Bank of Jamaica
Financial Stability Report
2011

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Preface

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.[1] 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 2011 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 welcome. 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

Macro-financial Environment

The Bank of Jamaica (BoJ) continued to assess the financial system during 2011 to identify any potential threats to financial stability. The financial health of the corporate, household and government sectors as well as structural developments were also closely observed to detect, in a timely manner, possible signs of stress that may negatively affect the financial system. Overall, financial stability risks deteriorated slightly in 2011 despite improved economic activity and slightly enhanced credit quality for households relative to credit conditions that prevailed in 2010.

The general financial stability environment in 2011, although remaining stable, was dominated by higher credit risks (see Chapter 4). The credit risk conditions permeating the financial markets in 2011 were affected by domestic economic conditions pertaining to uncertainty surrounding the status of the Stand-By Arrangement with the International Monetary Fund (IMF), deteriorating debt indicators, the delay of other key economic reforms and the less than favourable strength of economic recovery.

The annual change in Jamaica's gross domestic product (GDP) returned to positive growth rates at end-2011. In addition, economic activity appeared to be trending to levels recorded prior to the international financial crisis that started in 2007. Despite this, there was significant growth in non-performing loans (NPLs). This raised no significant concerns as DTIs had more than adequate loan loss provisioning. Of note, however, this growth in NPLs outpaced the increase in loan loss provisioning by DTIs during 2011.

The evolution of improved economic activity in 2011 was supported by increased borrowing activities in the household and corporate sectors (see Chapter 4). The maintenance of a low interest rate environment during the review period created a positive atmosphere for credit growth, improved loan quality ratios and a reduction in non-performing loans to the household sector. However, there was a high delinquency rate on loans in the corporate sector, which contributed to the strong growth in NPLs for the review period.

Global Environment

International financial market tensions increased during 2011 as a result of rising sovereign debt levels in a number of Euro area member states. As a consequence, a number of sovereign credit rating downgrades contributed to lower market liquidity, higher price volatility in those markets and greater contagion risk across global financial markets. These developments increased the risks to global financial stability and hence policy makers worldwide took various initiatives including fiscal consolidation to mitigate risks.

Sovereign risk pressures were aggravated by signs of slowing global economic growth and increased uncertainty about prospects for the world economy. The weakening in global economic activity may have been attributed to:

- temporary effects from the earthquake and tsumani in Japan;
- a significant rise in commodity prices;
- the heightening of Euro area sovereign risk.

In regard to the United States of America, despite the continuation of loose monetary policy since 2007, the US dollar strengthened in 2011. This occurred in a context of accelerated economic growth as well as a flight to US Treasury bonds primarily from European investors.

Domestic Financial System Developments

In 2011, the characteristics of external and internal macro-financial environment were not homogenous. The positive economic performance of the economy was reflected in improved performance of a number of financial institutions. There were, however, several identified risks to the domestic financial sector in 2011. These risks included:

- a pronounced increase in NPLs, primarily to corporations, which propagated higher levels of credit risk for DTIs;
- the scheduled increases in risk weights on foreign currency Government of Jamaica (GOJ) instruments as a benchmark requirement under the IMF Stand-by Arrangement with Jamaica contributed to a decline in the capital adequacy ratios of financial institutions, in particular securities dealers; and[1]
- protracted uncertainty regarding the status of reviews of the country's medium-term programme by the IMF led to elevated sovereign risk in the financial system.

Despite these challenges, for the year under review, the financial sector was adequately capitalized.

Notably, the performance in the insurance sector was more favourable over the review period relative to 2010. This performance was due primarily to:

- the introduction of a new regulatory measure for general insurance companies' capital requirements;[2]
- robust growth in the sector's asset base driven mainly by increased fixed term investments in GOJ securities; and
- improved profitability resulting from growth in revenues from premiums.

However, performance in the sector was dampened by the muted levels of insurance penetration, indicating the relatively underdeveloped status of that segment of the market.

On balance, risks to financial stability from the insurance sector remained negligible given that the aggregate solvency ratio in this sector was quite robust.

Financial System Exposures

Financial soundness indicators reflected improved performance within the financial sector for 2011. Specifically, financial institutions experienced an overall increase in profitability in 2011 relative to 2010 (see Chapter 3). This increase in profitability was the result of:

- activities in the banking sector which realized accelerated growth in the asset base;
- continued reduction in risks related to the cost of financing in 2011, despite low aggregate demand and unfavourable performance on interest bearing assets; and
- lower market interest rates during 2011, thus generating lower interest expense relative to 2010.

Improved profitability within the sector was dampened by deteriorated efficiency levels brought about primarily by an increase in loans to the household sector.[3] There was also growth in loans to all economic sectors except *Manufacturing*,

[1] Risk weightings on GOJ foreign currency denoted securities were introduced in the March 2010 quarter. See Box 1.1 for details.

[2] The introduction of the minimum capital test (MCT) at end-June 2011 replaced the minimum asset test (MAT) with a risk-based risk management tool for regulators and insurance companies to improve the sector's capital adequacy.

[3] The efficiency ratio is computed as the ratio of operating expenses to net interest income.

Construction, and *Professional & Other Services* (see Chapter 4).

The financial strength of the non-financial corporate sector showed mixed signals in 2011. In particular, there was an overall reduction in profitability in all sectors, with the exception of *Communications* and *Manufacturing*. In contrast, there were improvements in the financial strength of *Mining & Quarrying*, *Electricity* and *Transport, Storage & Communications* reflecting higher credit growth (see Chapter 3). This overall picture was corroborated by the marginal growth in the main JSE Index.[4]

Risk Assessment of the Financial System

In 2011, systemic risks to the financial system were mitigated by:

- strong levels of capitalization despite a reduction in the CAR of some institutions; and
- adequate liquidity conditions of financial institutions as affirmed by stress test results regarding the capacity of the financial system to absorb potential shocks.

However, concerns about the quality of financial institutions' credit exposures remained from the previous year. Nevertheless, indications were that financial institutions could withstand hypothetical shocks including possible large declines in average deposits, sharp depreciation in the value of the Jamaica Dollar, an increase in domestic and foreign interest rates and an increase in the stock of NPLs (see Chapter 5).

Payment System Developments

Within the oversight framework, the Bank continued to assess systemic risk related to the operations of the major domestic payment and settlement systems, including the Bank's real time gross settlement system (RTGS) and Central Securities Depository (CSD), in 2011. The assessment confirmed that:

- the risk to financial stability was persistently low in these systems; and
- payment and settlement systems in Jamaica operated efficiently in a safe environment which posed no threat to its participants and the entire financial system.

During the year, there was a significant reduction in the average volume and value of transactions by cheque. This decline was largely due to the implementation of the ACH value threshold during the review period which augured well for payment system safety.

Outlook

Although credit risk is expected to remain a concern in 2012, the outlook for financial stability is stable. While economic activity has picked up in Jamaica, the financial system remains susceptible to any weakening in the recovery which could give rise to further credit risk. In addition, sovereign risk from the Euro area remains elevated and could pose significant threat to domestic macroeconomic performance.

The improved performance of the household sector is expected to remain at the level experienced during 2011. It is also expected that the repayment capacity of the household sector will be stronger in 2012, contingent on the maintenance of a low interest rate environment. In contrast, corporate sector performance is expected to remain muted during 2012. The main risk to financial stability in 2012 is the protracted uncertainty regarding the status of a new financial programme with the IMF.

[4] The JSE index grew by 11.8 per cent in 2011, relative to growth of 2.3 per cent in 2010 (see Chapter 4).

This uncertainty will continue to negatively affect sovereign risk exposure in the financial system.

Box 1.1 Impact of Risk Weights on GOJ Foreign Currency Securities

In 2010, the Bank of Jamaica (BOJ) and the Financial Services Commission (FSC) began the phased implementation of the 100.0 per cent risk weighting on all Government of Jamaica (GOJ) foreign currency denominated instruments, consistent with Basel standards.[5] Prior to this, GOJ foreign currency instruments were assigned a zero risk weighting. This move formed part of the structural reform agenda under Jamaica's Stand-by Arrangement with the International Monetary Fund (IMF-SBA) to strengthen the regulatory and supervisory frameworks. The planned implementation involved incremental increases in the regulatory weight of 12.5 percentage points per quarter commencing end-June 2010 with full implementation by March 2012.[6]

The incremental increases in the risk weights over the period end-June 2010 to end-2011 resulted in a trend decline in the respective measures of capital adequacy for all sectors, with the exception of general insurance companies. Notwithstanding the declines, the capital adequacy measures remained above the respective minimum regulatory levels. The CAR for the securities dealers sector was the most impacted throughout the period, declining from 81.5 per cent at end-March 2010 to 29.3 per cent at end-2011 (see **Figure 1**). This was mainly due to the trend increase in the sector's risk weighted assets. Similarly, the CAR for the deposit-taking institutions (DTIs) declined throughout the period mainly due to increases in the sector's risk weighted assets (see **Figure 2**). The CAR for the sector was 18.6 per cent at end-March 2010 and fell to 15.9 per cent at end-2011. The life insurance sector recorded a decline in its minimum continuing capital and surplus requirements (MCCSR) over the review period (see **Figure 3**). Notably, the sector's MCCSR declined from 329.7 per cent at end-March 2010 to 282.0 per cent at end-2011 mainly reflecting a fall in the sector's total capital available. Prior to end-September 2011, the general insurance companies were monitored using the minimum asset test (MAT) which measures the regulatory capital on a liquidation basis. The MAT for the sector showed a trend increase from 151.4 per cent at end-June 2010 to 538.4 per cent at end-June 2011 (see **Figure 4**). However, due to the need for a more risk-based capital assessment model for the general insurance companies, the Minimum Capital Test (MCT) has replaced the MAT since end-September 2011.[7] The MCT increased from 288.1 per cent at end-September 2011 to 302.5 per cent at end-2011.

[5] Jamaica - Memorandum of Economic and Financial Policies 2010

[6] Of note, however, there was a temporary pause in June 2011 which resulted in the risk weights remaining at the end-March 2011 position of 50.0 per cent. This occurred due to implementation challenges mainly for the securities dealers sector. Notwithstanding this temporary break, the phased implementation continued at end-September 2011 with the target of 100.0 per cent risk weighting being adjusted to end-June 2012.

[7] The MCT Prescribed Capital Required ("PCR") assesses the riskiness of assets and policy liabilities and compares capital available to capital required. It is initially set at 200.0 per cent and will be increased to 225.0 per cent in the first quarter of 2012 and increased to 250.0 per cent by 2013.

Figure 1: Securities Dealers' Capital Adequacy Ratio

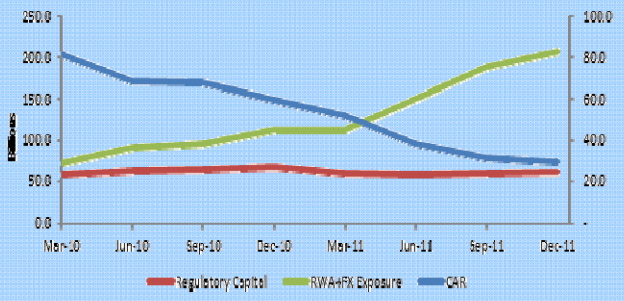


Figure 2: Deposit-taking Institutions' Capital Adequacy Ratio

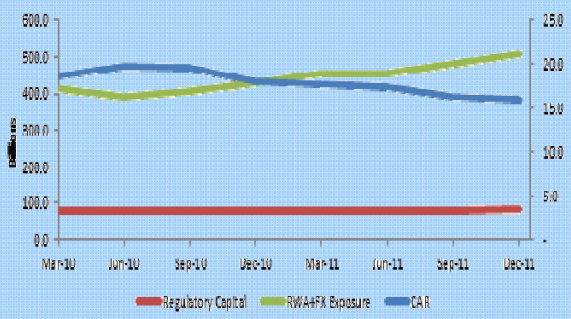


Figure 3: Life Insurance Companies' Minimum Continuing Capital and Surplus Requirements

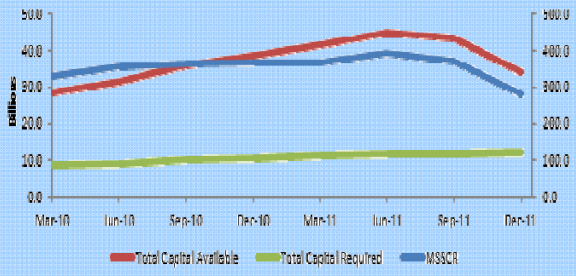
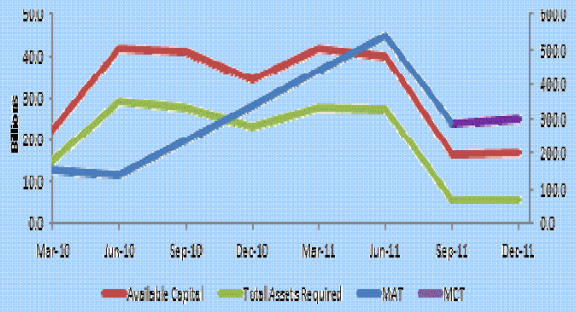


Figure 4: General Insurance Companies' Minimum Capital Test Requirement Ratio



2. Macro-Financial Risks

2.1 Overview

The conditions in the global financial markets during 2011 reflected investor uncertainty resulting from concerns over the impact of geo-political tensions in the Middle East and North Africa (MENA) on oil prices as well as the ability of Euro Area authorities to address a sovereign debt crisis for some European countries. Regarding domestic conditions, there was uncertainty surrounding the status of the Stand-By Arrangement with the International Monetary Fund (IMF), the strength of economic recovery, deteriorating fiscal and debt indicators as well the delay of key reforms. Notwithstanding these uncertainties, the Jamaican economy returned to positive economic growth as well as recorded relatively low inflation for the review year.

Against the background of these developments the BOJ's measures of financial stability reflected mixed performance for 2011. Although there was an overall improvement in the macro-financial index in 2011, the micro-prudential indices for all three banking sub-sectors deteriorated. However, the deterioration was contained as only the index for the FIA licensees sector indicated vulnerability. Notwithstanding, there was overall improvement in the Z-score index of insolvency risk for DTIs reflecting a decline in profit volatility. There was also a decline in the exposure of DTIs to GOJ sovereign debt default, as measured by the ratio of holdings of external GOJ debt to capital, during 2011. However, the exposure of DTIs to sovereign default as a measured by credit risk exposure to capital base, increased marginally during the year.

2.2 Macroeconomic Risks in the Domestic and Global Environment

There were positive developments in the Jamaican macro-economy during 2011 reflected in the improved performance of key economic variables such as GDP growth, inflation and the fiscal balance to GDP (see **Figure 2.1**). In particular, Jamaica recorded the first quarter of growth in March 2011 ending the cycle of 13 consecutive quarters of contraction. The trend continued throughout the remaining quarters of 2011, contributing to growth of 1.3 per cent for the year.

Additionally, the point-to-point headline inflation rate for 2011 fell well within the BOJ's target range of 6.0 and 8.0 per cent, ending the review period at 6.0 per cent. The outturn was lower than the 11.7 per cent recorded for 2010 and represented the lowest annual inflation rate since 2006. The fiscal balance to GDP ratio also improved relative to 2010 reflecting containment in expenditure given shortfalls in revenues as well as the increase in real GDP during the year.

The broad financial environment, reflected in the Bank of Jamaica's "cobweb" diagram, indicated that risks to the financial system were fairly stable across different dimensions in 2011 relative to 2010 (see **Figure 2.2**). Of note, however, there was significant improvement in the 'domestic environment' dimension of the cobweb in 2011 relative to 2010. On the contrary, there was a slight deterioration in risks funding and liquidity conditions in 2011. Risks to both the global and domestic economic environment remained generally unchanged over the review period (see **Figure 2.2**).

Figure 2.1 Selected macroeconomic indicators

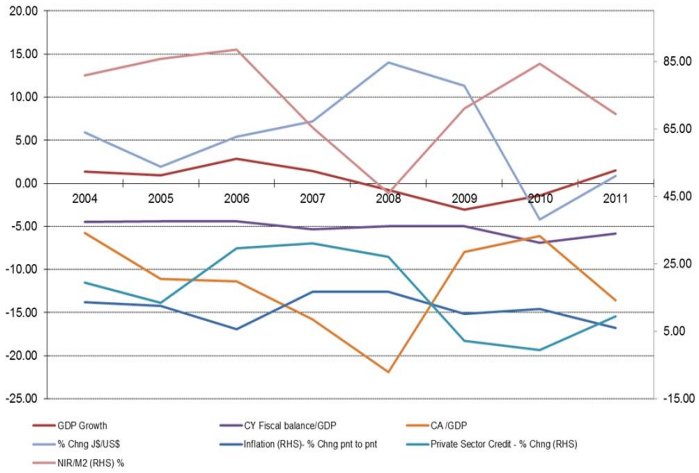
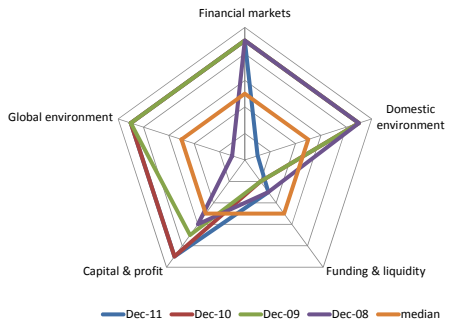
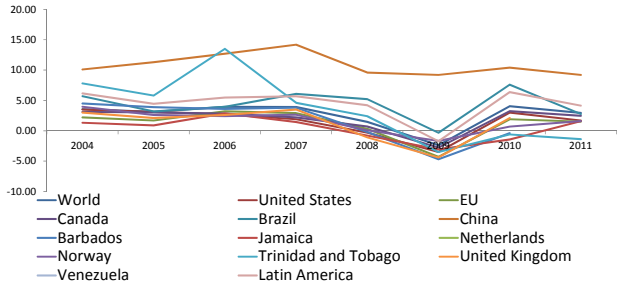


Figure 2.2 Financial stability cobweb



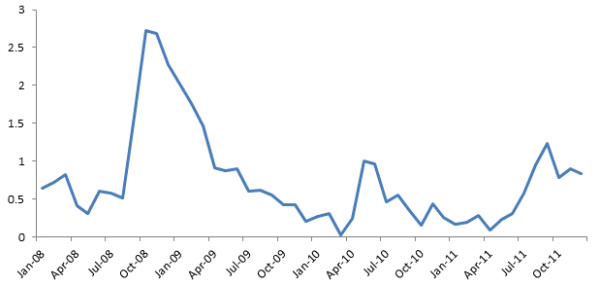
Note: The orange band represents a normal level of risk. Movements away from the centre of the diagram represent an increase in financial stability risks. Movements towards the centre of the diagram represent a reduction in financial stability risks.

Figure 2.3 Growth rates of selected countries



Source: Bloomberg

Figure 2.4 Bank of America/Merryl Lynch global financial stress index

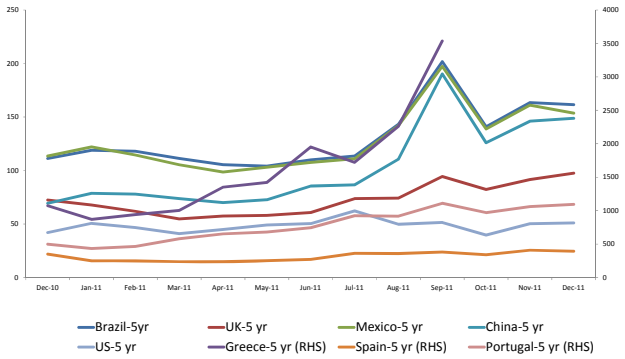


Source: Bloomberg

The global economy grew by an estimated 3.0 per cent in 2011 relative to a growth rate of 4.1 per cent in 2010 (see **Figure 2.3**). This expansion occurred despite significant concerns regarding economic spillover effects of an earthquake and tsunami in Japan, the impact of the geo-political turmoil in Middle East and North Africa (MENA) on world oil prices and the continuation of the Eurozone debt crisis. The impact of these factors was partly offset by accelerated growth in the United States of America.

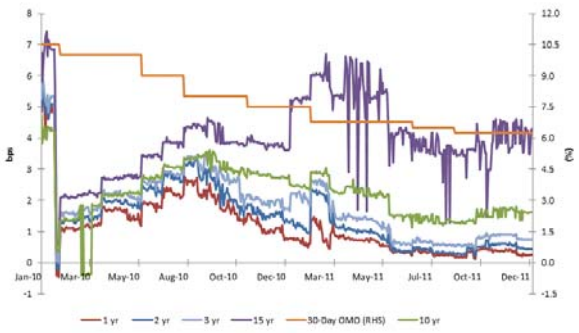
In addition, investor concerns over the Greek debt restructuring exercise as well as the uncertainty regarding further sovereign risk contagion in the Eurozone resulted in a switching towards safe-haven financial assets during 2011. The increased level of uncertainty in financial markets, particularly during the middle of the year, was reflected in the spike in the Bank of America-Merrill Lynch Financial Stress Index (see **Figure 2.4**). Further, Credit Default Swap (CDS) prices for selected countries increased relative to end-2010 indicating that investors demanded higher yields on sovereign debt. In particular, there was a significant increase in CDS prices in the third quarter of 2011 for Greece, Mexico, China and Brazil (see **Figure 2.5**). This followed the intensification of the European debt crisis and reflected the increased risk premium investors demanded for emerging market bonds.

Figure 2.5 5-year Credit default swap prices



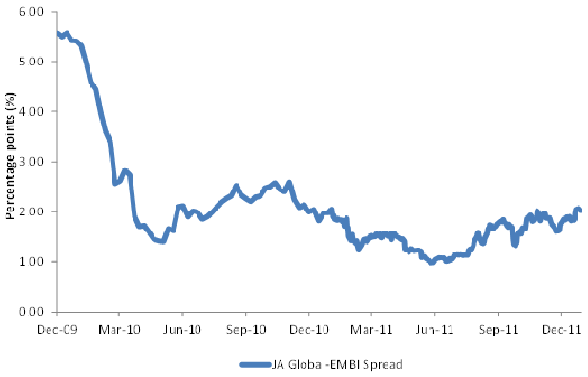
Source: Bloomberg

Figure 2.6 Spreads of daily GOJ domestic bond yields & 180-day Treasury bills



Source: Bloomberg & Bank of Jamaica

Figure 2.7 Jamaica EMBI+ global bond spread



Source: Bloomberg

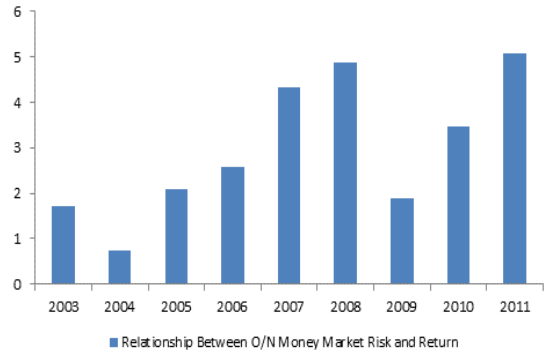
2.3 Domestic Financial Markets

Generally, there was increased volatility in the domestic GOJ bond market in 2011 relative to 2010 (see **Figure 2.6**). Notably, the longer tenors experienced heightened volatility due mainly to the uncertainty regarding the IMF-SBA and the future prospects of the economy. This uncertainty was also reflected in the higher demand for Government of Jamaica Variable Rate (VR) bonds relative to Fixed Rate (FR) instruments.

During 2011, the spread between the Jamaica Global Bond Index and the Emerging Markets Bond Index (EMBI+) increased (see **Figure 2.7**). The increase in the spread occurred although there was no explicit downgrade to the country's sovereign debt rating. There was, however, a revised outlook for the economy from stable to negative in October 2011 by Standard and Poor's ratings agency. This revised outlook was mainly influenced by the possible impact of the European debt crisis, increases in world commodity prices, a worsening growth outlook for developed countries and uncertainty regarding the status of the IMF-SBA as well as the Government's fiscal accounts.

Notwithstanding the influence of these factors, risk appetite in the domestic money market increased in 2011 relative to 2010 (see **Figure 2.8**). This occurred in a context where the Bank eased its monetary policy stance by lowering the 30-day CD rate four times during the year by a total of 125 bps to 6.25 per cent.

Figure 2.8 Jamaica money market risk appetite index.



Note: The money market risk appetite index is estimated based on the annual relationship between daily overnight (o/n) money market interest rates and the corresponding volatility (estimated as the standard deviation of o/n interest rates over a one year period).

Figure 2.9 Foreign exchange market investor risk appetite

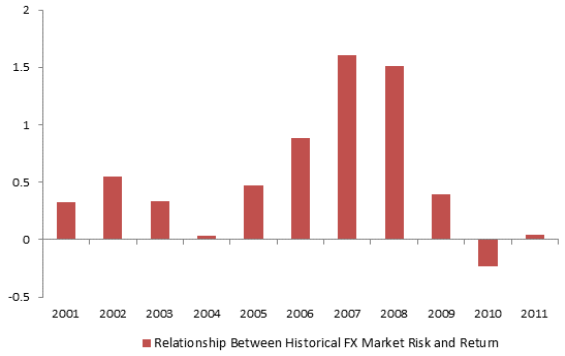
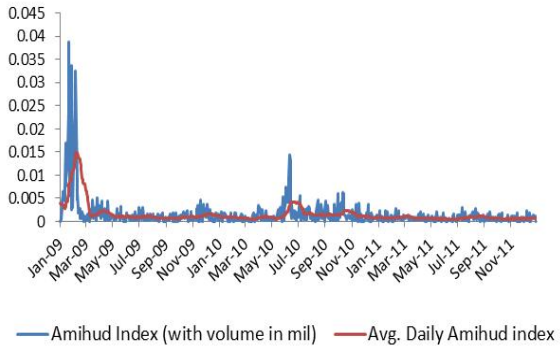


Figure 2.10 Amihud index of foreign exchange market depth (average daily)



There were minor improvements in the Risk Appetite Index for the foreign exchange market in 2011 as the index increased to 0.04 from -0.23 in 2010 reflecting higher demand for US dollars (see **Figure 2.9**). This occurred in a context of the maturity of a GOJ global bond and the refinancing of a Government guaranteed bond issued by the National Road Operating and Construction Company (NROCC). Notably, there was a depreciating trend in the exchange rate during the year when compared to the general appreciating trend which occurred during 2010. Nevertheless, the domestic foreign exchange market exhibited relative stability in 2011 as indicated by the favourable values for the Amihud Index (see Figure **2.10**). Additionally, the bid-ask spread declined in 2011, relative to 2010, reflecting a lower cost of executing transactions in the foreign exchange market (see Figure **2.11**).

The Jamaica Stock Exchange (JSE) Main Index advanced by 11.3 per cent for 2011 relative to the increase of 2.3 per cent recorded for 2010. This was influenced by declines in interest rates on domestic fixed income securities, relative stability in the foreign exchange market and better than expected earnings for several listed companies.

The values from both the Amihud Index of stock market depth and the JSE Risk Appetite Index supported the increase in the Main JSE index. The Amihud Index recorded a decline to 0.14 at end-2011 relative to 0.25 at end-2010 highlighting the increase in the level of participation by investors (see **Figure 2.12**). Additionally, the JSE risk appetite measure increased to 0.23 in 2011 from 0.09 in 2010 (see **Figure 2.13**).

Figure 2.11 Monthly bid-ask spreads & annual average daily volume in J$/US$ exchange rate

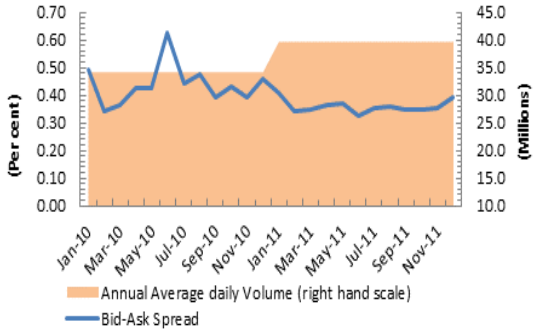


Figure 2.12 Monthly standard deviation of daily changes in Jamaica stock exchange index

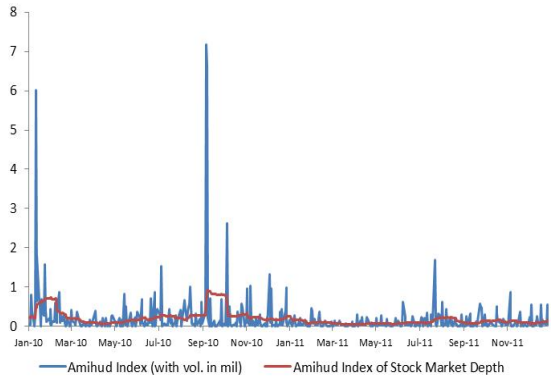
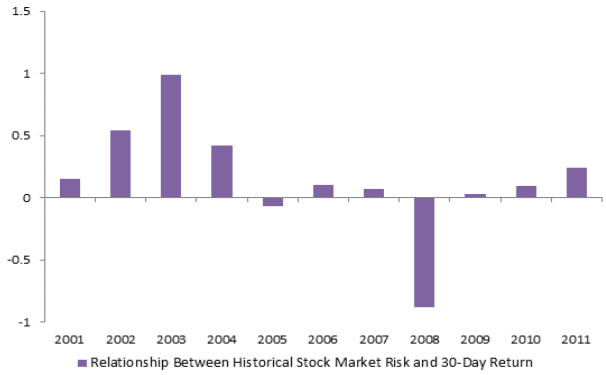


Figure 2.13 Jamaica stock market risk appetite index



2.4 Macro-financial and Macro-prudential Indices [1]

The Bank's macro-financial index (MaFI) for DTIs at end-2011 improved relative to end-2010. At end-2011, the index recorded a value of 13.0 points, 22.0 points below the value of the index at end-2010 (see **Figure 2.14**). The performance was attributed to improvement in economic growth, expansion in private sector credit and relatively stable financial market conditions. In particular, the 12-month GDP growth rate increased to 1.85 per cent at end-2011 following a decline of 0.55 per cent at end-2010. This represented the first 12-month year-on-year growth in GDP since end-September 2007. Additionally, the volatility in interest rates and exchange rates declined to 0.2 standard deviations (σ) and 0.1σ relative to respective 11.1σ and 3.7σ at end-2010 as well as respective tranquil period threshold values of 13.8σ and 55.6σ.

The micro-prudential indices (MiPIs) for the commercial banks, FIA licensees and building societies deteriorated at end-2011 compared to end-2010. However, with the exception of the FIA licensees, the MiPIs for the sector remained within the 1996-1999 financial crisis threshold value of 50.0 points. The MiPI for the commercial banks increased to 30.0 points at end-2011 relative to 24.0 points at end-2010. The deterioration in the MiPI for commercial banks reflected an increase in signals from the ratios of loans to capital, financial institution loans to total loans as well as interest income to assets. Offsetting the impact of this deterioration were reductions in the signals from the ratio of deposits to loans, loans and security loss provisions to assets and net income to assets (see **Figure 2.15**).

[1] The BOJ macro-financial and micro-prudential indices of the banking sector are monitored via a non-parametric approach to signal banking sector vulnerability. 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).

Figure 2.14 Macro-financial index

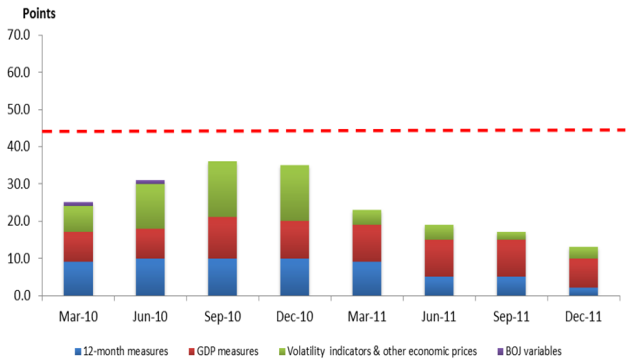


Figure 2.15 Micro-prudential index for the commercial banks

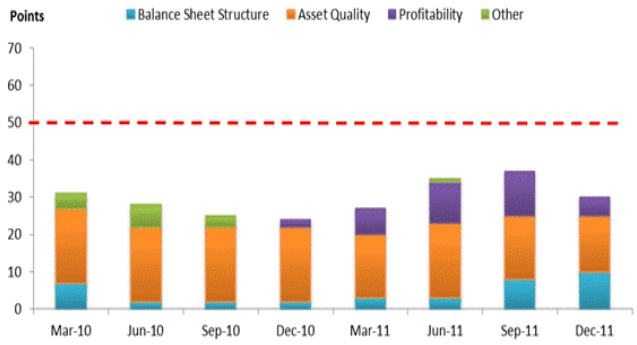
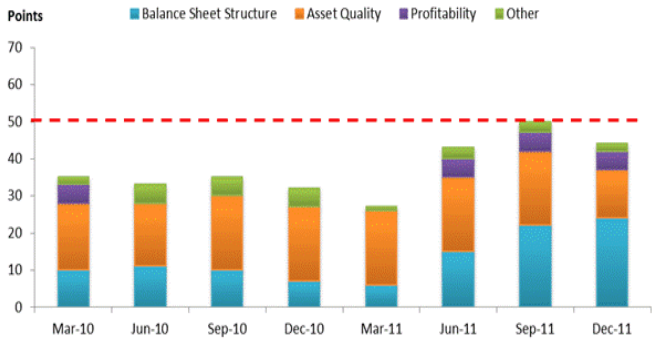


Figure 2.16 Micro-prudential index for the building societies



For the building societies sector, the MiPI increased to 44.0 points at end-2011 relative to the 32.0 points recorded at the end of the previous year. This deterioration reflected an increase in the signals from the ratios of loans to capital, deposits to total assets, deposits and repos to assets, investment to assets and investment income to assets. In particular, the signals from the ratios of deposits to total assets, deposits and securities sold under repurchase agreements to assets and investment income to assets rose to a signal of 5.0 relative to 0.0 for the previous year (see **Figure 2.16**).

The MiPI for the FIA licensees increased in severity to 59.0 points as at end-2011, in comparison to the 32.0 points recorded at end-2010. The sharp deterioration in the index was mainly due to an increase in signals from the ratio of loans to capital, deposits to total assets, deposits to total loans, interest income to assets, net income to assets as well as FX liabilities to FX assets (see **Figure 2.17**).

Figure 2.17 Micro-prudential index for the FIA licensees

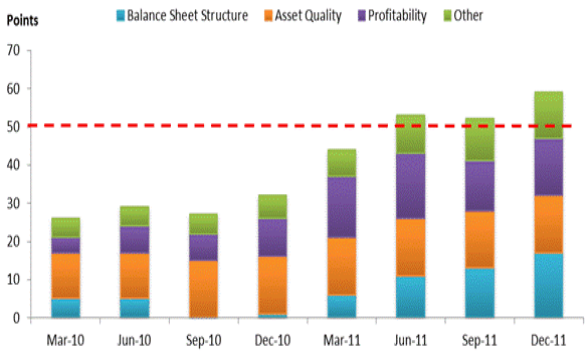
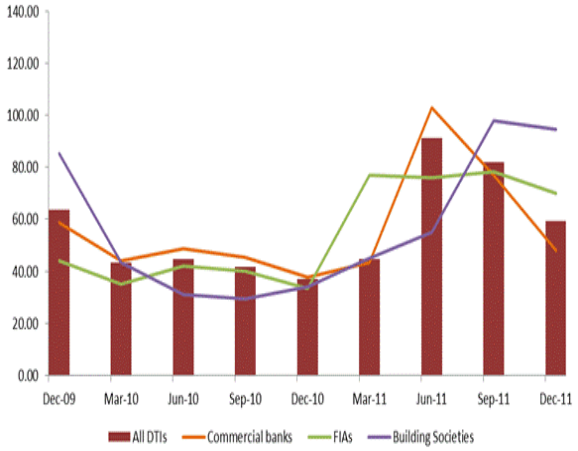


Figure 2.18 Z-score index for the DTIs



2.5 Insolvency Risk of DTIs

The Z-score index of insolvency risk for DTIs reflected an increase of 27.6 points to average 69.28 points at end-2011 relative to end-2010 (see **Figure 2.18**).[2,3] This improvement was largely influenced by a decline in the volatility of profits for DTIs. In particular, the Z-score index for the building societies increased by 38.8 points to average 73.3 points for 2011 reflecting improvements in capital and profits.

For 2011, the Z-score index for the commercial banking sector increased by 23.9 points to average 67.8 points (see **Figure 2.18**). The increase in the index for this sector was mainly attributed to growth in profits in spite of a significant increase in profit volatility.

The Z-score for the FIA licensees increased to an average of 75.2 points at end-2011 from an average of 37.6 points at end-2010. This significant improvement in the index reflected a substantial decrease in the volatility of profits.

[2] The Z-score (insolvency risk) index is used as a measure of a bank's financial soundness. The ratio is calculated as: $z = \frac{ROA + C/A}{STD\,DEV(ROA)}$, where ROA is the bank's return on assets, C/A is its regulatory capital to asset ratio and σROA is its standard deviation of return on assets computed over the sampling period. 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 of insolvency.

[3] The Z-Scores are weighted based on the relative total assets of the sectors.

Figure 2.19 Quarterly distance-to-default for DTIs

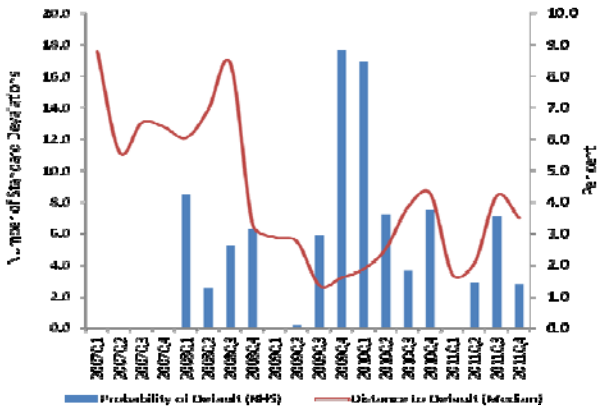
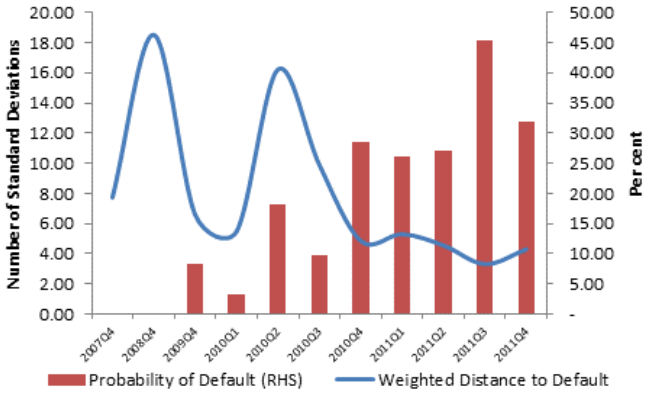


Figure 2.20 Quarterly distance-to-default for non-bank financial institutions



2.6 Distance to Default for DTIs

The vulnerability of DTIs to the risk of default increased over 2011. Specifically, the distance-to-default for DTIs decreased to 6.9 per cent at end-2011 from 8.5 per cent at end-2010 (see **Figure 2.19**).[4] The deterioration for DTIs reflected the decline in the market value of assets notwithstanding the marginal decline in the implied volatility of assets.

Similar to the DTIs, the risk of default for the non-bank financial sector increase over 2011. Specifically, the distance to default for the non-bank financial sector declined to 4.3 at end-2011 from 4.9 at end-2010. The decline was reflected in an increase in the implied volatility of assets for the sector as well as a decline in the market value of assets for the sector (see **Figure 2.20**).

[4] Default barrier = ½*(short-term + long-term liabilities)

Figure 2.21 Ratio of holdings of external GOJ debt by DTIs to capital

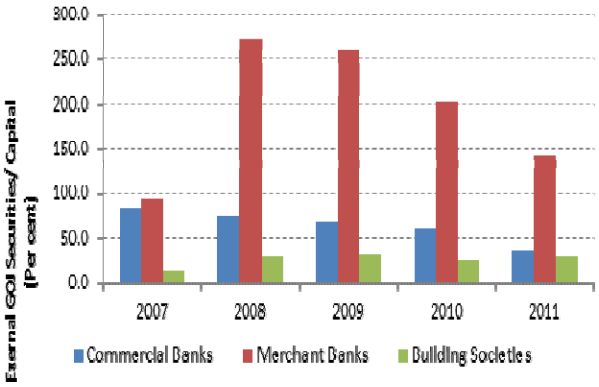
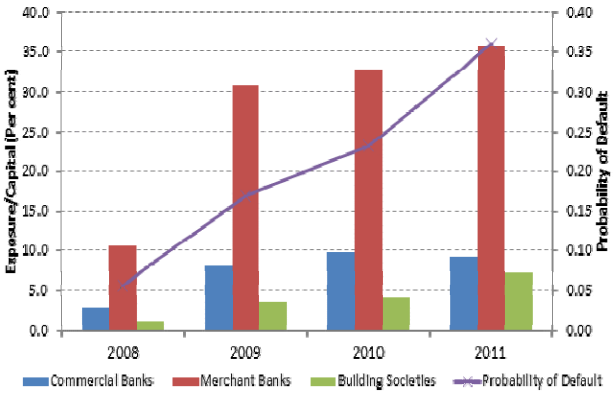


Figure 2.22 Exposure at default (EAD) of DTIs to capital and evolution of probability of default



2.7 Exposure to Sovereign Debt Default Risk of DTIs

The exposure of the banking system to sovereign debt default, as measured by the ratio of holdings of GOJ external debt to capital, declined in 2011. At end-2011, this exposure was approximately 36.5 per cent, 141.8 per cent and 28.8 per cent for commercial banks, FIA licensees and building societies, respectively. These exposures represent declines of 23.6 percentage points, 60.4 percentage points and an increase of 3.6 percentage points for the commercial banks, FIA licensees and building societies, respectively, relative to end-2010 (see **Figure 2.21**)

The probability of sovereign debt default increased by 12.8 percentage points to 35.9 per cent at end-2011 relative to end-2010.[5] However, the exposure of the banking system to sovereign credit risk, as measured by credit risk exposure (CRE), was mixed at end-2011.[6] Both the FIA licensees and building societies recorded marginal increases as a per cent of capital to 35.7 per cent and 7.3 per cent, respectively, while the commercial banks recorded a marginal decline to 9.2 per cent of capital. This was relative to 32.7 per cent, 4.1 per cent and 9.7 per cent for building societies, FIA licensees and commercial banks, respectively, at end-2010 (see **Figure 2.22**).

[5] 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.

[6] The credit risk exposure (CRE) is a product of the holding of GOJ external debt by banks, the probability of default (PD) and the loss given default (LGD).

Table 2.1 One-year ahead transition probability matrix for the banking system at end-2011

	INSOL	CUNDER	SUNDER	UNDER	CAP	WCAP	SCAP	NFAIL	FAIL
INSOL	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
CUNDER	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.09
SUNDER	0.00	0.10	0.91	0.00	0.00	0.00	0.00	0.00	0.00
UNDER	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.02
CAP	0.00	0.00	0.00	0.00	0.67	0.33	0.00	0.00	0.00
WCAP	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
SCAP	0.00	0.00	0.00	0.00	0.25	0.25	0.50	0.00	0.00
NFAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Table 2.2 One-year ahead transition probability matrix for the banking system at end-2010

	INSOL	CUNDER	SUNDER	UNDER	CAP	WCAP	SCAP	NFAIL	FAIL
INSOL	0.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
CUNDER	0.00	0.91	0.00	0.00	0.00	0.00	0.00	0.00	0.09
SUNDER	0.00	0.10	0.91	0.00	0.00	0.00	0.00	0.00	0.00
UNDER	0.00	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.02
CAP	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	0.01
WCAP	0.00	0.00	0.00	0.00	0.60	0.20	0.20	0.00	0.00
SCAP	0.00	0.00	0.00	0.00	0.00	0.01	0.99	0.00	0.00
NFAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
FAIL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00

According to BOJ's estimate of ratings transition probability matrix at end-2011, 30.8 per cent of DTIs migrated to a lower capital adequacy rating, 61.5 per cent remained within their previous rating and 7.7 per cent were upgraded in rating when compared with their rating at the beginning of the review year.[7] This was in comparison to the preceding year-end, where 23.1 per cent of the institutions were downgraded, 53.8 per cent remained unchanged and 23.1 per cent were upgraded.

[7] There are nine possible ratings that can be attributed to any bank at a given point in time as a function of its capital adequacy ratio (CAR). Banks with CARs which are greater than 20.0 per cent are rated SCAP, between 15.0 and 20.0 per cent are rated WCAP, between 10.0 and 15.0 per cent are rated CAP, between 9.0 to 10.0 per cent are rated UNDER, between 8.0 and 9.0 per cent are rated SUNDER, between 7.0 and 8.0 per cent are rated CUNDER, and CARs between 0.0 and 7.0 per cent are rated NFAIL. The transition probability matrix (TPM) for the banking sector is then calculated by evaluating the proportion of banks which have migrated from one rating to another over the period of a year. As is typical with TPMs the largest probabilities lie along the main diagonal indicating no change of rating for the period. Generalized maximum entropy is then used to condition these unconditional probabilities on bank-specific and macro-economic variables.

3. Financial System Development

3.0 Overview

Institutions within the financial sector remained broadly profitable and adequately capitalized in an environment of anemic domestic economic growth and low global demand during 2011. Financial soundness indicators also signaled improved conditions within the financial sector in particular as it relates to return on assets (ROA) and return on equity (ROE) for 2011. This increase in profitability of the financial system was led by the banking sector which realized accelerated growth in its asset base. Despite strong net profits, the financial sector's capital adequacy decreased during 2011 but remained at acceptable levels amidst strong growth in NPLs during the year. Even within a post-Jamaica Debt Exchange (JDX) business environment, the sector observed robust profits while reducing its financial leverage, despite narrowing interest margins.

3.1 The Financial System

A gradual weakening in the depth of financial intermediation in Jamaica continued during 2011, as measured by total financial institutions assets as a share of GDP (see **Figure 3.1**). The ratio declined to 126.7 per cent at end-2011 relative to 132.9 per cent at end-2010 and 140.8 per cent at end-2009. This decline in the ratio during 2011 was primarily due to growth in the Jamaican economy. Regarding regional performances, the depth of financial intermediation in Trinidad and Tobago strengthened to 132.2 per cent at end-2011 relative to 122.0 per cent at end-2010. Conversely, this indicator declined sharply for Barbados to 1 045.9 per cent at end-2011 relative to 1 180.1 per cent the previous year (see **Figure 3.1**).

3.2 Deposit Taking Institutions (DTIs)[1]

In 2011, building societies increased their market share of the sector's total assets at the expense of commercial banks, credit unions and FIA licensees (see **Figure 3.2**).

Fig. 3.1 Depth of financial intermediation
(assets of financial corporations as % of GDP)

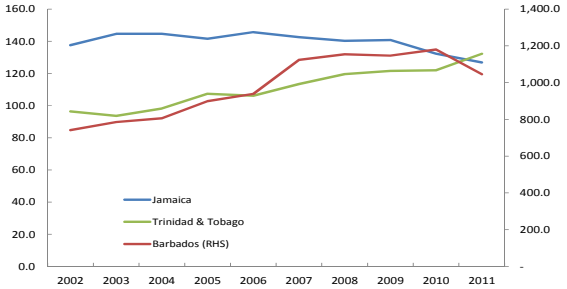


Fig 3.2 Growth in market shares in DTI assets
(%; growth between end-2010 and end-2011)

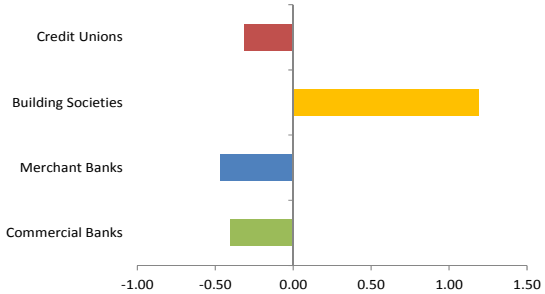
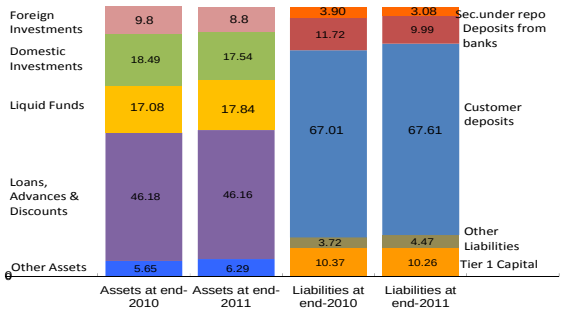


Fig 3.3 DTI's aggregate balance sheet as end-2010 and end-2011



[1] Deposit taking institutions include commercial banks, building societies and FIA licensees

Fig 3.4 Major asset categories as a share of total DTIs assets

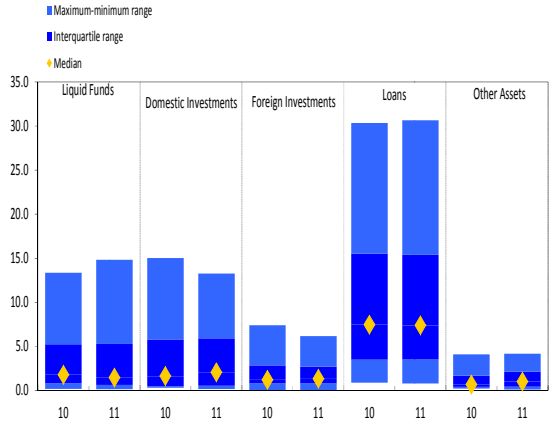


Fig 3.5 Concentration of DTIs loan portfolio *(Hh index 0-10,000: share of five largest clients,%)*

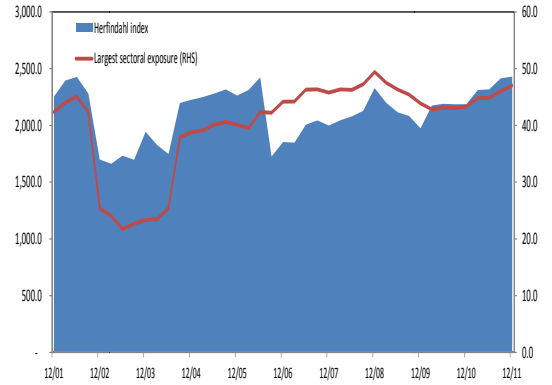


Table 2.0 Concentration of DTIs loan portfolio *(as a % of Total loans)*

	2007	2008	2009	2010	2011
AGRICULTURE & FISHING					
MINING, QUARRYING & PROC.					
MANUFACTURING					
CONSTRUCTION & LAND DEV.					
TRANSPORT , STORAGE & COMM.					
TOURISM					
DISTRIBUTION					
PROFESSIONAL & OTHER SERVICES					
PERSONAL (non bus.) LOANS					
ELECTRICITY					
ENTERTAINMENT					
OVERSEAS RESIDENTS					
OTHER CREDIT UNION LOANS					
FINANCIAL INSTITUTIONS					
PUBLIC SECTOR					

However, commercial banks remained the dominant sector despite their share of system assets decreasing marginally to 69.2 per cent in 2011 from 69.6 per cent in 2010.[2] FIA licensees recorded a decline in total assets of 12.5 per cent during the review period following a contraction of 26.1 per cent in 2010. The decline in the FIA licensees' assets reflected the continued impact of the sub-sector's re-alignment of its business model with predominant investments in foreign securities (see **Figure 3.3**).

3.2.1 DTIs balance sheet position

The banking sector's total assets grew by 4.3 per cent to $868.2 billion during 2011 relative to 2.5 per cent growth during the previous year and an average annual expansion rate of 15.0 per cent for the five years prior to the 2008 global financial crisis. The acceleration in asset growth for the review year mainly reflected an improvement in institutions holdings of *Liquid Funds* (4.5 per cent) and *Other Assets* (11.3 per cent), the impact of which was partially offset by a notable decline in *Investments* (6.7 per cent) while *Loans and Advances* remained virtually flat (see **Figure 3.4**). The maximum value for domestic investments as a share of total assets across all DTIs during 2011 declined to 13.3 per cent relative to 14.9 per cent in 2010. This decrease mainly reflected reduction in the holdings of public sector securities. While there was a slight increase in the distribution of loans to total assets across all DTIs in 2011, there was a marginal decline in the median ratio to 7.3 per cent from 7.6 per cent the previous year. Notwithstanding, *Loans, Advances and Discounts* comprised the majority of DTIs' asset base, totaling 46.2 per cent at-end 2011, relatively unchanged compared to end-2010.

Lending to domestic households represented the banking sector's largest exposure to the private sector during 2011 reflecting a 1.0 per cent increase to 24.2

[2] Assets are defined as total balance sheet assets

Table 2.0 The Encouraged Set of Financial Soundness Indicators

Indicator (%)	Indicates	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
Deposit-taking Institutions[1/]						
Capital to assets	Capital adequacy	15.3	15.8	15.9	16.9	16.8
Trading income to total income	Earnings & Profitability	51.9	51.4	56.4	85.1	67.1
Personnel expenses to non-interest expenses	Earnings & Profitability	40.3	38.6	42.7	39.9	38.0
Spread between lending & deposits rates [2/]	Earnings & Profitability	15.0	15.6	15.5	14.0	13.8
Customer deposits to total (non-interbank) loans	Liquidity	18.3	21.8	25.4	25.2	28.4
Foreign-currency-denominated loans to total loans	Foreign Exchange risk	32.0	32.0	29.8	30.0	29.9
Foreign-currency-denominated liabilities to total liabilities	Foreign Exchange risk	36.1	36.7	37.0	36.3	36.9
Net open position in equities to capital	Foreign Exchange risk	17.4	16.8	16.6	15.0	15.8
Household debt to GDP [3/]	Household sector leverage	57.8	58.3	60.2	59.7	59.3
Residential real estate loans to total loans [4/]	Exposure to real estate	25.0	25.2	25.0	25.1	24.6
Commercial real estate loans to total loans [5/]	Exposure to real estate	0.5	0.5	0.5	0.5	0.5

Notes:
[1/] Deposit-taking Institutions (DTIs) includes, commercial banks FIA licensees and building societies
[2/] Weighted by assets size to get the interest rate spread for the system
[3/] Represents household debt held by DTIs
[4/] Represent data for DTIs only
[5/] Represents data for building societies

per cent at end-2011 (see **Table 2.0**). Moreover, the Herfindahl-Hirschman Index (HHI), which measures concentration in private sector lending, increased by 8.5 per cent to 2 618.8 (see **Figure 3.5**). In addition to households, the DTIs' other significant exposures were to *Tourism* (8.8 per cent), *Construction* (7.0 per cent), *Professional & Other Services* (5.6 per cent) and *Overseas Residents* (5.6 per cent) at end-2011 (see **Table 1.0**).

Growth in NPLs accelerated during 2011 relative to the previous year (see **Figure 3.6**). This resulted in the volume of provisions for NPLs increasing at a faster rate than that which was obtained in 2010. Loan loss provisions grew by 36.4 per cent during 2011 relative to growth of 25.0 per cent during 2010 (see **Figure 3.7**). Consequently, the NPL coverage ratio improved during 2011 to 69.7 per cent from 67.3 per cent in 2010 and remained well above the requirements under the international accounting standards.[3] This increase was characteristic of the performance of all sub-sectors and the distribution of the ratio for the DTIs revealed an increase in the median aggregate ratio relative to end-2010 (see **Figure 3.8**).

DTIs also maintained adequate levels of liquidity during 2011. However, the ratio of liquid assets to total assets declined to 23.1 per cent at end-2011 from 26.0 per cent the previous year. This decrease in the ratio was due mainly to significant reductions in holdings of public sector securities that mature in the short term and cash (see **Figure 3.9**).

On the other hand, total liabilities increased significantly, driven primarily by increased client deposits. These deposits, which accounted for 80.1 per cent of total liabilities at end-2011 relative to 77.9 per cent at end-2010, continued to represent the main source of asset financing (see **Figure 3.10**). In particular, client deposits as a share of client loans increased to 144.1 per cent at end-2011 from 143.0 per cent at end-2010. This suggests a reduction in risks to

[3] This 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.

Fig. 3.6 NPLs in DTI sector *(client loans; %; JMD billions)*

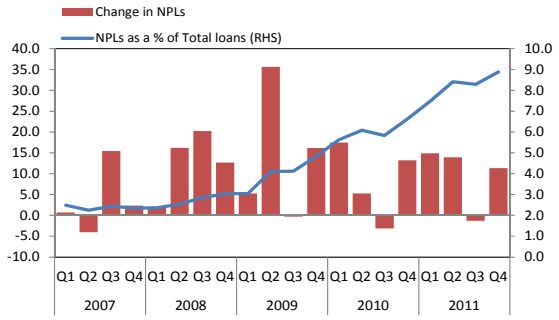


Fig. 3.7 Provisions and coverage of NPLs of DTIs by provisions (%)

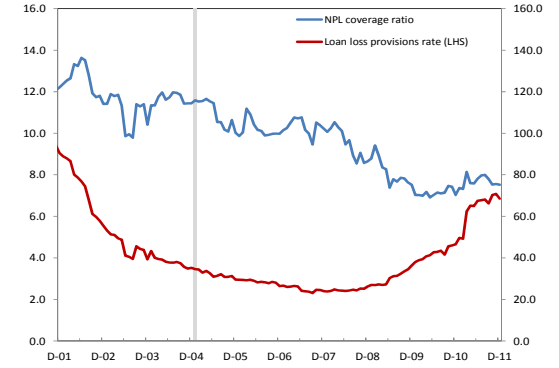
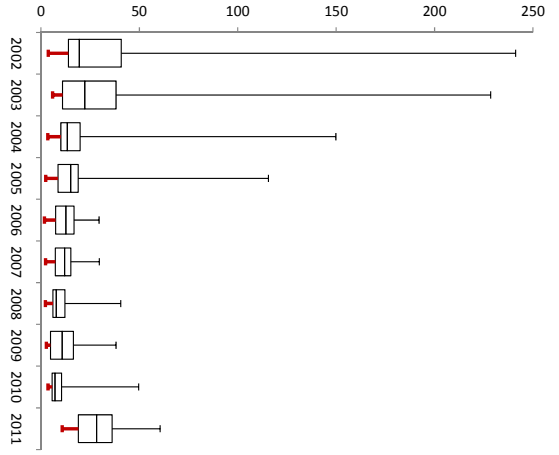


Fig. 3.8 Distribution of NPL coverage ratio in the domestic DTI sector (%; min, max and median)



financial stability over the review period as client deposits represent a relatively cheap and stable source of financing (see **Figures 3.11** and **3.12**).

3.2.2 Earnings and profitability

DTIs continued to record strong growth in profits in 2011 partially driven by continued reduction in risk related to the cost of financing. This was despite low aggregate demand and poor performance on interest bearing assets (see **Figure 3.12**).

At end-2011, the DTIs recorded net profits of $31.1 billion reflecting an increase of 46.8 per cent over that which obtained at end-2010. This corresponded with a return on equity (ROE) of 17.0 per cent at end-2011 relative to 17.5 per cent at end-2010 (see **Figure 3.13** and **Table 3.0**). The reduction in the ROE was mainly due to declines in leverage and risk-adjusted income during the review period.[4] However, DTI return on assets (ROA) increased to 1.7 per cent for 2011 compared to 1.4 per cent for 2010 (see **Figure 3.14**).

The median leverage ratio of the banking sector marginally declined during 2011 relative to the previous year continuing a trend observed over the past decade (see **Figure 3.15**).[5] Moreover, the distribution of the ratios of DTIs narrowed significantly since end-2006. The median value declined to 11.7 at end-2011 from 12.4 at end-2010.

While the economic climate remained fragile, even with the economy returning to positive growth during the year, low market interest rates during 2011 significantly contributed to the improved profitability of DTIs. Consequent on the gradual decline in interest expenses due to lower interest rates on deposits and interbank borrowing (to a lesser extent), DTIs' leverage

[4] See 2006 Bank of Jamaica Financial Stability Report for more elaborate discussion of the decomposition of ROE.
[5] Leverage ratio is defined as the ratio of Tier 1 Capital to adjusted assets. Adjusted assets are defined as the difference between total assets and intangible assets.

marginally increased during the review period relative to 2010. Nevertheless, DTIs' financial operations continued to perform creditably during the year. Furthermore, the outturn in net interest margin for DTIs revealed that interest income marginally increased throughout 2011 primarily as a result of a higher interest margin in the retail segment of client deposits and loans which grew faster than the net interest income from the administration of securities and other financial operations (see **Figure 3.16**). In general, net interest income for DTIs remained largely flat at $50.1 billion in 2011, relative to $50.8 billion in 2010. As such, DTIs profits for 2011 were primarily driven by gains in trading and dividend income of $16.0 billion in the December quarter, relative to $3.0 billion in the corresponding period of 2010.

Of note, interest margin in the retail segment of client deposits and loans grew at a slower pace in the review period relative to 2010. This reduction in the pace of growth resulted in the narrowing of the distribution of the interest margin of the DTIs (see **Figure 3.17**).

The robust performance in profits during 2011 was not mirrored in DTIs' capital adequacy as the sector recorded an average CAR of 21.2 per cent at end-2011, down from 22.5 per cent at end-2010. The scheduled increases in risk weights on holdings of GOJ foreign currency denoted securities contributed to the decline in CAR (see **Figures 3.18** and **3.19**). The quality of regulatory capital, as measured by the ratio of Tier 1 capital to total regulatory capital, was 104.3 per cent at end-2011 relative to 105.5 per cent at end-2010. Retained earnings remained the largest component of Tier 1 capital at end-2011 accounting for 48.4 per cent relative to 46.7 per cent in 2010. Statutory reserves accounted for 28.5 per cent relative to 25.8 per cent at end-2010.

Fig. 3.9 Liquidity conditions in the DTI sector (%; 3 month liabilities = liabilities maturing in under 3months)

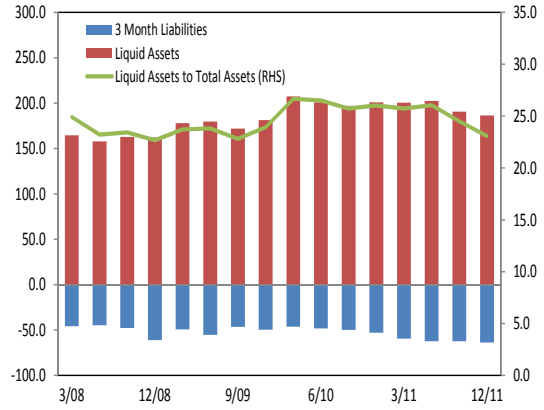


Fig. 3.10 DTI Funding sources as a share of Total liabilities as at end-2010 and end-2011

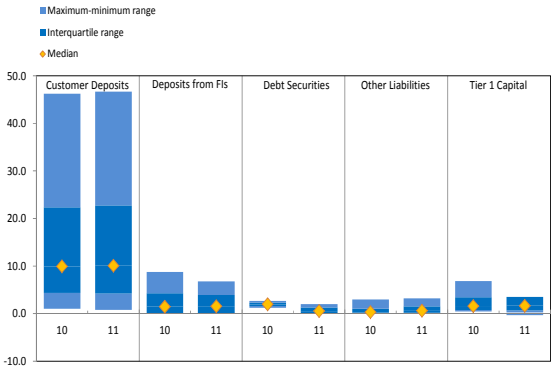


Fig 3.11 Domestic historical household saving ratio (Loans, deposits – J$ billion, savings ratio %)

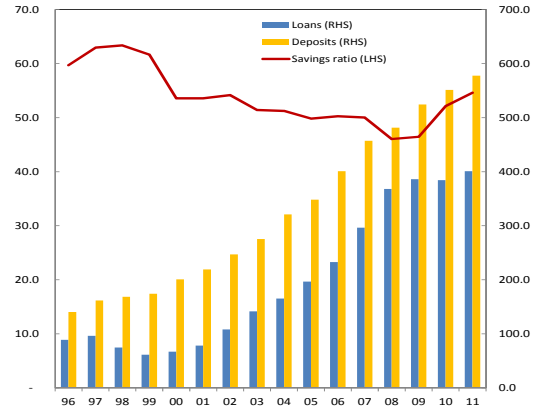


Fig 3.12 Operating profit and impairment losses for DTIs (JMD billions, quarterly values)

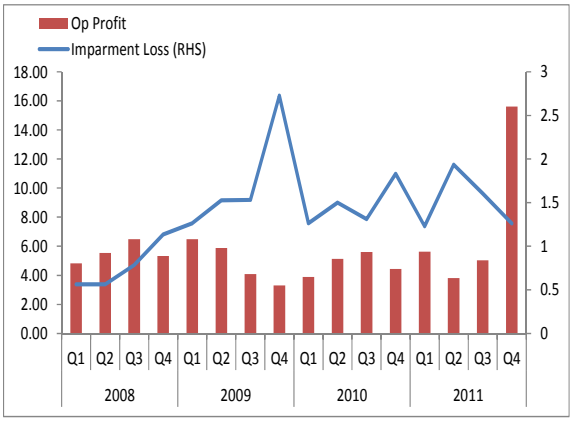


Fig 3.13 Decomposition of DTIs return on Equity (ROE) (%; changes in pct.)

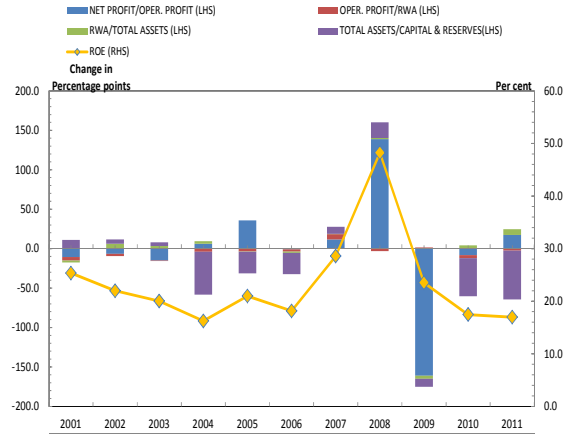
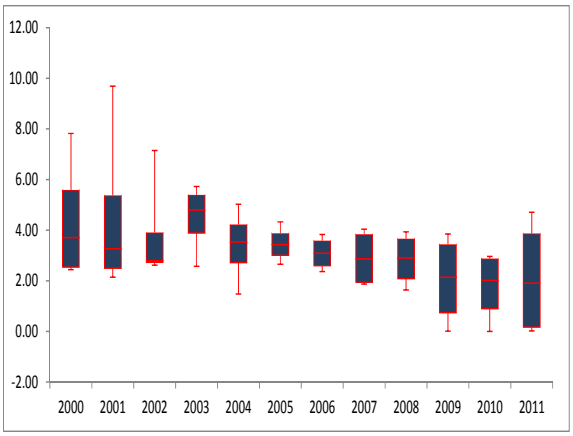


Fig 3.14 DTIs return on assets (ROA) (%)



3.2.3 Interbank Market

As the interbank market continued to be actively engaged by most DTIs to manage short-term liquidity demands, the standard measure of connectivity in the interbank market shown by the interrelationship matrix reflected relatively sparse interconnection (see **Box 3.1**). The average number of relationships between DTIs in Jamaica was around 4.0 at end-2011 (minimum 0, maximum 210) relative to 2.0 at end-2010.[6] This suggests a decline in the average connectivity in the banking system which realized an average connectivity of 1.8 per cent relative to 1.3 per cent at end-2011 for the 21 financial institutions assessed (see **Figure 3.21**).[7] Of note, the majority of relationships yielded relatively low exposures (see **Figure 3.20**). At end-2011, the average net exposure was $438.1 million relative to $818.0 million at end-2010. However, given the presence of low connectivity, its effect is generally limited even in highly adverse scenarios.

3.3 Non-bank Financial Institutions (NBFIs)

NBFIs experienced acceleration in asset growth despite challenging economic conditions during 2011. The sector's asset base expanded by 2.8 per cent in 2011 relative to 1.2 per cent in 2010. The expansion in the sector's total assets was largely influenced by increases in total assets of life and general insurance companies by 8.1 per cent and 3.9 per cent, respectively. However, growth of 0.8 per cent in total assets of securities dealers, which accounted for 67.8 per cent of NBFI market share, dampened growth in the sector's assets base (see **Figure 3.22**).

[6] The number of relationships refers to the number of financial institutions that a particular DTI or securities dealer conducts interbank transactions with.

[7] However, such figures are very difficult to compare internationally, as they are not generally available for banking sectors and those that are available contain different indicators.

3.3.1 Securities Dealers

The funds under management (FUM) of the major securities dealers increased to $657.6 billion at end-2011 relative to $639.1 billion at end-2010 (see **Figure 3.23**). The sector's growth in asset base during 2011 was driven by marginal increases in their holdings of GOJ and BOJ securities, in particular domestic currency holdings. Of note, foreign currency denoted assets declined by 1.76 per cent to $187.9 billion at end-2011 from $191.2 billion at end-2010.

In an environment of scheduled increases in the risk weights on GOJ foreign currency denoted securities, risk weighted assets of the securities dealers grew significantly by 82.7 per cent to $207.2 billion at end-2011 relative to $113.0 billion at end-2010 (see **Figure 3.23**). Consequently, the sector's capital adequacy ratio declined to 29.3 per cent at end-2011 relative to 59.2 per cent at end-2010 and 81.5 per cent at end-March 2010 when risk weightings were first implemented on GOJ foreign currency denoted securities (see **Figure 3.24**). Similarly, the sector's primary ratio, measured as a ratio of regulatory capital to total assets, decreased to 12.1 per cent at end-2011 relative to 13.5 per cent at end-2010. This was largely due to a decline in regulatory capital by 9.8 per cent to $60.6 billion coupled with a marginal increase in the sector's total assets during 2011.

However, securities dealers sensitivity to foreign exchange risk declined throughout most of 2011 as the sector's foreign currency net open position to capital ratio declined to 8.3 per cent at end-2011 relative to 17.5 per cent at end-2010. This reflected the sector's reduced holdings of foreign currency denoted assets (see **Figure 3.25** and **Table 4.0**).

The sector's profitability was fairly robust relative to the previous year. Securities dealers profit performance as measured by ROA and ROE recorded values of 2.7 per cent and 19.7 per cent, respectively, at end-2011 relative to respective values of 2.3 per cent and 18.3 per cent at end-2010.

Box 3.1 The Interbank credit market connectivity effects on Financial Stability[8]

Interbank markets play an essential role in modern financial systems. In the interbank market, banks with liquidity shortages borrow liquidity from banks with liquidity surpluses. Interbank connectivity in interbank markets, however, creates channels for contagion risks from one institution to the system.

The connectivity for each institution is calculated as the number of relationships with the other institutions relative to the maximum possible number of relationships. However, a risk to the financial system's stability could arise in a situation where there are several institutions in the sector that are net debtors and have a high number of relationships with other banks. In such a case, especially since interbank exposures are generally unsecured, their collapse could create a domino effect which could destabilize the financial system.

An interbank market can unambiguously stabilize the financial system by reducing overall risk, as liquidity risk can be absorbed by those institutions with liquidity surpluses.

[8] Li, Shouwei , and Jianmin He. "Resilience of Interbank Market Networks to Shocks." *Discrete Dynamics in Nature and Society*. School of Economics and Management, Southeast University, 2011. Web. 21 June 2012.

Fig 3.15 DTIs Leverage (%)

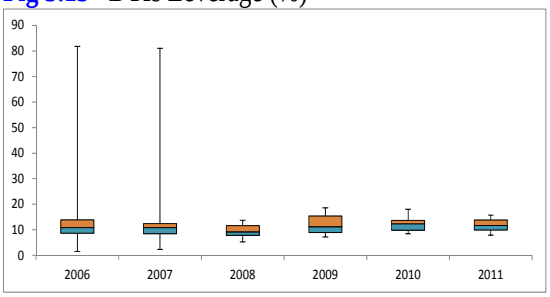


Fig 3.16 DTIs sources of revenue, charges for provisions and pre-tax profits (JMD billions)

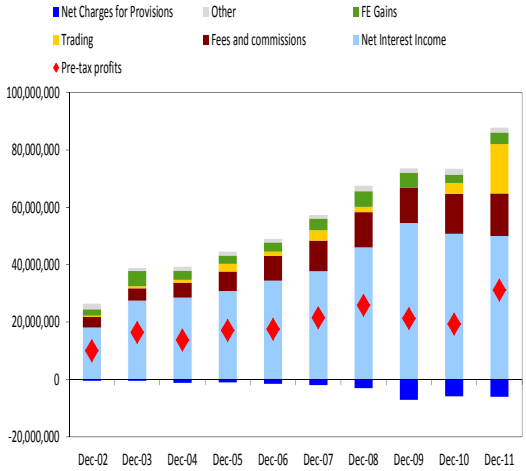


Fig 3.17 Interest margin for retail operations of DTIs (%)

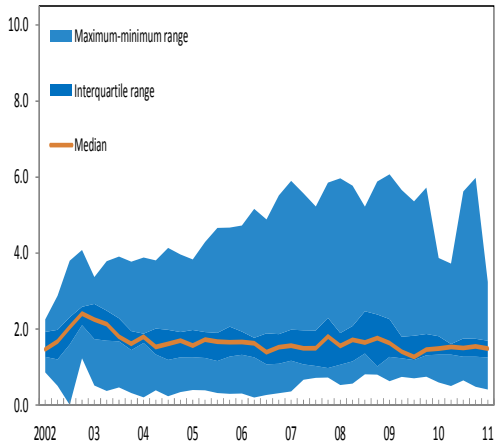
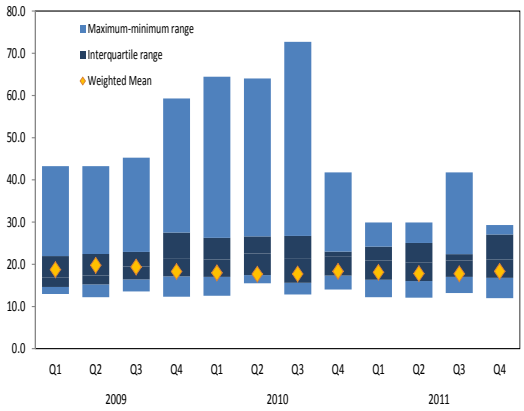


Fig. 3.18 Distribution and weighted average of capital adequacy ratio (%)



Similarly, the leverage ratio of the securities dealers increased for 2011 to 15.0 per cent relative to 13.4 per cent at end-2010.[9] This increase was largely due to increases in Tier 1 capital during the review period. However, the ratio of the sector's holdings of liquid assets to current liabilities decreased to 7.7 per cent for 2011 from 13.7 per cent for the previous year.

3.3.2 Insurance Companies

The insurance sector realized robust growth in its asset base during 2011. In particular, life and general insurance companies experienced increases of 8.1 per cent and 3.9 per cent, respectively, in their asset bases. For life insurance companies, this growth was driven predominantly by increases in fixed term investments, in particular expansion in the holdings of GOJ securities of $11.6 billion during 2011. Similarly, increases in GOJ Jamaica Dollar denoted investments were largely responsible for growth in general insurance companies' asset base during the review year.

Despite the sector's increased asset base, the insurance penetration continued to be low (see **Figure 3.26** and **Tables 5.0** & **6.0**). Insurance penetration for life insurance companies increased to 2.3 per cent of GDP at end-2011 from 2.1 per cent of GDP at end-2010 while penetration for general insurance companies were

[9] See footnote 5.

flat at 2.2 per cent of GDP at end-2011 relative to end-2010. These developments suggest that the market continued to be relatively underdeveloped as indicated by a 0.001 per cent insurance density (see **Box 3.2** and **Table 7.0**).

During 2011, profitability was robust for insurance companies despite the falloff in interest income since the JDX in 2010. The life insurance sector's ROA decreased to 13.1 per cent at end-2011 relative to 13.3 per cent at end-2010, while the ROE increased to 61.4 per cent relative to 52.6 per cent at end-2010. However, the general insurance sector realized an increase in both ROA and ROE to 15.2 per cent and 41.0 per cent, respectively, at end-2011 relative to 5.9 per cent and 15.7 per cent respectively, at end-2010. The sector's improved profitability was largely due to growth in revenues from premiums. For life insurance companies premiums increased by 15.2 per cent at end-2011 relative to 3.4 per cent at end-2010, while premiums for general insurance companies grew by 6.6 per cent at end-2011 relative to 5.8 per cent at end-2010. In addition, both life and general insurance companies registered increases in their holdings of GOJ investment of $11.6 billion and $1.1 billion, respectively, during the review year.

There was introduction of a new regulatory measure for general insurance companies' capital requirements during 2011. Specifically, the introduction of the minimum capital test (MCT) at end-June 2011 replaced the minimum asset test (MAT). This included a risk-based risk management tool for regulators and insurance companies to improve sector capital adequacy thus strengthening the sector's financial stability.[10]

The capital adequacy and solvency of the insurance companies remained at adequate levels at end-2011. In addition, the sector's ratio of disposable solvency to required solvency though relatively high was comparable to those in major economies (see **Figure 3.27**).[11] The sector was also adequately capitalized despite the ratio of capital to total assets realizing a sharp decline to 21.4 per cent at end-2011 from 31.1 per cent at end-2010 (see **Figure 3.28**).

Fig 3.19 Risk-weighted assets (Stock in JMD billions; two largest banks vs banking sector; securities dealers (SDs))

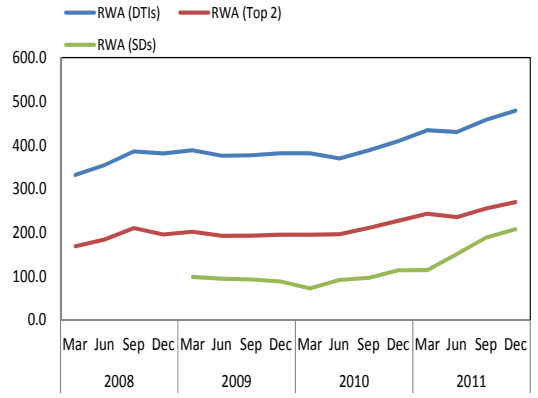
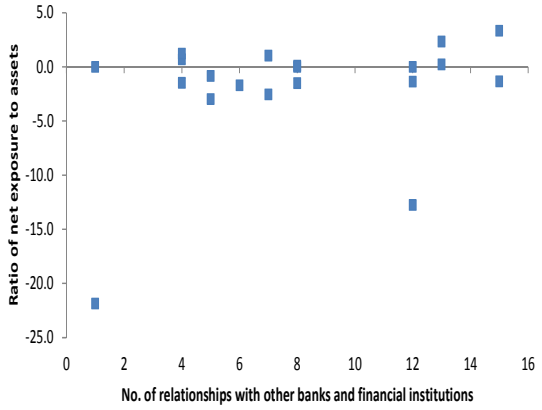


Fig 3.20 Interbank exposure ratios (%; as of 31 Dec 2011; points indicate individual institutions)



[10] The Minimum Capital Test is a measure of capital adequacy for general insurance companies. It is a risk-based minimum requirement determined by applying factors for a number of risk components to specific on- and off-balance sheet assets or liabilities.

[11] Measured as the ratio of capital and surplus, investment and capital reserves to total liabilities, this ratio captures the company's leverage. The higher the ratio, the more the company is able to withstand financial distress and difficult periods.

Fig 3.21 Debtor and credit: the existence of both positions in DTI and securities dealers (points in the chart are individual institutions as of 31 Dec 2011)

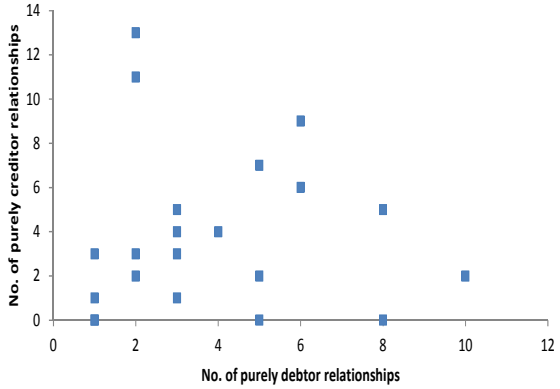


Fig 2.22 Growth in market share in NBFIs assets (%; growth between end-2010- end-2011)

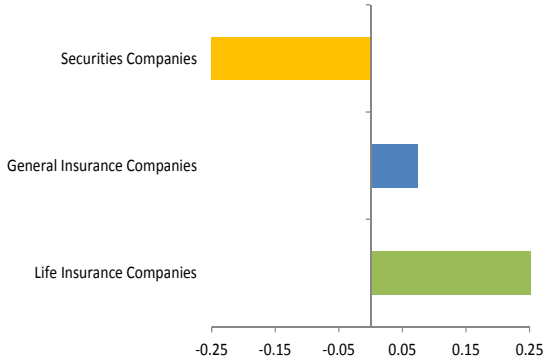


Fig 3.23 Securities dealers' fund under management (FUM) (JMD billions)

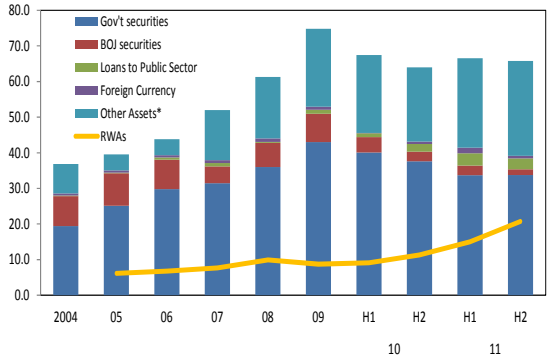


Fig 3.24 Securities dealers' regulatory capital, capital adequacy and primary ratios (JMD billions; ratios - %)

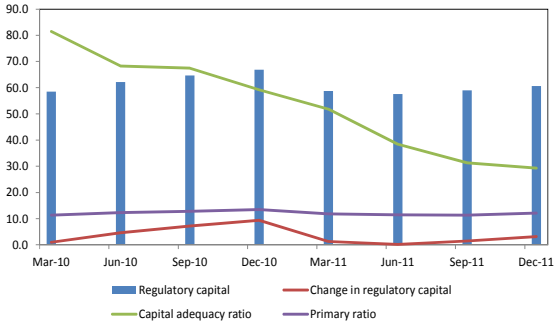


Fig. 3.25 Securities dealers' net open position to capital (%)

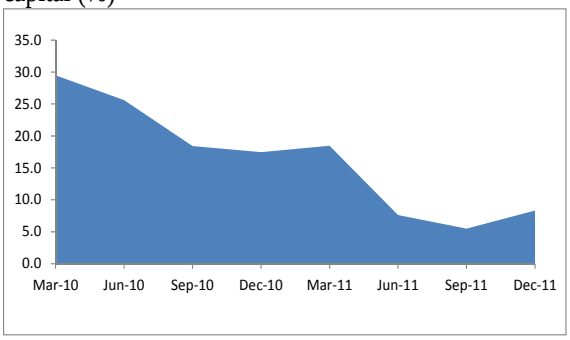
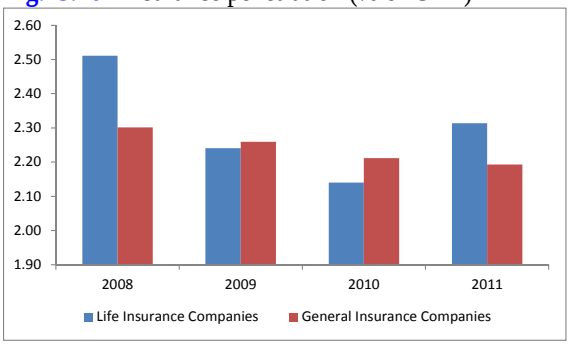


Fig. 3.26 Insurance penetration (% of GDP)



Box 3.2 Brief explanation of Insurance Penetration and Insurance density[12]

Insurance Penetration is defined as the ratio of premium volume to GDP and measures the importance of insurance activity relative to the size of the economy. On the other hand, insurance density is defined as gross premiums per capita expressed. These measures gauge the growth and development potential of the insurance market. Insurance Penetration, however, is not a perfect indicator of insurance consumption since it is a function of quantity and price. Therefore, a higher premium volume might provide misleading representation of insurance penetration. Needless to say, a vibrant insurance sector might also foster the development of the banking sector.

Fig 3.27 Solvency of insurance companies (available to required solvency ratio; %)

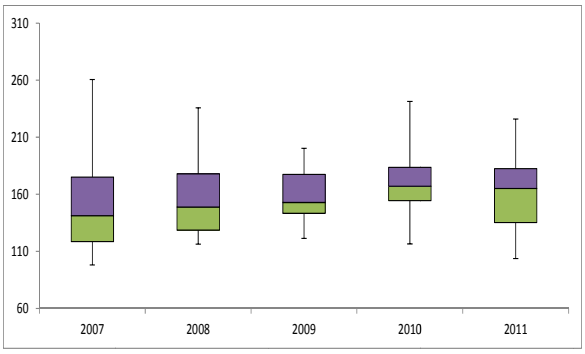
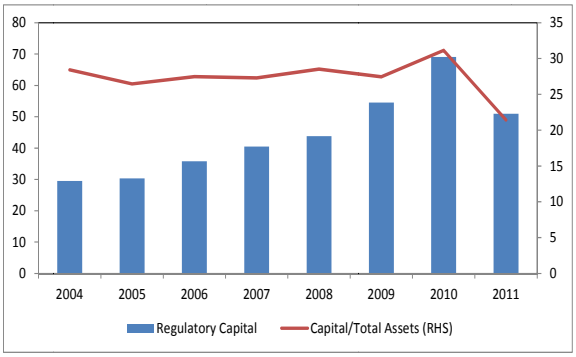


Fig 3.28 Capitalization of the insurance sector (JMD billions; %)



[12] Beck, Thorsten, and Webb, Ian. "Economic, Demographic, and Institutional Determinants of Life Insurance Consumption across Countries" World Bank and International Insurance Foundation, October 2002.

Table 3.0 Core Set of Financial Soundness Indicators: DTIs

Indicator (%)	Indicates	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
Deposit-taking Institutions[1/]						
Regulatory capital to risk-weighted assets	Capital adequacy	18.2	17.5	17.5	16.5	15.9
Tier1 capital to risk-weighted assets	Capital adequacy	19.0	17.9	17.9	16.9	16.0
Non-performing loans (net) to capital	Capital adequacy	18.3	21.8	25.4	25.2	28.4
Non-performing loans to total loans	Assets quality	6.5	7.5	8.4	8.3	8.9
Return on assets	Earnings & Profitability	0.5	0.8	0.5	0.6	2.0
Return on equity	Earnings & Profitability	3.6	5.1	3.3	4.1	12.5
Interest margin to income	Earnings & Profitability	56.3	52.2	57.7	55.2	37.4
Non-interest expenses to income	Earnings & Profitability	26.8	26.6	28.8	29.3	19.4
Liquid assets to total assets	Liquidity	26.0	25.7	26.0	24.5	23.1
Duration on assets -Domestic Bonds	Sensitivity to Market Risk	0.7	0.6	0.6	0.7	0.7
Duration on assets- Global Bonds	Sensitivity to Market Risk	3.2	1.8	1.6	1.8	2.6
NOP to capital	Sensitivity to Market Risk	19.7	10.4	23.2	20.6	30.6

Notes:
[1/] Deposit-taking Institutions includes, commercial banks FIA Licensees and building societies

Table 4.0 Core Set of Financial Soundness Indicators: SDs

Indicator (%)	Indicates	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
Securities Dealers [1/]						
Regulatory capital to risk-weighted assets	Capital adequacy	59.2	51.8	38.4	31.3	29.3
Tier1 capital to risk-weighted assets	Capital adequacy	38.2	41.1	28.3	22.2	21.8
Non-performing loans (net) to capital	Capital adequacy	-0.2	0.6	0.8	-0.7	-1.1
Non-performing loans to total loans	Assets quality	5.6	7.9	9.1	5.8	4.5
Return on assets	Earnings & Profitability	0.7	0.8	0.7	0.8	0.7
Return on equity	Earnings & Profitability	5.5	6.7	5.1	6.1	5.0
Interest margin to income	Earnings & Profitability	34.6	32.5	35.3	33.9	37.9
Non-interest expenses to income	Earnings & Profitability	10.2	10.1	11.6	10.5	13.0
Liquid assets to total assets	Liquidity	15.3	8.8	8.0	8.3	6.7
Duration on assets -Domestic Bonds	Sensitivity to Market Risk	1.6	1.7	2.2	2.2	2.2
Duration on assets- Global Bonds	Sensitivity to Market Risk	1.6	1.3	1.3	2.1	2.3
NOP to capital	Sensitivity to Market Risk	17.5	18.5	7.6	5.5	8.3

Notes:
[1/] Includes the top-12 securieties dealers.

Table 5.0 Core Set of Financial Soundness Indicators: General Insurance sector

Indicator (%)	Indicates	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
General Insurance						
Net premium to Capital	Capital adequacy	89.4	23.5	45.8	66.0	91.4
Capital to Assets	Capital adequacy	29.0	26.1	27.6	29.3	29.4
(Real estate + unquoted equities + debtors) to total assets	Assets quality	61.7	61.5	58.9	62.3	65.1
Receivables to gross premiums	Assets quality	10.9	56.6	30.1	13.1	10.0
Equities to total assets	Assets quality	4.9	4.9	5.1	3.9	2.2
Net technical reserves to net claims paid in last year	Reinsurance & acturial issues	74.3	486.2	204.9	124.0	99.8
Risk retention ratio (net premium to gross premium)	Reinsurance & acturial issues	47.9	53.6	45.4	46.5	48.5
Gross premium to number of employees J$(000)	Management Soundness	21.7	4.8	12.6	18.2	23.7
Assets per employee J$(000)	Management Soundness	40.2	41.8	45.1	43.9	42.8
Net Claims to net premium (loss ratio)	Earnings & Profitability	64.4	56.4	57.3	59.3	54.4
Total expenses to net premium (expense ratio)	Earnings & Profitability	105.1	95.2	94.6	97.6	92.7
Combined ratio (loss + expense ratio)	Earnings & Profitability	169.5	151.7	151.9	156.9	147.1
Investment Income to net premium	Earnings & Profitability	21.9	20.9	19.3	29.9	28.4
Return on Equity	Earnings & Profitability	14.4	4.5	9.1	20.7	32.7
Liquid assets to total liabilities	Liquidity	71.9	73.1	73.1	76.4	82.2

Table 6.0 Core Set of Financial Soundness Indicators: Life Insurance sector

Indicator (%)	Indicates	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
Life Insurance						
Capital to technical reserves	Capital adequacy	136.4	130.7	130.5	122.1	104.1
(Real estate + unquoted equities + debtors) to total assets	Assets quality	79.2	79.9	80.9	82.4	79.4
Receivables to gross premiums	Assets quality	18.9	83.9	32.9	17.3	13.8
Equities to total assets	Assets quality	0.8	0.8	0.8	0.9	0.9
Net technical reserves to net premium paid in last year	Reinsurance & acturial issues	141.5	555.4	290.5	214.5	156.4
Risk retention ratio (net premium to gross premium)	Reinsurance & acturial issues	97.8	97.9	98.1	98.2	98.5
Gross premium to number of employees J$(000)	Management Soundness	17.8	4.9	9.9	16.0	20.8
Assets per employee J$(000)	Management Soundness	122.9	129.9	136.2	138.0	133.7
Expenses to net premium (expense ratio)	Earnings & Profitability	68.7	61.6	59.6	54.9	57.1
Investment Income to investment assets	Earnings & Profitability	11.7	2.6	4.9	7.1	10.3
Return on Equity	Earnings & Profitability	6.2	1.3	2.6	4.0	6.3
Liquid assets to total liabilities	Liquidity	18.4	17.9	17.4	21.9	22.2
Duration on assets -Domestic Bonds	Sensitivity to market risk	0.03	0.04	0.01	0.02	2.0
Duration on assets- Global Bonds	Sensitivity to market risk	0.2	5.6	5.5	5.1	5.3

Table 7.0 Sectoral Indicators of Financial Development

sub-sector	Indicator	2007	2008	2009	2010	2011
Banking	Total number of DTIs	14.0	14.0	14.0	13.0	13.0
	Number of branches and outlets	179.0	181.0	178.0	173.0	173.0
	Number of branches/thousand population	0.07	0.07	0.07	0.06	0.06
	Bank deposits/GDP (%)	47.7	43.9	44.5	42.9	41.7
	Bank assets/total financial assets (%)[1/]	45.1	44.4	43.2	42.6	42.7
	Bank assets/GDP (%)	74.2	71.2	70.2	65.8	63.8
Insurance	Number of insurance companies	17.0	16.0	16.0	14.0	14.0
	Gross premiums/GDP (%)	4.5	4.8	4.5	4.4	4.5
	Gross life premiums/GDP (%)	2.0	2.5	2.2	2.1	2.3
	Gross non-life premiums/GDP (%)	2.5	2.3	2.3	2.2	2.2
Pensions	Types of pension plans					
	# Defined Benefit plan	-	204	129	120	116
	# Defined Contribution plan	-	339	363	366	347
	Pension fund assets/GDP (%)	21.9	19.5	21.2	22.1	22.3
	Pension fund assets/total financial assets (%)	13.3	12.2	13.0	14.3	15.0
Mortgage	Mortgage assets/total financial assets (%) [2/]	4.9	5.4	5.5	5.7	5.8
	Mortgage assets/GDP (%)	8.1	8.7	9.0	8.8	8.7
Securities Dealers	Securities dealer's assets/GDP (%)	46.9	47.6	47.4	42.4	39.6
	Securities dealer's/total financial assets (%)	28.5	29.7	29.2	27.5	26.5
	Total number of securities dealers	32.0	30.0	29.0	29.0	31.0
Credit Union	Credit union's assets/GDP (%)	5.0	5.0	5.2	5.2	4.8
	Credit union's assets/total financial assets (%)	3.0	3.1	3.2	3.4	3.2
	Total number of credit unions	47.0	46.0	45.0	46.0	43.0
Foreign exchange markets	Adequacy of foreign exchange (reserves in months of imports)	2.8	2.6	3.6	5.7	4.7
	foreign exchange reserves as ratio to short-term external debt (%)	168.4	123.3	188.5	217.2	196.8
Capital markets	Number of listed securities (equities)[3/]	44	45	44	51	55
	Number of new issues (equities)[4/]	5	1	1	7	6
	Number of new issues (bonds) [5/]	20	30	55	22	19
	Value of new issues (equities) J$Bn	3.8	1.9	0.1	1.3	3.0
	Value of new issues (bonds) J$Bn	92.3	96.1	222.8	151.6	105.1
	Market capitalization/GDP (%)	99.0	59.4	50.4	48.1	48.9
	Value traded/market capitalization (%)	3.3	11.2	2.2	3.7	3.4
Colllective investment funds	Unit trust funds under management (J$BN)[6/]	16.9	11.9	14.2	21.5	32.4
	Number of unit trust	4.0	4.0	4.0	4.0	4.0
	Mutual fund (value of units held by Jamaicans)US$MN	-	-	-	151.1	164.5

Notes:

[1/] Financial system assets includes assets for banks, insurance companies, credit unions, securities dealers and pension 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

- data availability

4. 1 Overview

Deposit-taking instititions' (DTIs) exposures to household and corporate sector debt increased in 2011, while non-bank financial institutions (NBFIs) exposures to these debt categories remained virtually flat in comparison to 2010. The DTIs' performance occurred against the background of improvements in domestic macroeconomic conditions in 2011, including real GDP growth, continued downward adjustments in interest rates and increased remittance inflows. Despite relatively higher exposure to household and corporate sector debt in 2011, DTIs' loan quality ratio for both categories of debt showed mixed results. Specifically, asset quality for the household sector recorded a marginal improvement while the asset quality ratio for the corporate sector deteriorated sharply. For NBFIs, the ratio improved in comparison to end-2010.

In contrast to household and corporate debt exposures, DTIs' exposure to public sector debt declined in 2011. This might have been influenced by protracted uncertainty regarding the status of the country's financial programme with the International Monetary Fund (IMF). This uncertainty increased sovereign risk in the financial system as the Government was unable to extend the maturity profile of its debt stock and to issue a greater proportion of fixed rate relative to variable rate debt, in accordance with its debt strategy. NBFIs, on the other hand increased their exposure to public sector debt in 2011 relative to 2010, albeit marginally.

4.2 Household Debt and DTIs Exposure

Household debt expanded by 9.5 per cent in 2011, relative to 4.3 per cent in 2010, representing the highest annual growth since 2008. However, this was notably well below the average annual increase of 19.1 per cent over the last five years, reflecting continued low demand conditions (see **Figure 4.1**).[1] The growth in 2011 was primarily due to an increase of 15.5 per cent in consumer loans compared to an expansion of 5.1

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

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

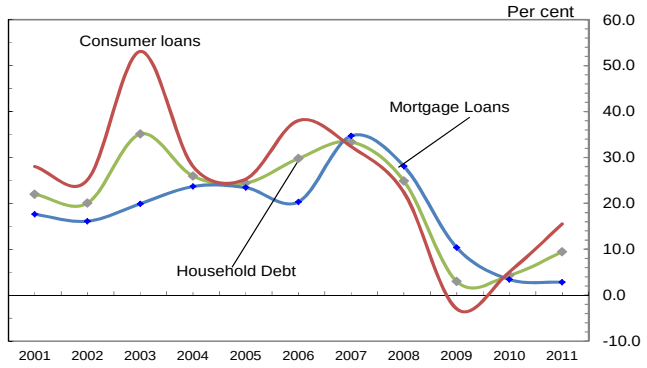


Table 4.1 Selected interest rates & housing data

	2008	2009	2010	2011
Sectoral Interest Rates (per cent)				
Building Societies				
Mortgage Loans Rate	12.6	12.6	12.5	11.1
Bridging Loans Rate	16.5	17.0	16.4	12.5
Average Weighted Loan Rate	12.6	12.6	12.4	11.0
New Mortgate Loans J$BN	4.3	2.2	2.1	2.6
Commercial bank				
Installment Credit Rate	20.6	21.5	20.8	19.2
Personal Credit Rate	26.4	24.0	25.9	21.7
Average Weighted Loan Rate	21.7	21.1	20.4	18.0
FIAs				
Installment Credit Rate	18.7	21.6	19.1	16.6
Personal Credit Rate	14.3	17.8	25.9	25.2
AverageWeighted Loan Rate	15.7	17.6	18.0	16.6
Housing Data				
Building Societies New Mortgate Loans J$BN	4.3	2.2	2.1	2.6
# of Loans Account Building Societies	3 911	2 050	1 423	1 285
Total # of Mortgages 1/,p/	10 465	7 955	8 292	14 090
Total Value of Mortgages J$BN 1/,p/	33.1	23.2	24.7	28.0
Total Housing Completion 2/,p/	4 347	2 433	2999	6 097
Total Housing Starts 2/,p/	3237	2107	2674	3 644

1/ Includes NHT, building societies & HAJ
2/ Includes public sector & private sector
p/ Provisional
Source: BOJ, NHT & PIOJ

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

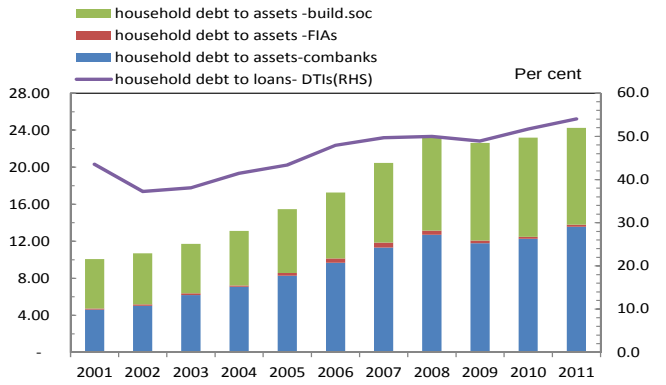


Figure 4.3 DTIs household sector loan quality

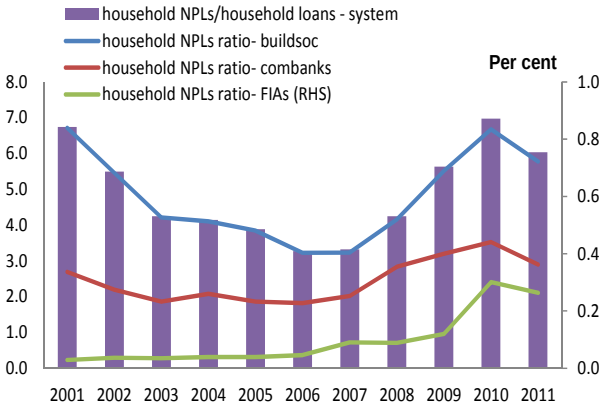


Figure 4.4 DTIs loan loss provisioning to household sector NPLs & Household NPLs to DTIs Capital Base

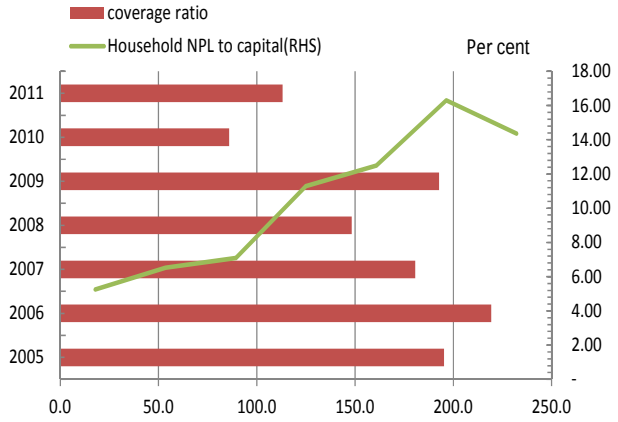
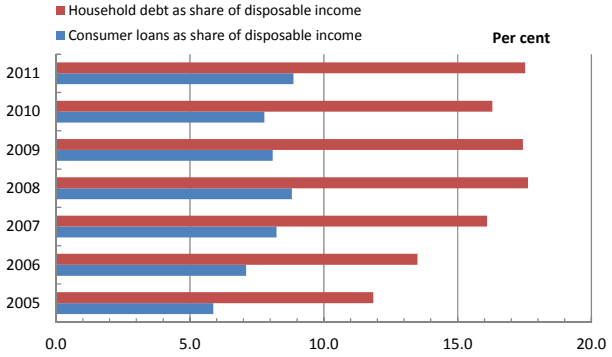


Figure 4.5 DTIs household debt and consumer loans as a share of disposable Income



per cent in the prior year. Growth in household debt was also supported by a 2.8 per cent increase in mortgage loans. However, this increase in mortgage loans represented a deceleration relative to growth of 3.4 per cent in the previous year. Mortgage loans for the household sector continued to be affected by low demand in 2011 due to affordability challenges stemming from weak growth in real disposable income and higher unemployment levels.

Notwithstanding the above, the expansion in household sector credit held by DTIs occurred against the background of improvement in domestic macroeconomic conditions in 2011, including real GDP growth, increased remittance inflows and continued downward adjustments in interest rates.[2] By extension, consistent with the continued lowering of interest rates by the BOJ, rates on all categories of loans including personal loans as well as medium and long-term loans such as car and mortgage loans declined in 2011 relative to 2010. As at end-2011, the average weighted loans rate for each DTI sub-sector was in the range of 11.0 per cent and 18.0 per cent, relative to a range of 12.4 per cent and 20.4 per cent in 2010 (see **Table 4.1**). Additionally, the imposition of lower import duties and relaxation of other restrictions on motor vehicles as well as the lowering of stamp duty on refinancing & transfer of existing mortgages, positively impacted on credit growth, in particular consumer loans.

In 2011, household sector debt accounted for approximately 54.0 per cent of DTI's credit portfolio relative to 51.7 per cent in 2010 and was 4.4 percentage points above the average for the past five years. Additionally, household debt to assets expanded, albeit marginally, during the review period to 24.2 per cent at end-2011 compared to 23.2 per cent in 2010. The increase was mainly reflected in the activities of the commercial banks as the share of household debt to DTIs asset for building societies and FIA licensees declined marginally (see **Figure 4.2**). In contrast to 2010, household sector loan quality ratio improved marginally in

[2] In 2011 real GDP grew by **1.3 per cent** relative to a contraction of **1.4 per cent** in 2010. Additionally, remittance flows also increase to US$2.0 billion in 2011 compared to US$1.9 billion in 2010.

the review year. Specifically, non-performing household loans (NPLs) as a share of total household loans for DTIs declined to 6.0 per cent at end-2011 relative to 7.0 per cent at end-2010. The improvement in the ratio was reflected across all DTI sectors, in particular commercial banks (see **Figure 4.3**). However, the ratio as at end-2011 was relatively high in comparison to the past five year annual average rate of 4.7 per cent and could be partly attributable to the higher unemployment levels.

Notably, DTIs' household coverage ratio and capital adequacy positions improved in 2011 relative to 2010.[3] For 2011, the household coverage ratio increased in excess of 100.0 per cent compared to a ratio of 85.9 per cent at the end of the prior year. This was influenced by a 24.7 per cent increase in provisioning and a 5.3 per cent decline in household NPLs (see **Figure 4.4**). Similarly, the capacity of banks to withstand losses arising from NPLs, as measured by the ratio of household sector NPLs to regulatory capital, improved to 14.4 per cent at end-2011 relative to 16.3 per cent at the end of the previous year. This was due to higher levels of regulatory capital relative to household NPLs.

4.2.1 Household Sector Performance

The debt servicing capacity of the household sector, as measured by the ratio of household debt to disposable income, is estimated to have deteriorated slightly by 1.2 percentage points to 17.5 per cent at end-2011 relative to end-2010 (see **Figure 4.5**).[4,5] This was attributed to a faster pace of growth in household sector debt (8.9 per cent) relative to disposable income (1.3 per cent) during the year.[6]

Figure 4.6 Growth in corporate sector debt held by DTIs

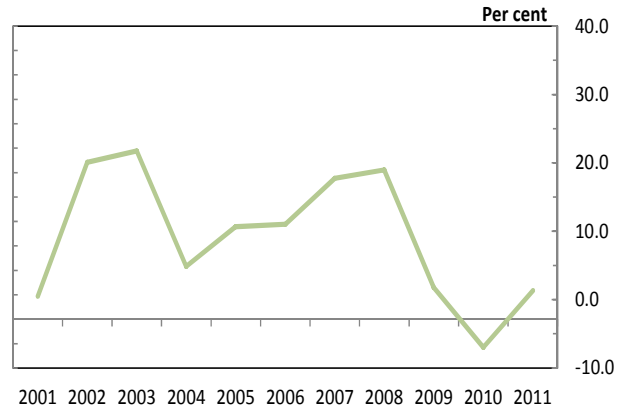


Figure 4.7 Corporate sector debt as a share of DTIs assets and loans

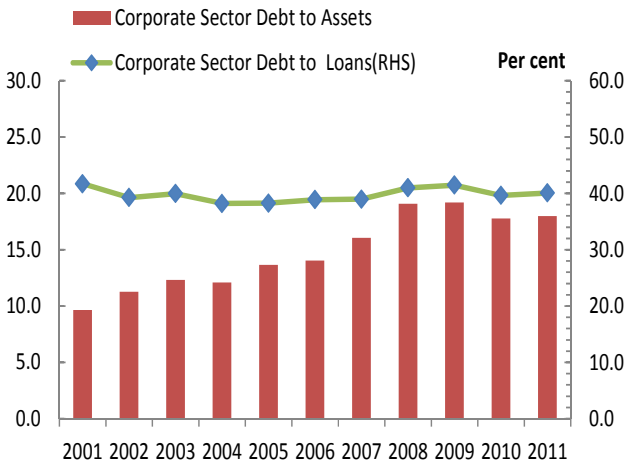
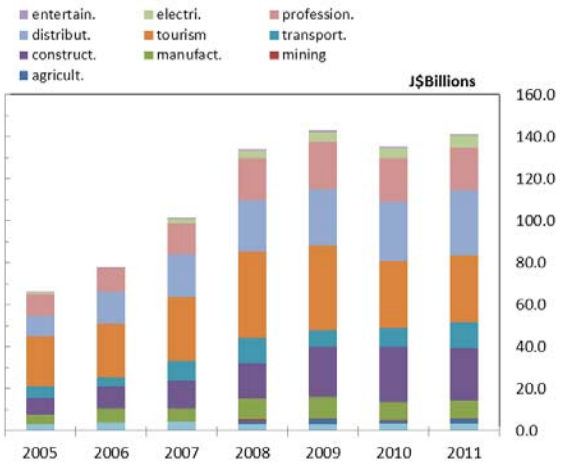


Figure 4.8 DTIs exposure to corporate sector loans



[3] Coverage ratio is measured as the ratio of loan loss provisions plus prudential provisioning to non-performing household loans.

[4] Household debt is proxied by the sum of residential mortgage loans, consumer loans (which includes credit card receivables) and NHT loans.

[5] Disposable income for 2011 was estimated based on the annual estimated growth rate in real wages.

[6] The deterioration in debt servicing capacity also occurred in a context where the performance in real wages has continued to remain weak relative to pre-crisis levels, despite growth of 1.5 per cent recorded during 2011.

Figure 4.9 Corporate sector loan quality

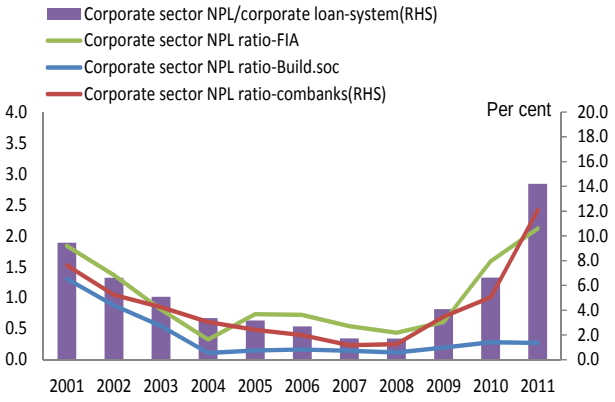


Figure 4.10 Ratio of corporate sector NPLs to corporate sector loans-DTIs

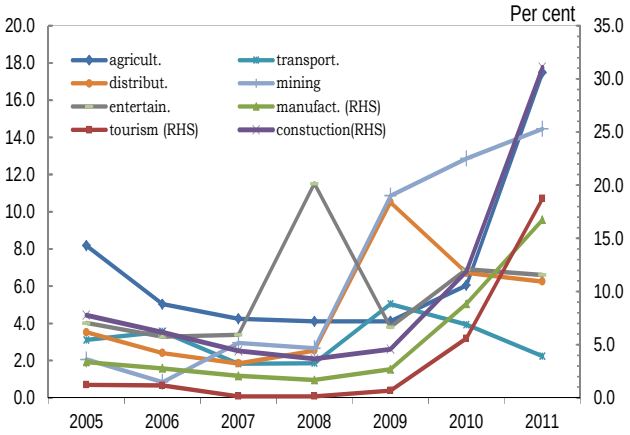
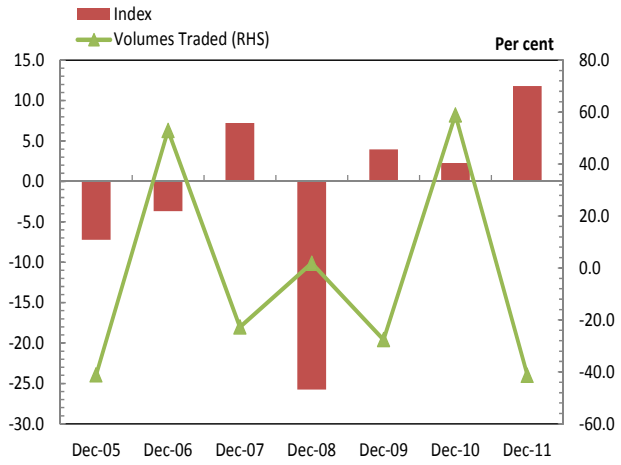


Figure 4.11 Annual growth of the JSE Index & volumes



4.3 Corporate Sector Debt and DTIs Exposure

Corporate sector debt held by DTIs expanded by 5.9 per cent relative to a contraction of 5.7 per cent in 2010 and an average growth of 15.9 per cent for the past five years (see **Figure 4.6**). This increase mainly reflected growth of 4.8 per cent in lending for private commercial purposes as this category represented 97.5 per cent of total corporate sector loans at end-2011.[7]

With the moderate increase in corporate sector debt, DTIs holding of corporate sector debt to DTI assets increased slightly by 0.2 percentage point to 18.0 per cent for 2011. Additionally, there was a marginal increase in the share of corporate sector debt to total loans by 0.4 percentage point to 40.1 per cent relative to 2010.

The marginal increase in DTI exposure to corporate sector debt reflected growth in lending to most economic sectors except *Manufacturing*, *Construction* and *Professional & Other Services* (see **Figure 4.8**). The sectors that recorded the highest expansion in credit growth were *Mining & Quarrying*, *Electricity* and *Transport Storage & Communications*, averaging 28.2 per cent growth in 2011 relative to average growth of 0.5 per cent in 2010. Notably, growth in lending to these sectors was consistent with increases in their rates of economic growth. *Mining & Quarrying*, *Electricity* and *Transport Storage & Communications* are estimated to have grown by 20.1 per cent, 1.6 per cent and -0.3 per cent, respectively, in 2011 relative to respective declines of 4.3 per cent, 4.3 per cent and 2.0 per cent in 2010.

4.3.1 Corporate Sector Loan Quality

Corporate sector loan quality continued the trend deterioration observed since 2008 and recorded a sharp increase in 2011 relative to 2010. In particular, the ratio of corporate sector NPLs to total corporate sector loans

[7] Corporate sector debt is defined as loans for commercial purposes, loans to other financial institutions and notes & debenture holdings of the banking sector.

increased to 14.2 per cent at end-2011relative to a value of 6.6 per cent at end-2010. Additionally, the ratio at end-2011 was well above the five year annual average of 3.4 per cent which underscored DTIs' increased susceptibility to corporate credit risk (see **Figure 4.9**). The sharp increase in the asset quality ratio for the business sector was mainly reflected in the loan portfolio of the commercial banks which recorded a ratio of 12.1 per cent at end-2011. In examining the delinquency rate by sector, relative to 2010, the loan quality ratio for all economic sectors, with the exception of *Distribution*, *Entertainment* and *Transport*, deteriorated in 2011. Notably, *Construction*, *Tourism* and *Agriculture*, recorded the highest NPL ratios of 31.1 per cent, 18.7 per cent and 17.5 per cent, respectively, in 2011 (see **Figure 4.10**).

4.3.2 Performance of Companies listed on the Jamaica Stock Exchange (JSE) during 2011

The Jamaica Stock Exchange (JSE) Index advanced by 11.8 per cent for 2011 which compares favourably to the 2.3 per cent gain recorded for 2010 (see **Figure 4.11**). The improved performance of the JSE index for 2011 occurred against the background of better than expected earnings for several listed entities and positive macro-economic developments. In particular, there was recovery in real GDP growth, a sharp decline in inflation, relative stability in the foreign exchange market and continued reductions in interest rates. Additionally, the announcement of various plans for business expansion by listed corporate entities buoyed investors' interest in equities and positively impacted the market during the review period.[8]

Despite the strong growth in the JSE Index for the review period, there was a marked reduction in trading activity as reflected in the overall volumes traded during 2011. The volume of stocks traded declined by 41.3 per cent in 2011 in

Figure 4.12 Leverage ratio for listed companies by sector

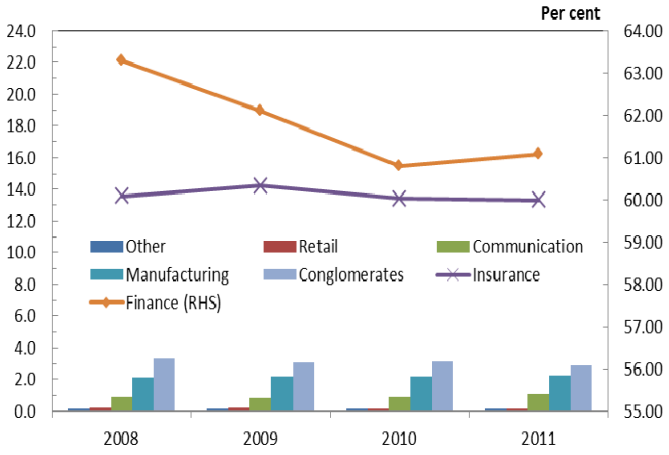


Figure 4.13 ROA for listed companies by sector

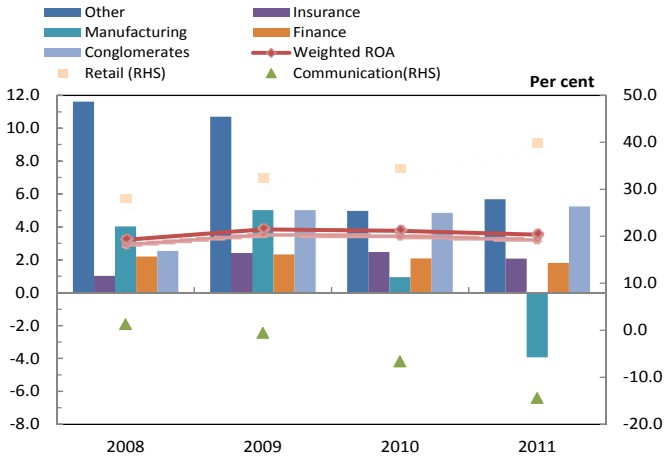
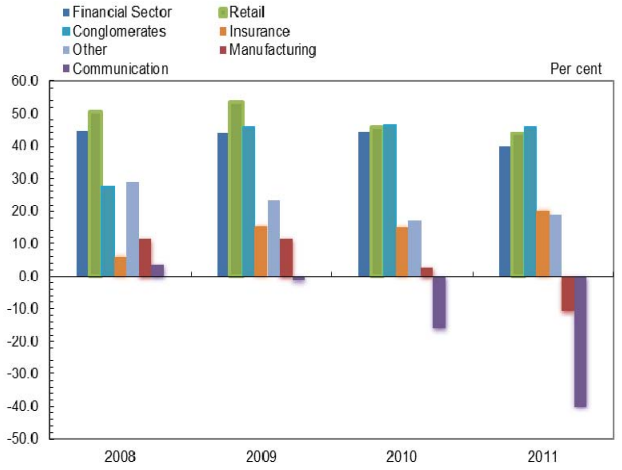


Figure 4.14 Profit margin for listed companies by sector



8 These included the planned acquisitions of Capital and Credit Merchant Bank Limited and Pegasus Hotels of Jamaica by Jamaica Money Market Brokers and Quivin International Limited, respectively. Also, within the year, the National Commercial Bank Jamaica Limited announced plans to list on the New York Stock Exchange (NYSE) while Pan-Jamaican Investments Trust assumed the assets and liabilities of First Jamaica Investments Limited.

comparison to a sharp increase of 58.9 per cent for the prior year.[9]

During 2011, listed corporate sector entities' financial leverage ratio remained virtually flat at 80.9 per cent at end-2011 relative to end-2010 (see **Figure 4.12**).[10] Of note, companies within *Finance* and *Insurance* remained highly leveraged while companies within *Retail* and *Other* recorded the lowest leverage ratios for the review period.

Overall profitability of listed companies remained relatively flat during 2011 (see **Figure 4.13**). The asset utilization ratio as measured by average return on assets (ROA) for listed companies declined to 3.5 per cent in 2011 relative to 3.7 per cent in 2010, reflecting lower net profits during the review period for a few large market capitalization stocks such as Guardian Holdings Limited, Trinidad Cement Limited, First Caribbean International Bank and Scotia Group Jamaica.[11] Furthermore, with the exception of a few stocks, many of the listed companies recorded improvements in profitability relative to 2010. Notably, *Retail*, *Other* and *Conglomerate* recorded the highest increases in ROA while stocks from *Communications* and *Manufacturing* recorded the steepest declines. Similarly, the ratio of net profits to revenues for listed entities declined in 2011 relative to 2010. This ratio declined to 21.3 per cent from 24.4 per cent in 2010.[12] Furthermore, *Retail*, *Conglomerate* and *Finance* continued to record the highest profit margin ratios while *Communications* and *Manufacturing* recorded the lowest ratios (see **Figure 4.14**).

Figure 4.15 P/E ratio for listed companies by sector

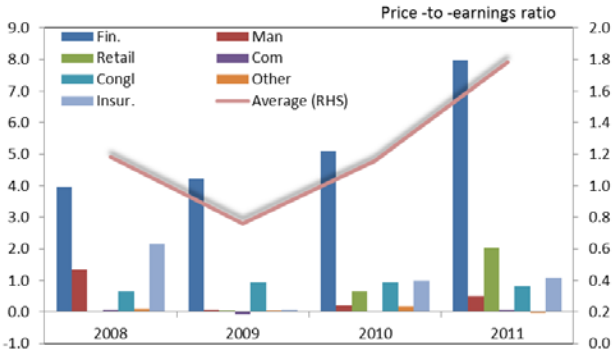


Figure 4.16 Solvency ratio for listed companies by sector

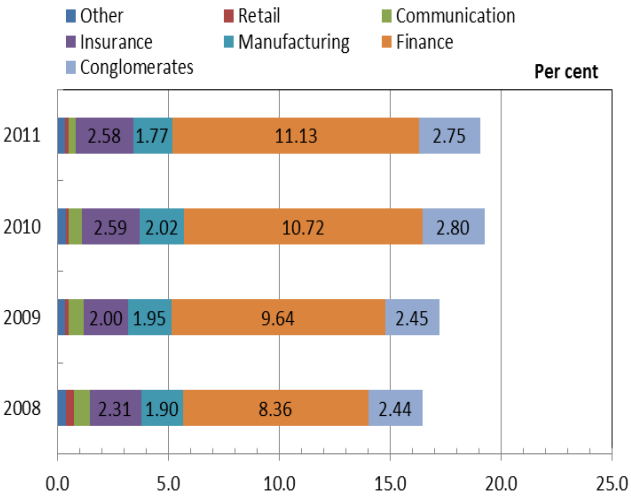
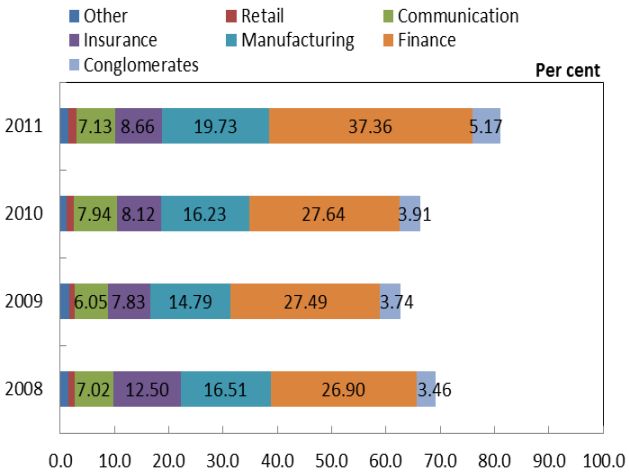


Figure 4.17 Efficiency ratio for listed companies by sector



9 However, it must be noted that the significant increase in market activity during 2010 was primarily concentrated in the first quarter of the year and reflected renewed investor interest associated with the successful completion of the Jamaica Debt Exchange programme as well as the signing of the Stand-By-Arrangement between Jamaica and the International Monetary Fund.

10 Financial leverage ratio is measured as the ratio of total debt to total assets. A debt to asset ratio in excess of 65.0 per is typically associated with excessive debt.

11 ROA measures net profits as a proportion of average total assets. The weighted ROA for all listed entities was weighted by the market capitalization for each sector.

12 This implies that for every $1.00 of revenue generated, $0.21 went to the companies' profit.

The weighted price to earnings (P/E) ratio for listed companies improved in 2011 relative to 2010.[13] At end-2011, the weighted P/E ratio across the sectors averaged 1.8 relative to a ratio of 1.1 in 2010 (see **Figure 4.15**). With the exception of *Finance*, *Retail* and *Insurance*, all sectors recorded P/E ratios below 1.0.

The solvency ratio for listed companies continued to be high. However, at end-2011, the capital to asset ratio was 19.1 per cent compared to 19.2 per cent at end-2010. Notably, with the exception of *Retail* and *Finance*, all other sectors on the Exchange recorded declines in their solvency ratios in 2011 relative to the prior year. In addition, *Finance* recorded a solvency ratio of 11.1 per cent, well above the regulatory benchmark of 6.0 per cent (see **Figure 4.16**).

There was deterioration in the ratio of operating expenses to revenues in 2011(see **Figure 4.17**). This ratio increased to 81.1 per cent across sectors in 2011 relative to 66.4 per cent in 2010. The deterioration in the ratio reflected the performance of companies across all listed sectors with the exception of *Communication*.

4.4. Public Sector Debt & DTIs Exposure

Within a context where there was an overall expansion in the stock of loans for DTIs, there was a decline in the holdings of public sector debt in 2011, particularly for commercial banks. This was reflected in a reduction in the ratio of public sector loans and securities to DTIs assets to 19.7 per cent at end-2011, relative to 22.3 per cent at end-2010 (see **Figure 4.18**).[14] The performance was mainly influenced by declines of 3.6 per cent and 24.5 per cent in DTIs' holdings of public sector securities and public sector loans, respectively, during the year.

Figure 4.18 Public sector loans and securities to assets & capital - DTIs

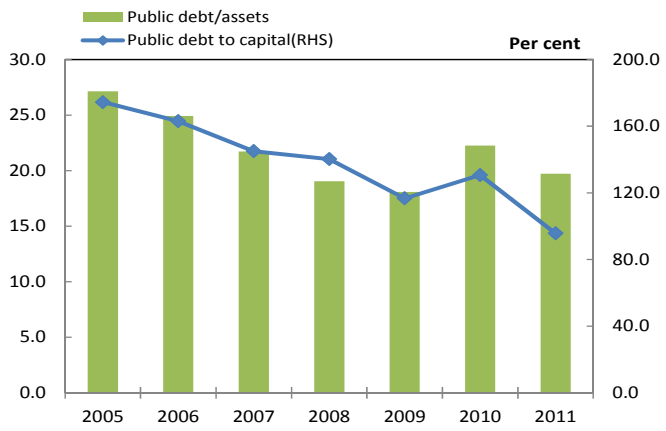


Figure 4.19 Debt to GDP ratios

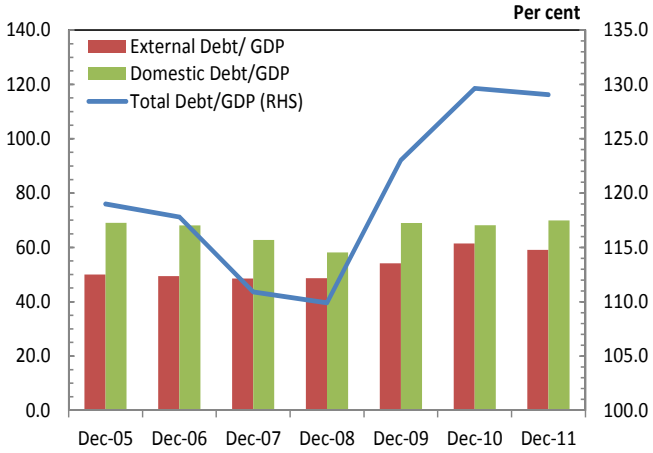
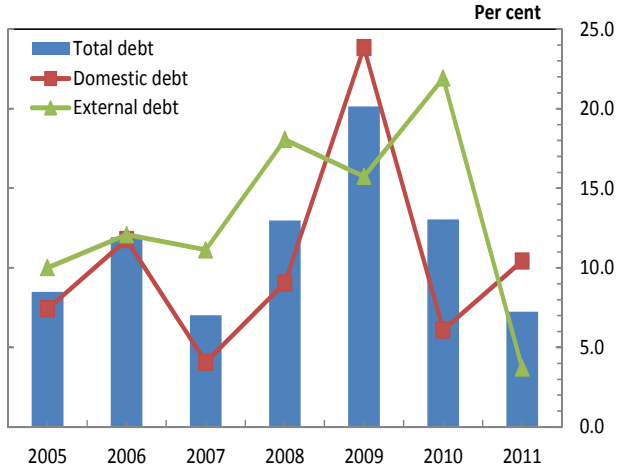


Figure 4.20 Growth in public sector debt stock



[13] The P/E ratio is calculated as the market value per share divided by the per share earnings of a company. The ratio was then weighted by the market capitalization of each listed company.

[14] 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.

4.4.1 Public Sector Indebtedness & Performance

Public sector debt as a share of GDP declined marginally to 129.0 per cent at end-2011 from 129.6 per cent at end-2010, reflecting a slower growth in the debt stock of 7.2 per cent when compared to 13.0 per cent in 2010 (see **Figure 4.19**). This slower growth in the total debt stock was primarily influenced by a reduction in the rate of expansion of external debt, which increased by 3.7 per cent relative to the increase of 21.9 per cent during 2010.

This reduction was primarily associated with net amortization of Central Government's external debt (see **Figure 4.20**). The growth rate in domestic debt, on the other hand, increased by 4.3 percentage points to 10.4 per cent for 2011 and reflected the funding of a larger than budgeted fiscal deficit in a context of weaker than projected revenue flows.

Notwithstanding the above, the fiscal stability ratio (FSR), which captures the stability of government finances, improved marginally to 1.23 at end-2011 from 1.25 at end-2010 (see **Figure 4.21**).[15] This improvement occurred against the background of improvement in tax revenues relative to 2010. This largely reflected higher PAYE tax receipts due to an increase in salaries following the payment of retroactive salaries to public sector workers. Additionally, cost containment was achieved through expenditure savings due to a lower interest rate path and a reduction in capital expenditure.

Notably, in 2010, the uncertainties regarding the status of the agreement of the country's financial programme with the IMF affected the Government's ability to issue a greater proportion of fixed rate relative to variable rate debt as well as limited its ability to extend the maturity profile of the debt stock. These factors consequently resulted in deterioration in the sustainability of the debt profile during 2011. Specifically, at end-2011, the share of domestic fixed rate instruments declined by 2.8 percentage points to 56.5 per cent while

Figure 4.21 Fiscal stability ratio

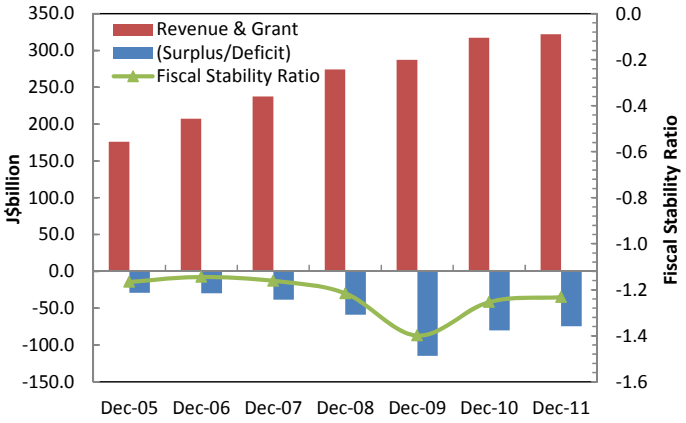


Figure 4.22 Domestic debt interest rate composition

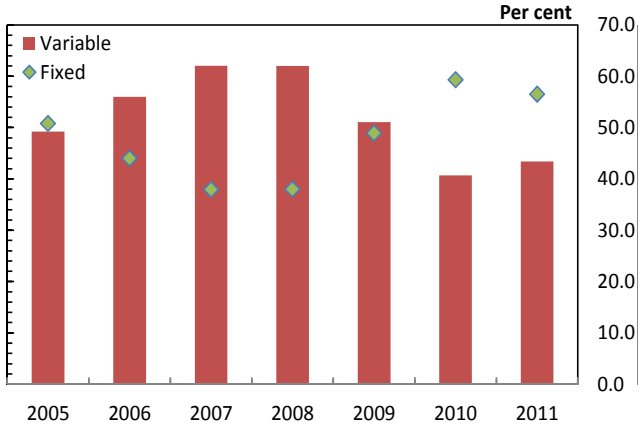
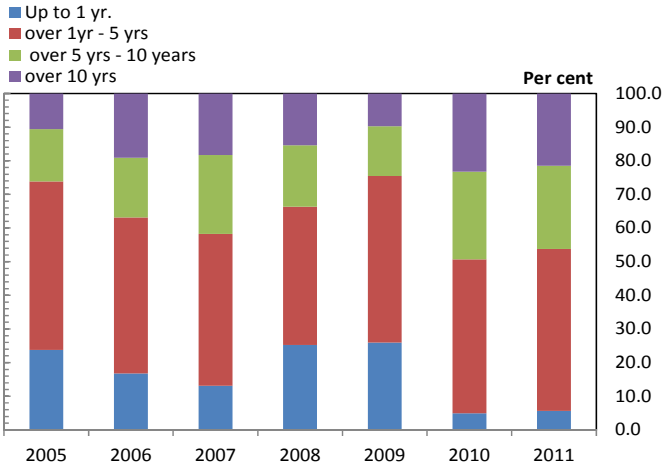


Figure 4.23 Domestic debt - maturity profile



[15] 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.

Figure 4.24 External debt - maturity profile

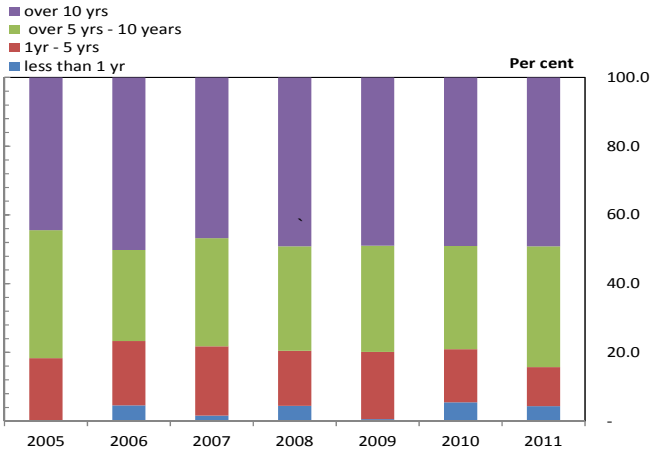


Figure 4.25 Private sector loans to assets & capital for the 12 largest securities dealers

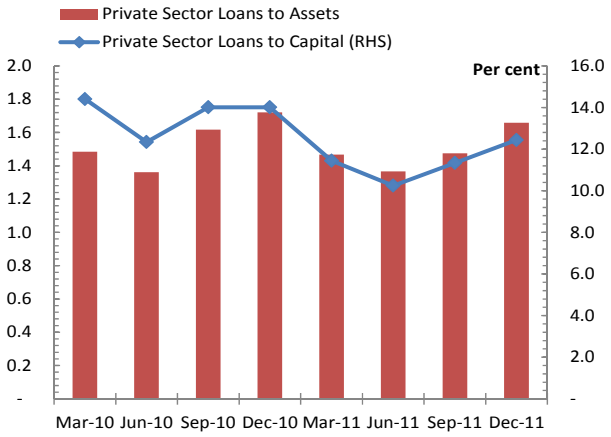
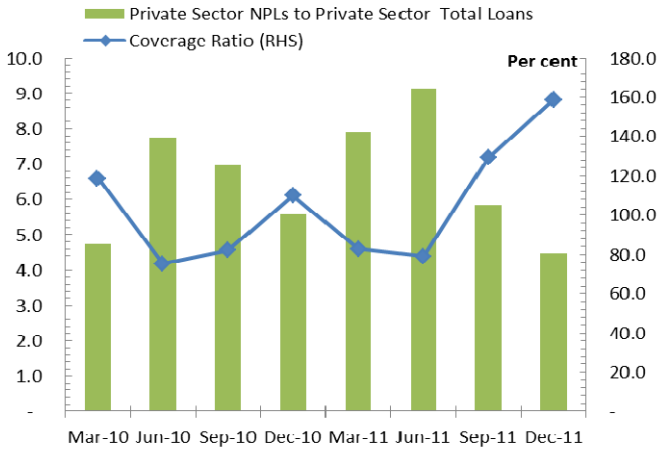


Figure 4.26 Private sector NPLs to total private sector loans & coverage ratio for the 12 largest securities dealers



the share of variable rate instruments grew by 2.7 percentage points to 43.4 per cent (see **Figure 4.22**).

Additionally, the proportion of domestic debt due to mature in 5 years or less increased to 53.8 per cent at end-2011 from 50.7 per cent at end-2010, indicative of increased refinancing risk in the near-term (see **Figure 4.23**). In terms of the external debt, this portfolio continued to be dominated by long-term fixed rate instruments, thereby containing its vulnerability to interest rate shocks (see **Figure 4.24).**

4.5. Non-Bank Financial Sector Exposure

4.5.1 Private Sector Debt & Securities Dealers Exposure

The exposure of the twelve largest securities dealers (SDs) to private sector debt remained low during 2011.[16] The ratio of private sector debt to assets for the SDs was virtually flat at 1.7 per cent at end-2011 relative to end-2010 (see **Figure 4.25**).[17] Notably, of the twelve SDs only six institutions had exposure to private sector debt, which ranged between 0.9 per cent and 3.4 per cent of total assets

Private sector debt held by SDs as a proportion of capital averaged 11.4 per cent for 2011. Relative to 2010, this represented an average decline of 2.0 percentage points in the ratio.

The SDs loan quality ratio as measured by private sector NPLs to private sector loans improved to 4.5 per cent at end-2011 relative to 5.6 per cent at end-2010 (see **Figure 4.26**). The improvement in the loan quality ratio for the top twelve SDs, relative to end-2010, was reflected across all institutions with the exception of one institution.

[16] Private sector loans incorporate loans to corporate sector entities and personal (household) loans.

[17] Data on private sector debt for non-banks was only available for 2011 & 2010.

The coverage ratio for SDs also improved at end-2011 to 158.5 per cent when compared to a ratio of 110.0 per cent at end-2010. Notably, at end-2011 the ratio for the SDs was approximately 1.4 times that of the DTIs and represented strong levels of provisioning (see **Figure 4.26**).

4.5.2 Public Sector Debt & Securities Dealers Exposure

SDs holdings of public sector debt increased at end-2011 relative to their holdings at end-2010.[18] The ratio of public sector debt to assets grew to 48.5 per cent at end-2011 (twice that of DTIs) compared to a ratio of 46.7 per cent at end-2010 (see **Figure 4.27**). This increase reflected growth of 3.5 per cent in the holdings of public sector securities. Conversely, public sector debt holdings to capital declined steadily to 363.4 per cent at end-2011 from a ratio of 380.4 per cent at end-2010. However, the ratio was significantly higher when compared to a ratio of 95.7 per cent for DTIs recorded at end-2011.

4.5.3 Public Sector Debt & Insurance Sector Exposure

Similar to the SDs, exposure to public sector debt increased for the insurance sector during 2011. The ratio of public sector debt holdings to assets increased to 57.1 per cent at end-2011 relative to 56.9 per cent at end-2010 (see **Figure 4.28**). Of note, this ratio was 63.7 per cent and 36.7 per cent for the life and general insurance companies, respectively, during 2011. This compared to ratios of 63.1 per cent and 32.9 per cent, respectively, during 2010. As a proportion of capital, public sector debt holdings for the insurance sector increased to 205.5 per cent at end-2011 relative to a ratio of 179.6 per cent at end-2010 (see **Figure 4.29**). This high ratio was influenced mainly by the life insurance sector which recorded a ratio of 227.8 per cent at end-2011 while the general insurance companies recorded a ratio of 127.6 per cent.

Figure 4.27 Public sector debt holdings to assets & capital for the 12 largest securities dealers

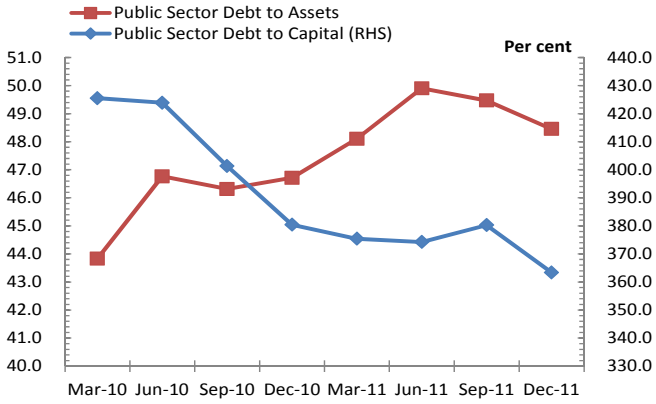


Figure 4.28 Public sector debt holdings to assets for insurance companies

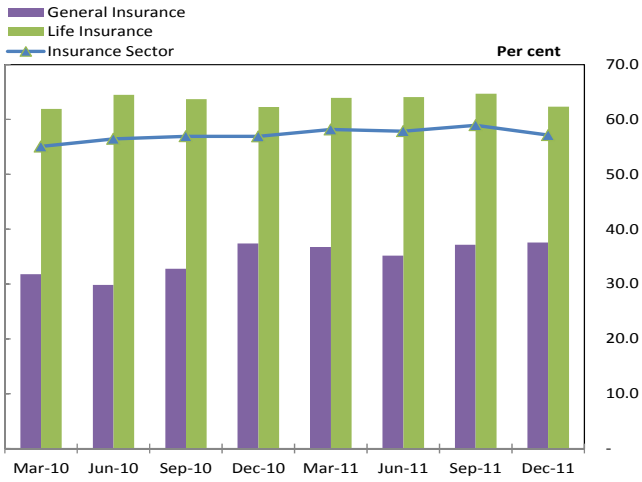
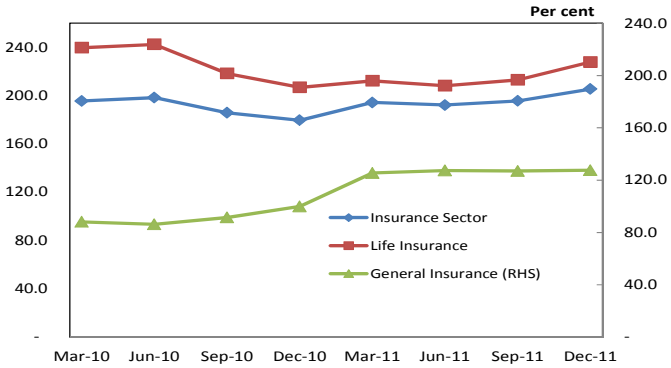


Figure 4.29 Public sector debt holdings to capital for the insurance sector



[18] 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.

Figure 4.30 Investments in other assets for the financial sector

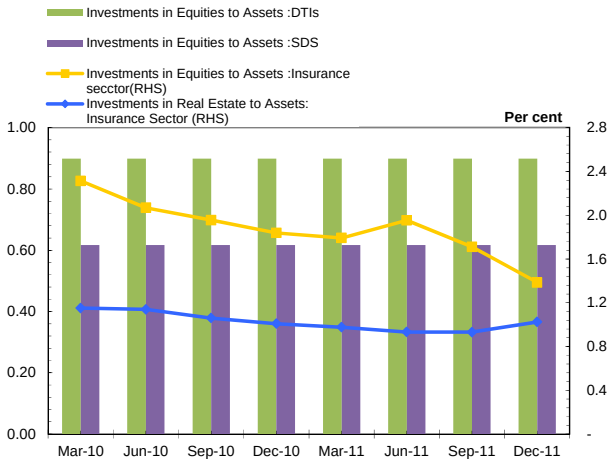


Table 4.2 Investments classes as a per cent of total assets Pension Industry

	2009	2010	2011
Investments in Governments Securities to Assets (%)[1/]	41.87	43.69	44.53
Investments in Equities to Assets (%)	9.4	9.6	11.7
Investments in Real Estate to Assets (%)	5.6	5.4	5.2
Investment Arrangement to Assets (%)[2/]	23.6	23.0	25.9
Other Investments to Assets (%)	17.7	14.7	11.6
Total Asset values (J$bn)	228.6	259.1	283.0

Notes

[1/] Governments securities includes Government of Jamaica securities and other sovereign securities from the US, UK and Canada.

[2/] An investment arrangement describes investments in deposit adminitration contracts and pooled funds

4.5.4 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. During 2011, the ratios of equity investments to assets and real estate investments to assets for the insurance sector averaged 1.7 per cent and 0.9 per cent, respectively. This is in comparison to average ratios of 2.0 per cent and 1.1 per cent recorded during 2010.

In comparison, the exposures of SDs and DTIs to equities investments remained flat at 0.6 per cent and 0.9 per cent, respectively, during 2011 relative to 2010 (see **Figure 4.30**).

4.6 Pension Industry Exposure to Governments Securities, Equities & Real Estate[19]

At end-2011, the pension industry continued to have the highest exposure to *Investments in Governments Securities* (44.5 per cent), as well as *Investment Arrangement* (25.9 per cent) which includes investments in deposit administration contracts and pooled funds, when compared to investment in the other investment classes (see **Table 4.2**).[20,21] This represented an increase relative to values of 43.7 per cent and 23.0 per cent, respectively, recorded at end-2010. For the review period there was increased exposure to equities investments to 11.7 per cent from 9.6 per cent at the end-2010. This could be attributed to the reduction in interest rates on fixed income securities during 2010 and 2011. However, pension fund exposure to real estate declined marginally by 0.2 percentage point to 5.2 per cent largely due to faster pace of growth in their asset base.

[19] Governments securities includes Government of Jamaica securities and other sovereign securities from the US, UK and Canada.

[20] Pension industry refers to private pension plans within the regulatory oversight of the Financial Services Commission.

[21] Exposure is computed as Government securities/investment arrangement as a per cent of total assets.

5. Risks Assessment of the Financial Sector

5.1 Overview

Deposit-taking institutions (DTIs) remained robust to hypothetical liquidity, market and credit shocks during 2011. However, while liquidity and market risk exposures remained subdued during 2011, the exposure to credit-related risks persisted during the year. Based on stress test results, exposure to credit risk remained the most significant exposure of the DTIs. In addition, the exposure of DTIs to interest rate risk increased significantly, while foreign exchange risk and liquidity-related risks remained negligible (see ***Figure 5.1*** *and* ***Figure 5.2****)*[1]*. The non-banking financial sector also remained robust to a wide range of market and liquidity shocks during 2011. However, while securities dealers reduced their exposure to interest rate risk their exposure to liquidity funding risk increased.*

Figure 5.1 Relative exposures of DTIs to selected risks

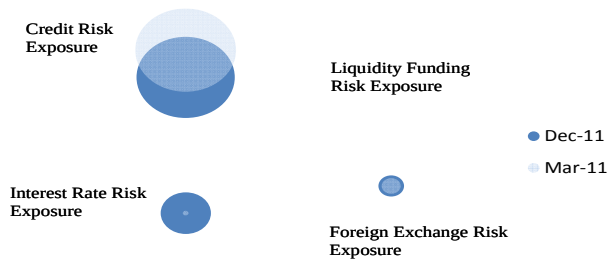
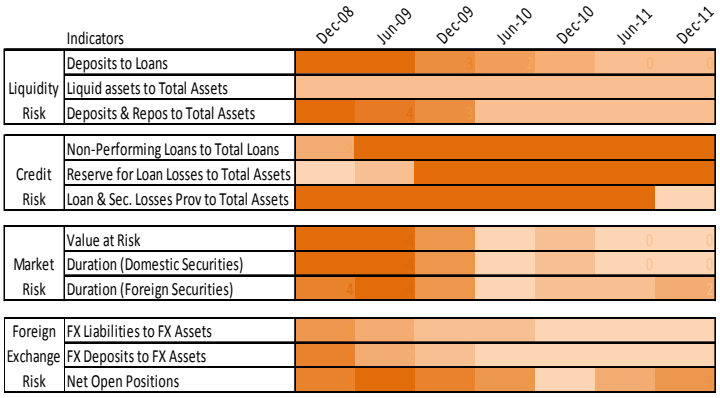


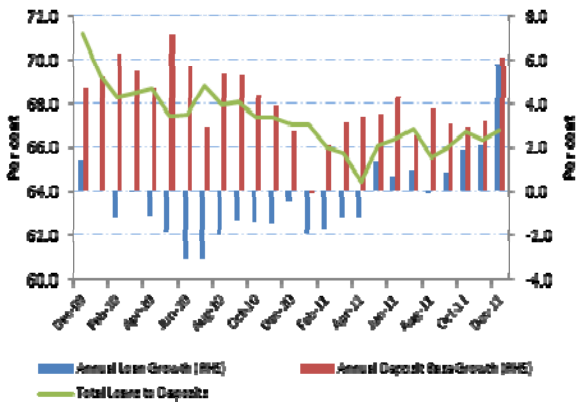
Figure 5.2 Evolution of risk indictors for DTIs



5.2 Liquidity Funding Risk Assessment of the Banking System

The DTI sector continued to rely primarily on deposits to fund its activities during 2011. Deposits as a proportion of banking system funding increased to 81.5 per cent at end-2011 from 78.1 per cent at end-2010. In terms of other sources of funding, DTIs relied significantly less on 'other borrowing' relative to the preceding year and marginally more on inter-bank funding. Specifically, inter-bank funding and borrowings accounted for an average of 15.8 per cent and 4.1 per cent of the funding base of DTIs during 2011, respectively, relative to an average of 18.2 per cent and 4.3 per cent at end-2010. There was also a slowdown in the annual growth of the DTI's funding base to 1.5 per cent for 2011 relative to a five-year average growth of 9.4 per cent. The marginal increase in the funding base was influenced by growth in deposits of 5.0 per cent, the impact of which was partially offset by a 19.4 per cent reduction in 'other borrowing'. In addition, inter-bank funding declined by 8.7 per cent during 2011 relative to a reduction of 11.2 per cent in 2010 and a five-year average growth of 17.8 per cent (see **Figure 5.3**).

Figure 5.3 Loans to deposit ratio



[1] In Figure 5.1 the size of each node is scaled in proportion to the total value of exposure arising from the stress test as at end-March 2011 and end- 2011.

The liquidity risk exposure of the DTI sector remained low during 2011 as reflected in the trends in several measures of liquidity risk. In particular, the loans-to-deposit ratio remained relatively flat at 66.8 per cent at end-2011 relative to 67.0 per cent at end-2010. The stability in this ratio over the year was a result of an increase in the annual growth rate of deposits which was matched by an almost similar increase in loan growth rate. Furthermore, the liquidity ratio of the system trended downwards for the year, as DTIs recorded a ratio of 30.8 per cent at end-2011 relative to 36.2 per cent as at end-2010. Additionally, DTIs reserves of liquidity in excess of those prescribed by the Bank waned. Of note, these reserves fell off in the last quarter of 2011 (see **Figure 5.4**). Finally, the ratio of short-term assets to short-term liabilities for DTIs, deteriorated with the exception of the FIA licensees sector, deteriorated, indicating slightly elevated short-term liquidity risk (see **Figure 5.5**). At end-2011, in excess of 40.0 per cent and 30.0 per cent of short-term liabilities were backed by short-term assets for commercial banks and building societies, respectively. In contrast, only 26.9 per cent of short-term liabilities were backed by short-term assets of the FIA licensees sector, albeit a significant increase relative to the 5.6 per cent obtained in the prior year.

During 2011, liquidity funding stress tests indicated that all DTIs were adequately capitalised to absorb hypothetical losses associated with a decline in deposits. Specifically, after a hypothetical 10.0 per cent decline in average deposits, it was revealed that all DTIs had post-shock capital adequacy ratios (CARs) above the regulatory benchmark of 10.0 per cent.[2] However, there was a slight decrease in the median post-shock CAR of the system during 2011 which reflected the slight increase in susceptibility of banks to liquidity funding risk (see **Figure 5.6**).

Figure 5.4 Trends in the liquidity ratio and excess reserves

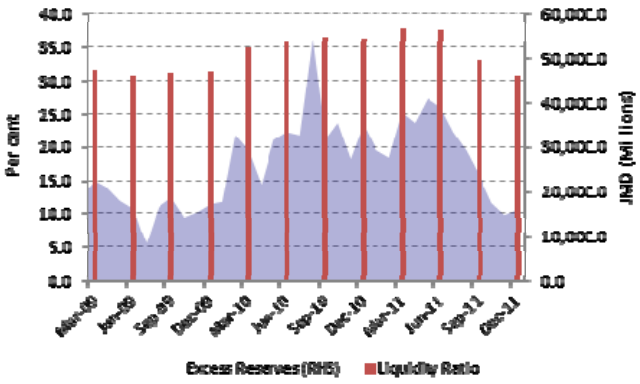


Figure 5.5 The ratio of assets maturing within 3 –months to liabilities maturing within 3 - months for DTIs

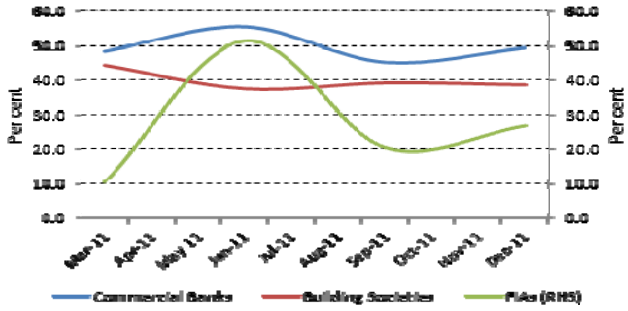
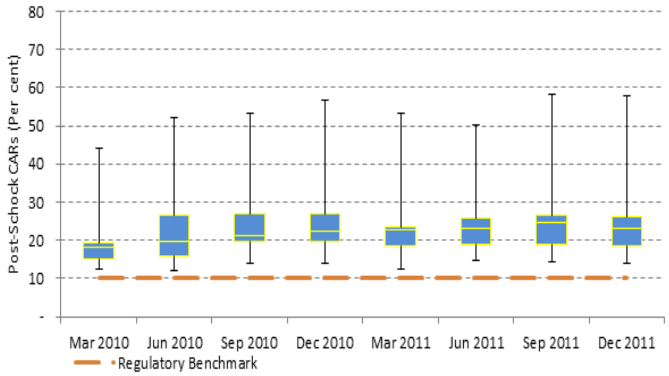


Figure 5.6 Liquidity funding risk stress test results for the banking system



[2] The 'hair cut' (% loss in value) applied in the stress testing framework on liquidating each category of assets are: items in course of collection (10.0%), non-liquid investments (20.0%), accounts receivables (20.0%), loans & advances (28.0%), Fixed Assets (36.0%), Other Assets (90.0%) and resultant losses are written off against the capital buffers first and then statutory capital.

Figure 5.7 Implied volatility of assets of DTIs

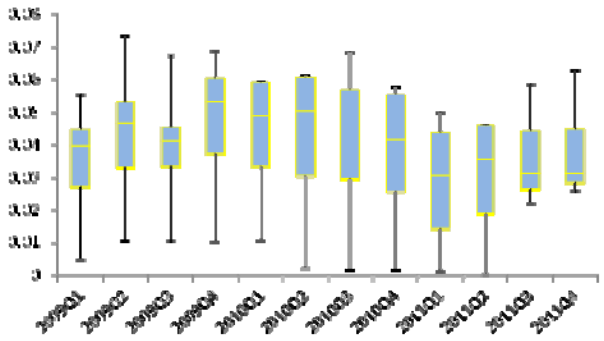


Figure 5.8 Evolution of duration for domestic and foreign currency securities for DTIs

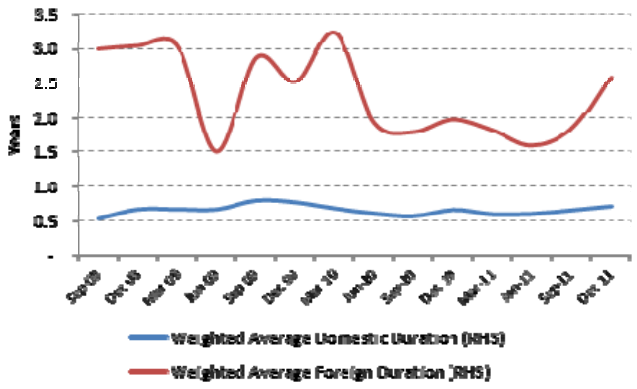
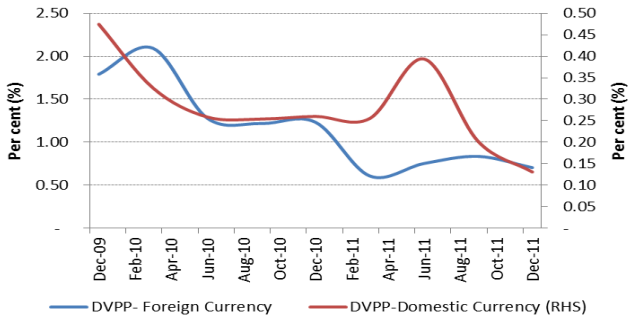


Figure 5.9 Dollar value of a percentage point (DVPP) to capital for DTIs



5.3 Market Risk Assessment of Deposit-Taking Institutions

The composition of the investment portfolio of commercial banks and building societies remained more heavily weighted in Jamaica Dollar denominated bonds relative to positions in foreign currency denominated securities and equities for 2011. In contrast, the FIA sector held the largest proportion of their portfolio in foreign currency securities. Relative to end-2010, all sub-sectors within the DTI system, with the exception of FIA licensees, marginally increased their position in Jamaica Dollar securities. However, while there was a slight increase in holdings of foreign currency bonds for institutions in the commercial bank and building societies sub-sectors (see **Chapter 3.13)**.

Conditions in the domestic financial markets remained benign as reflected in a downward trend in yields on domestic instruments, complemented by a reduction in the volatility in yields. Improved market perception of the stability of the system, was reflected in the trend decline in the median implied volatility of assets of publicly-listed DTIs. Furthermore, latent concerns about financial system stability faded as indicated by the narrowing of the inter-quartile range for the implied volatility of assets of publicly-listed DTIs relative to end-2010 (see **Figure 5.7**).

Concurrently, the duration of domestic bonds held by DTIs increased to 0.72 at end-2011 from 0.66 at end-2010 (see **Figure 5.8**). This represented a reversal of the declining trend in duration for the sector recorded for 2010. The trend in 2011 was largely influenced by the commercial bank and the building society sub-sectors. The duration of foreign currency securities held by DTIs increased to 2.59 at end-2011 from 1.97 at end-2010. The increase in the duration factors for the system highlighted a greater exposure to interest rate risk during 2011. Similar trends were observed for the interest rate risk exposure of the DTIs for both domestic and foreign currency securities. Specifically, the domestic dollar value of a percentage point to capital (DDVPC) for DTIs declined to 0.13 per cent at end-2011 from 0.26 per cent at end-2010. Similarly, during 2011 the DDVPC for foreign

currency securities declined by 0.53 percentage point to 0.7 per cent relative to end-2010 (see **Figure 5.9**). During 2011, interest rate risk stress tests indicated that all DTI sectors were adequately capitalised to absorb losses associated with large but plausible hypothetical increases in interest rates. Additionally, both the inter-quartile range and the median quarterly post-shock CAR decreased after a hypothetical increase of 1 100.0 basis points in interest rates (see **Figure 5.10**). Further, consequent on the relatively small movements in yields in bond markets and the trend declines in the duration targeted by DTIs, the risk of the system to reductions in interest rates declined even further during 2011. This was evidenced in the decline as well as the narrowing in the inter-quartile range for the DTIs' value-at-risk (VaR) estimates during 2011 (see **Figure 5.11**).[3]

The foreign exchange market returned to relative stability during 2011 compared to the bouts of instability observed over the previous year. This stability was particularly noticeable after the first quarter of 2011 as there was a decline in volatility in the first quarter of the year (see **Figure 5.12**). At end-2011, the exchange rate was US$1:J$86.34, reflecting a depreciation in the Jamaica Dollar of 0.85 per cent for 2011.

The net open position (NOP) of the DTI system increased during 2011. Relative to end-2010, DTIs increased their long position in US dollar assets by 71.0 per cent to US$333.9 million (see **Figure 5.13**). This increase in the NOP was observed across each of the DTI sub-sectors. Consequently, DTIs' exposure to foreign currency risk increased as reflected in a higher NOP to capital of 30.1 per cent, relative to 21.9 per cent at end-2010. DTIs also expanded their risk exposure to non-foreign currency earners during the review year.

Figure 5.10 Interquartile range for post-shock CARs due to interest rate risk stress tests of DTIs

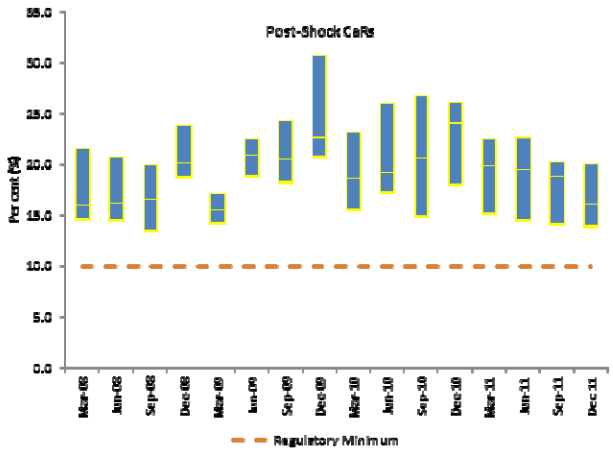


Figure 5.11 The evolution of inter-quartile ranges for the value at risk (VAR) for DTIs

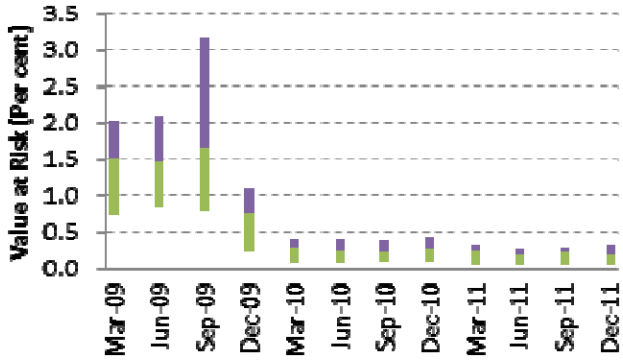
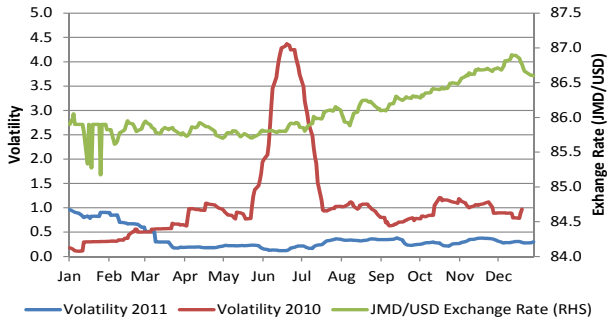


Figure 5.12 The evolution of the annualized volatility in the Jamaica Dollar to US dollar exchange rate



[3] The DVPC captures the dollar value loss of a percentage point increase in domestic bond yields as a proportion of the capital base.

This was reflected in DTIs loans to non-foreign exchange earners which increased to the equivalent of $18 361.0 million at end-2011 relative to $17 665.0 million at end-2010. Further, loans to non-foreign exchange earners as a proportion of total loans extended by DTIs increased by 1.2 percentage points to an average of 15.9 per cent compared to end-2010 (see **Figure 5.14**).

At end-2011, all DTIs were adequately capitalised to absorb losses associated with significant hypothetical depreciations of the Jamaica Dollar vis-à-vis the U.S. dollar.[4] Specifically, after a hypothetical 30.0 per cent depreciation, the median post-shock CARs across all DTI sub-sectors trended upwards except for one sub-sector, relative to the average median post-shock CARs recorded during 2010. The median post-shock CAR for commercial banks remained relatively flat and comfortably above the 10.0 per cent CAR benchmark during 2011. Building societies were minimally affected by the shocks applied in 2011 and generally exhibited slightly elevated median post-shock CAR relative to 2010. The median post-shock CAR for the FIA licensees sector also remained relatively flat during 2011 reflecting muted levels of risk to foreign exchange rate-related shocks. However, increased levels of vulnerability to a foreign exchange rate shock for the FIA licensees sector were observed at end-2011 as reflected in the decline in the median post-shock CAR as well as a narrowing of the inter-quartile range for the year (see **Figure 5.15**)

Figure 5.13 Quarterly ratio of DTI foreign exchange exposure to tiered capital

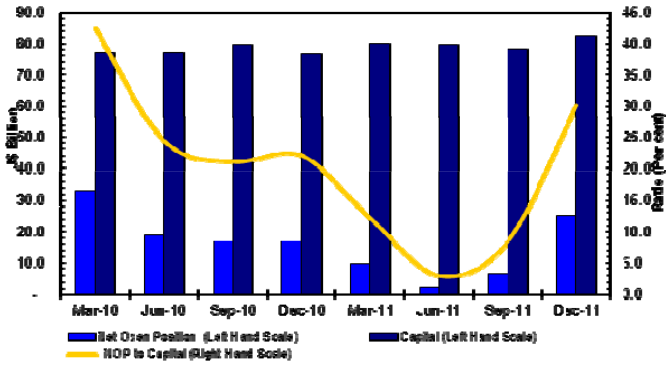


Figure 5.14 Analysis of foreign loans to non-foreign currency earners for DTIs

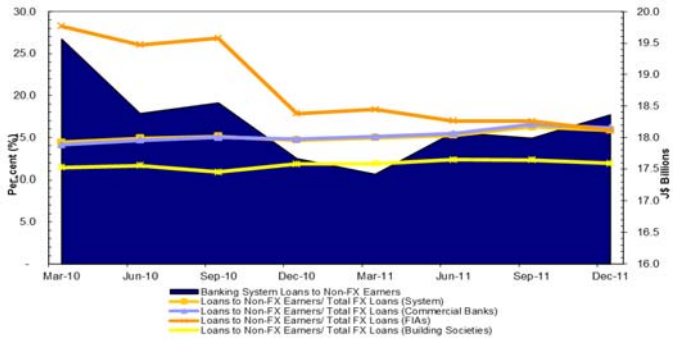
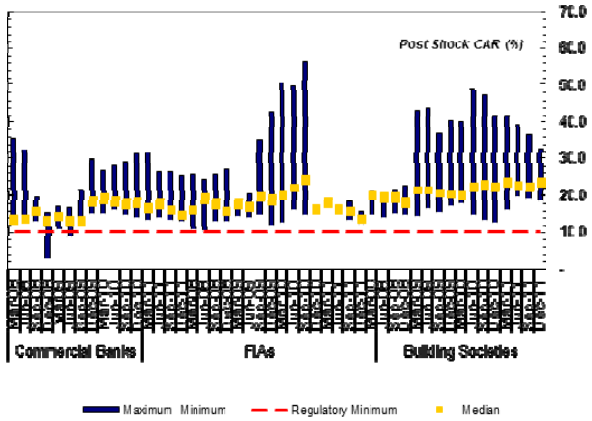


Figure 5.15 Foreign exchange risk stress test results for DTIs



[4] Shocks are applied firstly 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 January and May 2003.

Figure 5.16 Credit risk exposures for DTIs at end-2011 (Scenario: 100.0 per cent write-off of past due loans less than 3 months)

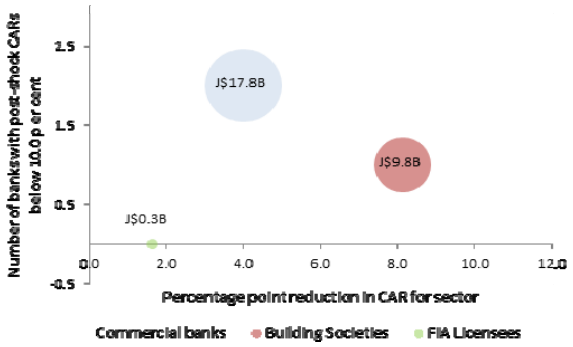


Figure 5.17 Provisioning rates for DTIs and write-off rates for non-performing loans for commercial banks

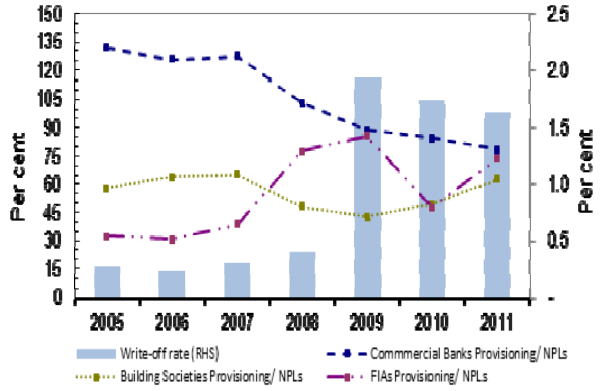
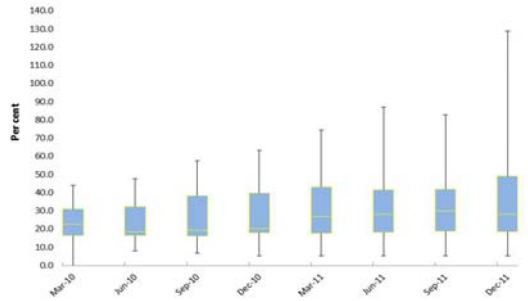


Figure 5.18 Non-performing loans to capital base for the banking System



5.4 Credit Risk Assessment of DTIs

Over 2011, exposure to credit risk remained the most significant risk to DTIs based on aggregate stress test results (see **Figure 5.16**).

The increased susceptibility of the DTI sector to credit risk was underscored by continued deterioration in the non-performing loans (NPL) ratio, reserves for loan losses ratio and loans and securities provision ratios. However, the write-off rate decreased to 1.6 per cent of total loans at end-2011 from 2.0 per cent at the beginning of 2010, having peaked at 2.3 per cent at end-October 2010.[5] Nonetheless write-off rates remained elevated relative to a five year historical average of 1.1 per cent. At the same time, provisioning ratios increased for building societies and FIA licensees but declined for commercial banks during 2011. The building societies sector recorded an increase in the ratio of provisioning to NPLs to 62.6 per cent at end-2011 relative to 49.6 per cent at end-2010. Similarly, the ratio of provisioning to NPLs increased by 25.9 percentage points to 73.7 per cent at end-2011, relative to end-2010 for FIA licensees. In contrast, the ratio of provisioning to NPLs declined by 5.8 percentage points to 78.6 per cent for commercial banks relative to end-2010 (see **Figure 5.17**). An overall decline in provisioning ratios for DTIs, driven by the commercial bank sub-sector, was implicitly consistent with the decline in write-off rates observed during the year.

The median NPL to capital ratio for DTIs increased marginally during 2011 relative to 2010. The ratio averaged 28.2 per cent for the review year, relative to an average of 20.2 per cent recorded for 2010. In addition, a widening of the inter-quartile range for NPLs to capital for DTIs underscored an increasing exposure to credit risk. This ratio increased to within an inter-quartile range of 18.5 per cent to 49.3 per cent at end-2011 relative to a range of 17.8 per cent to 40.0 per cent at end-2010. Additionally, the maximum ratio of NPLs to capital recorded across all DTIs

[5] Write-off rate is computed as the ratio of "Charged off assets" for the year to "Loans, advances & discounts (net of provisions"

increased sharply to 154.1 per cent from 119.6 per cent at end-2010 (see **Figure 5.18**).

Despite the continued deterioration in DTI loan quality, the CAR for all sectors, except the FIA licensees sector, remained adequate to absorb a hypothetical 30.0 per cent increase in NPLs. Specifically, both the commercial bank and the building society sectors showed consistent levels of robustness against large but plausible hypothetical shocks to NPLs over the review year. However, the FIA licensees post-shock CAR, showed an increased level of susceptibility to the hypothetical shock (see **Figure 5.19**).

Reverse stress testing exercises conducted for the building societies sector suggest that it would take a larger increase in the NPLs at end-2011 to cause the most vulnerable institution to have its CAR fall below 10.0 per cent relative to end-2010. Specifically, at end-2011 it would take a 160.0 per cent increase in NPLs for the first building society to breach the regulatory minimum CAR relative to an increase of 50.0 per cent at end-2010. In contrast, reverse stress testing assessments of the FIA licensees sector revealed increasing susceptibility to credit-related risks as it would take a smaller increase in NPLs at end-2011 to cause the most vulnerable institution to have its CAR fall below 10.0 per cent. Specifically, at end-2011, it would take a 20.0 per cent increase in NPLs to bring the CAR of the weakest institution below the 10.0 per cent benchmark relative to an increase of 65.0 per cent in NPLs at end-2010. Similarly, for the commercial bank sector, at end-2011 it would take a 20.0 per cent increase in NPLs for the CAR of the weakest institution to fall below the regulatory minimum relative to an increase of 175.0 per cent at end-2010 (see **Figure 5.20**).

5.5 Liquidity Funding Risk Exposure Assessment of Securities Dealers

Liquidity funding risk of the securities dealers sector as measured by the ratio of short-term assets to liabilities remained muted at end-2011 relative to end-2012. The ratio of short-term assets to liabilities increased marginally to 16.6 per cent from

Figure 5.19 Credit risk stress test results for DTIs (Scenario: Impact on CAR of a 30% increase in NPLs)

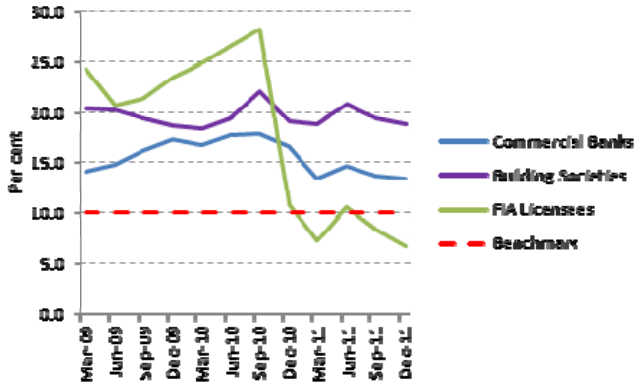


Figure 5.20 Reverse stress testing the credit risk exposure of DTIs

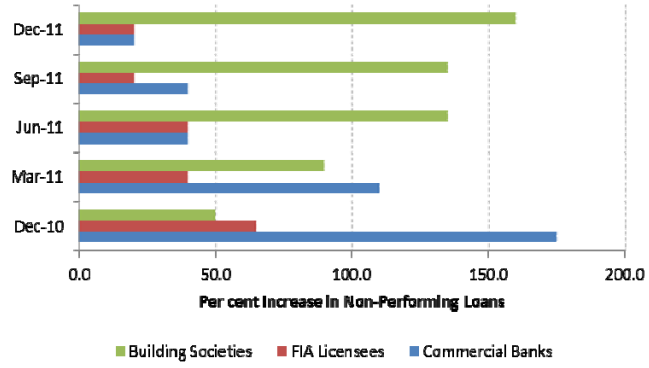
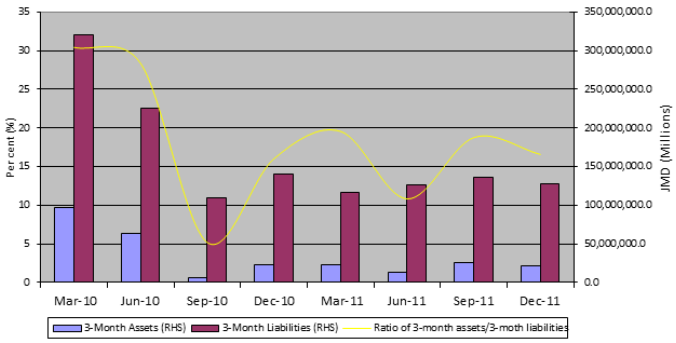


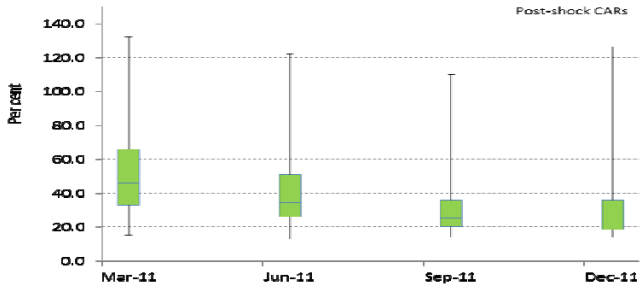
Figure 5.21 The ratio of assets maturing within 3–months to liabilities maturing within 3-months for securities dealers



16.0 per cent at end-2010. The decline in the ratio reflected a 5.2 per cent reduction in short-term assets to $21 227.00 million at end-2011. Similarly, short-term liabilities decreased by 8.4 per cent to $128 037.70 million at end-2011 (see **Figure 5.21**).

The liquidity funding stress test for the twelve largest securities dealers, involving a hypothetical 10.0 per cent reduction in retail repo-liabilities showed that all entities would have post-shock CARs above the regulatory minimum of 12.0 per cent. The average median post-shock CAR during 2011 was 31.6 per cent. However, the increased exposure to liquidity funding risk was reflected in both a downward trend and narrowing of the inter-quartile range of the post-shock CARs over the year. The median post-shock CAR declined to 20.4 per cent at end-2011 from 46.0 per cent at end-March 2011 (see **Figure 5.22**).

Figure 5.22 Liquidity funding risk stress test results for the 12 largest securities dealers



5.6 Market Risk Exposure Assessment of Securities Dealers

During 2011, the investment portfolio of the securities dealers sector remained tilted towards Jamaica Dollar denominated bonds. In particular, securities dealers held on average 59.1 per cent of their investment portfolio in Jamaica Dollar securities compared to 40.3 per cent in foreign currency securities. Investments in equity securities remained marginal during 2011.

Securities dealers exposure to interest rate risk increased during 2011, as reflected in the lengthening of the duration of both their domestic and foreign currency bond portfolios. This was more pronounced in their foreign currency bond portfolio which recorded an increase in duration to 2.3 at end-2011 from 1.6 at end-2010 (see **Figure 5.23**). Interest rate risk stress testing revealed that securities dealers were robust to large hypothetical shocks to interest rates. The sector recorded a median post-shock CAR of 30.3 per cent in response to the shock at end-2011 (see **Figure 5.24**). Concurrently, the trend increase in duration, the downside risk of the sector remained relatively flat during 2011. The highest value-at-risk (VaR) estimate was 0.34 per cent of the sector's investment portfolio, slightly below the maximum of 0.40 per cent which obtained during 2011. Further, the maximum

Figure 5.23 Evolution of duration for domestic and foreign securities for top 12 securities dealers

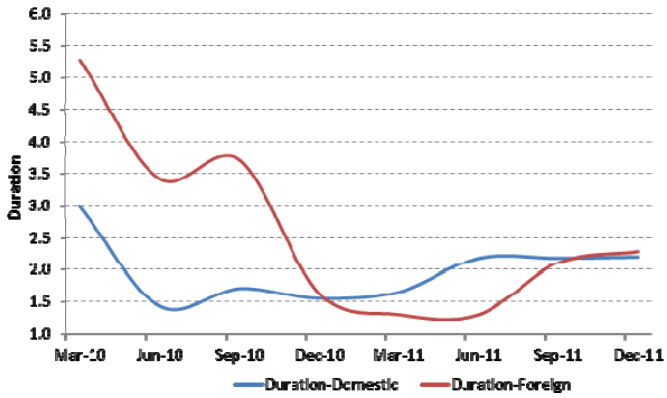
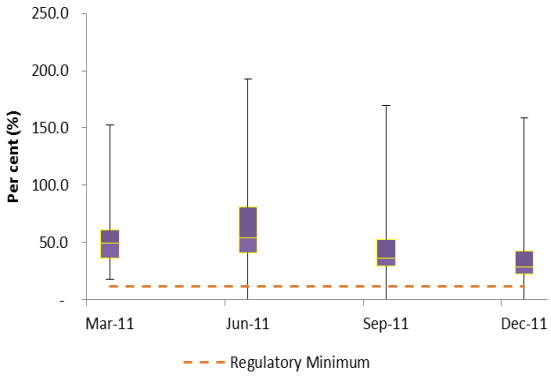


Figure 5.24 Interest rate stress test results for the top 12 securities dealers



security dealer VaR increased to 0.34 per cent at end-2011 relative to 0.31 per cent at end-March 2011 (see **Figure 5.25**).

The exposure of the securities dealers sector to foreign exchange rate risk decreased during 2011. The NOP of the securities sector declined to US$58.2 million at end-2011 from US$126.6 million at end March 2011. As a proportion of regulatory capital, the exposure of the sector declined to 14.3 per cent at end-2011 relative to 35.7 per cent at end-March 2010. Further, the median ratio of NOP to capital declined to 20.9 per cent at end-2010 relative to 19.1 per cent at end-March 2011 (see **Figure 5.26**). Against this background, the post-shock CARs of the securities dealers sector remained above the 12.0 per cent benchmark as a result of the contemplated 30.0 per cent depreciation in the exchange rate (see **Figure 5.27**).

5.7 Liquidity Funding Risk Exposure Assessment of Insurance Companies

Insurance companies' balance sheets remained robust to large but plausible hypothetical shocks to funding sources during 2011. Of note, however, post-shock minimum continuing capital surplus requirements (MCCSRs) for the life insurance sector declined during 2011, but remained comfortably above the regulatory benchmark of 150.0 per cent, signalling resiliency of the sector to absorb the contemplated shocks. The general insurance sector, on the other hand, showed increased resiliency to the contemplated shocks to funding sources. Most, of the resulting post-shock minimum capital tests (MCTs) reflected improvement in the actual ratios rather than the impact of the liquidity shock (see **Figure 5.28**).

5.8 Market Risk Exposure Assessment of Insurance Companies

The exposure of the life insurance sector to market risk remained low during 2011. The VAR for the sector recorded an average of 0.09 per cent for the year (see **Figure 5.29**). This outturn occurred in the context of benign movements in bond yields supported by slight reduction in the duration of foreign bond

Figure 5.25 Evolution of inter-quartile ranges for the value at risk for the 12 largest securities dealers

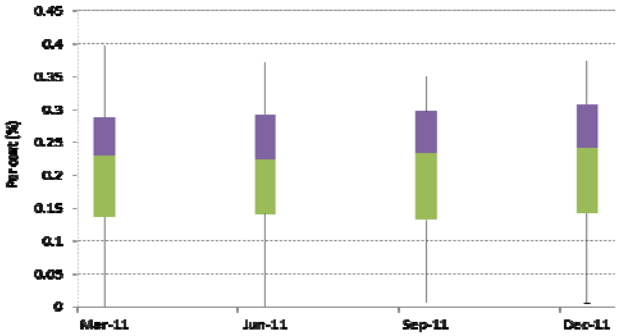


Figure 5.26 Quarterly inter-quartile ranges for the ratio of net open positions to tiered capital for securities dealers

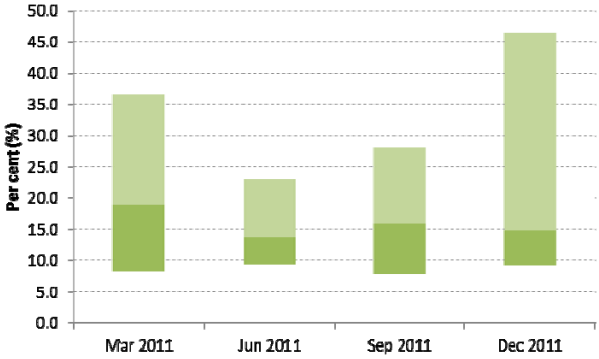
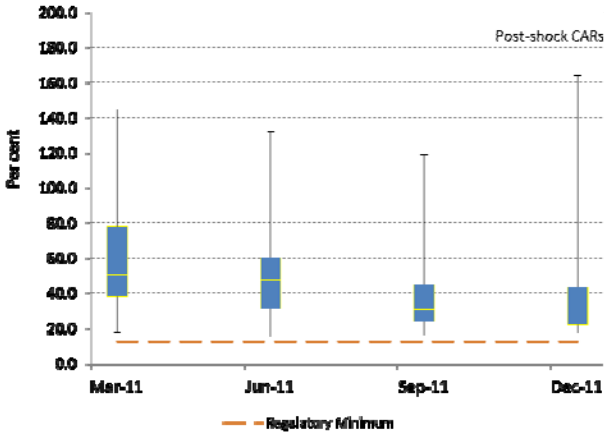


Figure 5.27 Foreign exchange risk stress test results for the 12 largest securities dealers



portfolios held by the sector. The duration on the foreign bond portfolio declined to 5.3 years at end-2011 relative to 5.6 years at end-2010.

On the contrary, the duration on the domestic bond portfolio increased to 2.0 years relative to a duration of approximately 0.0 at end-2010 (see **Figure 5.29**). Life insurance companies' balance sheets remained robust to large but plausible hypothetical shocks to interest rates during 2011 as the post-shock MCCSRs, despite declining, were comfortably above the regulatory benchmark of 150.0 per cent (see **Figure 5.30**).

5.9 Contagion Risk Assessment of the Domestic Financial System

Activities in the domestic inter-bank market declined at a slower pace relative to 2010. In particular, borrowing in the inter-bank sector declined on an annual basis by 0.8 per cent during 2011, relative to a 15.5 per cent reduction in 2010. Of note, these declines were spurred by increased uncertainty related to counter-party risk in this segment of the market.

Despite increased inter-bank funding during 2011, the uncertainty in inter-bank activity during 2011 reflected itself in increased periods of non-trading in the inter-bank market as well as sharp and persistent increases in inter-bank rates. For instance, the number of days with no reported trading activity increased to 50 for 2011 compared to 41 and 38 recorded in 2010 and 2009, respectively.[6] Correspondingly, the maximum inter-bank rate for 2011 declined to 12.0 per cent relative to maximum rates of 18.0 per cent and 32.0 per cent recorded for 2010 and 2009, respectively (see **Figure 5.31**).

At end-2011, the building societies sector continued to be net borrowers in the inter-bank market while securities dealers and commercial banks were generally net lenders. The securities dealers sector had the largest net exposure, both in dollar value as

[6] In response, the Bank established an intermediation facility for Jamaica Dollar and US dollar transactions within the inter-bank market in 2008. This facility assisted in the provision of liquidity to net-borrowers in the inter-bank market as well as the mitigation of counter-party risks to net lenders in the market (see **Figure 5.23**).

Figure 5.28 Liquidity funding rate risk stress test results for the insurance sector

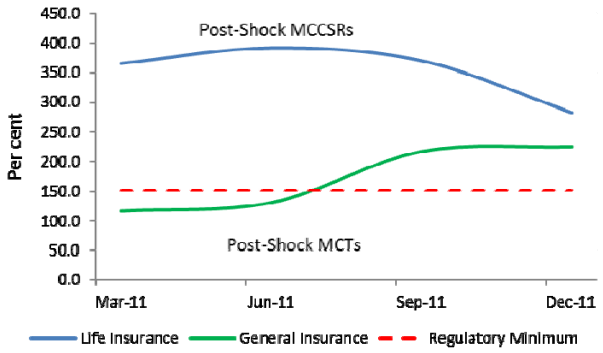


Figure 5.29 Value-at-risk and Durations for the life insurance sector

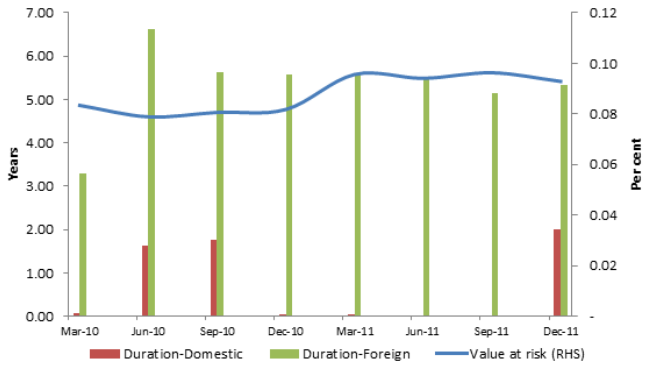
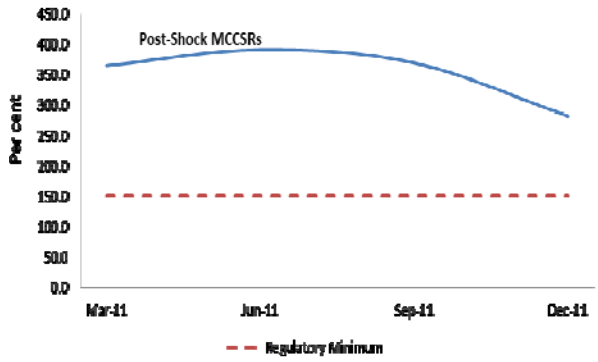


Figure 5.30 Interest rate risk stress tests for the life insurance sector



well as relative to the size of their capital base, in the inter-bank market followed by the commercial banking sector. The building societies sector, also had significant exposure to the securities dealer and commercial banking sectors relative to the size of their capital base at end-2011 (see **Figure 5.32**).[7,8,9] However, the exposure to counter-party risk of the insurance sector and the FIA licensees sector remained negligible at end-2011.

Stress testing of counter-party risk exposures for the financial system revealed that the securities dealers sector was most exposed to contagion risk emanating from the building societies sector.[10] Building societies were also exposed significantly to counter-party risk from the securities dealer sector. However, following the hypothetical shock there were no domino impacts leading to second round effects. The median post-shock CARs were 6.8 per cent, 6.1 per cent, and 14.3 per cent for the commercial bank, building society and securities dealer sectors, respectively (see **Figure 5.33**).

Figure 5.31 Daily ranges for inter-Bank Rates

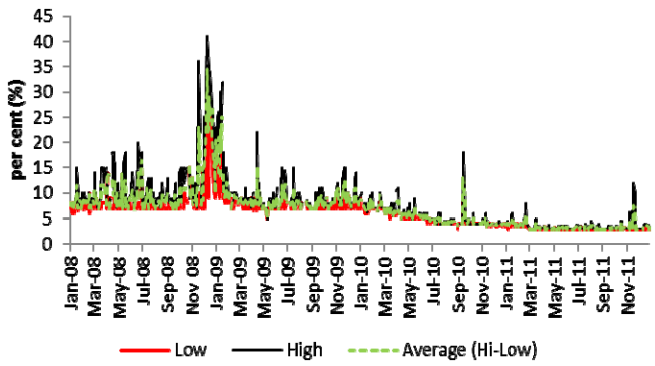


Figure 5.32 Network of large exposures between financial institutions at end-2011

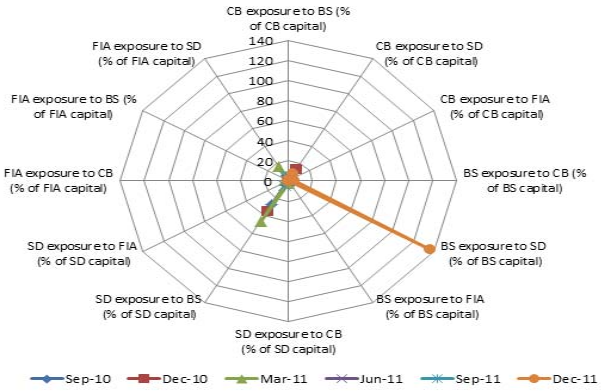
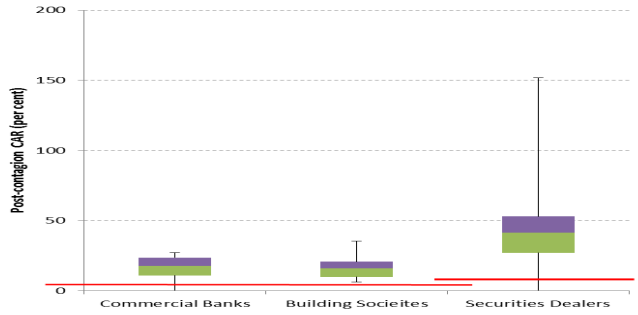


Figure 5.33 Counterparty risk exposures for the financial system (Scenario: Impact on CAR of the failure of institution(s) on financial entity with large net credit exposure)



[7] A large exposure is one that exceeds 10% of a lending bank's regulatory capital at the end of a period.

[8] The size of each node is scaled in proportion to the total value of net credit exposure to other financial institutions while the direction of the arrow indicates the counter-party to which the institution is exposed.

[9] The thickness of the line is proportional to the value of a single bilateral exposure. Red lines represent exposure in excess of 35.0 per cent of capital, and black lines indicate exposures in excess of 10.0 per cent of capital. Dotted black lines represent exposures which are less than 5.0 per cent of capital.

[10] Stress testing of counter-party risk exposures for the financial system involved the assessment of the hypothetical failure of a financial entity which exposed the financial system to the largest counter-party credit risk.

6. Payments System Developments

6.1 Overview

Growth in currency improved during 2011 against the background of continued growth in real sector activities during the year. Furthermore, overall average monthly Automated Banking Machine (ABM) and Point-of-Sale (POS) volumes and values increased by 13.7 per cent and 6.1 per cent, respectively, during the year, reflecting improvements in real wages and remittance inflows. Growth in the average value and volume of transactions by cheque declined significantly during the year in the context of the implementation of an upper limit on transactions in the ACH.

Activities in the JamClear systems – JamClear-RTGS and JamClear CSD - increased substantially during 2011. In addition, transactions via the RTGS as a proportion of the total value of transactions in the RTGS and ACH increased to 91.0 per cent at end-2011 relative to 82.0 per cent at end-2010, indicative of lower payment system credit risk during the review period.

6.2 Traditional Means of Payment

There was stronger growth in currency in circulation during 2011. For the year, currency in circulation increased by 9.0 per cent to $52.9 billion relative to 8.7 per cent for 2010. Measures of the role of currency in economic activity showed weak performance during 2011. The average monthly level of currency in circulation as a share of GDP increased by 0.1 percentage point to 3.6 per cent at end-2011 while average currency in circulation as a share of M1 also increased marginally to 44.4 per cent relative to 43.8 per cent at end-2010. Furthermore, growth in currency during the review period was generally in line with the average increase of 6.0 per cent over the last 3 years but still remained well below the average growth of approximately 15.0 per cent for the five years prior to 2008 when the global economic slowdown had intensified.

Figure 6.1 Currency in circulation

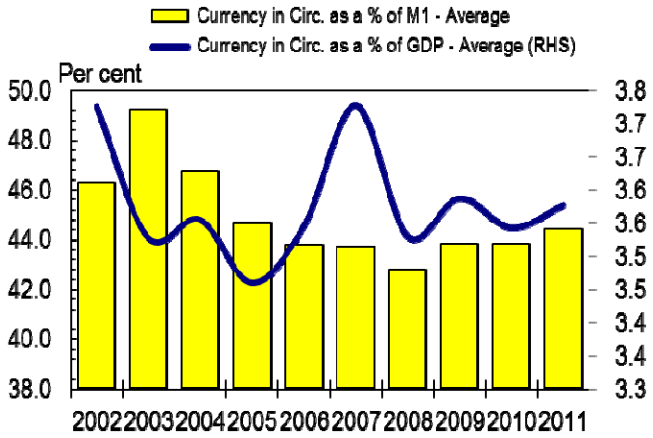


Figure 6.2 Cheque inter-bank volumes and values

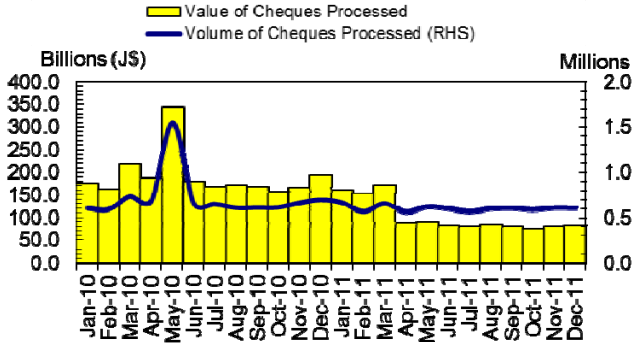
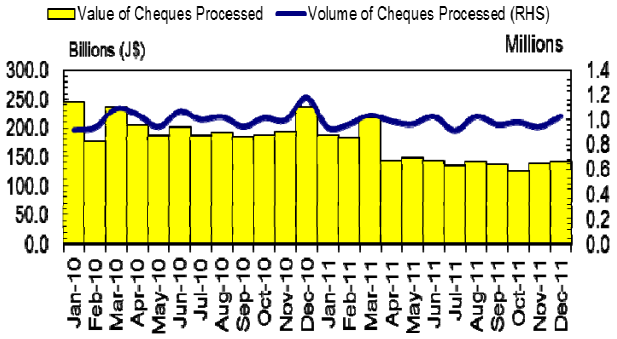
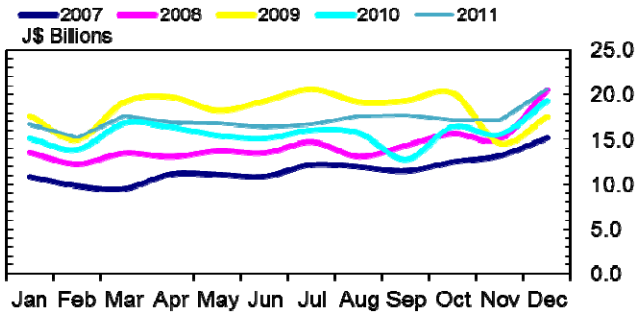


Figure 6.3 Cheque intra-bank volumes and values



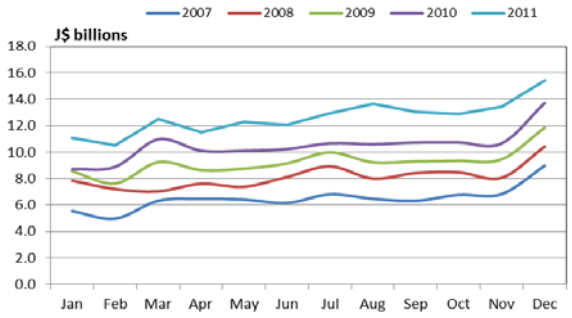
Source: JETS

Figure 6.4 ABM values



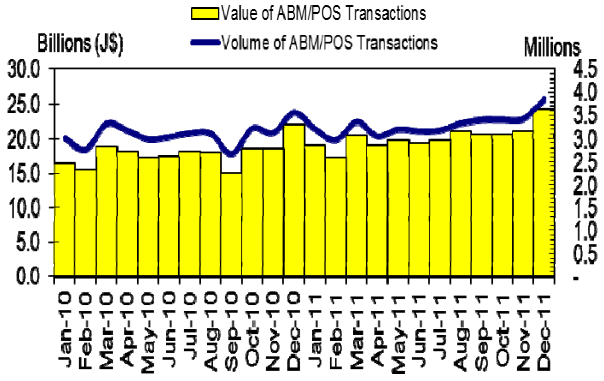
Source: JETS

Figure 6.5 POS values



Source: JETS

Figure 6.6 ABM/POS intra-bank volumes and values



Source: JETS

Concurrently, growth in average volume and value of transactions by cheque declined substantially during the review period. Average monthly volume and value of transactions by cheque fell by 8.5 per cent and 34.8 per cent to 1.6 million and $255.8 billion, respectively. In addition, there was a decline in the proportion of inter-bank cheque payments to 52.0 per cent at end-2011 relative to 57.0 per cent at end-2010. This decline largely reflected the impact of the implementation of the ACH value threshold on 01 April 2011, which resulted in a higher level of payment system safety during the year (see **Figure 6.2** and **Figure 6.3**).[1] Furthermore, the volume and value of proprietary or intra-bank cheque payments were higher relative to inter-bank cheque payments for 2011. However, the average size of intra-bank cheque payments ($156 079.00) was lower than the average size for inter-bank cheque payments ($169 204.00) for the review period.

[1] Effective April 1, 2011, the BOJ implemented a large value threshold for the ACH, whereby transactions $5 million and above are to be cleared via the RTGS system instead of through the ACH. Furthermore, failure of each bank to reduce its large value transactions by 50.0 per cent during 2011 would result in a penalty of $5 000.0 for each transaction of this value which is processed through the ACH.

6.3 Electronic Payment Instruments

During 2011, average monthly ABM and POS values and volumes increased by 13.7 per cent and 6.1 per cent to $29.8 billion and 5.0 billion, respectively. This performance compared favorably to respective monthly declines in values and volumes of 5.1 per cent and 12.0 per cent for 2010, but remained below growth of 22.6 per cent and 21.9 per cent, respectively, for 2009. The stronger performance during 2011 is reflective of improvement in real wages and sustained growth in net remittance inflows since 2010. Real wages grew by 1.5 per cent in 2011 relative to a decline of 12.3 per cent in 2010. At the same time, net remittance flows increased by 6.3 per cent following growth of 6.8 per cent for 2010.[2]

Regarding ABM transactions, average monthly ABM values increased by 9.5 per cent for 2011 to $17.2 billion relative to a decline of 14.5 per cent for 2010 (see **Figure 6.4**). However, average monthly ABM volumes declined by 4.4 per cent following a decline of 18.8 per cent in 2010. Conversely, average monthly POS values grew by a faster rate of 20.0 per cent for 2011 to $12.6 billion compared to growth of 13.5 per cent in 2010 (see **Figure 6.5**). Similarly, average monthly POS volumes grew by 9.1 per cent during 2011 relative to growth of 3.9 per cent during 2010. In addition, regarding the performance of measures of payment system safety through these payments instruments, ABM and POS intra-bank value and volumes as a share of overall values and volumes remained roughly unchanged at respective values of 68.0 per cent and 65.0 per cent at end-2011 (see **Figure 6.6** and **Figure 6.7**).

During 2011, there was continued improvement in the values of US dollar-denominated credit card transactions using the internet. This was underpinned by the increased ease of making US dollar payments in the context of the continued stability in the foreign exchange market during 2011 (see **Figure 6.8**).

Figure 6.7 ABM/POS inter-bank volumes and

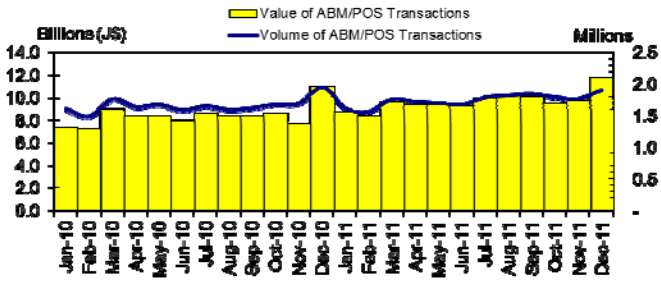


Figure 6.8 Internet card transactions – US dollar denominated

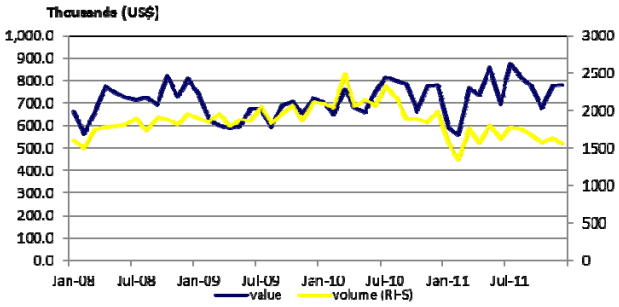
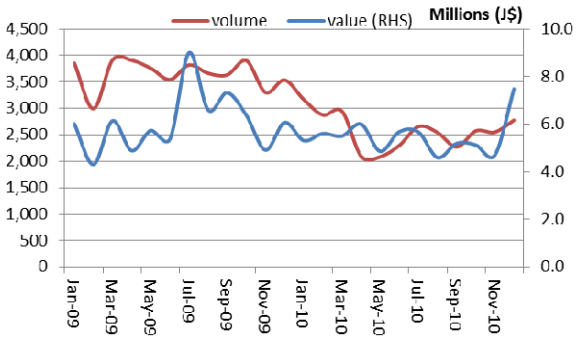


Figure 6.9 Internet Credit Card Transactions – Jamaica Dollar denominated



[2] Reflects employee average real earnings per week based on all sectors.

Figure 6.10 Number of ABM and POS terminals

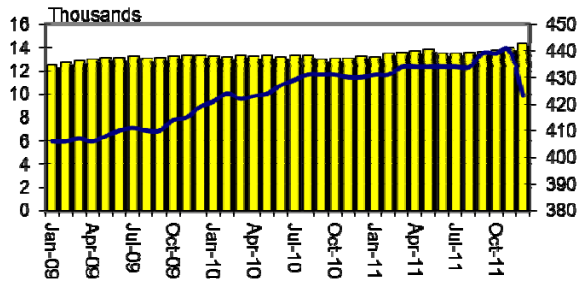


Figure 6.11 Debit and credit cards in circulation

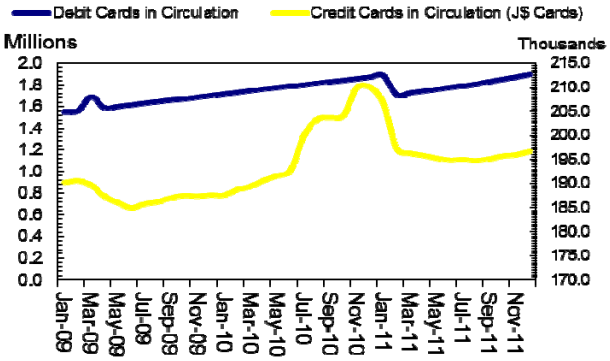
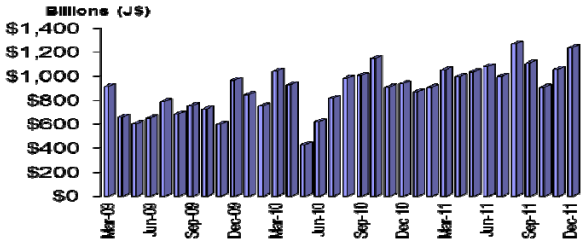


Figure 6.12 RTGS monthly transaction values



The number of ABM terminals in operation by commercial banks declined to 423 at end-2011 relative to 430 at end-2010. In addition, during the year, the number of terminals decommissioned totalled 38 exceeding the 31 terminals installed during the period. There were also 14 336 POS terminals in operation by commercial banks at end-2011 relative to 13 233 POS terminals in operation at end-2010 (see **Figure 6.10**).

A comparative analysis of payment systems statistics in Jamaica relative to selected Latin American and Caribbean economies was done to ascertain the degree of access to AMB and POS instruments. AMB and POS outreach per 1000 sq. km for Jamaica was relatively high compared to the other territories while deposits as a share of GDP was among the lowest, which is indicative of a lower savings rate for the country (see **Table 6.1**).[3] Savings data for Jamaica also showed the lowest number of deposit accounts per 1000 adults and that average deposit account value as a share of per capita income remained below values for all Latin American countries examined, except for Colombia.[4] A further implication of this is reflected to some extent in the relatively low loans value as a share of GDP, which is indicative of a relatively lower role of loans in financing economic activity for Jamaica.

Regarding cards in circulation, Jamaica Dollar denominated debit cards increased steadily during 2011 to approximately 1.89 million at the close of the year from 1.87 million at end-2010 (see **Figure 6.11**). However, credit cards in circulation declined to 196 671 at end-2011 from 209 974 at end-2010. At the same time, credit card receivables of DTIs increased marginally by 1.4 per cent to J$20 607.2 million at end-2011 relative to J$20 327.4 million at end-2010.

[3] Countries were chosen based on data availability.

[4] Data on accounts per 1000 adults, average account value as a share of per capital income and POS outreach was unavailable for the other Caribbean economies which were examined.

6.4 Large Value Transfer System

During 2011, there were substantial increases in activities in the JamClear systems (JamClear-RTGS and JamClear CSD). In particular, the total value of RTGS transactions was $12 500.0 billion, reflecting a significant increase of 20.2 per cent relative to 2010 (see **Figure 6.12**).[5] In addition, RTGS volumes totalled 170 600 for 2011, increasing by 36.4 per cent relative to 2010 (see **Figure 6.13**). However, during the review period, the average RTGS credit transfer totalled $73.3 million, 11.9 per cent below the average RTGS credit transfer of $83.2 million for 2010. Nonetheless, transactions via the RTGS, as a proportion of total value of transactions in the RTGS and Automated Clearing House (ACH) combined, increased to 91.0 per cent for 2011 relative to 82.0 per cent for 2010. This was indicative of lower payment system credit risk given that the RTGS is based on real time settlement versus the deferred net settlement of the ACH.

Average monthly value and volume of CSD transactions increased significantly to $1 804.0 billion and 17 012, respectively, for 2011 from respective values and volumes of $1 234.0 billion and 12 427 during 2010 (see **Figure 6.16**). Regarding transactions processed in the JamClear-CSD during 2011, GOJ fixed rate (FR) notes continued to be the most liquid securities in terms of volumes traded.[6] Nonetheless, with the exception of February and August 2011, which are interest payment periods for GOJ Benchmark securities, volumes traded increased for GOJ VRB notes and declined for GOJ FR notes. The reduced liquidity as it relates to GOJ FR securities could have been indicative of increased uncertainty relating to the delays in quarterly reviews of Jamaica's medium-term economic programme with the IMF. In terms of transaction size, for most months, the FR USD notes accounted for the largest values traded during the year.

Figure 6.13 RTGS monthly transaction volumes

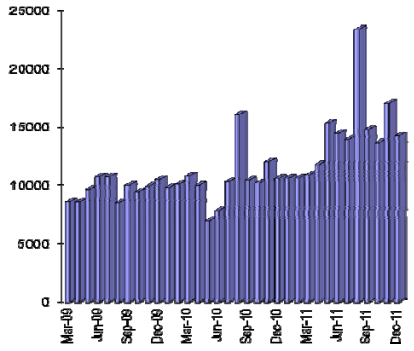


Figure 6.14 Volumes traded by instrument type

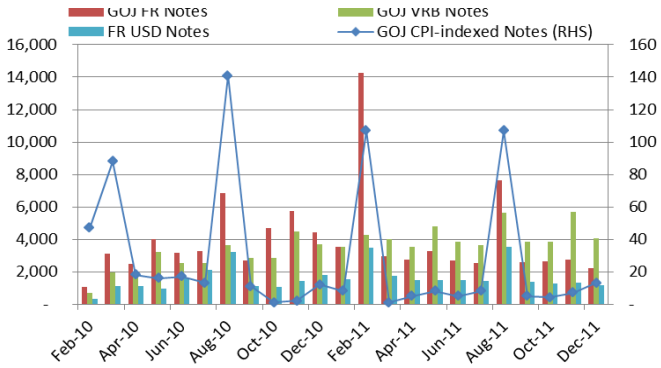
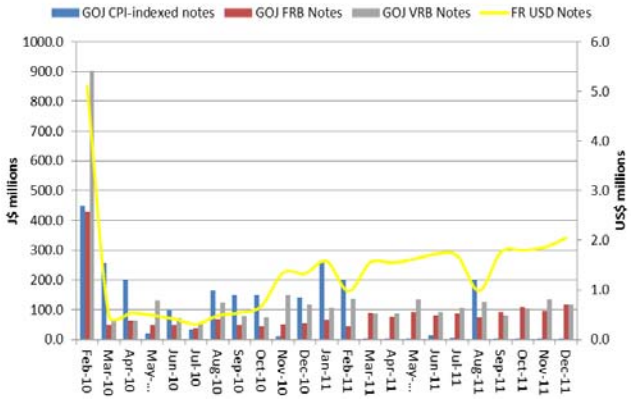


Figure 6.15 Transaction size of trades by instrument type



[5] The RTGS system was implemented on February 27, 2009.

[6] Transactions processed in the JamClear-CSD include a wide range of transaction types including repurchase and reverse repurchase transactions, pledges and primary issues.

Figure 6.16 CSD monthly transaction volumes

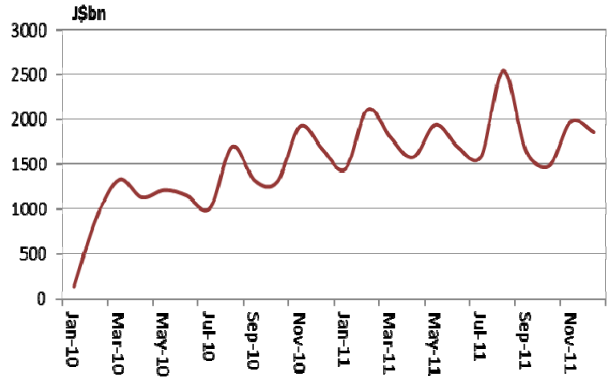


Figure 6.17 Share of BOJ intraday repos (values) demanded by four of fifteen institutions during 2010 & 2011

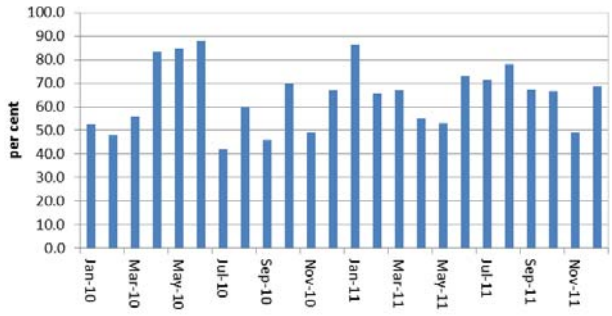
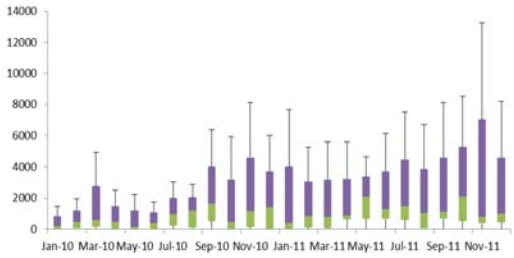


Figure 6.18 BOJ intraday repo facility average monthly transaction values across institutions



The use of the intra-day repo facility provided by the BOJ increased by 46.1 per cent during 2011. The Bank's provision of intra-day repos totalled $543 590.00 billion at end-2011 relative to $371 984.00 billion at end-2010 and was concentrated mainly in the same four institutions.7 Of the fifteen participants utilizing the facility, the percentage of funds demanded by four institutions remained well over 50.0 per cent during most of the review period and may be indicative of possible sources of systemic payment system risks (see **Figure 6.17**). Similar to 2010, the median size of funds demanded by institutions was higher in the second half of the year, which may have been influenced by greater seasonal demands for funds during this period. Funds demanded during the second half of the year totalled $339 638.0 billion relative to a total of $203 952.0 billion up to end-June 2011 (see **Figure 6.18**).

Based on monthly RTGS transaction values, the bulk of funds demanded and supplied were mainly concentrated mainly within three institutions during 2011. The median percentage of funds demanded and supplied also remained at low levels of below 0.1 per cent during most of the year (see **Figures 6.19** and **6.20**). This degree of concentration has the potential to trigger payment system disruptions and jeopardize payment system safety.

[7] Access to the intra-day 'Auto Repo' facility was offered by the Bank starting in July 2009.

Furthermore, the Herfindahl index of payment activity averaged 0.19, a marginal decline relative to the previous year, but nonetheless supported the notion of a fairly strong degree of concentration (see **Figure 6.21**).[8] An analysis of the Risk Index for payment system concentration also showed that payment concentration remained high for the review year.[9] The Index values for the two most active banks increased to an average of 29.6 per cent during 2011 relative to an average of 26.6 per cent during 2010. The average Risk Index value for the remaining banks increased to an average of 3.0 per cent for 2011 relative to an average of 2.8 per cent for 2010 (see **Figure 6.22)**. Similar to 2010, inter-quartile ranges show that most institutions were low net demanders and suppliers of funds.

Figure 6.19 Percentage net demand for funds based on RTGS average monthly transaction values across institutions

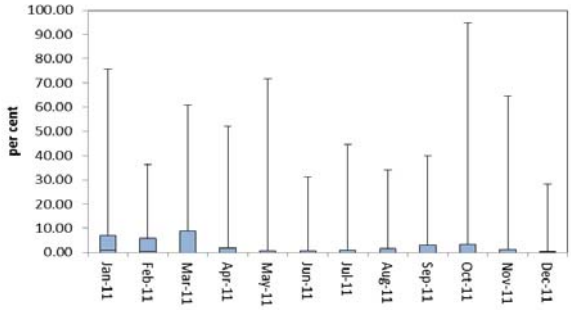


Figure 6.20 Percentage net supply of funds based on RTGS average monthly transaction values across institutions

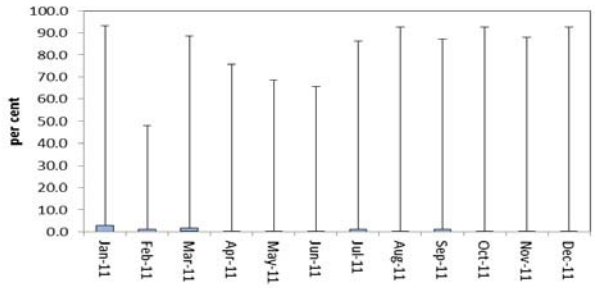
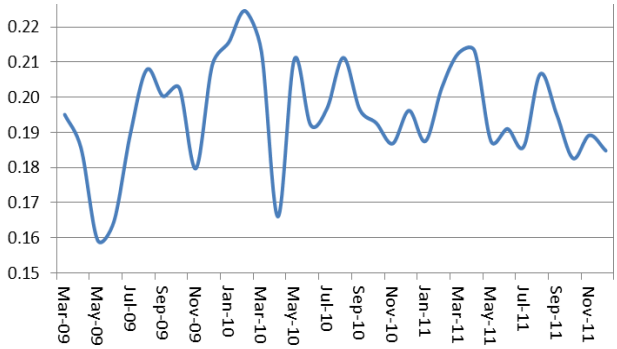


Figure 6.21 Herfindahl index of payment concentration



[8] The Herfindahl index is computed as $HI_{payments} = \sum_{Banks} \left(\frac{Bank\ i\ Payments}{Total\ Payments}\right)^2$, where if the Index is equally divided between N participants, then the Herfindahl measure of concentration equals 1/N.

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

Figure 6.22 Risk index of payment concentration

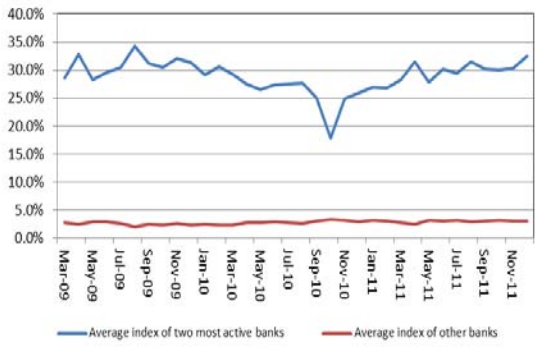
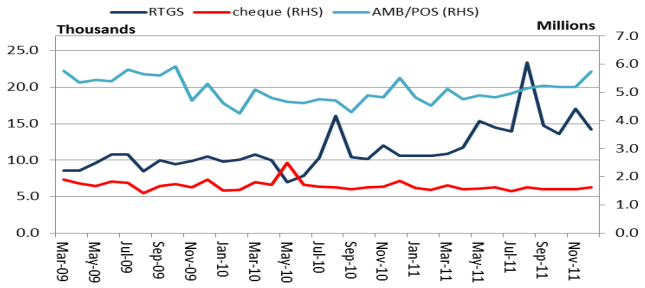
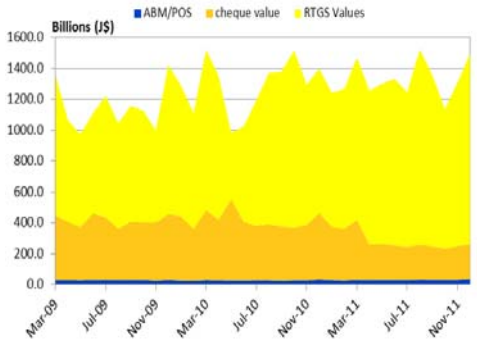


Figure 6.23 Volumes of transactions by payment instruments



Source: JETS

Figure 6.24 Values of transactions by payment instruments



6.5 Traditional Versus Electronic Means of Payment

During 2011, ABM and POS were the dominant means of payment in terms of volumes and ranked second in terms of values when compared to ABM and POS and RTGS transactions during 2011 (see **Figures 6.23** and **6.24**). More specifically, for the review period, transaction values for cheques, ABM and POS and RTGS totaled J$3 069.0 billion, J$358.0 billion and J$12, 500 billion while transaction volumes totaled 60.5 million, 19.0 million and 170 600, respectively.

Table 6.1

Retail Payment Statistics /1	Caribbean			Latin America		
	Jamaica /2	**Barbados**	**Guyana**	**Colombia**	**Brazil**	**Peru**
Commercial Banks						
Deposits						
Accounts per 1000 adults	749.7	-	-	1267.4	1065.4	783.4
Value (% of GDP)	31.6	109.2	55.0	26.0	35.6	26.8
Avg. account value (% income per capita)	42.1	-	-	29.1	45.3	49.4
Loans						
Accounts per 1000 adults	131.8	-	-	469.8	533.5	317.2
Value (% of GDP)	21.0	73.3	24.3	24.6	30.9	24.1
Avg. account value (% income per capita)	159.3	-	-	74.5	78.6	109.5
Outreach						
Branches per 100,000 adults	4.1	-	6.3	14.3	12.7	7.3
Branches per 1000 sq. km.	10.2	97.7	0.2	4.0	2.1	1.1
ATMs per 100,000 adults	15.6	-	14.0	29.6	112.1	22.3
ATMs per 1000 sq. km.	39.1	193.0	0.4	8.4	18.7	3.5
POS per 100,000 adults	529.1	-	-	441.1	2247.4	54.0
POS per 1,000 sq. km.	1323.7	-	-	124.7	375.6	8.4
Broad money (% GDP)	36.5	151.8	62.7	35.7	65.9	32.7

1/Source: Bank of Jamaica, STATIN, IMF, the World Bank and the Consultative Group to Assist the Poor (CGAP).

2/ Figures for Jamaica as at end-2011 and information for other countries based on 2010 data. In addition, data on broad money as a share of GDP for Barbados is based on 2009 data.

Glossary

Asset Utilization	This is a ratio which reflects the overall yield on earning assets.
Automated Clearing House	A facility that computes the payment obligations of participants, vis-à-vis each other based on payment messages transferred over an electronic system.
Central Securities Depository	An institution which provides the service of holding securities and facilitating the processing of securities transactions in a book entry (electronic) form.
Certificate of Participation	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.
Concentration Risk	The risk associated with the possibility that any single exposure produces losses large enough to adversely affect an institution's ability to carry out their core operations.
Consumer Confidence Index	An indicator of consumers' sentiments regarding their current situation and expectations of the future.
Credit Rating	A rating assigned to a borrower, which may be alphabetic or numerical, which indicates the probability associated with the party paying back a loan.

Credit Risk	The risk that a counterparty will be unable to settle payment of all obligations when due or in the future.
Deferred Net Settlement	The settlement of transfer orders netted at designated times between or among counterparties in order to economize on the number and value of transactions.
Delivery versus Payment	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.
Disposable Income	The remaining income after taxes has been paid which is available for spending and saving.
Financial Conglomerates	Financial institutions under common ownership which undertake a wide range of activities such as banking, stocking broking, insurance and fund management.
Financial Intermediation	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.
Fiscal Deficit	The excess of government expenditure over revenue for a given period of time.
Foreign Exchange Risk	The risk of potential losses which arise from adverse movements in the exchange rate incurred by an institution holding foreign currency-denominated instruments.

Funds Under Management/ Managed Funds	The management of various forms of client investments by a financial institution.
Gap Ratio	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.
Hedging	Strategy designed to reduce investment risk or financial risk. For example, taking positions that offset each other in case of market price movements.
Interest Margin	The dollar amount of interest earned on assets (interest income) minus the dollar amount of interest paid on liabilities (interest expense), expressed as a percent of total assets.
Interest Rate Risk	The risk associated with potential losses incurred on various financial instruments due to interest rate movements.
Intraday Credit	Credit extended to a payment system participant that is to be repaid within the same day.
Large Value Transfer System	A payment system designated for the transfer of large value and time-critical funds.
Liquid Ratio	The ratio of average prescribed assets to average prescribed liabilities.
Liquidity Risk	The risk that a counterparty will be unable to settle payment of all obligations when due.
Net Open Position	The difference between long positions and short positions in various financial instruments.
Non-Performing Loans	Loans whose payments of interest and principal are past due by 90 days or more.
Off-Balance Sheet Items	Contingent assets and debts that are not recorded on the balance sheet of a company. They are usually note worthy as these items could significantly affect profitability if realized.

Payment System	A payment system consist of the mechanisms - including payment instruments, institutions, procedures, and technologies - used to communicate information from payer to payee to settle payment obligations.
Payment Versus Payment	A mechanism which ensures that the transfer of payment occurs if and only if the final transfer of a counterparty payment is simultaneously received.
Preferences shares	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.
Prescribed Liabilities	These refer to a) deposit liabilities, b) reservable borrowings and c) interest accrued and payable on a) and b).
Real-Time Gross Settlement System	A gross settlement system in which payment transfers are settled continuously on a transaction-by-transaction basis at the time they are received (that is, in real-time).
Repurchase Agreement (Repo)	A contract between a seller and a buyer whereby the seller aggress to repurchase securities sold at an agreed price and at a stated time. Repos are used as a vehicle for money market investments as well as a monetary policy instrument of BOJ.
Retail Payment System	An interbank payment system designated for small value payments including cheques, direct debits, credit transfers, ABM and POS transactions.
Stress Test	A quantitative test to determine the loss exposure of an institution using assumptions of abnormal but plausible shocks to market conditions.

Systemic Risk	The risk of insolvency of a participant or a group of participants in a system due to spillover effects from the failure of another participant to honour its payment obligations in a timely fashion.
Value at Risk (VAR)	A metric or statistical technique that seeks to estimate the loss that an institution will not exceed over a specified time period with a given probability.