & 5.19). In particular, there were strong improvements in FIA licensees’ and building societies’ resilience to this hypothetical increase in NPLs during 2014. This was largely due to strong reductions in NPLs as well as improved capital positions during the year. Further, the commercial bank sub-sector also remained resilient to large but plausible hypothetical shocks to NPLs over the review year.

Reverse stress testing exercises showed that for the FIA licensees sub-sector it would take a significantly higher increase in NPLs of 3 120.0 per cent at end-2014 for the first FIA licensee to breach the CAR benchmark relative to an increase of 2 100.0 per cent at end-2013 (see Figure 5.20). In addition, building societies required an increase of 300.0 per cent at end-2014 relative to an increase of 170.0 per cent at end-2013. The commercial bank sub-sector also showed reduced susceptibility to reverse stress testing assessments. It would take a larger increase in NPLs of 120.0 per cent to cause the most vulnerable institution to have its CAR fall below 10.0 per cent, relative to an increase of 40.0 per cent in NPLs at end-2013.

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8 Reverse stress testing involves identifying the increase in NPLs required to bring the weakest institution’s CAR below the 10.0 per cent minimum benchmark.
5.8 Liquidity funding risk assessment of SDs

Within the context of stronger liquidity conditions, liquidity funding risk exposure of the SDs sector improved during 2014. Stress test results for the twelve largest SDs at end-September 2014 showed that these entities would remain resilient subsequent to hypothetical shocks involving a 10.0 per cent reduction in retail repo-liabilities, which remained the dominant funding source for these institutions during the year (see Figure 5.21). The post-shock CAR for the 12 largest SDs increased to a quarterly average of 20.6 for 2014, relative to a quarterly average of 18.0 for 2013.

In addition, there was decreased exposure to liquidity funding risk reflected in an increase in the quarterly median post-shock CAR to an average of 22.9 per cent for 2014 relative to an average of 19.2 per cent for 2013. Nonetheless, the ratio of short-term assets (less than three months) to short-term liabilities declined marginally to 30.2 per cent from 31.7 per cent at end-2013 (see Figure 5.22). The decline in the ratio was due to a decline in short-term assets of 1.5 per cent as well as an increase in short-term liabilities of 3.4 per cent for the review period.

5.9 Market risk assessment of SDs

During 2014, data for the 12 largest SDs showed an increase in the proportion of the investment portfolio in foreign currency securities relative to 2013 (see Figure 5.23). This performance was partly reflective of revaluations due to the depreciation in the domestic currency as well as greater portfolio diversification given the impending phasing down of retail repos. Foreign currency securities as a share of total investments averaged 52.3 per cent for 2014 relative to an average ratio of 48.5 per cent for 2013.

VaR results for the twelve largest SDs decreased during 2014 relative to the previous year. This improvement was also reflected in a lower inter-quartile range of VaR estimates for the 12 largest SDs relative to 2013 (see Figure 5.24). The outturn for 2014 was influenced by the decrease in the...
duration of securities dealers’ domestic currency bond portfolios which decreased to 1.7 at end-2014 relative to 2.4 at end-2013 (see Figure 5.25).

5.10 Interest rate risk assessment of SDs
Interest rate risk stress test results at end-2014 revealed decreased susceptibility of SDs to hypothetical shocks to interest rates relative to end-2013, largely due to lower potential fair value losses for the larger SDs. The average quarterly median post-shock CARs for the twelve largest SDs increased to 8.5 per cent for 2014 subsequent to a hypothetical increase of 1100 bps/100 bps & 275 bps/15 bps in interest rates on domestic/foreign rate sensitive assets and liabilities, respectively. This compares to an average quarterly median post-shock CAR of 7.5 per cent for 2013, following the same shock (see Figure 5.26). In addition, the maximum post-shock CAR for the 12 largest SDs increased to 154.9 at end-2014 relative to 120.2 at end-2013.

5.11 Foreign risk assessment of SDs
The NOP to capital ratios for the SDs increased during 2014, heightening the sector’s susceptibility to foreign exchange risk, particularly during the first half of the year. The median NOP to capital ratio increased by 2.9 percentage points for the review period to 9.4 per cent at end-2014; while the inter-quartile range for the SDs also widened during the year (see Figure 5.27). Nonetheless, stress test results for 2014 showed that the SDs remained resilient to hypothetical exchange rate shocks during the year. In particular, the post-shock CARs of the SDs remained above the 10.0 per cent benchmark as a result of the contemplated 30.0 per cent depreciation and appreciation in the exchange rate (see Figure 5.28).

5.12 Liquidity funding risk assessment of Insurance Companies (ICs)
Liquidity stress test results showed that subsequent to a shock involving a 10.0 per cent loss of liquid liabilities, post-shock minimum continuing capital surplus requirements (MCCSRs)
for life insurance companies remained well above the regulatory benchmark of 150.0 per cent (see Figure 5.29).

Regarding the general insurance sector, these companies were also resilient to this contemplated shock with the post-shock minimum capital test (MCT) of all general insurance companies remaining above the MCT benchmark of 250.0 per cent during the review period.

5.13 Market and interest rate risk assessment of ICs

Life insurance companies’ balance sheets remained robust to large but plausible hypothetical interest rate increases during the review period. In addition, the average quarterly VaR estimate for the sector increased marginally to 0.20 per cent for 2014 relative to 0.19 per cent for 2013 (see Figure 5.30). The duration on the foreign bond portfolio increased to 6.6 years from a duration of 4.9 years at end-2013. However, the duration on domestic bonds decreased marginally to 1.1 years at end-2014 relative to 1.6 years at end-2013.

More specifically, life insurance companies’ balance sheets remained robust to a large but plausible hypothetical increase of 1100 bps/100 bps & 275 bps/15 bps in interest rates on domestic/foreign rate sensitive assets and liabilities, respectively, in interest rates (see Figure 5.31).

5.14 Contagion risk assessment of the domestic financial system

For 2014, inter-bank rates increased to a daily average of 6.4 per cent relative to a daily average of 5.5 per cent for 2013. This performance largely reflected higher rates during the first half of 2014; as rates generally declined during the second half of the year, fuelled by reduced uncertainty related to counterparty and liquidity risks in this segment of the market.
Stress test results based on counterparty exposures revealed that at end-2014, building societies showed reduced susceptibility to these shocks relative to end-2013 (see Figure 5.32). Securities dealers and commercial banks showed increased susceptibility to these hypothetical shocks relative to end-2013. At end-2014, the average post-shock CARs for these sub-sectors declined to 22.1 per cent and -5.1 per cent respectively, from 29.2 per cent and 5.6 per cent at end-2013.

*The VaR was adjusted relative to previous publications to reflect amendments to the methodology.

bps in interest rates on domestic/foreign rate sensitive assets and liabilities)

Stress testing of counter-party risk exposures for the financial system is the second round impact due to net credit exposures subsequent to the application of macroeconomic shocks.
6. Payment System Developments

6.1 Overview

For 2014, growth in overall average monthly Automated Banking Machine (ABM) and Point-of-Sale (POS) values remained strong, increasing by 15.3 per cent relative to 11.7 per cent growth for 2013. Conversely, the average value and volume of cheque transactions declined during the year in the context of the migration of activities to real-time means of payment. Consequently, activities in the JamClear-Real Time Gross Settlement (RTGS) system increased in value during 2014. The migration to real-time means of payment was also in line with the reduction in the value threshold limit of the Automated Clearing House (ACH) which resulted in a reduction in settlement risk.

There was an improvement in liquidity conditions for 2014 as evidenced by the slowdown in the usage of the Bank of Jamaica (BOJ) intraday liquidity facility, especially in the latter part of the year. Additionally, BOJ heightened liquidity provision through the Standing Liquidity Facility (SLF) and Bi-Monthly Repurchase Operations (BRO), effectively reducing the liquidity and credit risks within the system. Concurrently, liquidity concentration risks persisted throughout the payment and settlement system during 2014. In addition, there was a reduction in activities in the JamClear-Central Securities Depository (CSD) system for the review period.

6.2 Large value transfer system

During 2014, there was an increase in activities in the JamClear-RTGS system. This increase was in line with the migration of payments from the ACH to the large value payment system, further facilitating the Bank’s mandate of maintaining safe and efficient means of payments. In particular, the total value of RTGS transactions was $14 536.2 billion, reflecting an increase of 2.5 per cent relative to 2013 (see Figure 6.1). Additionally, RTGS volumes increased by 13.5 per cent to a total of 284 936 for 2014 relative to 251 143 for 2013 (see Figure 6.2). RTGS monthly

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1 The Jamaica dollar portion of the Jam-Clear RTGS system is assessed.
transaction values continued to show that the bulk of funds
demanded and supplied were predominantly concentrated
within three institutions during 2014. This level of
concentration within the large value transfer system
highlights a potential area of vulnerability in the financial
system in the event of disruptions to the clearing of funds
channelled through these institutions. Furthermore, the level
of interconnectedness and interdependency within the
financial system increases the likelihood that disruptions
would lead to a build-up of systemic risks. However, the
median percentage of funds demanded and supplied also
remained relatively low during the year with most
institutions being low net demanders and net suppliers of
funds (see Figure 6.3 and Figure 6.4). Furthermore, 54.3 per
cent of the total value of RTGS transactions for 2014
occurred during the first half of the year, reflecting the spill-
over effects of the tight liquidity conditions that persisted
throughout 2013.

Concentration risk as measured by the Risk Index for
payment system concentration remained high for the review
year. The Index value for the two most active banks
decreased marginally to a monthly average of 36.0 per cent
for 2014 relative to a monthly average of 36.1 per cent for
2013. However, the average Risk Index value for the other
institutions remained at an average of 2.7 per cent for 2014
(see Figure 6.5). The level of concentration risk was also
reflected in the Herfindahl index of payment activity. This
index averaged 0.2, in line with the annual average over the
last five years, thereby signalling persistence in the level of
concentration within the large value transfer system in
Jamaica (see Figure 6.6).

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

3 The calculation excludes the activities of the Accountant’s General Department,
BOJ and the Automated Clearing House who are also participants in the RTGS
system.

4 Higher values of this index signal more concentration within the payment
system.
6.3 Central securities depository system

For 2014, there was a further slowdown in activities within the JamClear-CSD system as there were declines in both the value and volume of securities traded. The average monthly value of CSD transactions declined by 26.1 per cent to $1 540.3 billion from $1 861.9 billion for 2013. Similarly, the average monthly volume of transactions fell by 17.3 per cent to 11 325 at end-2014 relative to 15 321 at the close of the previous period (see Figure 6.7). More specifically, there was a downward trend in activity related to the four types of securities traded. The most noticeable declines were for the Fixed Rate (FR) USD notes and Government of Jamaica (GOJ) CPI-indexed notes which fell by 27.3 per cent and 11.9 per cent, respectively (see Figure 6.8). The difference in the volume of securities traded during 2014 relative to 2013 is largely reflective of a worsening of the dampened demand for GOJ debt instruments.

Of note, the actual purchase and sale of GOJ securities continued to decline for 2014 albeit at a slower pace than for 2013 (see Figure 6.9). There was a reduction in both the value and volume of activity by 20.7 per cent and 64.4 per cent, respectively, relative to declines of 51.0 per cent and 74.6 per cent for 2013.

6.4 BOJ liquidity facility

BOJ continued the provision of liquidity support in order to alleviate the liquidity challenges faced by institutions through its Enhanced Liquidity Management Framework (ELMF) which was introduced in 2013. There were two main components of this facility, Bi-Monthly Repurchase Operations (BRO) and a Standing Liquidity Facility (SLF). During 2014, however, BOJ refined the ELMF in order to provide additional liquidity support to DTIs. This reflected the continued effort to alleviate the potential impact of liquidity shortage on the provision of credit. In August 2014, BOJ doubled the limit on the SLF for each DTI, thereby increasing the total funding to $7.3 billion. In addition, with

\footnote{Volumes traded and transaction size are net of entitlement proceeds.}
Figure 6.10 Share of BOJ intraday repos (values) demanded by the top four subscribers during 2013 & 2014

Figure 6.11 BOJ intraday repo facility monthly transaction value

Figure 6.12 Currency in circulation

respect to the BRO, BOJ has allocated liquidity to satisfy all bids regardless of the relative asset size of the DTI as was previously required. Furthermore, given the possibility of arbitrage opportunities and increased risk-taking by financial institutions, the Bank aligned the interest rates payable on the SLF and BRO to market-determined rates, effectively reducing the potential risks.6

There was a substantial fall-off in the usage of the BOJ intraday repo facility during 2014. The use of the facility increased by 4.5 per cent relative to 70.6 per cent for 2013 in terms of the value of funds provided. Of the participating institutions utilizing the BOJ intra-day repo facility, the percentage of funds demanded by four institutions remained well over 50.0 per cent for most of the review period, indicative of liquidity concentration risks in the payment system (see Figure 6.10). The Bank’s provision of intra-day repos totalled $1 512.3 billion at end-2014 relative to $1 446.7 billion at end-2013. The amount of funds demanded during the second half of the year totalled $554.0 billion relative to a total of $958.3 billion up to end-June 2014 (see Figure 6.11). This outturn reflected an improvement in liquidity conditions and a lowering of liquidity risk within the payment system towards the end of the year.

6.5 Traditional means of payment

Amidst a slowdown in real sector activities, there was stronger growth in currency in circulation during 2014. For the year, currency in circulation increased by 8.4 per cent to $63.6 billion relative to growth of 7.1 per cent for 2013. The average monthly level of currency in circulation as a share of GDP, remained unchanged at 3.6 per cent at end-2014 relative to end-2013. On the other hand, average monthly currency in circulation as a share of M1 increased to 46.5 per cent relative to 45.1 per cent at end-2013 (see Figure 6.12). 7

There was an improvement in payment system safety in 2014 as reflected by the continued decline in cheque usage for

7 Currency in circulation plus demand deposits in local currency.
settling large value transactions. Against the background of the phased lowering of the Automated Clearing House (ACH) Value Threshold, commercial banks were required to further migrate activities to JamClear-RTGS as measure of risk mitigation. For 2013, the value threshold limit was reduced to J$2.0 million from J$3.0 million and commercial banks were required to migrate 50.0 per cent of prior year volumes above the threshold to the JamClear-RTGS system. As a result of this, by end 2014, there was a 75.0 per cent reduction in the aggregate value of small transactions processed through the ACH that are equal to or greater than J$2.0 million. Consequently, average monthly volume and value of transactions by cheque fell by 9.8 per cent and 9.0 per cent to 1.3 million and $166.1 billion, respectively, for 2014 (see Figure 6.13 and Figure 6.14). Furthermore, there was an increase in the proportion of inter-bank cheque payments to total cheque payments to 51.9 per cent at end-2014 relative to 50.8 per cent at end-2013. The size of intra-bank cheque payments averaged $122,597.7 and was lower than the average size for inter-bank cheque payments of $132,020.4 for the review period.

6.6 Electronic payment instruments

There was growth in the use of electronic payment instruments during 2014. Furthermore, overall ABM and POS intra-bank values as a share of overall value increased to 67.8 per cent relative to 67.0 per cent at end-2013, reflective of an improvement in payment system safety (see Figure 6.15 and Figure 6.16). Overall average monthly ABM and POS values increased by 15.3 per cent to $43.8 billion relative to an average monthly increase of 14.0 per cent for 2013. Similarly, ABM and POS volumes increased by 7.1 per cent relative to growth of 10.4 per cent for 2013. Specifically, average monthly ABM value and volume increased by 11.7 per cent and 6.8 per cent relative to respective increases of 11.5 per cent and 10.6 per cent for 2013. Average monthly values and volumes of POS transactions also increased by 19.8 per cent and 7.6 per cent, respectively for 2014 (see Figure 6.17). Furthermore, there
was an increase in the number of ABM and POS terminals to 513 and 22,140 at end-2014, respectively.

There was an increase in the average monthly value and volume of US dollar credit card transactions despite the continued depreciation in the Jamaican Dollar vis-à-vis the US dollar. For 2014, average monthly value and volume of US dollar credit card transactions done via the internet increased by 28.4 per cent and 17.3 per cent, respectively, relative to growth rates of 21.9 per cent and 9.1 per cent for 2013. On the other hand, there were sharp declines in the average monthly value and volume of Jamaica Dollar denominated card transactions by 14.9 per cent and 12.0 per cent, respectively.

The number of Jamaica Dollar denominated debit cards increased to approximately 2.6 million from 2.3 million at end-2013. Similarly, total credit cards in circulation increased to 223,259 at end-2014 from 215,084 at end-2013. At the same time, average monthly credit card receivables of commercial banks increased by 15.7 per cent to J$28,983.8 million at end-2014 relative to an increase of 14.8 per cent at end-2013.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Asset Utilization</td>
<td>This is a ratio which reflects the overall yield on earning assets.</td>
</tr>
<tr>
<td>Automated Clearing House</td>
<td>A facility that computes the payment obligations of participants, vis-à-vis each other based on payment messages transferred over an electronic system.</td>
</tr>
<tr>
<td>Central Securities Depository</td>
<td>An institution which provides the service of holding securities and facilitating the processing of securities transactions in a book entry (electronic) form.</td>
</tr>
<tr>
<td>Certificate of Participation</td>
<td>A financial instrument in which an investor has a pro rata share of lease revenue made by a municipal or government entity over a specified period.</td>
</tr>
<tr>
<td>Concentration Risk</td>
<td>The risk associated with the possibility that any single exposure produces losses large enough to adversely affect an institution’s ability to carry out their core operations.</td>
</tr>
<tr>
<td>Consumer Confidence Index</td>
<td>An indicator of consumers’ sentiments regarding their current situation and expectations of the future.</td>
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<tr>
<td>Credit Rating</td>
<td>A rating assigned to a borrower, which may be alphabetic or numerical, which indicates the probability associated with the party paying back a loan.</td>
</tr>
<tr>
<td><strong>Credit Risk</strong></td>
<td>The risk that a counterparty will be unable to settle payment of all obligations when due or in the future.</td>
</tr>
<tr>
<td><strong>Deferred Net Settlement</strong></td>
<td>The settlement of transfer orders netted at designated times between or among counterparties in order to economize on the number and value of transactions.</td>
</tr>
<tr>
<td><strong>Delivery versus Payment</strong></td>
<td>A mechanism which ensures that the transfer of payment from a payment system occurs if and only if the delivery of securities from a securities system occurs.</td>
</tr>
<tr>
<td><strong>Disposable Income</strong></td>
<td>The remaining income after taxes has been paid which is available for spending and saving.</td>
</tr>
<tr>
<td><strong>Financial Conglomerates</strong></td>
<td>Financial institutions under common ownership which undertake a wide range of activities such as banking, stockbroking, insurance and fund management.</td>
</tr>
<tr>
<td><strong>Financial Intermediation</strong></td>
<td>The process of channelling 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.</td>
</tr>
<tr>
<td><strong>Fiscal Deficit</strong></td>
<td>The excess of government expenditure over revenue for a given period of time.</td>
</tr>
<tr>
<td><strong>Foreign Exchange Risk</strong></td>
<td>The risk of potential losses which arise from adverse movements in the exchange rate incurred by an institution holding foreign currency-denominated instruments.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
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<tr>
<td>Funds Under Management/ Managed Funds</td>
<td>The management of various forms of client investments by a financial institution.</td>
</tr>
<tr>
<td>Gap Ratio</td>
<td>The ratio of cumulative differences between interest bearing assets and liabilities over various time horizons (e.g. less than 1 year, 1-2 years) to total assets.</td>
</tr>
<tr>
<td>Hedging</td>
<td>Strategy designed to reduce investment risk or financial risk. For example, taking positions that offset each other in case of market price movements.</td>
</tr>
<tr>
<td>Interest Margin</td>
<td>The dollar amount of interest earned on assets (interest income) minus the dollar amount of interest paid on liabilities (interest expense), expressed as a percent of total assets.</td>
</tr>
<tr>
<td>Interest Rate Risk</td>
<td>The risk associated with potential losses incurred on various financial instruments due to interest rate movements.</td>
</tr>
<tr>
<td>Intraday Credit</td>
<td>Credit extended to a payment system participant that is to be repaid within the same day.</td>
</tr>
<tr>
<td>Large Value Transfer System</td>
<td>A payment system designated for the transfer of large value and time-critical funds.</td>
</tr>
<tr>
<td>Liquid Ratio</td>
<td>The ratio of average prescribed assets to average prescribed liabilities.</td>
</tr>
<tr>
<td>Liquidity Risk</td>
<td>The risk that a counterparty will be unable to settle payment of all obligations when due.</td>
</tr>
<tr>
<td>Net Open Position</td>
<td>The difference between long positions and short positions in various financial instruments.</td>
</tr>
<tr>
<td>Non-Performing Loans</td>
<td>Loans whose payments of interest and principal are past due by 90 days or more.</td>
</tr>
<tr>
<td>Off-Balance Sheet Items</td>
<td>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.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Payment System</td>
<td>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.</td>
</tr>
<tr>
<td>Payment Versus Payment</td>
<td>A mechanism which ensures that the transfer of payment occurs if and only if the final transfer of a counterparty payment is simultaneously received.</td>
</tr>
<tr>
<td>Preferences shares</td>
<td>Capital stock which provides a specific dividend that is paid before any dividends are paid to common stock holders and which takes precedence over common stock in the event of liquidation.</td>
</tr>
<tr>
<td>Prescribed Liabilities</td>
<td>These refer to a) deposit liabilities, b) reservable borrowings and c) interest accrued and payable on a) and b).</td>
</tr>
<tr>
<td>Real-Time Gross Settlement System</td>
<td>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).</td>
</tr>
<tr>
<td>Repurchase Agreement (Repo)</td>
<td>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.</td>
</tr>
<tr>
<td>Retail Payment System</td>
<td>An interbank payment system designated for small value payments including cheques, direct debits, credit transfers, ABM and POS transactions.</td>
</tr>
<tr>
<td>Stress Test</td>
<td>A quantitative test to determine the loss exposure of an institution using assumptions of abnormal but plausible shocks to market conditions.</td>
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