Bank of Jamaica

Financial Stability Report

2005

Volume 1

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Foreword

The *Financial Stability Report 2005* is the first publication to be issued by the Bank of Jamaica (BOJ) that addresses solely financial stability issues. The maintenance of financial stability by the BOJ primarily concerns the safeguard of conditions which ensures 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, non-financial 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 2005 represents the analysis of financial system trends, exposures and risks by the new Financial Stability Department which was established within the BOJ in 2003.[2] The strengthening of the Bank's financial stability objective is consistent with a recent international trend among central banks following the endemic and costly financial crises across the world between 1970 and 2000. Similar to many other central banks, the purpose of this annual report is to keep financial system participants and other stakeholders informed of their influence on the stability of the system and provide information that mitigates against the occurrence of a financial crisis.

i) The Report provides an assessment of the main financial developments, trends and vulnerabilities influencing the stability of

[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.

[2] Other central banks that publish financial stability reports include: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Euro Area, Estonia, Finland, France, Germany, Ghana, Greece, Hungary, Hong Kong SAR, Iceland, Indonesia, Ireland, Israel, Japan, Kenya, Korea, Latvia, Macao, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Russia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, UK (see 'How Do Central Banks Write on Financial Stability?' 2006, Martin Čihák, International Monetary Fund, Working Paper 06/163.

Jamaica's financial system during 2005. The Report covers:

i) an overall assessment of financial stability;
ii) domestic macro-financial developments;
iii) global financial developments;
iv) financial system developments;
v) banking system exposures;
vi) risk assessment of the banking sector; and payment system developments.

The Report also includes an appendix containing special articles, prepared by members of the Financial Stability Department, relating to current financial stability issues.

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

1. Financial Stability Overview

Macroeconomic Environment

The macroeconomic conditions influencing the financial system were broadly favourable during 2005. The positive financial environment was underpinned by responsive monetary and fiscal policies despite the impact of significant exogenous shocks. In general, financial conditions improved relative to 2004. Improvements in the financial environment during 2005 were reflected *inter alia* in Gross Domestic Product (GDP) growth of 1.6 per cent relative to 0.9 per cent in 2004 and lower six-month Treasury bill rate of 13.55 per cent compared to 14.94 per cent at end 2004. Supporting these developments, weighted average loan rates in the banking sector declined to 17.08 per cent relative to 17.72 in 2004, the real growth rate of loans rose to 1.1 per cent compared to 0.6 per cent in 2004 and capital adequacy ratios in the banking sector moved further above the regulatory minimum requirement compared to the previous year.

During 2005, the BOJ effected three interest rate reductions. In spite of these reductions, the Bank was able to preserve relative stability in the foreign exchange and bond markets as well as increase the level of the country's net international reserves (NIR) by US$ 228.9 million to US$2 087.4 million at end 2005 (primarily reflecting increased market purchases). Headline inflation declined to 12.9 per cent from 13.7 per cent the previous year.

Fiscal performance was reasonable during 2005. Positive developments for the year included notable declines in the Government of Jamaica (GOJ) fiscal deficit, debt to GDP ratio and the ratio of GOJ interest payments to GDP. At the same time, the GOJ was able to lengthen the maturity profile on both domestic and global debt issues and reduce the foreign exchange exposure of their domestic debt portfolio. The GOJ successfully issued two Eurobonds during 2005 at historically low yields and longer tenors.

In spite of the generally favourable macroeconomic conditions, the economy was challenged during 2005 by a number of exogenous shocks. Primary among these were the impact of two hurricanes which adversely affected inflation as well as inflation expectations and output, specifically from agriculture and tourism. Another negative development in the year was the significant increase of approximately 36.0 per cent in the average price of international crude oil. External supply constraints in the face of rising global petrol consumption, natural disasters and recurring geopolitical concerns have been the main sources of rising and volatile oil prices throughout the year. This oil price shock influenced a widening of the current account deficit of the balance of payments to US$1 078.7 million or 11.5 per cent of GDP from 5.8 per cent in 2004.

Domestic Financial System

The banking sector was broadly stable during 2005. Continued positive performance in terms of profitability, capital adequacy as well as other critical macro-prudential indicators reflected the resilience of the banking sector to negative shocks.

Additionally, the banking sector's exposure to market and credit risks remained within tolerable limits and did not pose a threat to financial stability in 2005.

The interest rate repricing profile of banking sector assets lengthened relative to liabilities reflecting increased levels of interest rate risk over 2005. The worsening repricing profile may have been related to the continued expectation of further reductions in interest rates by market participants. However, stress testing exercises conducted by the BOJ revealed that the interest rate risk exposure would not have threatened the stability of the banking sector in the event of significant interest rate shocks in 2005.

On balance, banking sector liquidity continued to be adequate as reflected in the continued buoyancy of the ratio of liquid assets to total assets. Additionally, banks overall did not rely too extensively on interbank funding, typically regarded as the most volatile source of financing. However, the maturity gap ratio for the banking sector increased over 2005 relative to 2004 posing increased liquidity risk in the face of a potential shock to domestic interest rates.

Banking sector's exchange rate exposure declined over 2005 in spite of increased depreciation in the value of the Jamaica Dollar vis-à-vis the US dollar in the latter half of 2005. Banks generally reduced net open positions in foreign currencies and reduced the duration of foreign denominated securities of their portfolios. However, the negative maturity gap positions, in terms of US dollar assets and liabilities maturing in less than one year, increased over 2005. Should banks need to refinance maturing US dollar liabilities, in a context of rising US interest rates in the future, this would have an adverse liquidity impact on the sector.

During 2005, the banking sector continued to increase profitability through the loan portfolio in a context of declining returns on local securities' holdings. Banking institutions embarked on aggressive loan marketing strategies, particularly by offering increased lending facilities to consumers. This may have been due to lower perceived risks in lending to the household sector, given the trend improvements in consumer loan portfolio quality. This is seen as a positive development as it will encourage banks to focus more on their traditional financial intermediation role through further loan expansion.

The general improvement in the ratio of non-performing loans (NPLs) to total loans, adequate levels of loan-loss provisions and improvements in the diversification of loans to corporations underscored the improvement in the credit quality of the banking sector during 2005.

Of concern, however, is the rising proportion of loans to the household sector in proportion to the entire loan portfolio of the banking system. Further increases in the share of consumer loans in disposable income could undermine the sector's capacity to absorb income shocks which would increase the banking sector's vulnerability to household debt default.

Moreover, to the extent that further interest rate increases in developed economies could lead to domestic monetary tightening, householders' debt servicing capacity may be eroded.

In 2005, recurrent weather related shocks and steep oil price increases in the second half of the year, dampened consumer demand, increased input costs and eroded corporate sector profitability. Nonetheless, the ratio of non-performing corporate sector loans to total corporate sector loans from the banking sector remained low.

The expansion of the financial sector during 2005 can be largely attributed to the operations of securities dealers. Funds under management in the securities industry have increased rapidly in recent years and surpassed the level of bank deposits in 2003. This significant development further spurred the growth of non-bank financial institutions, resulting in increased revenue. Despite the impact of hurricane damage on costs, insurance companies also performed credibly during 2005, in terms of growth in gross premiums and overall profitability.

Outlook

Given the Jamaican economy's susceptibility to external shocks, including hurricanes, disruptions to market conditions can arise quickly. However, except in cases of major catastrophe, such events should have no meaningful impact on the stability of the financial system given its current health.

Continued improvements in macroeconomic performance should engender further benefits for Government in improving fiscal performance. Strong containment in Government's borrowing requirement should also bolster further bank credit to the non-financial corporate sector. Government's ability to meet its fiscal targets will also engender stronger investor confidence in local financial markets.

The major risks to financial stability for 2006 are primarily from the global commodity and financial markets. Domestic economic growth and inflation targets were adversely affected by souring oil prices to unprecedented levels in 2005 which drove up both production and consumption costs. Some international observers predict that oil prices may increase to even higher levels over the medium term as a result of projected global expansion in excess demand for this commodity. This scenario would have adverse consequences for both international and domestic inflation and economic growth.

The persistence of large fiscal and current account deficits in the US, reflecting widening saving-investment imbalances globally and internally to the US, also pose a significant risk for domestic foreign exchange and bond markets during 2006. The increasing likelihood of an unravelling of these imbalances could lead to a sharp correction in the value of the US dollar as well as a significant increase in US interest rates. The implications of this scenario on international financial markets would be stark, particularly for emerging countries, as further monetary tightening in the US would likely result in a global retreat from

emerging market bonds and equities. This might be accompanied by a rise in domestic interest rates, possibly reversing recent positive trends in economic growth, fiscal performance and sovereign debt management, as well as asset price stability. Additionally, mark-to-market financial losses would occur given the significant bond portfolio risk exposures of domestic financial institutions, particularly securities dealers and institutional investors, to fluctuations in GOJ global bond prices. Substantial margin calls would increase the US currency demand by institutions that have GOJ bond margin obligations with international financial investment firms, placing increasing pressure by domestic foreign currency dealers on the foreign exchange market.

2. Domestic Macro-Financial Developments

2.1. Overview

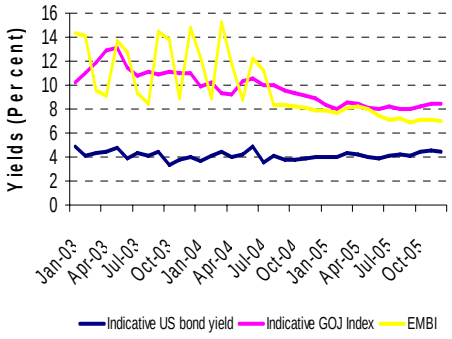
Jamaica's financial system remained robust to macroeconomic shocks throughout 2005. Despite the continued increase in oil prices, rising interest rates in the United States, adverse weather disturbances and some amount of slippage in fiscal targets, indicators suggest that the health of the financial sector was quite strong throughout the year. Domestic macroeconomic conditions improved, evidenced by acceleration in output, lower inflation rates and reductions in interest rates.

2.2 General Economic Performance

Stability in domestic financial markets was facilitated by continued confidence in the Jamaican economy

International investor confidence in the Jamaican economy was maintained during 2005 as evidenced by the moderate decline in yields on the country's Eurobonds in comparison with the Emerging Market Bond Index (EMBI) (see **Figure 2.1**).

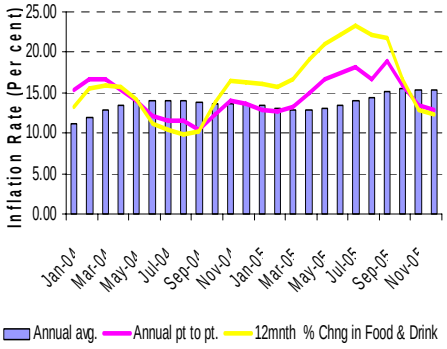
Figure 2.1
Comparative Bond Yields



This confidence in the economy provided a positive backdrop for the stability of the financial sector by reducing the likelihood of serious volatility in domestic financial markets. A perceived reduction in the risk of GOJ global bonds was also reflected in the ability of the GOJ to successfully issue a US$300 million 10-year Eurobond during May 2005, at a coupon rate of 9.0 per cent, a historically low rate for the country at the time.

Macroeconomic conditions improved, relative to 2004, with an increase in GDP growth and a reduction in the headline inflation rate (see **Figure 2.2**). [3] This provided an environment in which institutions found it profitable to continue placing more resources into providing loans relative to investing in financial securities. Additionally, the improved environment strengthened the quality of institutions' loan portfolios as the ratio of non- performing loans to gross loans declined (see **Section 4**).

Figure 2.2
Domestic Inflation Rates



The improvement in macroeconomic conditions, in particular inflation, occurred despite various challenges especially increases in global oil prices (see **Figure 3.10**, *Global Financial Markets*). [4]

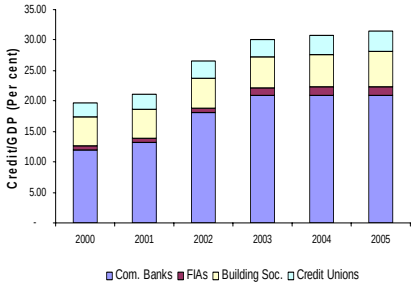
[3] See the Overview section of Bank of Jamaica Annual Report 2005.
[4] See the Prices and Production section of Bank of Jamaica Annual Report 2005, for a fulsome discussion of the factors affecting inflation and output growth.

2.3 Monetary Aggregates

The monetary base grew by 9.2 per cent for 2005, relative to growth of 11.2 per cent the previous year. Slower growth was reflected in the performance of both bank statutory reserves and the stock of currency. Deceleration in the growth of all categories of deposits affected the outturn for statutory reserves (see **Section 4**).

Given the reduction in interest rates during 2005, which served to reduce interest margins, deposit-taking institutions (DTIs) repositioned their asset portfolio composition more towards loans relative to fixed income instruments. In this context, credit increased during the year (see **Figure 2.3**). The shift in asset composition allowed the DTIs to improve their profitability despite the reduction in interest rates (see **Section 4.2.3**).

Figure 2.3
Domestic Credit to GDP by type of Institution



2.4 Balance of Payments (BOP)

Marked increase in current account deficit, partly reflecting higher oil prices.

Jamaica's current account deficit increased to 11.1 per cent of GDP at end 2005 relative to 5.8 per cent at end 2004 (see **Table 2.1**). [5]

This mainly reflected an expansion of US$636.8 million in the trade deficit, partly offset by improvements on the service and current transfers accounts at end 2005. [6]

Table 2.1
Jamaica's Balance of Payments

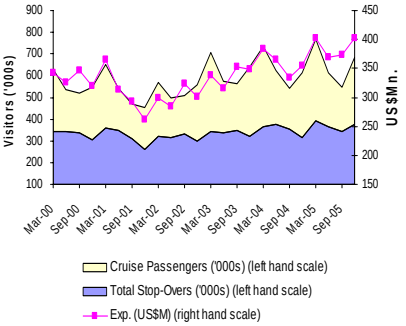
Jamaica's Balance of Payments					
	2003	2004	2005	Change	% Chng.
1. Current account	**-772.6**	**-509.4**	**-1078.7**	**-569.3**	**111.8**
% of GDP	-9.4	-5.8	-11.1	-5.3	
Goods Balance	-1942.6	-1944.5	-2581.3	-636.8	32.7
Exports	1385.6	1601.6	1664.3	62.7	3.9
Imports	3328.2	3546.1	4245.6	699.5	19.7
Net Services	552.3	571.7	600.1	28.4	5.0
Travel	1102.7	1151.5	1295.7	144.2	12.5
Income	-571.4	-582.7	-675.9	-93.2	16.0
Investment Income	-642.1	-667.2	-764.4	-97.2	14.6
Current Transfers	1189.1	1446.1	1578.4	132.3	9.1
Private	1083.9	1286.2	1441.4	155.2	12.1
2. Cap. & Fin. Account	**772.6**	**509.4**	**1078.7**	**569.3**	111.8
A. Capital Account	**0.1**	**2.2**	**-2.7**	**-4.9**	**-222.7**
B Financial Account	**772.5**	**507.2**	**1081.4**	**574.2**	**113.2**
Other official investment	-362.5	479.2	409.0	-70.2	-14.6
Other private Investment	702.9	721.6	901.3	179.7	24.9
Reserves (Net Change)	432.1	-693.6	-228.9	464.7	-67.0

* A minus in the net change in reserves represents and increase in the NIR.

Disruption to tourism arrivals during the latter half of 2005 led to increased volatility in foreign exchange markets.

The services account was positively affected by buoyancy in tourism revenue. An active hurricane season adversely affected visitor arrivals during the second half of 2005, leading to lower foreign exchange inflows and greater volatility in the market (see **Figure 2.4 & Figure 2.10**). Robust remittance flows continued to be a significant source of foreign currency inflows throughout 2005.

Figure 2.4
Jamaica's Tourism Performance

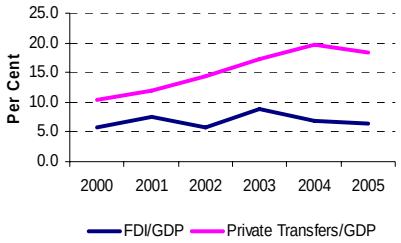


[5] This was in part due to higher fuel prices and increased construction activities, partly arising from foreign direct investment projects.

[6] See Balance of Payments Annual 2005 for developments in Jamaica's transactions with the rest of the world.

Foreign investors' continued confidence in the long term prospects of the economy was reflected in sustained net private capital investment, with foreign direct investment (FDI) flows into the country remaining in line with the strong levels recorded in 2004 (see **Figure 2. 5**).

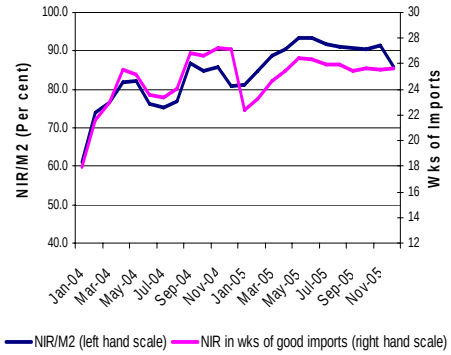
Figure 2.5
FDI and Private Transfers to GDP



Market confidence facilitates strong growth in NIR

Strong foreign currency inflows facilitated an increase of US$228.9 million in the country's net international reserves (NIR) during 2005. The robust levels of the NIR stock during the year, in terms of absolute value, its ratio to money supply and coverage of goods imports, contributed positively to the stability in domestic financial markets (see **Figure 2.6**).

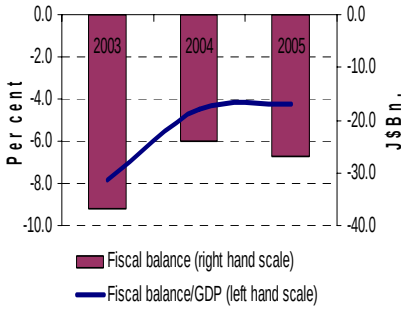
Figure 2.6
NIR Performance



2.5 Central Government Performance

A moderation in the growth of the debt stock occurred during 2005, partly due to a lower deficit, as a share of GDP, by Central Government, relative to 2004 (see **Figure 2.7**). In this context, banking sector exposure to public sector debt, as a share of total assets, increased by 1.0 percentage point during the year (see **Section 5.4**). The improved fiscal performance served to strengthen positive investor sentiment during the year.

Figure 2.7
Fiscal Balance to GDP Ratio



Central Government performance mainly reflected containment in expenditure, particularly interest expenditure (see **Figures 2.8 & 2.9**).

Figure 2.8
Comparison of Primary Balance & Interest Payments

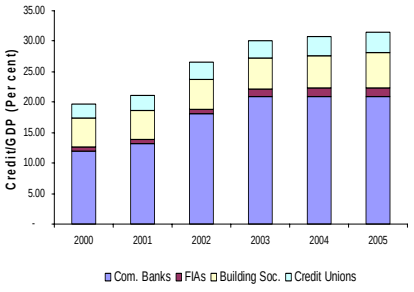
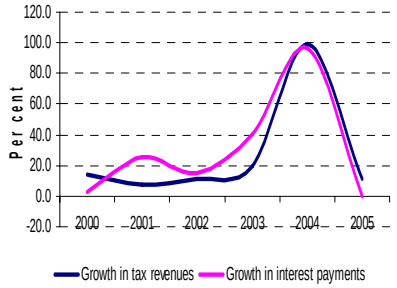


Figure 2.9
Comparison of Growth in Tax Revenues & Interest Payments



The lowering of interest expenditure for the calendar year was largely influenced by the downward adjustment on BOJ open market operation (OMO). These lower rates negatively impacted the profitability of the banking sector.

Demand for variable rate instruments increased during second half of 2005

The maturity profile of debt securities issued by Government was extended during the year. However, investors required a hedge in order to purchase long-term instruments and, as such, most securities issued with tenors over five years offered variable-rate coupons which served to reduce their interest rate risk exposure. The preference for instruments with relatively low interest rate risk increased during the latter half of 2005, in an environment of temporary spikes in inflation and instances of demand pressures in the foreign exchange market.

Overall, better fiscal performance and the lowering of the debt to GDP ratio would have improved external creditors' confidence in the ability of the Government to meet its debt obligations, lowering the likelihood of large downward adjustments in the value of external GOJ bonds.

2.6 Foreign Exchange Market

Foreign exchange market experiences increased volatility during latter half of 2005

Volatility in domestic foreign exchange market remained relatively low during 2005 Improvements in fiscal performance, robust NIR levels and prudent monetary policy adjustments supported the stability in the markets.

However, there was some instability in the foreign exchange market during the latter part of 2005, relative to the first half, in the context of temporary spikes in inflation and a fall-off in receipts from tourist arrivals (see **Figure 2.10 and Figure 2.11**). In spite of this development, the overall stability in the foreign exchange market for the year, reduced the relative attractiveness of foreign currency denominated assets and contributed to a slow down in the rate of growth in foreign currency deposits (see **page 29**).

Figure 2.10
Domestic: Foreign Exchange Rate

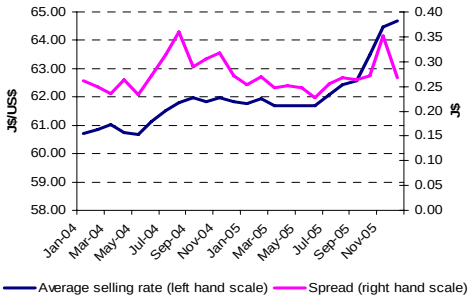
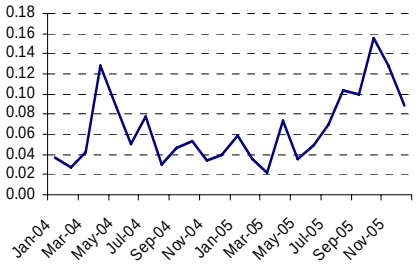


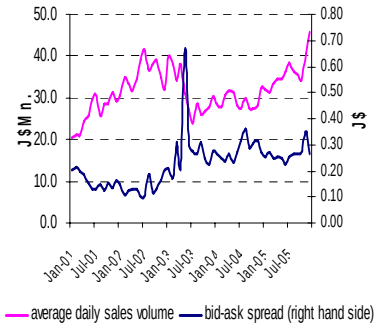
Figure 2.11
Monthly Standard deviation of Daily Changes in J$/US Exchange Rate



Stability in the foreign exchange market was supported by improvements in liquidity conditions. There was a narrowing in the market bid-ask spread towards the end of 2005 (see **Figure 2.12**). This narrowing was associated with increased trading volumes, indicating improvements in market depth.

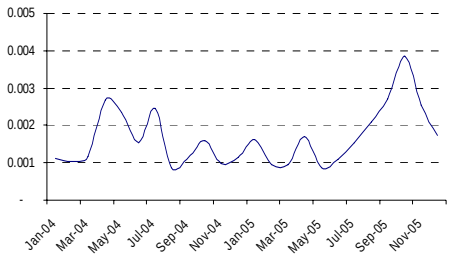
Foreign exchange market bid-ask spread declines throughout most of 2005

Figure 2.12
Bid – Ask Spreads & Average Daily Sales Volume -J$/US Exchange Rate



The Amihud index of foreign exchange market depth generally declined during the first half of the year, indicating improvements in market liquidity, but rose during the second half of the year reflecting pressures in the foreign exchange market (see **Figure 2.13**). [7,8]

Figure 2.13
Amihud Index of Foreign Exchange Market Depth (Average Daily)



The ratio of inter-dealer foreign exchange sales to sales to commercial clients increased in 2005 relative to 2004 (see **Figure 2.14**). This was most evident in the latter half of 2005 and coincided with the instability experienced in the market. Financial institutions repositioning their portfolios in response to narrowing interest rate differentials may have contributed to this occurrence. The contribution of foreign exchange gains to the profitability of DTI's decreased relative to the previous year (see **Section 4, pg30**).

Figure 2.14
Inter-Dealer to Commercial Client Foreign Exchange Sales

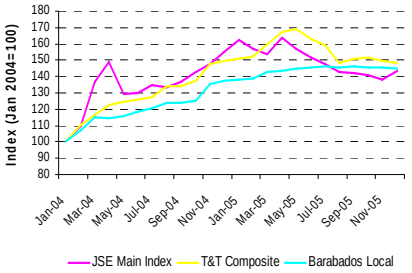
2.7 Stock Market

The main Jamaica Stock Exchange Index declined by 7.2 per cent during 2005 compared to an increase of 66.7 per cent in 2004 (see **Figure 2.15**).

[7] The Amihud index of market depth is measured by the daily change in asset prices divided by daily level of trading (turnover).

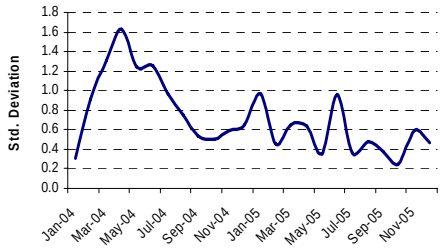
[8] Reductions in the index suggest daily volumes traded have a minimal impact on asset prices.

Figure 2.15
Regional Stock Exchange Indices



Volatility in the stock market declined during 2005 relative to 2004. Price fluctuations during the year were mainly due to the poor profit performance of many of the listed companies (see **Figure 2.16**).[9] Given the relatively small size of equity as a share of total investments, volatility in equity prices had little impact on the stability of the financial sector.

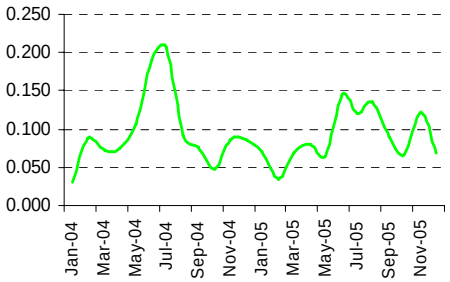
Figure 2.16
Monthly Standard Deviation of Daily Changes in Main JSE Index



Despite the negative developments which impacted the stock market, there was an improvement in the average Amihud index of stock market depth, relative to the levels in 2004 (see **Figure 2.17**). This decline in the index partly reflected a correction from the large increase that occurred during the middle of 2004.

[9] See section 5.3.2 for further details of developments in the domestic stock market.

Figure 2.17
Amihud Index of Stock Market Depth



2.8 Bond Market

The BOJ lowered interest rates on three occasions during the year. The rate on the BOJ's 365-day tenor declined by 190 basis points (bp) to 13.60 per cent. Furthermore, there was a reduction in the special deposit requirement for commercial banks and institutions licensed under the Financial Institutions Act (FIAs) from 5.0 per cent down to 1.0 per cent.[10] Investors' expectation of a more contractionary monetary policy stance in the United States beyond what was envisaged earlier in the year and some amount of instability in the foreign exchange market, mitigated against further declines in domestic interest rates during the latter half of the year.

BOJ successfully lowered interest rates during first half of year, despite narrowing interest rate differentials

During the latter half of 2005, there were declines on average in daily turnover ratios on the overnight, 30-day and 365-day open market operation (OMO) instruments (see **Figure 2.18**).[11] Additionally, there was relative stability in private money market

[10] See BOJ Annual 2005 for full details on developments within the domestic economy, including monetary policy actions.

[11] Due to the absence of secondary market trading information, daily turnover represents average daily issues on these instruments.

rates during 2005 (see **Figure 2.18 and Figure 2.19**). The stability in the domestic bond market facilitated the willingness of DTI's to increase their holdings of Jamaica Dollar securities (see **Section 4**).

Figure 2.18
Average Daily Turnover of O/N, 30-day and 365-day Instruments

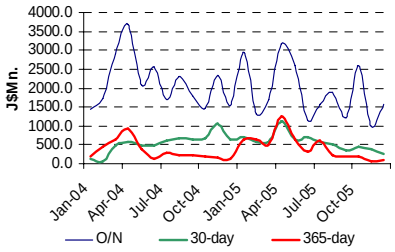
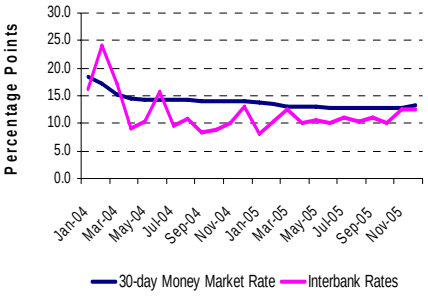


Figure 2.19
Private Money Market Rates



3. Global Financial Markets

3.1 Developments in Global Financial Markets

World economic growth continued at a strong pace in 2005 with an estimated rate of 4.8 per cent, relative to 5.3 per cent in 2004.[12] The growth rate for developed economies was 2.7 per cent while developing economies grew by 7.2 per cent. Among the developed regions, the United States (US) displayed the highest growth rate of 3.5 per cent in 2005 followed by Canada with 2.9 per cent (see **Figure 3.1**).

Investors' continued appetite for emerging market debt led to contraction in spreads.

Despite continued monetary tightening in the US and, to a lesser extent, the European Union (EU) during 2005, international demand for emerging market bonds continued to be strong (see **Figure 3.2**).

Additionally, increasing interest rates were not enough to cause declines in asset prices in some markets. Stock indices in selected developed economies recorded gains during the year, in a context of favourable global growth prospects (see **Figure 3.3**).

Figure 3.1
Growth Rates of Selected Developed Economies

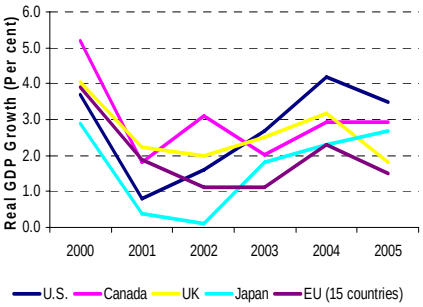


Figure 3.2
Policy Interest Rates of Selected Developed Countries

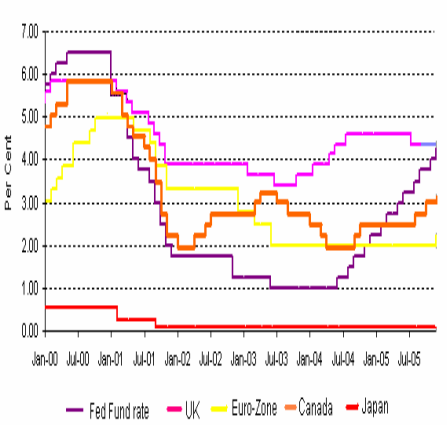
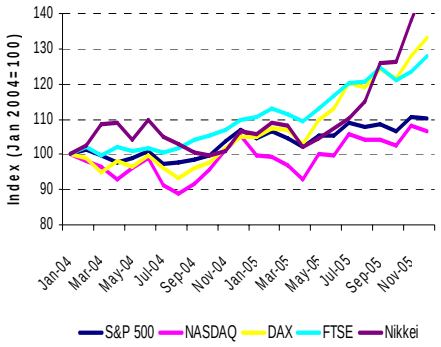


Figure 3.3
Stock Exchange Indices of Selected Developed Economies

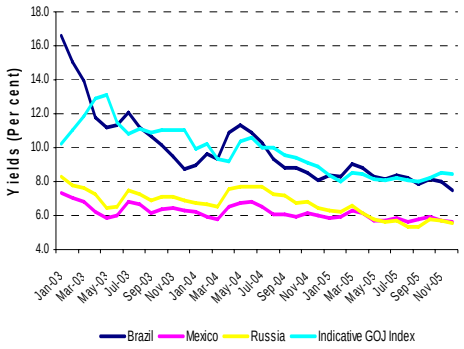


The positive outlook for the global economy provided a backdrop for the maintenance of sustained international investor confidence. This confidence facilitated a decline in the yields on emerging market bonds, as measured by the EMBI, resulting in the compression of the spread on emerging market sovereign bond yields vis-à-vis US bond yields relative to 2004 (see **Figure 3.4**).

Record low spreads on some emerging market bond yields vis a vis US bond yields

[12] "World Economic Outlook", April 2006 IMF

Figure 3.4
Sovereign Bond Yields



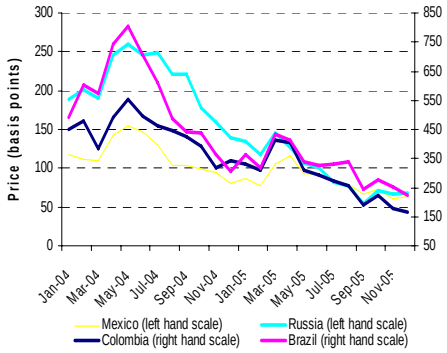
Spreads on some emerging market bonds actually declined to record lows during the September 2005 quarter, due to improved macroeconomic fundamentals in some countries and what has been phrased as "the search for yield" or "global liquidity glut".

Buoyant export earnings from oil rich economies and high savings rates in Asian countries led to greater demand for long-term investment instruments during 2005.[13] Limited investment opportunities existed in developed market bonds, as rates on long-term US Treasuries were only marginally higher than short-term US interest rates. As such, there was increased investor preference for emerging market debt instruments that contributed to the decline in yields on these instruments.

Strong decline in CDS prices over 2005

Credit default swaps (CDSs) on global bonds, which provide protection against sovereign default risk, were vigorously traded in the international market during 2005. Changes in market perception of a sovereign's probability of defaulting on its external debt can be inferred from fluctuations in CDS prices on the country's debt (see **Box 1**). During 2005, investors' perceived a measurable decline in the probability of default on emerging market external debt, evidenced by the decline in CDS prices (see **Figure 3.5).**[14]

Figure 3.5
Selected 5 Year Credit Default Swap Prices



3.2 International Interest Rates

Monetary policy tightening in developed economies during 2005

The US Federal Reserve continued to increase short term rates during 2005, from the historically low levels which existed in 2004 (see **Figure 3.2**). These actions took place in the context of continued expansion in the US economy, partly due to strong growth in housing markets, and inflationary pressures from escalating energy prices (see **Figure 3.6**). The US economy displayed robust growth during the first three quarters of the year despite major devastation to

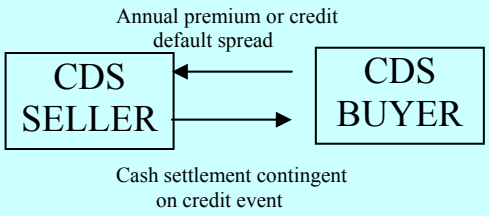
[13] See, for example, Global Financial Stability Report, April 2006, IMF.

[14] As with other forms of insurance, the price of the CDS declines with the perceived risk of the sovereign.

Box 1. What is a credit default swap?

A credit derivative enables financial institutions to trade their credit risk on an asset, which relates to the possibility that a counterparty will fail to fully meet contractual obligations. The payoff from a credit derivative depends on the credit quality of the third-party company or sovereign entity. A credit default swap (CDS) is the most common type of credit derivative. The buyer of a CDS acquires protection against a "credit event" (eg default, apprehended default, moratorium, debt restructure, credit-rating downgrade or anything else agreed upon within the bounds of a materiality clause) of a "reference entity" (eg a third-party company or sovereign). In return for this insurance, the buyer pays a "credit default spread" (ie premium or contingent payment), typically expressed in basis points on the notional principal of the swap contract, for the life of the contract or until default (see Chart 1). A CDS is normally sold over-the-counter for significant sums ranging in millions of U.S. dollars. This type of credit derivative generally matures between one to ten years, and sometimes beyond.

Chart 1. A Credit Default Swap Transaction



If the reference entity defaults (or there is a fall in the price of the bond or "reference asset" below the predetermined "reference price") before the CDS matures, the institution sells the reference asset, to the seller of the CDS in exchange for a cash settlement. This payment, which is contingent on the credit event occurring, is typically estimated as the fall in the price of the reference asset below par after the credit event (essentially the difference between market value directly after the default and par value) and does not require the exchange of the reference asset. Alternatively, the settlement of the CDS after the credit event sometimes entails the physical delivery of the reference asset in exchange for a payment of its face value. In this case, the CDS seller now owns the reference assets and has recourse to the reference entity to try and recover the par value of the asset.

An example of a typical CDS transaction is as follows. Consider a financial institution that has holdings of sovereign bonds. The institution is concerned about the probability of an adverse credit event affecting the value of the bonds and therefore purchases a CDS with a maturity of 5 years on its holdings of sovereign bonds from an investor in order to hedge a possible credit event. The institution pays 100 bps per annum on a notional principal of the CDS of US$ 10.0 million. If there is no credit event in the 5 years, then the financial institution will receive nothing but would have paid out US$100,000 times 5. However, in the case of a credit event then the CDS seller must pay the financial institution a predetermined value.[15] Thus, if

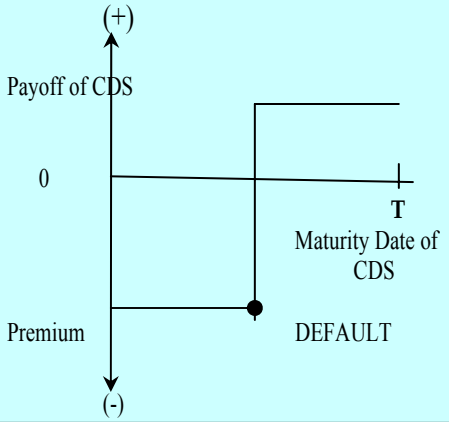
[15] The CDS usually stipulates that the buyer pay a final accrual payment when a credit event occurs (i.e another premium payment is made shortly after the credit event).

after the credit event the price of the bond falls to 60.0 per cent of par, then the domestic financial institution collects 40.0 per cent of par from the CDS seller and still gets the 60 per cent of par from the market.

As mentioned in the previous section, there are two broad types of payment forms depending on the specifications of the contract. In the case of a physical settlement, the financial institution has the option to sell the bonds to its counterparty at par value, if the credit event occurs. In the case of a cash settlement (ie a digital or binary option), the CDS seller pays out an amount of cash, usually calculated as the par value less the decline in the price of the bond below par at some pre-designated number of days (or months) after the credit event .

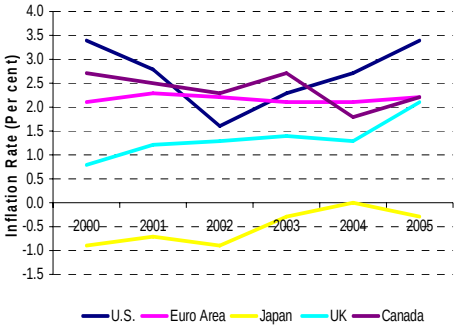
The diagram below (Chart 2) illustrates the payoff to the financial institution from holding a digital CDS.

Figure 2. Payoff Diagram to the Holder of a Digital Credit Default Swap:



the state of Louisiana from Hurricane Katrina in the September quarter. However, growth slowed markedly during the December quarter. Most economists consider the slowdown at the end of the year to be transient and expect growth to continue apace during 2006.[16]

Figure 3.6
Inflation Rates for Selected Developed Economies



Rising inflation rates in selected developed economies over 2005

Interest rate increases were also effected by the European Central Bank (ECB) during December, in light of continued inflationary pressures from energy prices and some amount of labour market inflexibility throughout the year. Of the major developed economies, the United Kingdom (UK) was the only country in which the monetary authorities reduced interest rates during the year.

The Bank of Japan maintained interest rates at zero despite signs that the country was on a path towards sustained economic growth after years of deflation.

3.3 International Currency Developments

Interest rate hikes support appreciation of US dollar against most major currencies

Interest rate hikes by the US Federal Reserve provided support for the value of the US dollar against most currencies during

[16] Higher housing prices in the US during 2005, facilitated by low mortgage rates, has bolstered consumer credit via mortgage refinancing and increased consumer wealth. This has supported increased consumer spending and economic growth in the US.

the year, except against the Canadian dollar (see **Figure 3.7**). The lowered differential between US interest rates and those obtaining in other economies helped to stimulate investor interest in US Treasuries and attracted the funds necessary to finance the country's expanding current account deficit (see **Figure3.8**).

Figure 3.7
Selected Major Economy Exchange Rates

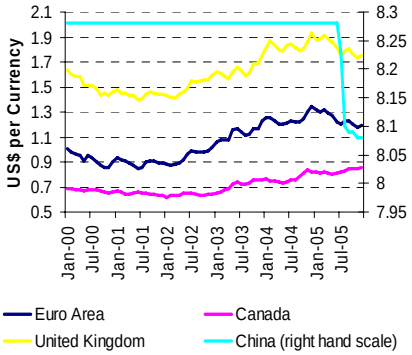
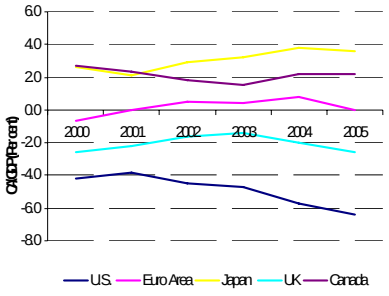


Figure 3.8
Current Account to GDP Ratios



China allows flexibility in exchange rate in 2005

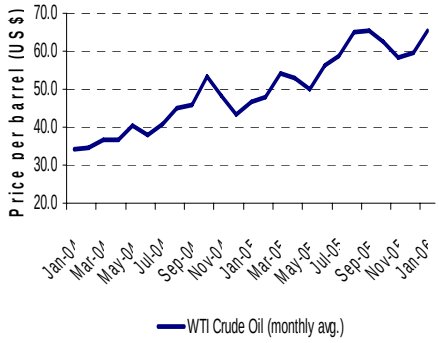
Developments in the Chinese economy meaningfully impacted global markets, given the recent importance of China to world growth. During 2005, China allowed its currency, the Yuan, to appreciate marginally and moved from an exchange rate pegged against the US dollar to a system whereby the exchange rate is based on a basket of currencies with fluctuations in the currency limited to within a narrow band. This occurred in a context of increased acrimony over the trade deficit between China and the US and growing concerns about the danger that "global imbalances" could pose to the world economy. [17] Despite the change in China's exchange rate regime, fluctuations in the value of the Yuan were limited and are considered by many observers as not reflective of the actual interaction of market forces.

3.4 Commodity Prices

Higher oil prices created inflationary pressures in most economies

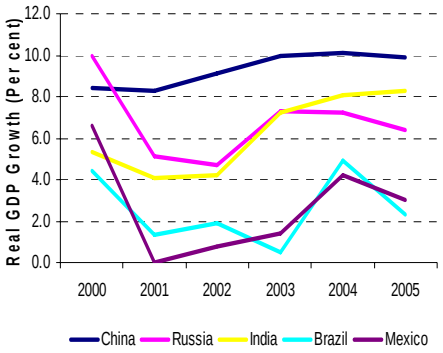
Oil prices continued to rise during 2005 with an increase of approximately 36.2 per cent to an average price of approximately $60.0 per barrel for the month of December (see **Figure 3.9**). This increase was slightly higher than the 34.8 per cent rise in 2004. The rise in oil prices since 2003 was mainly attributed to increased global demand, especially due to growth in major developing economies such as China and India (see **Figure 3.10**).

Figure 3.9
International Crude Oil Prices



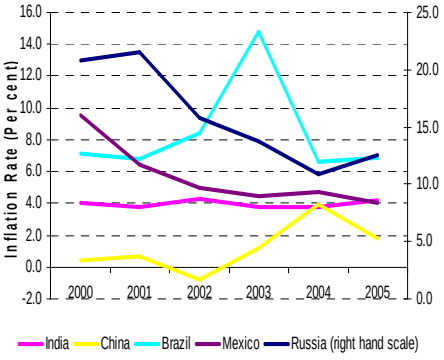
[17] "Global imbalances" broadly refers to the large current account deficit of the United States and the associated current account surpluses in other countries, such as in China and various oil exporting countries.

Figure 3.10
Growth in Selected Developing Economies



The increase in prices was exacerbated by limited excess capacity and fears of possible supply disruptions. Despite inflationary pressures from higher energy prices, inflation rates in some leading developing economies did not rise markedly (see **Figure 3.11**).[18]

Figure 3.11
Inflation Rates in Selected Developing Economies



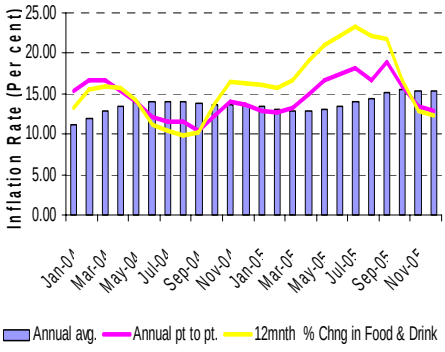
[18] Oil prices peaked at their highest historical nominal value during September as a result of the disruption caused by Hurricane Katrina to oil producing areas near the Gulf of Mexico. Interruptions to Nigeria's output of oil as a result of rebel attacks on production facilities and investor fears regarding geopolitical tensions in the Middle East also contributed to upward pressure on oil prices during the year.

Strong global demand drives rise in oil price

Oil prices are generally expected to remain high over the medium term. This arises from limited spare production capacity to offset any disruptions to supply and forecasts for continued robust growth in the world economy, especially for highly oil dependent developing economies. Additionally, there is a long time lag before additional oil production facilities can be brought on stream.

Robust growth in countries such as China spurred consumption of commodities during 2005. Indications are that relatively low interest rates in developed economies have provided the necessary liquidity for speculators to meaningfully increase their positions in commodity markets. The general rise in commodity prices, excluding oil, over the past few years has had mixed effects on the Jamaican economy. Higher steel prices, among others, would have placed upward pressure on Jamaica's import prices and by extension domestic inflation (see **Figure 3.12**).

Figure 3.12
Domestic Inflation



Conversely, rising alumina prices contributed positively to the value of exports and stimulated production and investment in the country's mining industry.

China's continued high growth rate and consequent demand for raw materials had a significant impact on commodity prices. As such, any meaningful change in the outlook for China's economy would have implications for the price of raw materials. Furthermore, monetary policy actions emanating from a restrictive monetary policy stance by the People's Bank of China may have a significant impact on the operations of international capital markets.

3.5 CARICOM

In contrast to the interest rate reductions effected by monetary authorities in Jamaica, interest rates in Barbados and Trinidad & Tobago rose while rates in Guyana and the Eastern Caribbean Currency Union (ECCU) remained constant.

Significant GDP growth in Trinidad & Tobago and Barbados for 2005

Estimates by the Central Bank of Trinidad and Tobago (CBTT) are that the economy grew by 7.0 per cent in 2005, partly as a result of the buoyancy in the energy sector, while the non-energy sector expanded by 4.0 per cent.[19] Buoyant economic activity led to historically low unemployment rates, while sharp increases in food prices contributed to a rise in headline inflation. In an attempt to moderate excess liquidity, the CBTT conducted four 25 bps increases in the "repo" rate during the year. With respect to the external account, the current account surplus for 2005 was 17.7 per cent of GDP relative to 14.5 per cent for 2004, which helped to facilitate an increase in official reserves.

The economy of Barbados grew by 4.1 per cent in 2005, slightly below the 4.8 per cent for 2004.[20] In an effort to limit liquidity and lower the demand for credit the Central Bank of Barbados (CBB) increased the interest rate on short-term loans to commercial banks to 10.0 per cent in July from 7.5 per cent, as well as the minimum deposit rate to 4.75 per cent from 2.25 per cent during 2005.[21] The CBB estimates that Barbados's fiscal deficit increased to 2.9 per cent of GDP in 2005 from 2.2 per cent in 2004, while the current account deficit was approximately 12.6 per cent of GDP, an increase relative to the previous year. During the year, the Barbados Government issued a 20-year US$250.0 million bond with coupon of 7.25 per cent at a rate of 6.625 per cent in the international capital market.

Guyana's GDP declined by 3.0 per cent in 2005, partly due to the effects of flooding, after growing by 1.6 per cent in 2004. The inflation rate increased to 8.2 per cent for 2005, relative to 5.5 per cent in 2004, reflecting higher prices for fuel, food, housing and education.[22] Interest rates remained basically constant throughout the year while the foreign exchange market

19 "Review of the Economy 2005", Central Bank of Trinidad and Tobago (www.central-bank.org.tt)

20 "Review of the Economy for 2005", Central Bank of Barbados.

21 Note that Barbados operates a fixed exchange rate system with two Barbadian dollars equivalent to one US dollar.

22 Bank of Guyana Annual Report 2005.

displayed stability. The current account deficit widened to US$149.9 million at end 2005 from US$69.8 million at end 2004.

Inflation in the ECCU increased to 4.0 per cent in 2005, compared to 2.6 per cent in 2004. GDP growth for the ECCU is estimated at 5.0 per cent for 2005. A current account deficit of 0.9 per cent of GDP was recorded as at end 2005, relative to a surplus of 3.4 per cent of GDP at end 2004. The stance of monetary policy in the ECCU was neutral throughout the year.

4. Financial System Developments

4.1 Overview

The health of the financial system in Jamaica continued to be sound during 2005. Financial institutions continued to reposition their activities to achieve the interrelated benefits of higher growth, better capital allocation among investment options and more opportunities for risk sharing and risk diversification. This was evidenced by strategic consolidation within the financial system in recent years as well as a trend increase in loans vis-à-vis investments as institutions responded to the changing interest rate environment. Robust asset growth was fuelled predominantly by expansion in Deposit Taking Institutions (DTIs) lending activities and Non Bank Financial Institutions (NBFIs) life underwriting and managed funds operations. The sector exhibited strong levels of profitability and prudential capital indicators were consistently maintained above the minimum regulatory levels. At end December 2005, the sector surpassed $1,000.0 billion in total assets to represent 160.0 per cent of GDP.

Financial sector surpassed $1,000 billion in total assets

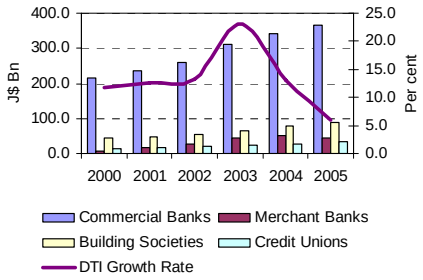
4.2 Deposit Taking Institutions

The number of DTIs in Jamaica declined significantly over the period 2000 to 2005 due predominantly to mergers and acquisitions and the separation of banking and non-banking activities resulting from legislative changes. At end 2005, the number of DTIs in the financial system declined to 63[23] relative to 82 at end 2000.

[23] At end December 2005, the DTI system comprised 6 commercial banks, 5 merchant banks, 4 building societies and 48 credit unions.

Despite the decline in numbers, DTIs asset expansion has continued unabated since 2000, although evidence of deceleration has been observed in recent years (see **Figure 4.1**).

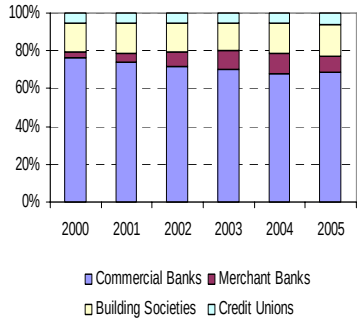
Figure 4.1
Comparative Asset Base of Deposit Taking Institutions



Commercial banks registered a decline in market share over the five year period, but continued to be the dominant contributor to the overall increase in DTI's assets at end 2005 (see **Figure 4.2**).

Despite decline in market share, commercial banks continue to drive DTI growth

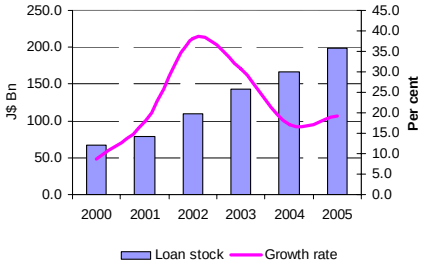
Figure 4.2
DTI Market Share (Total Assets)



Asset growth of DTIs was generated predominantly from robust deposit inflows and borrowings, which financed growth in loans, new investments and increased placements with banks both locally and overseas. One of the major features of DTI growth over the period was the strong expansion in loans (see **Figure 4.3**).

Figure 4.3
Gross Loans

Significant credit expansion fuelled asset growth in recent years



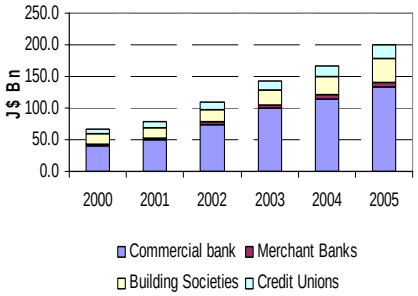
Prior to 2003, DTI's profitability benefited generally from the upward movement in interest rates, resulting in higher returns and some capital accretion. Over the last two years, however, with the decline in interest rates, compression was noted in the profit results of DTIs.

4.2.1 Asset Positions

DTI's assets grew by 6.0 per cent to total $530.5 billion at end 2005. [24] Total assets grew at a slower pace in 2005 relative to 2004. Asset growth in 2004 was reflective of revaluation as a result of first time implementation of International Accounting Standards/International Financial Reporting Standards (IAS/IFRS) as well as exchange rate movements. During 2005, growth was funded largely from increased deposits and was influenced mainly by an expansion in the DTI loan portfolio. The loans portfolio of DTIs gained significant share as a percentage of total assets and in 2005 replaced *Investments* as the leading asset category. All the sub-sectors reflected increased loan stock in excess of 15.0 per cent during 2005, with the most significant growth rate occurring in entities licensed under the Financial Institutions Act. During the year, lending by mortgage institutions grew by 24.8 per cent, representing the highest growth rate since 2000, while credit unions and commercial banks loan portfolio expanded by 22.8 per cent and 16.7 per cent, respectively (see **Figure 4.4**). [25]

Favourable economic environment influenced higher demand for credit

Figure 4.4
Gross Loans By sector



Mortgage loans continue to increase despite the upturn in housing prices. This acceleration was due in part to the increased mortgage financing to National Housing Trust (NHT) beneficiaries under the Joint Financing Mortgage Programme (JFMP) between the NHT and building societies.[26] Funding provided to building societies under the JFMP increased by 77.0 per cent at end 2005 relative to 42.0 per cent at end 2004.

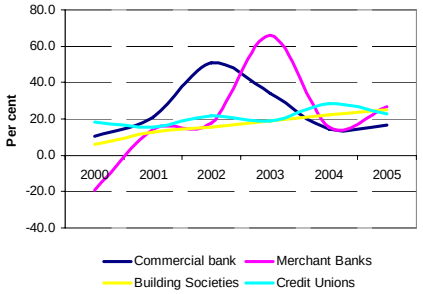
[24] DTI balances represented in this section of the report are in respect of commercial banks, building societies, credit unions and institutions licensed under the financial institutions Act (FIA).

[25] Institutions licensed under the Building Societies Act.

[26] Under this programme, first time home owners can finance their mortgages at more affordable rates by mixing a cheaper source of funds obtained from NHT with the slightly more expensive building societies funds.

The loans portfolio of DTIs grew at a faster pace in 2005 than in the previous year, with the exception of the credit union sub-sector, (see **Figure 4.5**).

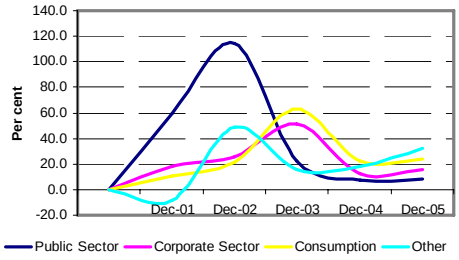
Figure 4.5
Growth in Gross Loans by Sector



Growth in consumer loans continue to outpace credit growth to both public and corporate sectors

Over the five-year period, growth in loans for consumption purposes, (predominantly personal loans) continued to outpace credit provided to both the public and corporate sectors. Corporate sector loans increased by 15.8 per cent in 2005 relative to 12.0 per cent at end 2004. This development coincided with the increased pace of productive activity in the context of improved economic conditions. The growth rate of loans to the public sector, however, has gradually tempered since the significant jump of 114.3 per cent in 2002 (see **Figure 4.6**).

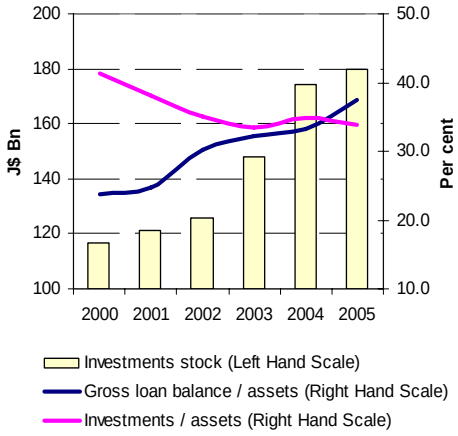
Figure 4.6
Growth in Gross Loans by Type



At end 2005, *Investments* comprised 33.9 per cent of total assets relative to 34.8 per cent at end 2004. DTI *Investments* have been increasing since 2000.[27] However, when analyzed as a share of total assets, there was a noticeable decline as institutions repositioned their asset portfolio towards higher yielding loans as a result of the downturn in yields on public sector debt securities (see **Figure 4.7**).

Loans replaced investments as leading asset category

Figure 4.7
Investment and Gross Loans as Percentages of Total Assets

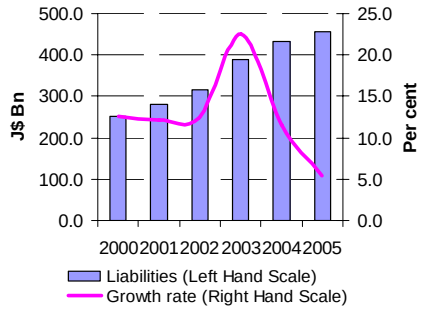


[27] Investment stock is largely comprised of government paper held as substitution for bad debt as well as capital injection arising from government interventions during the late 1990s.

4.2.2 Liability Positions

DTI liabilities increased steadily over the past five years and at end 2005 was $456.7 billion, representing a 5.4 per cent increase over the previous year (see **Figure 4.8**).

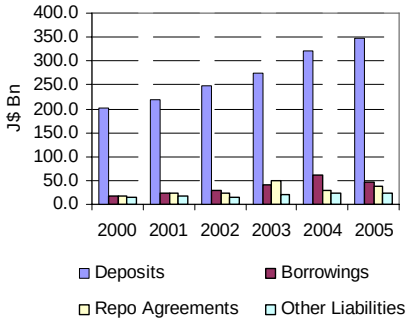
Figure 4.8
DTIs Liabilities and Growth Rate



Deposits continue to be the main mechanism for financing DTIs although at a slower pace than pervious years

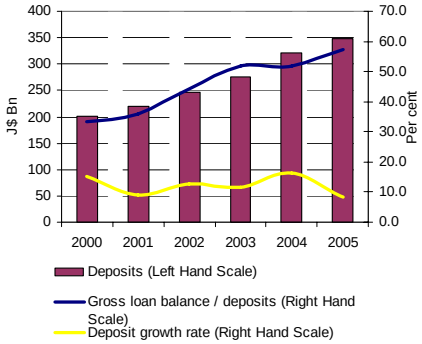
The increase in liabilities was fuelled largely by growth in deposits, which remained the principal source of funding for DTIs (see **Figure 4.9)**. At end 2005, deposits accounted for $347.9 billion or 76.2 per cent of total liabilities relative to 74.0 per cent at end 2004. The increase in deposits largely reflected the continued improvement in confidence and the general improvement in economic conditions.

Figure 4.9
DTI Funding Sources



Notwithstanding the increase in deposit stock, the growth rate of deposits declined in 2005 (see **Figure 4.10**). Deposits grew by 8.4 per cent at end 2005 compared with 16.5 per cent and 11.5 per cent at end 2004 and 2003, respectively. This deceleration in the growth rate was reflected in all the sub-sectors in 2005. However, the most significant fall-off was reflected in merchant banks and building societies.

Figure 4.10
Gross Loans to Deposits



DTI's ability to attract new deposits increasing at a slower pace than the demand for loans

Despite yielding some of its market share to other DTIs, commercial banks continued to be the dominant influence on deposit trends. At end 2005, commercial banks' deposits accounted for 70.8 per cent of total deposits relative to 71.1 per cent at end 2004. Domestic currency deposits remained relatively flat over the previous year. However, foreign currency deposits increased marginally to account for 36.1 per cent of total deposits for 2005 relative to 35.8 per cent at end 2004.

Slow down in foreign currency deposits reflects stable foreign exchange market conditions

At end 2005, foreign currency deposit growth rate was 9.3 per cent relative to 19.7 per cent at end 2004. The relatively stable foreign currency market conditions coupled with the improvement in confidence resulted in the slow down in the rate of growth in foreign currency deposits.

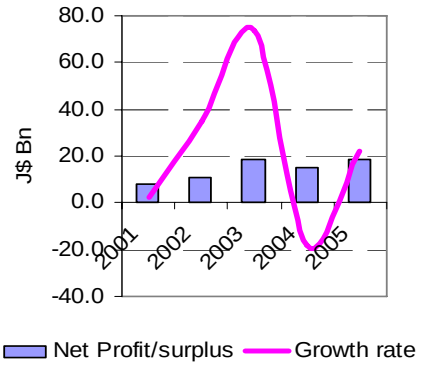
The rate at which mortgage institutions were able to attract deposits in 2005 was higher than that of commercial banks. However, the growth in savings funds of mortgage institutions in 2005 was significantly less than 2004. Deposit growth rate in credit unions outperformed that of the other DTIs at end 2005.

4.2.3 EARNINGS AND PROFITABILITY

Building societies and credit unions yielding profit share to commercial banks and merchant banks

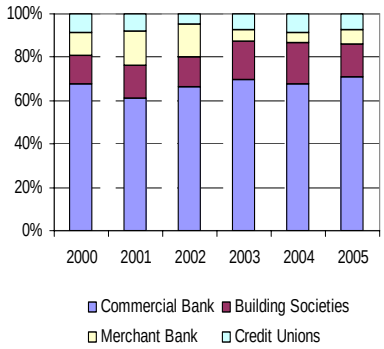
Net profits for DTIs increased steadily up to 2003. However, in 2004 there was a significant fall-off in profitability as institutions adapted to the declining interest rate environment (see **Figure 4.11**).

Figure 4.11
Profit/Surplus in DTIs



At end 2005, net profits rebounded to $18.4 billion representing normalization to the 2003 outcome. Both building societies and credit unions lost profit share to commercial banks and merchant banks in 2005 (see **Figure 4.12**).

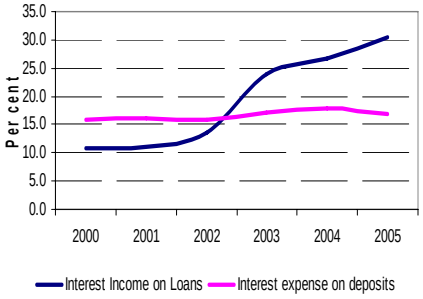
Figure 4.12
DTIs Net Profits/Surplus



Interest income on loans has consistently trended upwards since 2000

DTI's net profit margin was 26.3 per cent at end 2005 relative to 22.5 per cent at end 2004. Net profit growth in 2005 was driven predominantly by interest income on loans and income from other sources (service charges, transaction fees and commissions). Interest income on loans has consistently trended upwards since 2000 with its growth rate increasing at a significantly faster pace than the costs on deposit liabilities (see **Figure 4.13**).

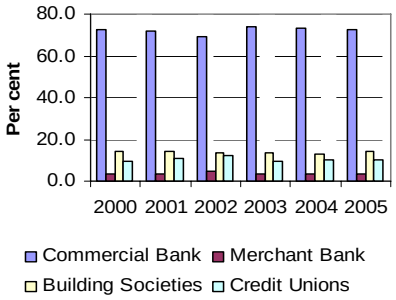
Figure 4.13
Interest Income/Expense



In a context of declining domestic interest rates, interest income from investments declined by 23.0 per cent in 2005 and represented 24.9 per cent of total revenue relative to 33.7 per cent at end 2004.

At end 2005, commercial bank's share of *Revenues* accounted for 72.4 per cent of DTI revenues followed by mortgage institutions, with a 13.9 per cent share (see **Figure 4.14**).

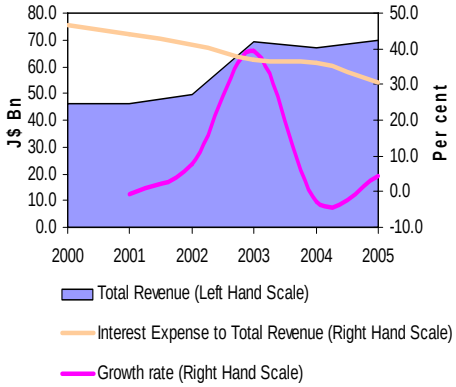
Figure 4.14
Net Interest Income



Increase in DTIs revenue driven by commercial banks and building societies

Total revenues increased to $69.9 billion in 2005 from $46.4 billion in 2000. In contrast, interest paid to depositors declined over the period. Interest on deposits as a percentage of total revenue declined by 16.0 percentage points since 2000 to 30.6 per cent (see **Figure 4.15**).

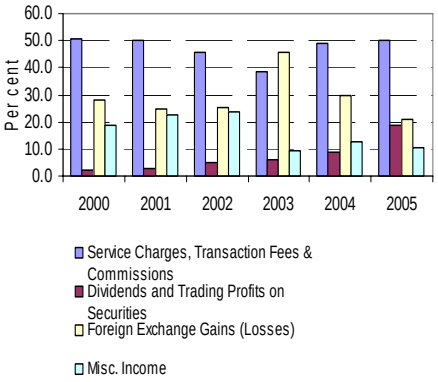
Figure 4.15
DTIs Revenue Growth and Interest Expense to Total Revenue



Other Income in the DTI sector increased by 27.4 per cent at end 2005 relative to the 5.0 per cent decline in 2004. This however, was significantly below the 37.4 per cent growth rate for 2003. The increase in *Other Income* in 2005 was driven primarily by the 170.0 per cent increase in earnings from foreign exchange and securities trading. This was coupled with the 30.8 per cent increase in service charges on loans and transaction fees, which accounted for 50.0 per cent of *Other Income* at end 2005 (see **Figure 4.16**).

At end 2005, the major share of *Other Income* originated from fees, followed by income from foreign exchange gains, although the latter has declined significantly since 2003 when it registered a record annual increase of 150.0 per cent. In 2003, income from foreign exchange gains of $5.3 billion was the leading source of *Other Income* accounting for 45.9 per cent, displacing income from service charges, transaction fees and commissions.

Figure 4.16
DTIs Other Income

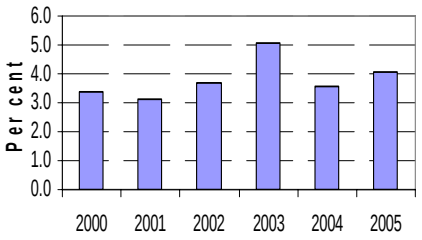


DTIs profitability as measured by return on assets (ROA) and return on equity (ROE) improved marginally in 2005, driven primarily by improved yields on earning assets of 4.3 per cent at end December 2005 compared with 3.6 per cent at end 2004 (see **Figure 4.17**).

Figure 4.17

Yeild on Earnings Assets

Rebound in ROA resulted from increased yield on earning assets

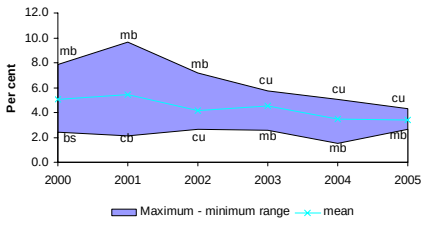


Between 2000 and 2002 the merchant banking system had the highest ROA among the DTIs. Subsequent to 2002, however, merchant banks' profitability declined partly as a result of the fall in fee-based business consequent on the transfer of 'managed funds' portfolios to other financial institutions. In the latter years, the credit union sector was the most profitable (see **Figure 4.18**).

Transfer of managed funds operations to other financial institutions resulted in a decline in merchant banks profitability

Figure 4.18

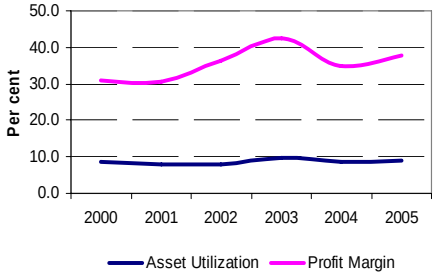
Return on Assets for DTIs



Key: cb – Commercial Banks, mb – Merchant Banks, bs – Building Societies, cu – Credit Unions

As a result of the faster pace of growth in assets vis-à-vis the growth rate in income, the asset utilization ratio has declined marginally in recent years (see **Figure 4.19**). This has precipitated the decline in ROA since 2003. Net interest margin (NIM) has traditionally been the larger contributor to the overall asset utilization ratio relative to non-interest margin. All sub-sectors of DTIs generally showed signs of improvement in net interest margin since 2001.

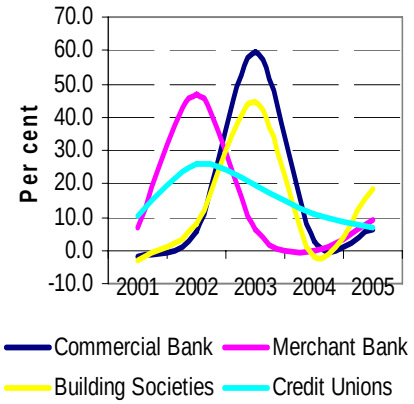
Figure 4.19
Asset Utilization



However, with the exception of the credit union sector, net interest margin grew at a faster pace in 2005 relative to 2004. The NIM of commercial banks and credit unions grew by 6.2 per cent and 6.9 per cent, respectively, relative to 3.0 per cent and 11.1 per cent in 2004. Both the building societies and merchant banks recorded significant growth in NIM relative to the decline in 2004 (see **Figure 4.20**).

Net interest margin generally grew at a faster pace in 2005

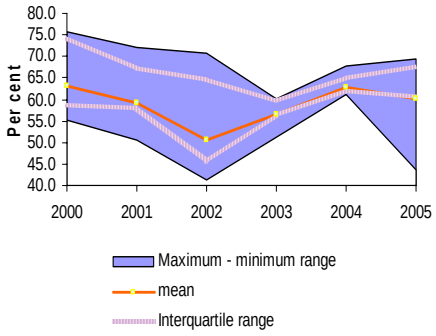
Figure 4.20
Net Interest Margin per Sector



The slow growth rate in net interest margin in recent years should be considered in the context of other contemporaneous developments including marginal improvement in financial institutions' cost efficiency and the generally downward trends in retail interest rates. Operating costs efficiency as measured by non-interest expense to gross income continued on a general downward trajectory since 2000. At end 2005, this ratio was 66.7 per cent relative to 75.6 per cent at end 2000 (see **Figure 4.21**). [28]

Effective containment of operational costs by banking sector resulted in improved efficiency

Figure 4.21
Non Interest Expense to Gross Income



The reduction in operating costs efficiency over the period 2000 to 2005 was due to the faster rate of growth in gross income relative to increases in operating expenses. At end 2005, staff costs of $15.3 billion represented 47.7 per cent of total operating expenses, compared to $8.4 billion or 46.4 per cent in 2000.

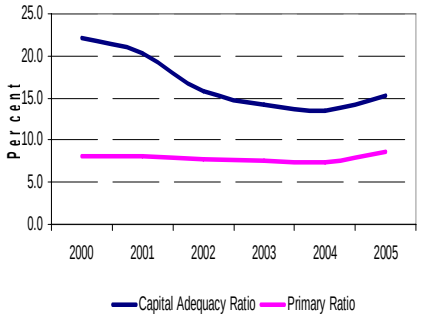
Commercial banks recorded the highest ratio of non-interest expense to gross income over the 2000 to 2005 period, followed by mortgage institutions. The high operating costs were due predominantly to growth in administrative expenses.

4.2.4 Capital and Solvency

The risk-weighted capital adequacy ratio at end 2005 was well in excess of the minimum regulatory limit of 10.0 per cent as institutions continue to bolster permanent capital resources. [29] Over the past five years, the ratio of risk weighted assets (RWA) to capital fluctuated between 13.0 per cent and 22.0 per cent (see **Figure 4.22**).

Capital adequacy ratios maintained in excess of regulatory benchmarks

Figure 4.22
Capital Adequacy Ratio



[28] Non interest expense is expressed as a percentage of gross income.
[29] Basel Capital Ratio (Tier I and Tier II Capital as a proportion of Risk-weighted assets).

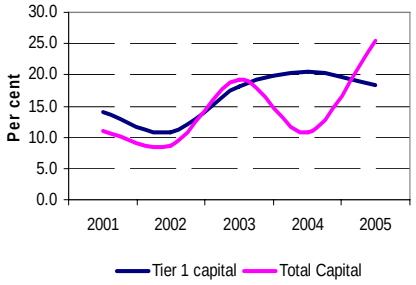
The reduced CAR during the period was due to the higher risk weight assigned to loans, reflecting high household loan concentration, particularly in commercial banks. In the context of falling interest rates since 2000, DTI lending operations continued in an expansionary mode as a result of increased economic activity and greater private sector demand for resources.

The DTI sector's ability to accumulate capital continues to be strong as demonstrated by the significant increases in the statutory reserve fund and ordinary shares at end 2005. The significant stock of statutory reserves indicates DTIs disposition to maintain the high levels of internal capital accumulation at the expense of higher dividend payments to shareholders. Financing risk through core capital is a positive development for financial stability.

Since December 2000, the primary ratio (capital base to total assets) also remained above the 6.0 per cent regulatory benchmark, although declining marginally each year between December 2000 and December 2004. At end 2005, however, the primary ratio rebounded due to the improvements in Tier I and Tier II capital components. Tier 1 capital grew by 18.3 per cent while Tier II capital increased by 10.3 per cent after a significant decline of over 200.0 per cent at end 2004. The significant decline in Tier II capital in 2004 was due to the reduction in preference shares in the commercial banking system (see **Figure 4.23**).

Primary ratio rebounds after four years of decline

Figure 4.23
Tier 1 Capital and Total Capital Growth Rates



The growth rate in RWA has declined since 2002 due to the general deceleration in growth rate of the on-balance sheet loan portfolio as well as off-balance sheet items of DTIs.[30] Based on prudential regulations, loans and off-balance sheet items are potentially more risky and therefore assigned higher risk weights. At end 2005 however, risk weighted assets expanded by 10.7 per cent to total $303.0 billion relative to 16.5 per cent expansion at end 2004.

[30] On and Off-balance sheet assets are assigned weights according to inherent risks. Assets assigned 20.0 per cent risks include claims on DTIs supervised by BOJ. Assets assigned 50.0 per cent risk weight includes residential mortgages (1st legal mortgage to Owner Occupiers, not in arrears). Assets assigned 100.0 per cent risk weight include other loans and advances to the private sector. Off-balance sheet assets are also assigned 100.0 per cent risk weight including contingent accounts (commitments, guarantees etc.)

Box 2. Financial Soundness Indicators

Over the past two decades, the global financial markets experienced disruption as a result of severe financial crisis in many countries.[31] These crises have highlighted the need for on-going surveillance of the health and soundness of financial institutions as well as the resilience of corporate and household counterparts to external shocks.

The IMF has identified and developed a list of financial soundness indicators to monitor the health and soundness of financial institutions and markets and have proposed for adaptation, two sets of indicators. The first set which is referred to as "core" indicators, comprise 15 variables which are indicative of financial stability. These variables span the gamut of the banking system from the perspectives of capital adequacy, asset quality, earnings and profitability, liquidity and sensitivity to market risk. The second set of indicators is specifically geared towards non-bank institutions, real estate markets, corporate sector and household. A selection of the IMF indicators are used to assess the financial soundness of the DTIs in Jamaica in this Box.

Financial stability was maintained in the banking sector at end 2005 with capital adequacy ratios remaining well above regulatory requirements. The sector remains highly profitable and liquidity ratios were maintained in excess of prudential requirements.

Asset quality for the sector remained sound with non-performing loans shrinking significantly since 2000. Concentration in GOJ securities has been trending down although the ratio of GOJ securities to capital remains high for some sub-sectors. Capital exposures to public sector loans for the commercial bank and merchant bank sectors have been declining over the years.

	2003	2004	2005[32]
Capital Adequacy			
Regulatory capital to Risk weighted assets (est.)[33]	16.1	15.9	17.0
Asset Quality			
Capital (net worth) to assets	12.1	13.2	13.9
FX loans to total loans	42.9	33.7	30.7
NPLs to gross loans	3.8	3.0	2.8
NPLs net of provisions to (Statutory) capital	-0.6	-0.8	1.6
Earnings and Profitability			
ROA	3.9	3.4	3.5
ROE	32.3	27.1	26.0
Interest margin to gross income	42.5	45.9	70.9
Noninterest expenses to gorss income	35.1	45.8	66.8
Personnel expenses to noninterest expenses	49.2	48.1	47.7
Trading & fee income to total income	7.7	11.6	13.9
Liquidity			
Avg liquid assets / total assets	23.5	27.1	26.0
Customer deposits to total loans	198.7	199.8	175.0
FX liabilities to total liabilities[34]	27.9	45.9	39.0

[31] For example the Mexican crisis of 1994 to 1996 and the Asian crisis of 1997 to 1998

[32] 2005 results include the credit union sub-system.

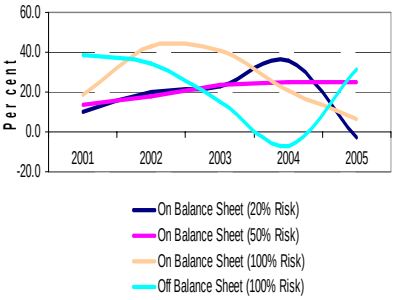
[33] Benchmark of 10%.

[34] Foreign currency deposits to total deposits used as a proxy at end December 2005.

The increase in RWA was generated mostly by assets assigned a 100.0 per cent risk weight and comprised predominantly of loans and off-balance sheet assets. Off-balance sheet RWA, however, has trended downwards since 2000 (see **Figure 4.24**)

Risk weighted assets declining since 2002 due to more risky on and off-balance sheet assets

Figure 4.24
Growth in Risk Weighted Assets



4.3 Non Bank Financial Intermediaries (NBFIs)

During 2005, the number of non-bank financial intermediaries decreased by two to end the year at forty seven, excluding pension funds (see **Table 4.1**). Dyoll Insurance Company exited the system and Globe Insurance Company of the West Indies was merged with Globe Insurance Company of Jamaica Limited.

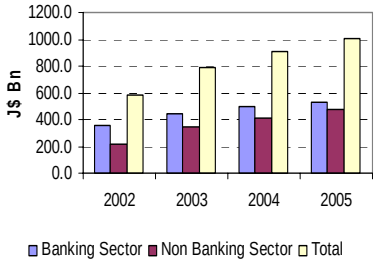
NBFIs continue to grow at a significant rate despite decline in number of entities

Table 4.1
Number of Institutions
Comprising NBFIs in Jamaica

	Securities Dealers	Life Insurance	General Insurance	Total NBFI
2002	33	8	14	55
2003	33	7	13	53
2004	30	6	13	49
2005	30	6	11	47

Notwithstanding the decline in the number of registered entities, the assets of NBFIs have grown at a phenomenal rate in recent years (see **Figure 4.25**). The significant growth rate in non-bank financial intermediaries in 2005, resulted in aggregate assets of $480.0 billion (excluding pension funds) relative to $412.0 billion at end 2004. The combined share of securities and insurance companies increased to 47.5 per cent at end 2005 from 45.1 per cent at end 2004.

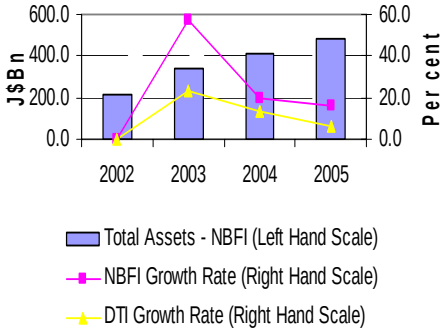
Figure 4.25
Comparative NBFIs & DTIs Total Assets



NBFIs growing at a faster rate than the banking sector

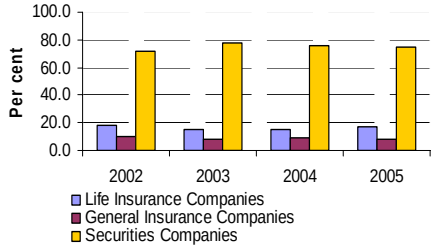
Over the past three years, NBFIs assets grew at a faster pace than banking sector assets. Growth of 16.5 per cent in NBFIs in 2005 more than doubled the 6.0 per cent recorded by DTIs. Additionally, NBFI asset growth of nearly 40.0 per cent in 2003 tripled that of the banking sector during that year (see **Figure 4.26**).

Figure 4.26
NBFIs Asset and Growth Rate



The significant growth rate in the non-bank sector was driven by expansions in the asset bases of securities and life insurance companies. (see **Figure 4.27**).

Figure 4.27
NBFIs Asset base



Securities dealers and life insurance companies driving growth in NBFIs

Despite continued growth in NBFIs asset base over the last few years, the depth of financial intermediation in the last two years has not continued apace. This was due predominantly to the significant decline in savings held with securities dealers (funds under management) as a proportion of GDP at end 2005 (see **Table 4.2**).

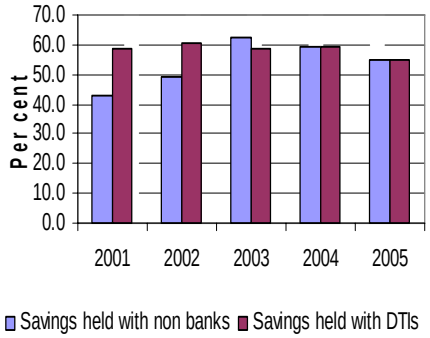
Table 4.2
Savings of Select NBFIs in Jamaica
As a Proportion of GDP

	Securities Dealers	Life Insurance	General Insurance	Total NBFI
2002	46.0	1.9	1.4	49.3
2003	58.8	2.5	1.4	62.7
2004	63.9	1.3	2.1	67.2
2005	54.2	1.4	1.9	57.5

4.4 Securities Firms

Securities firms continued to represent the most significant share of NBFIs total assets (see **Figure 4.29**). Funds under management as a percentage of GDP reflected a deepening in the intermediary role of securities dealers[35] between 2000 and 2003. This trend however, has not continued in the last two years (see **Figure 4.28**).

Figure 4.28
Funds Under Management and Deposits to GDP

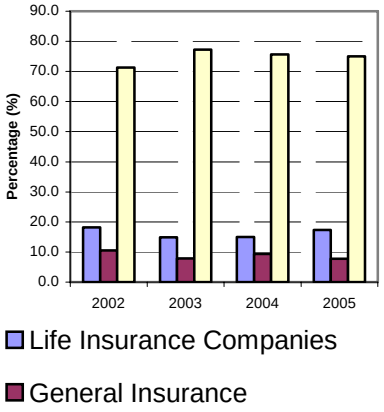


The robust asset growth of securities dealers in the past five years was prompted by taxation and regulatory opportunities. This growth was further facilitated by the separation of banking and non-banking activities consequent upon the passing of legislation in 2002, which precipitated the transfer of funds under management from merchant banks to securities dealers.

Funds under management surpassed DTI deposits as securities dealers drive NBFIs overall expansion

[35] Ownership of securities dealers was dominated by financial groups with extensive distribution network

Figure 4.29
NBFIs Market Share

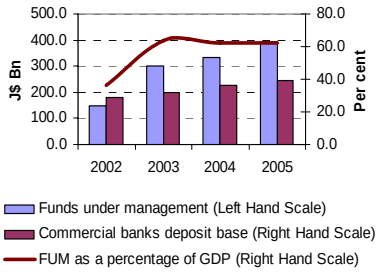


Source: Financial Services Commission

At the end 2005, funds under management by securities dealers amounted to $395.0 billion, representing 62.5 per cent of GDP, up marginally from the 62.0 per cent recorded at end 2004. Since December 2003, clients' funds under management by securities firms have surpassed the level of deposits with commercial banks (see **Figure 4.30**).

Client funds under management surpassed commercial bank's deposits

Figure 4.30
Comparative Funds Under Management and Commercial Bank Deposits



The redistribution of depositor's funds to securities firms has provided the scope for banks to focus on their substantive role of lending to the productive sector. This also facilitated a shifting of the intermediation of public debt from systemically sensitive banking institutions to individual investors.

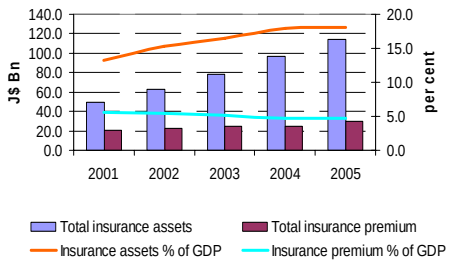
Institutional investors have maintained their risk aversion as indicated by their significant portfolio holding of secure money market funds. Over the past three years, securites firm's investments in GOJ securities increased by 145.7 per cent relative to the 7.1 per cent decline in equities, foreign securities and private sector debt combined. This increased concentration in GOJ securities increased the exposure of the industry to macroeconomic risk factors such as bond price volatility and foreign exchange instability.

Concentration in GOJ securities increases the exposure of securities firms to macroeconomic risk factors

4.5 Insurance Companies

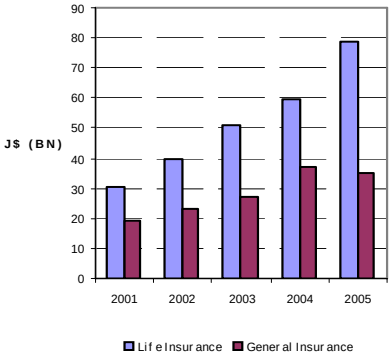
Similar to the commercial banking sector, the life insurance sector was predominantly owned by conglomerates and foreign entities. The growth rate of the insurance sector decelerated in 2005 as a result of two general insurance companies exiting the system. Total insurance assets of $114.4 billion at end 2005, which represented 17.9 per cent of GDP, accounted for 23.8 per cent share of the non bank financial institution's assets and 11.3 per cent share of the overall financial sector assets (excluding pension funds) (see **Figure 4.31**). At end 2005, life insurance companies accounted for over two-thirds of the insurance sector's total assets (see **Figure 4.32**).

Figure 4.31
Insurance Sector Assets/Premium



Source: Financial Services Commission

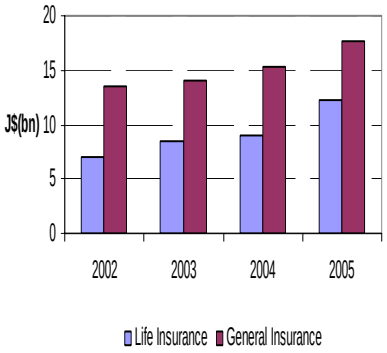
Figure 4.32
Life and General Insurance Assets



Source: Financial Services Commission

Gross premiums of $29.9 billion in 2005, represented a 22.5 per cent increase over the previous year. General insurance companies gross premiums of $17.7 billion contributed 59.2 per cent of overall gross premiums (see **Figure 4.33**). Within the general insurance sector, business activity was dominated by property and motor vehicle classes of insurance.

Figure 4.33
Life and General Insurance Premiums



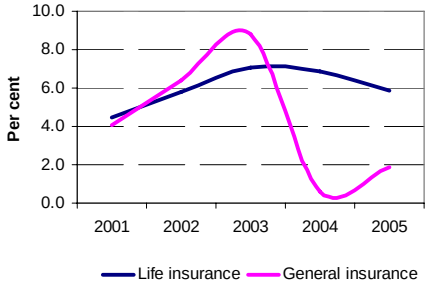
Source: Financial Services Commission

Decline in interest rates placed pressure on insurance sector's profitability

The insurance sector has been relatively profitable in recent years. However, the downward trajectory of interest rates since the last half of 2003 placed pressure on the industry's profitability as most of the sector's assets are heavily weighted towards GOJ bonds.

Profits in the general insurance segment of the industry were more volatile than in the life insurance segment. This was influenced by weather-related shocks in 2004 and 2005 (see **Figure 4.34**).

Figure 4.34
Life and General Insurance ROA



Source: Financial Services Commission

5. Banking Sector Exposures

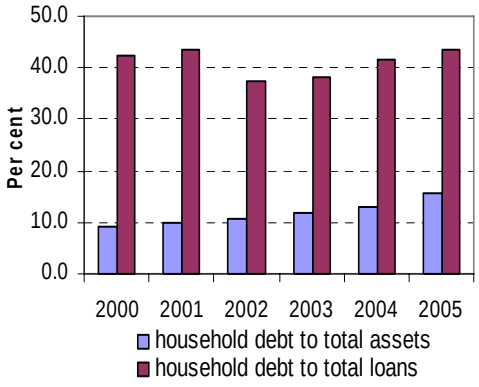
5.1 Overview

Relative stability in the macroeconomic environment during 2005 engendered improvements in the banking sector's exposure to debt of the household and corporate sectors as well as to the public sector. There was continued strengthening in the credit quality of corporate and household debt. Moreover, continued efforts by Government to limit the impact of macroeconomic shocks on the debt portfolio should engender further reductions in the banking sector's vulnerability to public sector debt.

5.2 Household Debt and Banking System Exposure

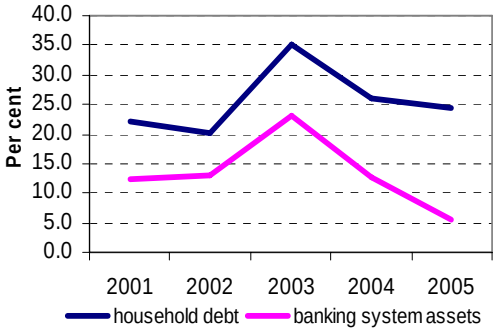
Household debt held by the banking sector accounted for 15.5 per cent of assets at the end of 2005 and represented the largest share of banking system assets for the past five years (see **Figure 5.1**).[36]

Figure 5.1
Household Debt as a Share of Banking Sector Loans & Assets



During 2000 to 2003, household debt significantly outpaced the growth in banking sector assets (see **Figure 5.2**). This was fueled primarily by higher than projected inflation, which resulted in an erosion of consumers' purchasing power and strong growth in consumer spending. In addition, growth in household debt was fueled by higher rates charged on consumer borrowings due to substantial increases in domestic interest rates over the period. In 2004 and 2005, household debt grew at a slower pace, reflecting the marked improvements in the macroeconomic environment, which considerably moderated the growth in consumer spending relative to previous years.

Figure 5.2
Growth in Household Debt & Banking System Assets

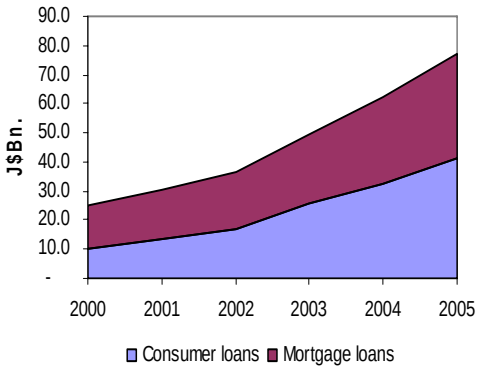


Consumer loans drive the performance in household debt

The main driver of household debt over the past five years was consumer loans. Against this background, at end 2005, consumer loans accounted for 53.0 per cent of the loans extended to the household sector (see **Figure 5.3**).

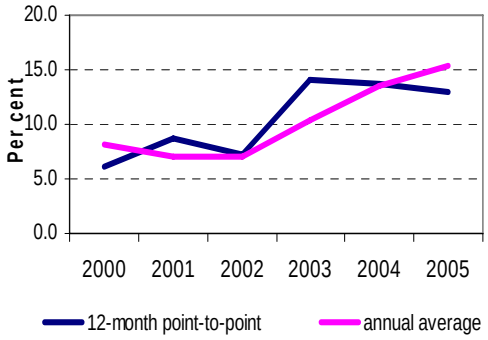
[36] Household debt incurred with the banking sector is proxied by the sum of residential mortgage loans and consumer loans (which includes credit card receivables).

Figure 5.3
Breakdown of Household Debt



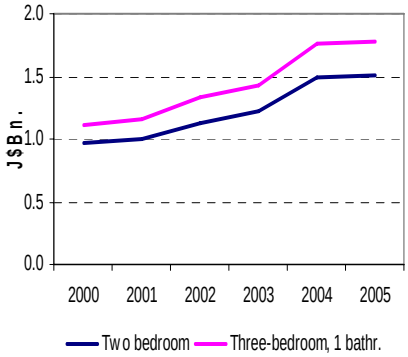
Similarly, growth in consumer loans reached a peak of 53.0 per cent during 2003, relative to growth of 19.9 per cent for mortgage loans during that year. The exceptional growth in consumer loans stemmed from the sharp deterioration in the inflation outturn during 2003 and was accommodated by strong appreciation in property values over the period (see **Figure 5.4 & 5.5**). [37] Relatively high inflation resulted in increased growth in foreign currency savings during 2001 to 2003. This served as a hedge for householders against further erosion in purchasing power (see **Figure 5.6**).

Figure 5.4
Domestic Inflation Rates



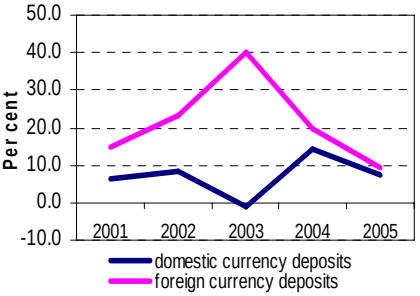
Source: Statistical Institute of Jamaica

Figure 5.5
Trend in Housing Prices
(Standard NHT Units)



Source: National Housing Trust

Figure 5.6
Growth in Foreign and
Domestic Currency Deposits



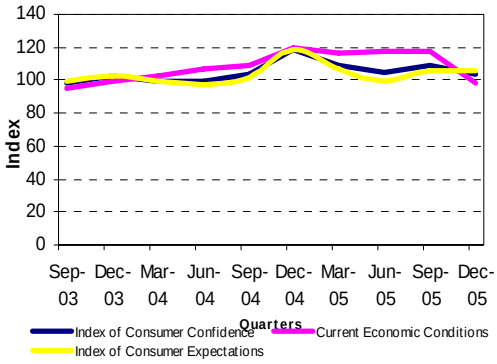
During 2004 and 2005, there was a slow-down in the growth of consumer loans. This slower growth in consumer loans was underpinned by improved macroeconomic performance, in particular improved inflation and GDP growth performance during 2005. The economy also continued to benefit from significant inflows of remittances, which increased by 11.8 per cent during 2005. This was in a context where total earnings by Jamaicans working abroad rose by US$4.3 million in 2005.[38]

[37] This is evidenced by the strong growth in National Housing Trust (NHT) property values.

[38] See BOJ Annual report – December 2005

The improvement in macroeconomic performance was mirrored in a slight rebound in consumer confidence relative to 2003 (see **Figure 5.7**).

Figure 5.7
Index of Consumer Confidence



Source: Jamaica Conference Board

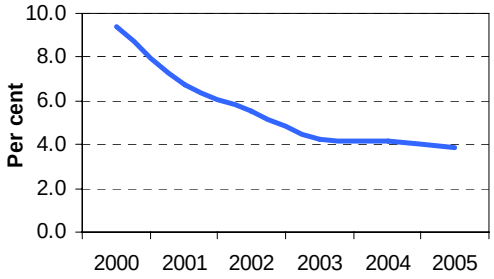
The rebound in consumer confidence led to increased holdings of Jamaica Dollar assets, resulting in domestic currency saving deposits increasing by 14.3 per cent and 7.3 per cent during 2004 and 2005, respectively.[39]

Nonetheless, there was stronger growth in mortgage loans during the two-year period, as consumers sought to increase wealth holdings in a context of lower domestic interest rates.

Improvements in household sector loan quality was underpinned by improvements in macroeconomic performance

There were continued improvements in household sector loan quality during 2005 influenced by the continued declines in domestic interest rates. The ratio of household non-performing loans (NPLs) to household loans declined to 3.9 per cent at the end of 2005 relative to 4.1 per cent at the end of 2004 (see **Figure 5.8**).

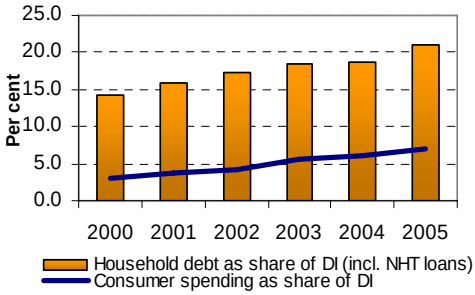
Figure 5.8
Household NPLs as a proportion of Household Loans



5.2.1 Household Sector Performance

The share of overall household debt as a proportion of disposable income increased during 2005 (see **Figure 5.9**).[40]

Figure 5.9
Household Debt and Consumer Loans as a Share of Income



Overall, household debt accounted for 21.0 per cent of disposable income at end 2005 relative to 18.0 per cent at the end of 2004. This increase reflected some deterioration in householders' debt servicing capacity largely due to slower growth in disposable income during 2005.

[39] Banking system savings deposits were used as a proxy for householders' confidence in holding Jamaica Dollar assets.

[40] Overall household debt is comprised of household debt held by the banking sector plus NHT loans to beneficiaries. The disposable income for 2005 is based on trend.

Furthermore, real disposable income declined by 6.4 per cent during 2005 relative to a moderate increase of 4.4 per cent during 2004. In this context, consumer spending as a share of disposable income increased to 7.1 per cent at end 2005, representing a 1.1 percentage point increase relative to 2004 (see **Figure 5.9**).

During 2005, householders' disposable income and debt servicing capacity were affected by socio-political factors, international developments as well as weather-related shocks. Growth in real disposable income during the year was undermined by significant increases in world oil prices and the impact of an active hurricane season. Hurricane damage severely reduced agricultural supplies, leading to increases in the price of agricultural commodities.

In addition, a critical development that spanned the two-year period was the public sector Memorandum of Understanding (MOU), effective April 2004 to March 2006. This agreement imposed a two-year wage freeze on public sector workers who constituted 11.4 per cent of the employed labour force in October 2004. [41]

The prospects for increases in real disposable income in the near term will be dependent on whether there are risks to employment and income emanating from further external shocks as well as the extent of public sector wage increases subsequent to the MOU agreement period.

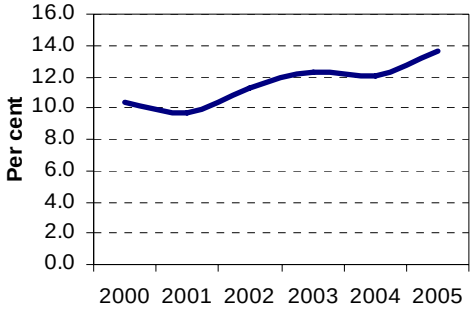
[41] The agreement moderated wage increases in the rest of the economy.

5.3 Corporate Sector Debt and Banking System Exposure

During 2005, corporate sector debt held by the banking sector increased by 19.0 per cent, relative to growth of 11.0 per cent for 2004.[42] At end 2005, loans and advances continued to account for the largest share of the banking sector's investment in the corporate sector. Loans to the corporate sector during 2005 were largely facilitated by relative stability in the macroeconomic environment and the continued lowering of domestic interest rates.

Corporate sector debt as a proportion of total assets increased to 13.6 per cent at the end of 2005, relative to 12.1 per cent at the end of 2004 (see **Figure 5.10**).

Figure 5.10
Corporate Sector Debt as a share of Banking Sector Assets



Despite the strong growth in corporate debt during 2005, this was far less than the exceptional increases of 32.0 and 34.0 per cent experienced in 2002 and 2003, respectively. These earlier increases were funded by the substantial expansion in deposits.

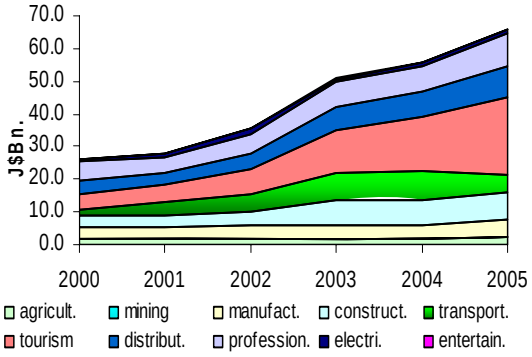
[42] Corporate sector debt is defined as loans for commercial purposes, loans to other financial institutions and notes & debenture holdings of the banking sector.

Notably, the sector benefited from a further one-percentage point reduction in the statutory cash reserve ratio to 9.0 per cent during 2002.

An analysis of corporate sector debt by creditor entity revealed similar investment patterns for merchant banks and commercial banks during the period. Over the past five years, there was sustained growth in the corporate debt holdings of these institutions. During 2003 to 2005 the strong increases in the corporate sector debt holdings of commercial banks and merchant banks were due to significant expansions in lending to the tourism, manufacturing and transport, storage and communication sub-sectors (**see Figure 5.11**). The strong investment in these sectors funded large start-up projects as well as expansions in productive capacity.

Corporate debt holdings by banks influenced by increased demand for loans to fund investment projects

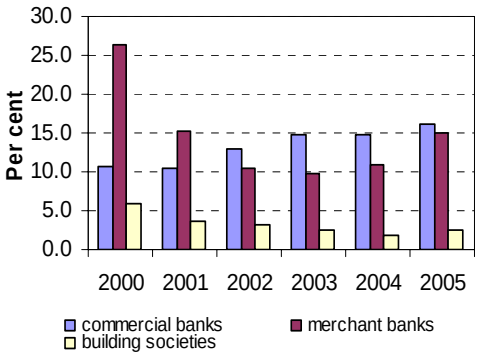
Figure 5.11
Banking Sector Exposure to Corporate Loans



For merchant banks, corporate sector debt as a share of assets increased to 15.0 per cent at the end of 2005 relative to 10.9 per cent at the end of 2004, while for commercial banks the ratio increased to 16.2 per cent relative to 14.7 per cent at the end of 2004 (see **Figure 5.12**).

However, the trend decline in mortgage loan rates over the past three years influenced substantial expansion in mortgage loans, dampening further investment in the corporate sector.

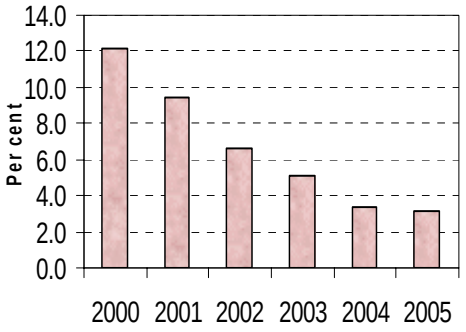
Figure 5.12
Banking Sector Exposure to Corporate Sector – by type of entity (as share of assets)



5.3.1 Corporate Sector Debt Quality

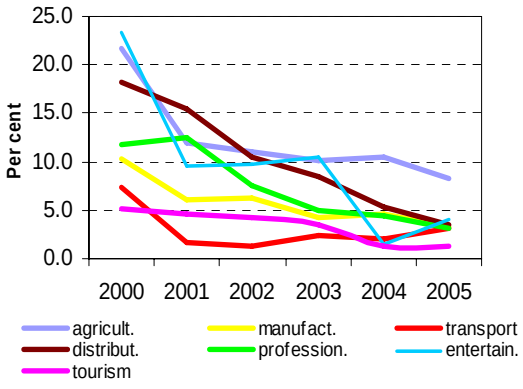
The strong expansion in corporate loans since 2000 has been associated with marked improvement in the quality of these loans, reflective of advances made in upgrading loan administration and management in the banking system. This was reflected in the continued decline in the ratio of non-performing corporate sector loans to total corporate sector loans to 3.2 per cent at end December 2005 relative to 12.2 per cent at end 2000 (see **Figure 5.13).**

Figure 5.13
Loan Quality – Corporate Loans
Banking Sector



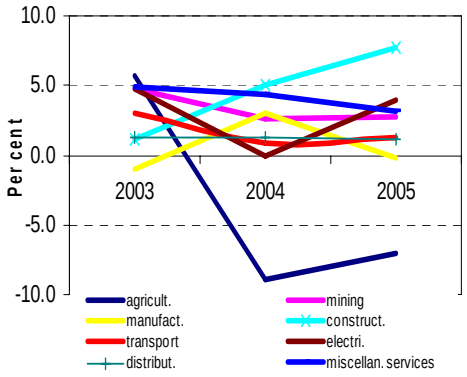
Since 2003, the tourism, professional services, distribution and the manufacturing sub-sectors have been the major recipients of the loans extended to the corporate sector (see **Figure 5.11**). The improvements in the ratio of non-performing loans to gross loans were observed in the sectors that have been major beneficiaries of increased loans since 2003 (see **Figure 5.14**).

Figure 5.14
Ratio of Corporate Sector NPLs to
Corporate Sector Loans – Banking Sector



There was significant contraction in the agriculture sector during 2004, due to the recurrent adverse impact of weather-related shocks. This resulted in an 8.9 per cent decline in the sector's contribution to real GDP during that year (see **Figure 5.15**).

Figure 5.15
Growth by Sector



The weak performance in the agriculture sector during 2004, led to a slight increase in NPLs (see **Figure 5.14**). However, with the strong rebound in the sector during 2005 there was an improvement in the sector's debt servicing capacity. For the transportation sub-sector, the improved growth performance during 2005, has not translated into an improvement in the sector's debt servicing capacity. [43]

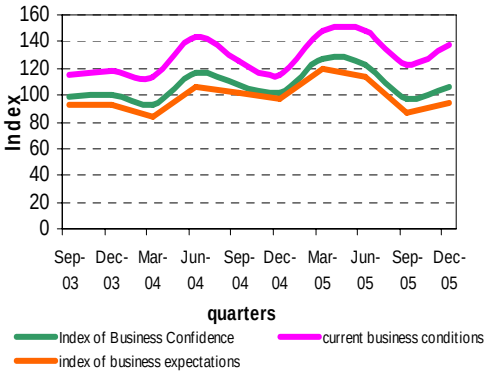
5.3.2 Performance of Corporates listed on the Jamaica Stock Exchange (JSE) during 2005

Corporate performance during 2004 and 2005 was strongly influenced by the adverse effects of weather-related shocks

Weather-related shocks also impacted the performance of companies listed on the JSE. Despite improvements in the indicators of business conditions during most of 2005, there was deterioration in the profit performance of a number of companies listed on the JSE (see **Figure 5.16**).

[43] This performance may have been influenced by the Jamaica Urban Transit Company Limited (JUTC), as the entity continued to experience losses during 2005.

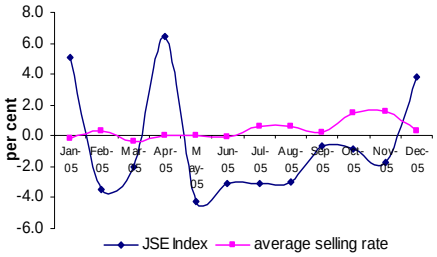
Figure 5.16
Index of Business Conditions



Source: Jamaica Conference Board

This was reflected in poor stock market performance, with the main JSE index declining by 7.2 per cent for 2005. Additionally, the diversion of demand from local equities occurred despite relatively low returns in the foreign exchange market (see **Figure 5.17**).

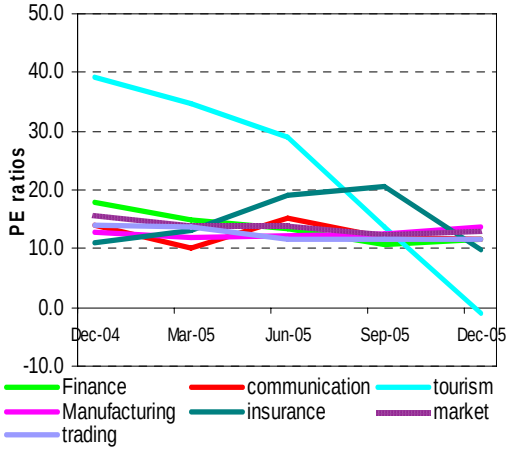
Figure 5.17
Monthly change in JSE Index and J$/US Exchange Rate



In this context, there were marked reductions in the price investors were willing to pay for company earnings. This contributed to a general downward trend in the average price-earnings (PE) ratios of the listed companies by sector during most of 2005 (see **Figure .18**).[44]

Despite the price corrections, market averages remained high, with an average ratio of 14.0 for 2005.[45] There were strong deviations in average PE ratios for the listed companies in the tourism and insurance sectors relative to market performance during the period. For companies in the tourism sector, there was a sharp decline in the average PE ratio.

Figure 5.18
Average PE Ratios of Shares Listed on the JSE



At the same time, there was a marked increase in the average PE ratio for the insurance sector. Despite the poor earnings performance in the sector, there was continued increase in the average share price, reflecting over-investment and speculative tendencies regarding these stocks.

[44] PE ratios measure how much investors are willing to pay per dollar of earnings, thereby relating the market's valuation of a company's share to the wealth the company is creating. Trailing price earnings ratios were computed for each industry. This incorporates the impact of recent profit performance on the price of the stock, where divergences in the stock price from normal performance reflect expectations regarding future profit performance.

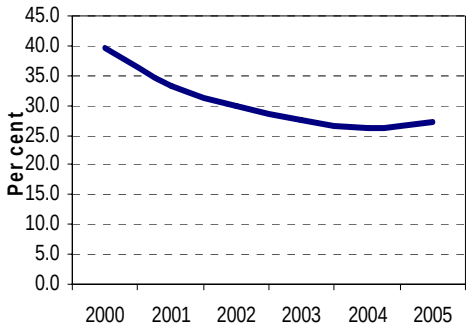
[45] High PE ratios can serve as signal of positive investor confidence in the growth prospects for an industry.

There was a rebound in investor expectations regarding profit performance of the listed companies during the December 2005 quarter, due to anticipated improvements in macroeconomic environment in the near-term. This influenced a general upward trend in the PE ratios.

5.4 Banking Sector Exposure to Public Sector Debt

The banking sector's exposure to Jamaica public sector debt at the end of 2005 reflected a considerable decline relative to 2000.[46] At the end of 2005, the ratio had declined by 12.3 percentage points from a high of 39.5 per cent at the end of 2000 (see **Figure 5.19**). This performance was influenced by the exceptional growth in banking system assets, due to strong expansion in lending to the private sector over the period.

Figure 5.19
Public Sector Loans & Securities to Assets - Banking Sector



However, at the end of 2005, public sector loans and securities as a proportion of banking system assets was 27.0 per cent, representing a one-percentage point increase relative 2004. This was partly reflective of stronger investments in domestic bonds during 2005, consistent with the rebound in investor confidence during the year. Commercial banks accounted for the largest share of public sector debt held by the banking sector, totaling 88.0 per cent in 2005.

Commercial banks dominate banking sector investments in public sector debt

5.4.1 Public Sector Indebtedness & Performance

The vulnerability of the banking sector arising from high exposures to public sector debt may be determined by examining the public sector's overall indebtedness and performance. Over the past five years, public sector debt increased by approximately 142.0 per cent to $827.0 billion at the end of 2005, reflecting a 8.5 per cent increase relative to end 2004 (see **Figure 5.19**).

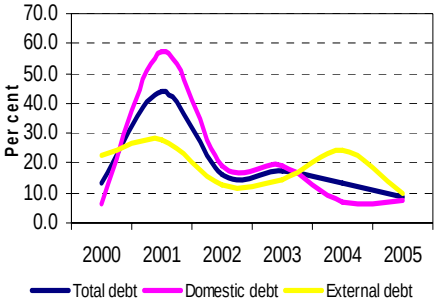
Although declining in real terms, securities holdings have accounted for approximately 75.0 per cent of the banking sector's holdings of public sector debt since December 2003. Additionally, there has been a moderation in the growth rate of loans extended to the public sector, since the significant increase during 2002. During the past five years, domestic financing continued to account for the bulk of public sector funding.

[46] Exposure is measured by public sector loans and securities as a share of banking system assets. Public sector comprise Public Entities and Central Government.

This was particularly evident during 2000 to 2003, in a context of rising uncertainties in the macroeconomic environment. Negative investor sentiments internationally regarding emerging market debt also limited Government's debt raising opportunities on the international market.

During 2001, the total debt stock increased by 44.1 per cent, driven by a 57.0 per cent increase in the domestic debt stock during that year. The significant increase in the total debt stock during 2001 related to liabilities assumed in respect of restructuring costs associated with the financial sector distress of the latter half of the 1990s. Despite high debt levels, there has been moderation in the growth in domestic and external debt since 2002 (see **Figure 5.20**). Growth in the debt stock was also tempered by reductions in costs of borrowing due to improvements in the local and international market environment over the past two years.

Figure 5.20
Growth in Public Sector Debt Stock



Government efforts to reduce the riskiness of their debt has been relatively successful

Efforts by Government to minimize risks in the debt portfolio have been geared towards extending the maturity profile of domestic and external debt as well as increasing the share of fixed rate debt in the portfolio. The latter acts as a hedge against unexpected increases in interest rates, instability in the foreign exchange market as well as external shocks (see **Figures 5.21 & 5.22**).

Figure 5.21
Domestic Debt – Maturity Structure

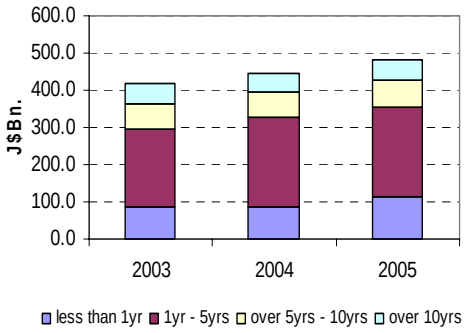
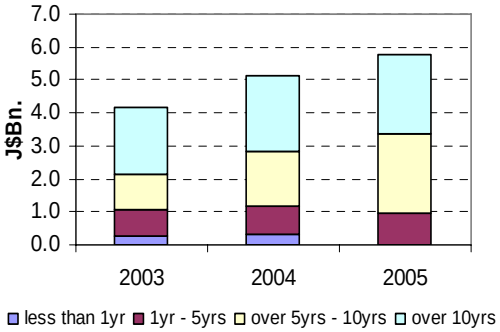


Figure 5.22
External Debt – Maturity Structure



Since 2003, there has been steady progress in shifting external debt into the 'over 10 years' maturity bucket. For domestic debt, there have been increased investments in the '5 to 10 years' maturity bucket. The Government was more successful in extending the maturity profile of domestic debt during 2005 compared to 2004. The shifting of public sector securities issues to longer-term tenors was reflected in the lengthening of the average tenor of the public sector securities held by the banking sub-sector at end 2005 relative to end 2004 (see **Figures 5.23 to 5.25**).

Figure 5.23
Maturity Structure of Public Securities – Commercial Banks

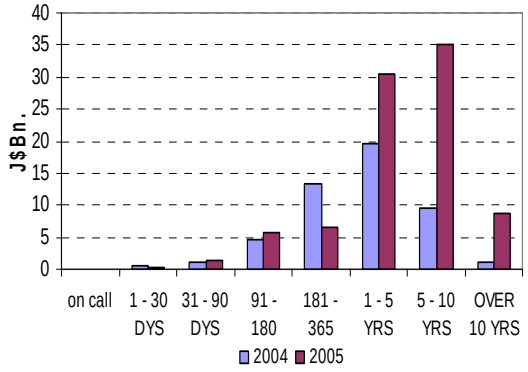


Figure 5.24
Maturity Structure of Public Securities – FIAs

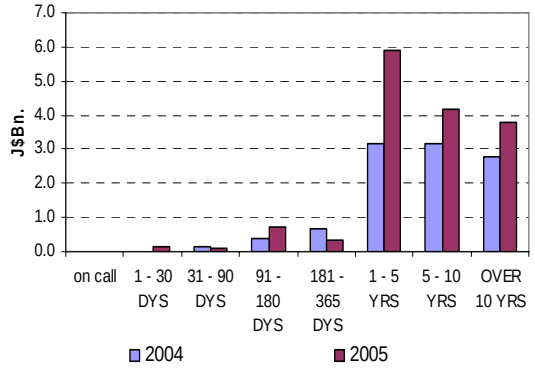
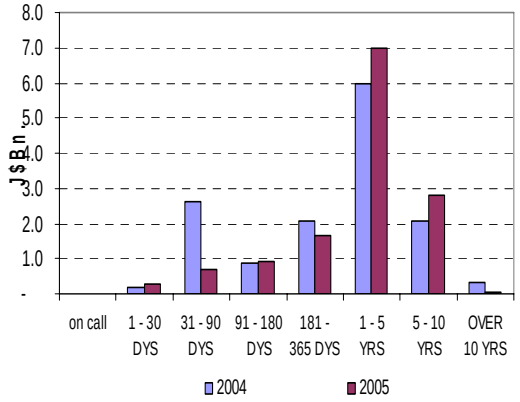


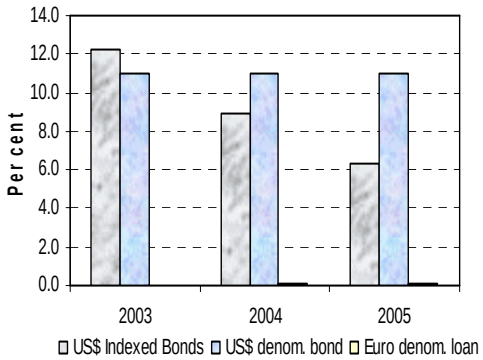
Figure 5.25
Maturity Structure of Public Securities – Building Societies



Government's success in extending the maturity profile of domestic debt during 2005 was encouraged by the lowering of domestic interest rates. However, Government was unsuccessful in increasing the share of fixed rate instruments in the domestic debt portfolio, in a context of uncertainties regarding the inflation path. Fixed rate instruments as a share of the debt portfolio declined to 50.8 per cent at end December 2005, relative to 57.9 per cent at end 2004.

The Government made substantial progress in reducing the foreign exchange risk of domestic debt in 2005. At end December 2005, US$-Indexed bonds totaled J$30.4 billion or 6.3 per cent of the domestic debt portfolio relative to J$51.2 billion at end 2004 (see **Figure 5.26**). This represents a progressive decline in US$-indexed bonds as a share of the domestic debt portfolio since 2003. The ability to reduce the supply of US dollar-indexed assets is reflective of greater stability in the foreign exchange market since 2003.

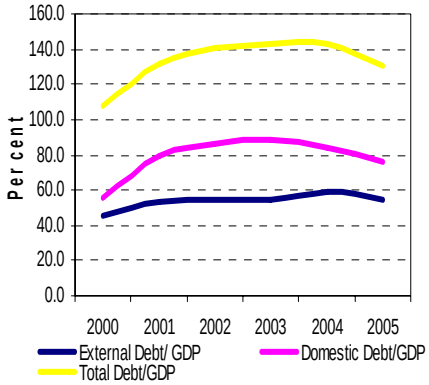
Figure 5.26
Foreign Linked Debt in Domestic Debt Portfolio



An examination of debt performance indicators reveals mixed results

There have also been improvements in the total debt to GDP ratio since 2003, which has been influenced by slower growth in the debt stock relative to GDP growth (see **Figure 5.27**).

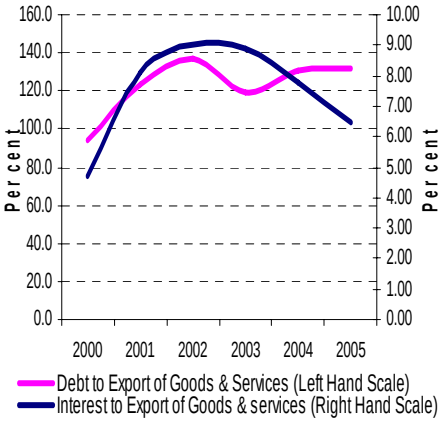
Figure 5.27
Debt to GDP Ratios



Government has achieved some amount of success in limiting the impact of macroeconomic shocks on the debt portfolio, consequently minimizing the banking sector's vulnerability to high exposures in public sector debt.

Jamaica's ability to service external interest payments through export earnings has also improved, largely reflecting declines in external interest payments over the past three years. Notably, the ratio of external interest payments to exports of goods and services declined to 6.5 per cent in 2005 relative to 9.0 per cent at the end of December 2002 (see **Figure 5.28**).

Figure 5.28
External Interest & External Debt to Exports of Goods & Services



Notwithstanding, there has been an increase in external debt since 2003, which has outpaced the growth in exports, resulting in an increase in the ratio.

Fiscal performance benefited from the relative macroeconomic stability that prevailed during 2005. A continuation of this stability should improve the banking sector's vulnerability to public sector debt.

6. Risk Assessment of the Banking Sector

6.1 Overview

At end 2005, the balance sheet of the banking system exhibited a significant level of robustness to absorb potential market and credit risk shocks. [47] *Core deposits stability as well as buoyant liquid assets bolstered the banking system's capacity to absorb liquidity shocks during 2005. Additionally, stress test performed by the BOJ show that Jamaica's banking sector would not be unduly impaired by sudden changes in the exchange rates. However, there was some deterioration in the banking system exposure to interest rates shocks in 2005 relative to the previous year. Continued increases in credit quality, significant levels of provisions for loan-losses as well as improvements in the composition of the credit portfolios of the banking sector continue to insulate the banking system from the inimical impact of credit shocks. Overall, Jamaica's banking sector would not be significantly exposed to sudden changes in either market risk or credit risk factors.*

6.2 Market and Credit Risks[48]

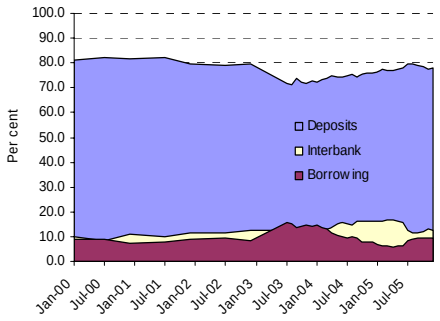
6.2.1 Liquidity Risk of the Banking System

One of the main functions of banking institutions is to intermediate funds. Banks do this by managing financial claims (e.g. loans and securities) and liabilities (e.g. deposits and inter-bank borrowings). Banking sector assets typically are composed of relatively illiquid assets such as long-term loans while their main liabilities are liquid short-term deposits. This maturity mismatch gives rise to liquidity risk.

Funding structure of banks remains stable over the past five years

Between 2000 and 2005 the banking system exhibited significant levels of core-deposits stability (see Figure 6.1).[49] Confidence in the banking system as well as the successful implementation of the deposit insurance scheme by the Jamaica Deposit Insurance Company (JDIC) have aided in the stability of this source of funding. [50] At end 2005, deposits and inter-bank borrowing accounted for 78.0 per cent and 12.7 per cent of total funding, respectively. This compares with a funding structure of 81.8 per cent and 10.8 per cent for deposits and inter-bank borrowing, respectively, at end December 2000 (see **Figure 6.1**).

Figure 6.1
Funding Structure of Banking Activities



[47] The banking system in this chapter refers only to commercial banks, building societies, and merchant banks.

[48] The equity risk component of the market risk assessment is not covered in this analysis as it does not represent a systemic vulnerability to the sector.

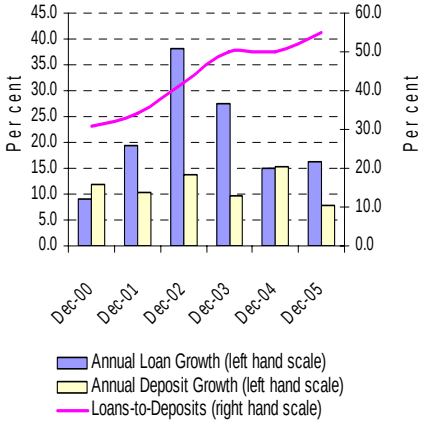
[49] Savings and demand deposits have shown low levels of volatility between 2000 and 2005. The average monthly growth rate over the review period for savings and demand deposits was 0.4 per cent with a standard deviation of 1.1 per cent.

[50] This confidence is reflected in higher deposit levels in spite of declining rates of interest on deposits.

The large proportion of core funding from deposits is crucial to the management of liquidity risk as a high level of short-term funding represents increased liquidity risk for banks.[51] In 2005, the level of deposits of the banking system increased by 7.8 per cent, albeit at a slower rate of increase relative to 2004. Over the same period, funding in the inter-bank market declined by 17.8 per cent (see **Figure 6.1**).

The bank's loans-to-deposit ratio increased to 54.0 per cent at end 2005 from 31.0 per cent at end 2000. The loan-to-deposit ratio, which reflects the banking systems' demand for the financing of its lending activities, increased steadily over the past five years. Since 2004, the increase in the loans-to-deposit ratio has been more measured as growth in loans has moderated in line with the growth in deposits (see **Figure 6.2**).

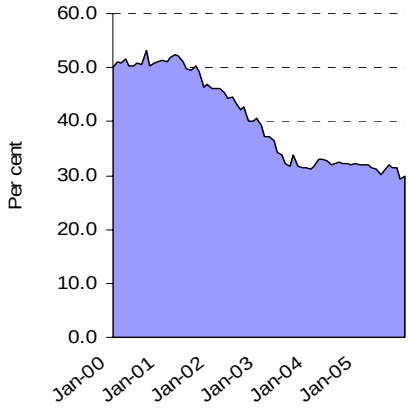
Figure 6.2
Loans to Deposit Ratio



The net funding position of banking institutions decreased over the last five years to 32.4 per cent at end 2005 from 51.4 per cent at end 2000.[52] This positive gap implies that banks can fund all their lending and advances from deposits (see **Figure 6.3**).

Liquidity funding gap continue to show surplus

Figure 6.3
Overall Net Funding Positions



The banking system has also maintained high levels of liquidity in recent years as measured by the liquid asset ratio and the ratio of liquid assets to total assets (see **Figure 6.4**).[53] The liquid asset ratio remained relatively flat at 35.6 per cent at end 2005, relative to end 2004, while the ratio of liquid assets to total assets for the banking sector increased marginally to 14.1 per cent at end 2005 from 13.7 per cent at end 2004. Both these measures were consistent with adequate liquidity management which augured well for the capacity of the system to absorb liquidity shocks.

[51] This is particularly true if their liquid assets are not adequate.

[52] The net funding position is measured as the difference between deposits and loans, expressed as a percentage of total assets.

[53] The liquid assets ratio is the ratio of the average prescribed assets over the average prescribed liabilities. The statutory requirement for the liquid asset ratio is 23.0 per cent since 2001.

Figure 6.4
Core Liquidity Indicators

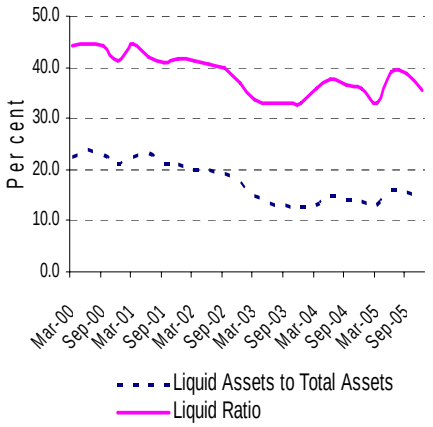


Figure 6.5
Maturity Structure of Assets & Liabilities at End 2005

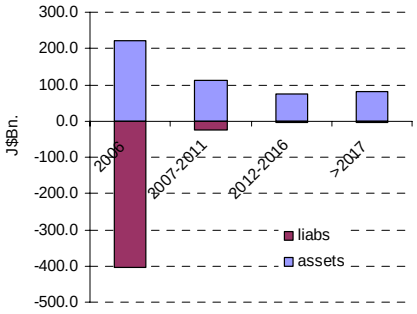
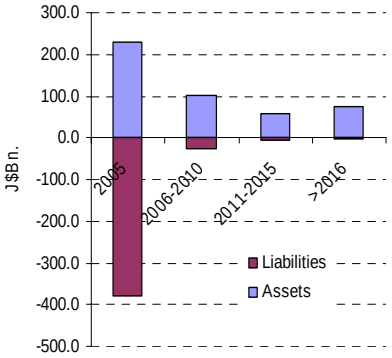


Figure 6.6
Maturity Structure of Assets & Liabilities at End 2004



Greater mismatch between banking sector assets and liabilities maturing in less than one year

At end 2005, banks' liquidity gap profile for assets and liabilities maturing within one year deteriorated relative to that of the previous year as the banking system became even more negatively gapped over the short-term (see **Figure 6.5** and **Figure 6.6**). There was a larger value of liabilities maturing within one-year, relative to the value of assets which matured over the same period. The increased negative gap over 2005 served to expose financial intermediaries' to positive interest rate shocks which would result in these short-term liabilities being re-priced at higher rate than the maturing assets. The short-term negative gap position of the banking sector grew by 22.2 per cent to $183.0 billion at end 2005 relative to end 2004. This was equivalent to a 5.0 percentage point increase in the overall gap ratio to minus 36.6 per cent at end 2005 relative to the previous year.[54]

In summary, although the exposure to liquidity risk increased over 2005, as captured by its impact on capital adequacy, this did not pose systemic risk to the banking system.

[54] The gap ratio is calculated as the ratio of the cumulative difference between interest bearing assets and liabilities over various time horizons e.g. less 1 year, 1-2 years, to total assets.

Box 3. Types of Risk

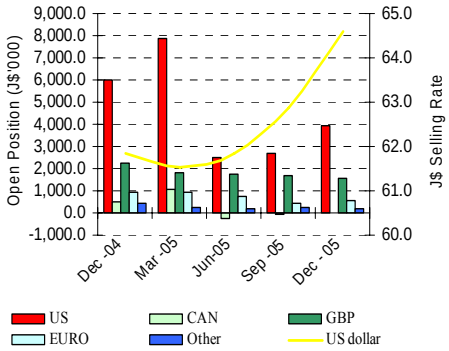
Credit Risk: the risk of losses to a bank due to the inability of counterparties (e.g. borrowers of loans) to meet their obligations when due, or in the future.

Liquidity risk: the risk that banks will fail to fulfill their obligations or need to finance such obligations at excessive interest rates due to inadequate liquid funds.

Market risk: the risk of losses to a bank due to changes in interest rates, exchange rates or share prices which affect the value of an institution's assets or liabilities.

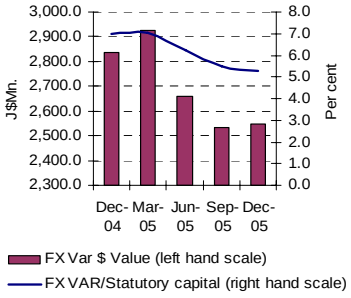
Operational risk: the risk of losses due to operational disruptions, for example failures in computer systems, breaches of rules or fraud.

Figure 6.7
Quarterly Net Open Positions by Currency & Selected Exchange Rates December 2004 – December 2005



Foreign exchange risk was not a significant threat to the banking sector stability as the aggregate Value at Risk (VaR) related to banks maintaining open FX positions did not exceed 7.0 per cent of banks' regulatory capital (see **Figure 6.8**). [55]

Figure 6.8
FX Value at Risk expressed as Percentage of Regulatory Capital



Reduction in net open positions in latter half of 2005 lowered foreign exchange exposure of banking system

6.2.2 Foreign Exchange Risk (FX) Exposure

Reduction in Value at Risk (VaR) for FX positions for the banking sector

Foreign currency financial instruments constitute a significant part of banks' balance sheet. At end 2005, 40.3 per cent and 45.4 per cent of the banking system assets and liabilities, respectively, were denominated in a foreign currency. Individual banks were exposed to foreign exchange risk to varying degrees, based on their different net open positions in various currencies. However, the greatest levels of currency exposures were from net open positions in US dollars and to a lesser extent Great Britain Pounds (see **Figure 6.7**).

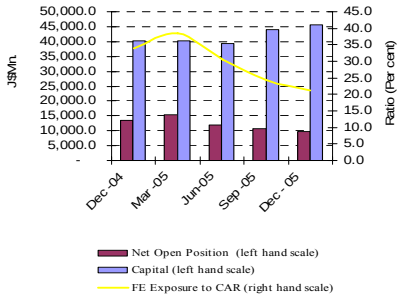
However, deterioration in macroeconomic conditions during the second half

[55] See Box 6.2 for a brief exposition of Value at Risk (VaR). The FX VaR is calculated for 1-day holding period on the basis of historical daily exchange rate movements during one trading year. The probability of a loss higher than VaR being incurred does not exceed 5 per cent.

of 2005, along with the concomitant increased volatility in the foreign exchange market, resulted in banks employing several hedging strategies.[56]

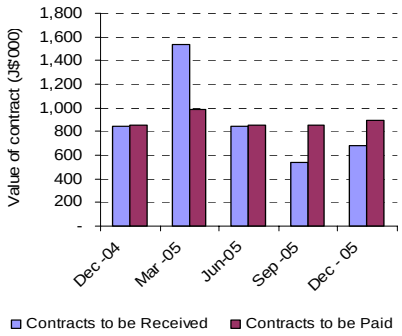
The VaR associated with the FX positions of the banking sector declined in the latter half of 2005. This reduction resulted primarily from a decline in the duration of foreign currency investments held by the banking sector. Additionally, banks limited their exposure to fluctuations in foreign exchange rates by reducing their net open positions, particularly in US dollars. As such, the ratio of net open positions to regulatory capital declined steadily to 20.0 per cent at end 2005 (see **Figure 6.9**).

Figure 6.9
Quarterly Ratio of Tiered Capital to Foreign Exchange Exposure



Banks also increasingly matched long and short positions in foreign exchange forward contracts which limited their exposure to increased volatility in the exchange rates as experienced in the latter half of 2005 (see **Figure 6.10**).

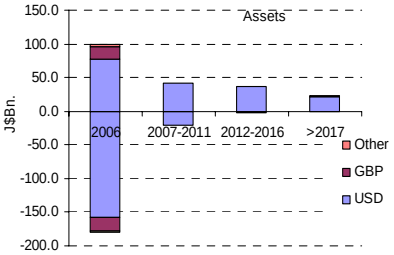
Figure 6.10
Quarterly Foreign Exchange Forward Positions of the Banking System: December 2004 - December 2005



An evaluation of the maturity gap profile showed that by end 2005, banks became increasingly negatively gapped with regard to their US dollar interest sensitive assets and liabilities maturing in less than one year. The gap ratio for interest sensitive assets and liabilities denominated in US dollars with maturity of one-year or less, increased to minus 16.2 per cent at end 2005 from minus 11.1 per cent in 2004. This increased the banking sector's liquidity risk exposure to maturing US dollar-denominated liabilities over the short-term. Given this maturity profile, an increase in US interest rates in the future will have an adverse liquidity impact in a scenario where banks need to refinance maturing US dollar liabilities at higher rates than maturing US dollar assets (see **Figure 6.11**).

[56] The exchange rate depreciated by 4.4 per cent in the second half of the year in contrast to a depreciation of 0.3 per cent in the first six months.

Figure 6.11
Maturity Structure of Foreign Currency Interest Sensitive Assets & Liabilities at End 2005



Maturity Structure of Foreign Currency Interest Sensitive Assets & Liabilities at End 2004

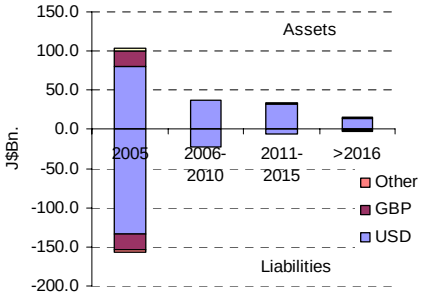
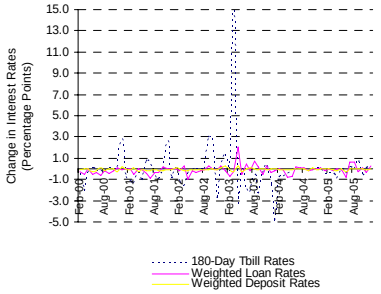
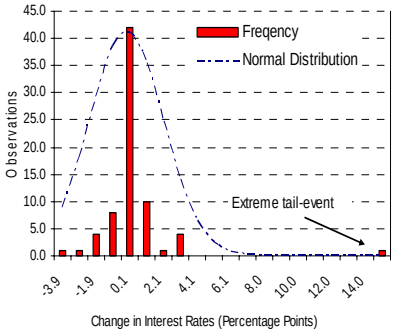


Figure 6.12
a) Monthly Weighted Average Deposit, Loan and 180-Day Treasury Bill Rates March 2000 - December 2005



b) Frequency Distribution for Changes in the 180-Day Treasury Bill Rate



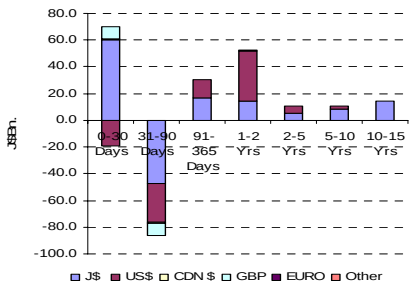
Overall, however, the foreign exchange risk exposure of the banking sector was still considered low at end 2005.

6.2.3 Interest Rate Risk Exposure

Over the period 2000 to 2005, interest rates on various financial instruments displayed periods of significant volatility, particularly during the disturbances in the foreign exchange market in 2003. Since then interest rate volatility and thus bond price volatility diminished. This was in a context of improved macroeconomic performance and market participants' expectations of successive reductions in interest rates (see **Figure 6.12**).

The banking sector's repricing gap profile for 2005 reflected a larger mismatch between assets and liabilities, denominated particularly in Jamaica Dollars and US dollars. This continued to expose the banking system to interest rate risk (see **Figure 6.13**).

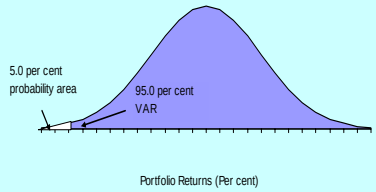
Figure 6.13
Repricing Structure of Interest Sensitive Assets



BOX 4. Value at Risk

Value at Risk (VaR) is a metric that seeks to measure the loss that an institution will experience with a given probability over a specified time period. VaR can be used to quantify an institution's exposure to market risk, i.e. possible losses to an institution's investment portfolio. It is usually reported as a rate of return relative to portfolio value.

VaR and Normal Distribution



VaR implicitly assumes that a portfolio's composition remains constant over the holding period. Also, the VaR measures increase as the holding period under consideration lengthens, because there is more time for negative market developments to occur. In calculating the VaR all the risks inherent in the portfolio are aggregated taking into account that there are various positions within the portfolio which can offset or augment the risk of each other.

With a given probability p, over a holding period of t, the 1-p per cent VaR is the loss that is expected to be exceeded only p per cent of the time over a period of the next t days. If, for example, p is 5.0 per cent and t is one trading day, then a 95.0 per cent VaR of say 3.0 per cent, means the institution will make a rate of return higher than 3.0 per cent over one trading day with 95.0 per cent probability.

If portfolio returns are assumed to be normally distributed, the VaR can be calculated using the equation for a standard normal distribution to find the loss that corresponds to the p per cent lower tail:

$$95\ \%\ \text{VaR} = \mu \times 1.96\ \sigma$$

Where μ and σ are the mean and standard deviation of portfolio returns, respectively, over the estimation period.

From a financial stability point of view, "stress tests" are conducted to ascertain what the VAR of financial institutions is likely to be should serious disturbances to financial markets occur. In effect, crisis conditions that are unlikely to arise are simulated. The impact of potential losses from extreme shocks on institutions' CARs are then determined.

Results from the VaR framework as at 31 December 2005 are reported below:

VaR Stress Test Results as at 31 December 2005

	VaR (%)	VaR ($'Mn)	% of 05 Pre-tax Profits
Banks	-1.00	1,285.73	9.8
FIAs	-3.70	1,098.89	87.4
Building Societies	-1.30	273.57	10.3

Specifically, the value of instruments to be re-priced in three or more years would decline in a context of sudden and large reversals in the downward path of interest rates. In addition, the cumulative 90-day repricing gap increased significantly by J$ 25.8 billion at end 2005 and the gap as a percentage of balance sheet assets expanded by 5.1 percentage points to 6.1 per cent relative to end-December 2004 (See **Table 6.1**).

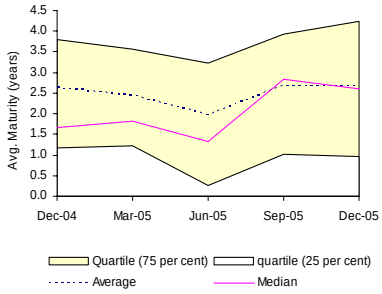
Table 6.1
Major Indicators of Banks' Interest Rate Exposure

	Dec-05	Dec-04
90-Day Cumulative Total Gap (J$ Billion)	30.3	4.5
90-Day Cumulative FX Gap (J$ Billion)	10.3	2.1
90-Day Cumulative Gap/Balance Sheet Total	6.1%	1.0%
90-Day Cumulative FX Gap/Balance Sheet Total	2.1%	0.4%
Average of Interest Bearing assets/ Average of Interest Bearing Liabilities	100.2%	97.0%
Interest Margin (Interest Income/ Average Balance Sheet Total)	7.9%	8.8%
Spread (Interest Income/ Average of Interest-Bearing Assets-Interest Bearing Liabilities)	8.5%	9.1%

The lengthening of the average repricing profile for banking sector securities also reflected increased levels of interest rate risk over 2005 (see **Figure 6.14**). This may have been related to the expectation of further reductions in interest rates over the calendar year. At end 2005, the securities portfolio of the banking sector accounted for 35.2 per cent of banking system assets.[57] It is estimated that, at end December 2005, in the case of a parallel upward shift in the yield curve by one hundred basis points, the banking sector would incur loss on their securities portfolio equivalent to 1.95 per cent of their net interest income.

[57] These include Jamaica Dollar and foreign currency denominated GOJ and BOJ securities held by the banking sector.

Figure 6.14
Average Time to Reprice for Banking Sector Securities



The net interest income and valuation gains and losses on securities were not significantly differentiated between individual banks. This is indicative of the limited possibility of reversing positions or off-setting those positions with liabilities of a similar tenor and magnitude. Additionally, due to the significant securities portfolios (consisting largely of GOJ securities) the interest rate risk levels of the banking sector exhibited considerable inertia.

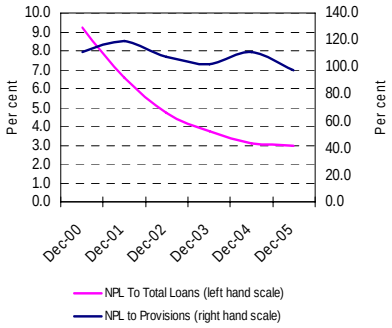
Taken in the context of the entire banking sector, however, interest rate risk exposure would not threaten the stability of the banking system as at end 2005. This was primarily due to the significant stock of retained earnings and accumulated profits of the banking system which would stem the impact of such a shock on the capital adequacy of these entities.

6.2.4 Credit Risk Exposure of the Banking System

Trend decline in NPLs continued in 2005

Positive developments in the banking system's credit risk profile include the continued reduction in non-performing loans (NPLs), robustness in the adequacy of loan-loss provision as well as reductions in the concentration in the credit portfolios of the banking sector. Of some concern, however, was the rising proportion of loans to the household sector in proportion to the entire loan portfolio of the banking system.

Figure 6.15
The Evolution of Credit Default risk and the Adequacy of Provisioning for Bad Debt



Robust levels of provisions for loan-losses within the banking system

Credit risk as measured by the ratio of NPLs to gross credit declined to 3.0 per cent at end 2005 from 9.2 per cent at end 2000 (see **Figure 6.15**). The general improvement in the ratio of NPLs to total loans has occurred against the backdrop of declines in lending rates, particularly for commercial loans since 2000, as well as improved diversification of the loan portfolio of the banking system (see **Figure 6.16 and Figure 6.17**).

Figure 6.16
Selected Loan Rates and Loan-Deposit Spread of the Commercial Banking Sector

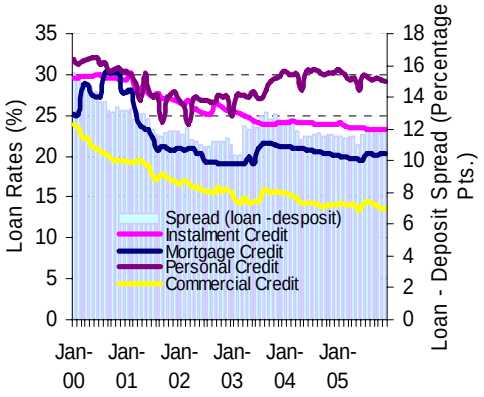
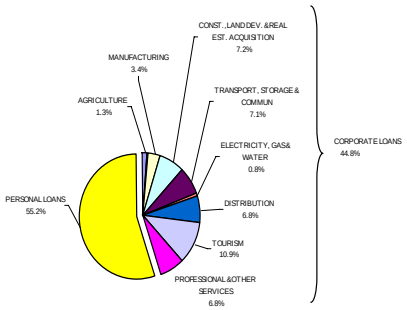
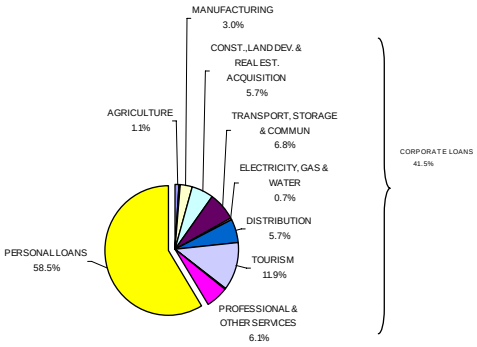


Figure 6.17
a) Composition of the Loan Portfolio of the Banking System at end December 2005



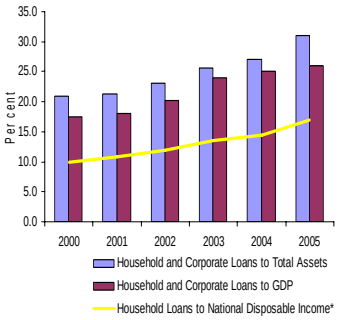
b) Composition of the Loan Portfolio of the Banking System at end December 2004



The adequacy of the loan-loss provision, measured as the ratio of loan-loss provisions to gross NPLs, continued to record high levels and was 97.4 per cent at end December 2005 (cf. **Figure 6.15**). This outturn attests to the banking system's robust capacity to cope with the realization of credit risk resulting from borrower default. At the end of 2005, provision for loans-losses was $5 357.8 million relative to $5 316.0 million at end 2004.

There was a marginal increase in the ratio of private sector credit (including households) to GDP at end 2005 to 26.0 per cent from 25.0 per cent at the end of 2004 (see **Figure 6.16).** Between 2000 and 2005 **t**he increase in bank credit to the private sector derived from: (1) increased competition within the banking credit market in spite of consolidation within the sector (2) the desire of banking institutions to maintain margins in a context of declining interest rates, and (3) increased competition from non-bank credit substitutes

Figure 6.18
The Evolution of Credit Risk by Economic Sector for the Banking System

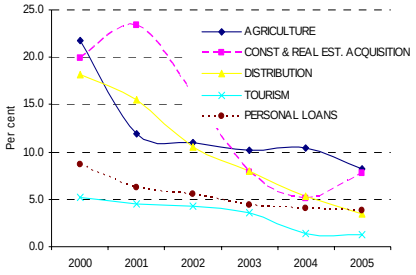


6.2.5 Credit Risk Exposure to the Household Sector

Credit to households at end 2005 represented 59.7 per cent of the total credit extended to the private sector up from 58.5 per cent at end December 2004. For 2005, credit to households (proxied by personal loans) grew by 24.1 per cent to $98 081.0 million. However, the household sector loan concentration risk did not pose a threat to the robustness of the banking system's loan portfolio. This was corroborated by the decline in the ratio of non-performing loans(NPLs) to gross credit for households which was also consistently below the sectoral NPLs to gross credit for corporate loans, with the exception of those to the tourism sector (see **Figure 6.19**).

Loans to households accounts for largest portion of credit portfolio

Figure 6.19
The Evolution of Credit Risk by Economic Sector for the Banking System



Though credit risk to households has been trending down, there are limits to which the lending portfolio of banks can benefit from increased lending to households. Increasing credit to this sector in light of their rising overall indebtedness may eventually

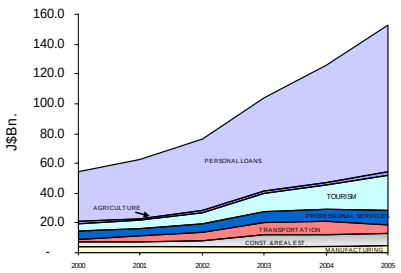
lead to increasing proportion of household credit defaults. In this regard, the planned development of a private credit bureau will serve a pivotal role in enabling banks to continue to manage this concentration risk.

6.2.6 Credit Risk Exposure to the Corporate Sector

The largest concentration of loans to the corporate sector was in the *tourism sector*. This concentration (as proportion of total corporate loans) increased to 36.0 per cent in 2005 from 28.0 per cent the previous year (see **Figure 6.20**).

NPLs to corporate sector trend downward

Figure 6.20
Trends in the Composition of the Loan Portfolio of the Banking System



An offsetting factor to the increased exposure to the tourism sector was the continued decline in the ratio of NPLs of non-performing loans (NPLs) to total credit to the sector. The exposure of the banking sector to agricultural loans declined to 8.2 per cent at end 2005 from 10.4 per cent at end 2004. This augured well for quality improvement of the credit portfolio of the banking system as the default risk in the *agricultural sector* has remained comparatively high, relative to other segments of the corporate sector. However, the default risk for the sector has declined steadily to 8.2 per cent at end 2005 from 22.0 per cent at end 2000 in spite of significant adverse weather conditions over the period.

There was expansion in the ratio of non-performing loans to gross loans for the *construction, land development and real estate sector* to 8.0 per cent at end 2005 from 5.0 per cent at the end of the previous year. This expansion indicates that the improvement in the credit risk exposure of the corporate sector was not comprehensive in 2005.

6.2.7 Counterparty Credit Risk Exposure to the Banking System

Financing transactions between the banking system and other deposit taking institutions exposes the banking system to counter-party default risk. Throughout 2005, the banking system was a net source of funding to financial institutions (see **Figure 6.21**). The magnitude of the net funding provided was greatest at end June 2005. Net financing was primarily provided to local non-deposit taking institutions, as the system received overall funding from foreign financial institutions (see **Figure 6.22**). Foreign financing reflected the receipt of resources from foreign sources by two institutions in the latter half of the year (see **Figure 6.23**). Given that the system is a net source of funding, and not a net user of funding, it is unlikely that their operations will be negatively impacted by a reduction in liquidity outside of the banking system. With net funding to non- deposit taking

institutions not exceeding 1.3 per cent of end of year assets for any quarter, the direct effect of default by these counterparties is unlikely to affect the stability of the system.

Figure 6.21
Total Banking System Funding

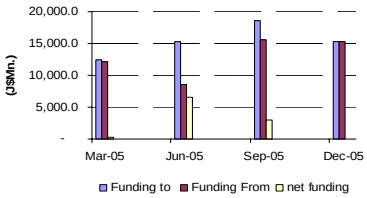


Figure 6.22
Bank System Funding with Local Non-Deposit Taking Institutions

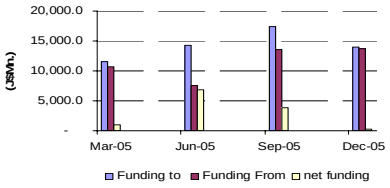


Figure 6.23
Banking System Funding with Foreign Institutions

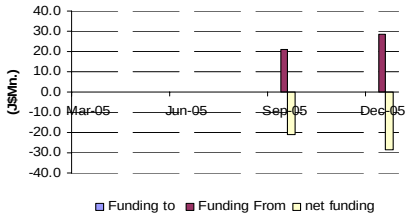
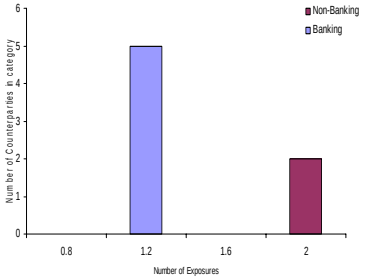


Figure 6.24 shows the incidence of large exposures (to other banks and non-banks) at end December 2005.[58] The more exposures there are to a single counterparty, the greater the number of banks that would incur a significant loss in the event that counterparty fails. At end 2005, there were only two institutions that at least two banking institutions shared as large exposure counterparty. These counterparties were non-banking institutions. These results would suggest that the banking sector was not significantly exposed to counterparty risk.

Figure 6.24
Incidence of common 'large exposure' counterparts at end December 2005



[58] For analytical purposes, 'large exposures' are defined as any exposure that exceeds 10 per cent of eligible capital.

BOX 5.

Stress Testing the Jamaican Banking System

Stress testing of the banking system assesses its capacity to absorb losses that may arise under a set of extreme, but plausible, macroeconomic shocks. 'Macro' stress tests typically involve quantifying the impact of a significant movement in a single risk factor or a set of factors on the aggregate system capital as well as earnings. The aim of this box is to assess the exposure of the banking system to a range of scenario-based shocks, which were informed by past experience as well as hypothetical shocks.

Specification of the Market Risk Stress Test

The market risk stress test involved exposing the banking system balance sheet to large movements in interest rates and exchange rates. The shocks were assumed to occur over a period within which the banks would be unable to change the composition of their portfolios in order to mitigate risks. The market risk shocks were assessed based on the impact on the capital adequacy of the institutions as well as the impact on their profitability.[59]

For interest rate shocks, both impact on liquidity as well as repricing risk were evaluated utilizing both duration and repricing gap models. The interest rate shock was assumed to be non-symmetric for different asset and liability classes.

A range shock of 1 100.0 bps to 1 500.0 bps was applied to the securities portfolio and a range shock of 100.0 bps to 500.0 bps applied to the deposit and loan portfolios.[60] For the foreign exchange risk, both a 10.0 per cent to 50.0 per cent appreciation and depreciation in the Jamaican Dollar vis-à-vis the US dollar were considered. Both the direct impact on the net open positions and indirect impacts of these shocks were evaluated.

Specification of the Credit Risk Stress Test

The credit risk shocks involved assessing the exposure of the loan book of the banking system. These stress tests sought to evaluate the impact on the capital adequacy of the banking sector of a range of large but plausible increases in non-performing loans.

Results of Stress Testing Exercise

Figure 6.1 shows the assessed impact of the shock on bank profits, relative to pre-tax profits for the year ended 2005. [61, 62] The impact on net interest income based on the shock was an estimated increase of approximately 21.7 per cent of base -year profits. As such, some banks were generally

[59] According to Banking (Capital Adequacy) Regulations (2004), a bank must maintain a minimum CAR, defined as capital base to risk-weighted assets (RWA) of 10.0 per cent.

[60] Historically, movements in these interest rates have responded in varying degrees to increased macro-economic volatility (cf. Figure 5.17). The non-symmetric shocks attempt to capture this phenomenon in a systematic manner.

[61] Profits are expressed relative to the base year; so for example, a reading of -10.0 per cent indicates that the pre-tax profits for the five banks would be 10 per cent lower than in the base year of 2005.

[62] The bars represent the 'highest' and the 'lowest' results and the dots show the weighted average for the banking system.

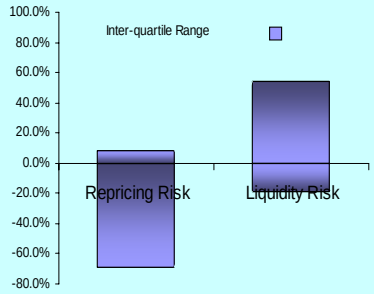
positioned to benefit from a sharp increase in interest rates (see **Figure 6.2b** – Liquidity Risk). [63]On the other hand, the repricing impact of the *same* interest rate shocks was, on average, a reduction of 40.3 per cent of base year profits at end December 2005. This impact obtained primarily as a result of long-dated assets on the balance sheet of some institutions, which were not offset by liabilities of a similar tenor.

The impact of the interest rate shocks on the capital adequacy of the banking system was marginal. The banking sector's CAR remained comfortably above the 10.0 per cent requirement even under extreme but plausible shocks. Banks also tended to have large buffers[64] which assisted in insulating them from the market risk though reducing profitability.

Varied response to market risk on profitability

Figure 6.1

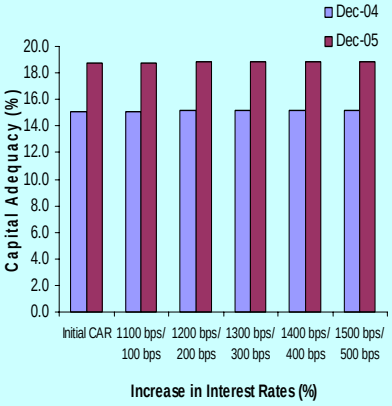
Impact of Interest Rate Shock as a Percentage of Base Year profits at End December 2005



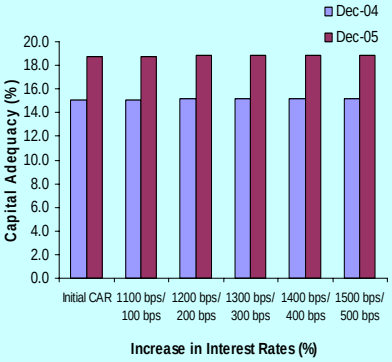
Capital Adequacy remains robust even under most extreme market shocks…

Figure 6.2

a) Impact of Interest Rate Repricing Stress Tests on the Capital Adequacy of the Banking System



b) Impact of Liquidity Stress Tests on Capital Adequacy of the Banking System



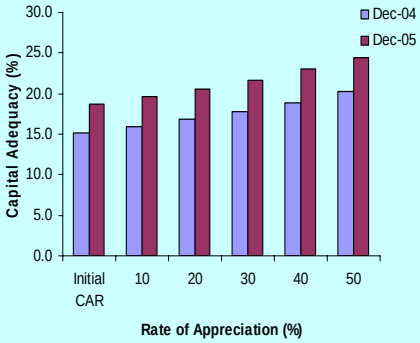
The foreign exchange stress tests revealed that the banking sector was generally well capitalized to withstand shocks involving appreciations up to 50.0 per cent (see **Figure 6.3**). Direct exchange rate risks were minimal, on aggregate, as banks maintained smaller open positions and larger levels of capital relative to the preceding year.

[63] This is not necessarily a better outcome, since if the shock went in the opposite direction the bank would have incurred a loss.

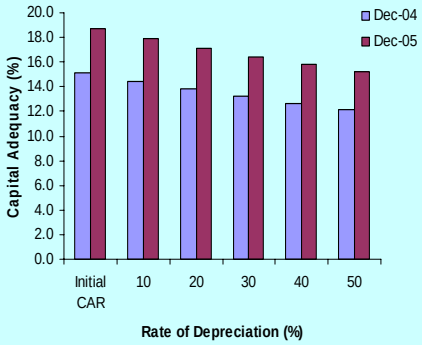
[64] For the purposes of the analysis a capital buffer consists of unappropriated profits, retained earnings and revaluation reserves of each institution.

Figure 6.3

a) Impact of an Appreciation in the Foreign Exchange Rate on the Capital Adequacy of the Banking System



b) Impact of a Depreciation in the Foreign Exchange Rate on the Capital Adequacy of the Banking System

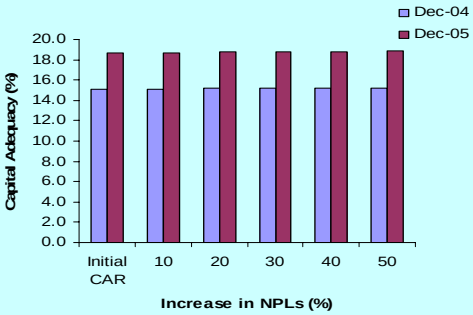


On the whole, interest rate exposures tended to outweigh exchange rate exposures. However, neither set of hypothetical shocks exposed the financial system to systemic risk.

The impact on the credit stress test is shown in **Figure 6.4**. In these scenarios, the impact is largely through hypothetical increases in current non-performing loan rates in various sectors. However, given that the default rate for loans have been low since 2003, even the largest shock increases in NPLs would have no impact on the capital adequacy of the banking system. Stress test results indicate that it would take a 580.0 per cent increase in NPLs for a single institution to fall below the minimum capital adequacy requirement.

Figure 6.4

Impact of Credit Stress Tests on Capital Adequacy of the Banking System



Conclusions

The results of the stress tests reveal that the banking system's CAR is robust to a wide range of market and credit related shocks. Banks have been both profitable as well as increasingly capitalized for the last five years. While the results of the stress testing exercise were encouraging, it is important to remember that stress tests are carried out in a simulated environment and as such the results should be taken with caution. Also, macroeconomic stress tests are on the aggregate level and are concerned with systemic risk rather than institutions specific nuances and as such will never capture the full picture. Even allowing for these caveats, the results do give a significant degree of comfort about the ability of the banking system to withstand a range of substantial shocks without becoming distressed.

7. Payment System Developments

7.1 Overview

Among the alternative payment instruments available, cash remains, by far, the most widely used in Jamaica. At end 2005, currency in circulation was approximately $30.0 billion (18.0 per cent of GDP) relative to $26.6 billion (19.0 per cent of GDP) at end 2004.

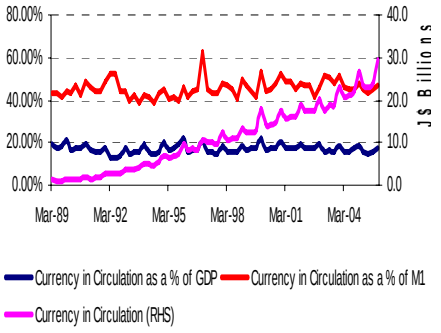
There has been steady growth in the use of small value retail payment media for domestic currency transactions, such as debit and credit card payments. The value of these electronic transactions, through automated banking machines (ABMs) and point-of-sale (POS) terminals, increased by 29.0 per cent to $129.0 billion at end 2005 relative to end 2004. Total payments by cheque, the most popular non-cash media in Jamaica, remained relatively flat at around $300.0 billion at the end 2004 and 2005. The total value of electronic transactions processed in the two large value transfer systems increased by 7.0 per cent during 2005 to approximately $1 817.0 billion or one-third of GDP.[65]

7.2 Payment System Developments

Payment systems are a major channel for monetary transmission. Safe and efficient payment systems are also critical in the promotion of a healthy financial system, which is fundamental to sustaining robust economic activity. Shocks may be transmitted across financial institutions and markets through systemically important payment systems (SIPS) resulting in both monetary and financial instability. For these reasons, the BOJ is concerned with the maintenance of systemic stability of payments systems. As the country's central bank, the BOJ is the sole institution authorised to issue and redeem Jamaica currency (notes and coins). Cash or currency in circulation has remained the most important payment instrument in Jamaica. The amount of currency in circulation, which reflects the public's demand for cash balances, increased in 2005 to $29.6 billion at end 2005 from $26.6 billion at end 2004 (see **Figure 7.1**).

Continued increase in currency demand over 2005

Figure 7.1
Currency in Circulation



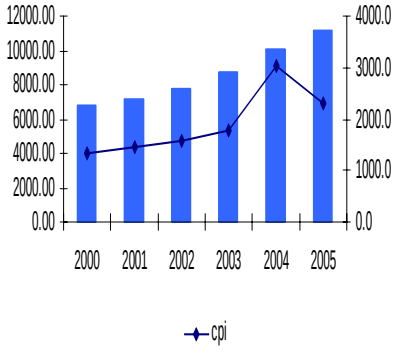
Currency in circulation as a per cent of GDP, which is a measure of cash use that controls for inflation, declined marginally to 17.8 per cent at end 2005 from 18.8 per cent at end 2004. However, another indicator of cash use, currency in circulation *per capita*, reflected an increase in currency demand during 2005 (see **Figure 7.2**). Currency in circulation per person should, in theory, decline with rising inflation and interest rates, but increase with economic expansion.[66]

[65] See *Glossary* for the definition of Large Value Transfer System.

[66] Higher interest rates lead to higher opportunity costs of holding cash.

Reflecting the declines in inflation and interest rates as well as annual GDP growth of approximately 2.0 per cent for 2005, currency in circulation *per capita* increased by almost 11.0 per cent relative to 2004.[67]

Figure 7.2
Currency in Circulation Per Capita

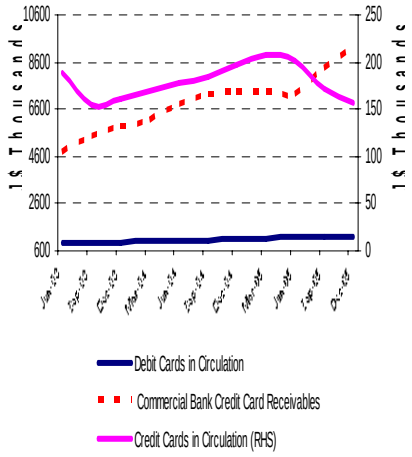


Currency in circulation as a per cent of M1 (narrow money) declined by 1.0 percentage point to 47.0 per cent at end 2005. This relatively flat trend implied a constant average share of cash transactions relative to non-cash transactions from deposits. There was steady growth in the use of small value retail payment media for domestic currency transactions. The downside impact on cash use of 12.5 per cent growth in debit cards in circulation over 2005 was partially offset by a 20.0 per cent decline in credit cards in circulation. The decline in credit cards in circulation during 2005 reflected, in large part, a 26.0 per cent increase in credit card receivables (and consequent credit card cancellations) for commercial banks at end 2005 relative to end 2004 (see **Figure 7.3**).

An expanding number of ABM terminals is associated with increased cash use. The number of ABM terminals increased by 9.3 per cent to 330 at end 2005 relative to end 2004. Offsetting the influence of ABM terminals on cash use, POS terminals expanded by 14.7 per cent to 12 020 over the same period.

Strong expansions in small value retail payment instruments but offsetting impact on cash use over 2004 and 2005

Figure 7.3
Debit and Credit Cards in Circulation
(in thousands)



There has been a clear upward shift in both POS and ABM monthly volumes and monthly values of transactions for 2005 relative to 2004. These increases have been driven by efficiency incentives on the part of consumers, retailers and banks with regard to reduced cash holdings.

[67] Apart from rising demand for transaction, speculative and precautionary purposes, rising currency demand may also reflect a growing underground economy and the commensurate increase in the level of tax evasion.

Over 2004 and 2005, the value of electronic transactions through both ABM and POS expanded by about 50.0 per cent.

For 2005, the average monthly volume of POS transactions increased by 18.0 per cent to 1.0 million, while the monthly value increased by 46.0 per cent to $3.4 billion. Similarly, the average monthly volume of ABM transactions increased by 15.0 per cent to 1.9 million, while the monthly value increased by 22.0 per cent to $7.3 billion (see **Figures 7.4** to **7.7**).

Figure7.4
Average Monthly POS Volumes

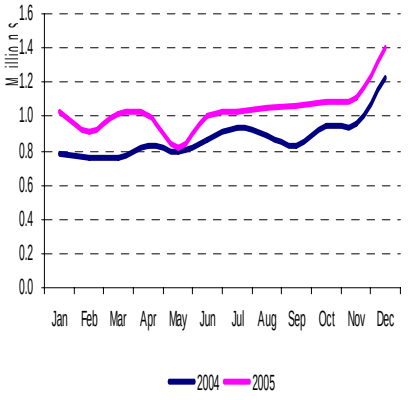


Figure 7.5
Average Monthly POS Values

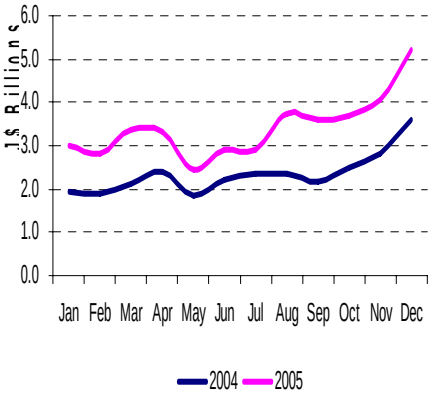


Figure 7.6
Average Monthly ABM Volumes

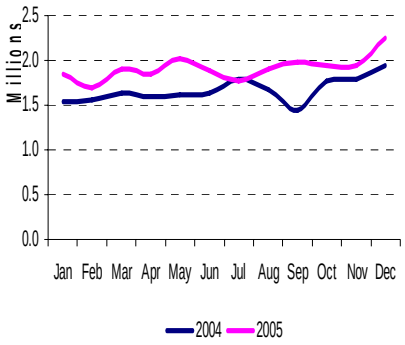
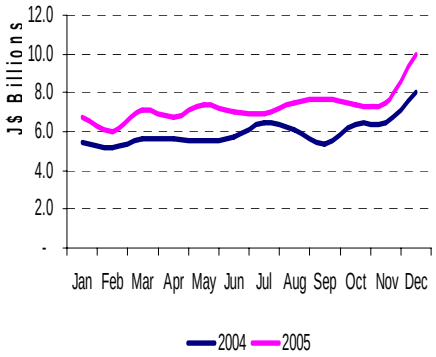
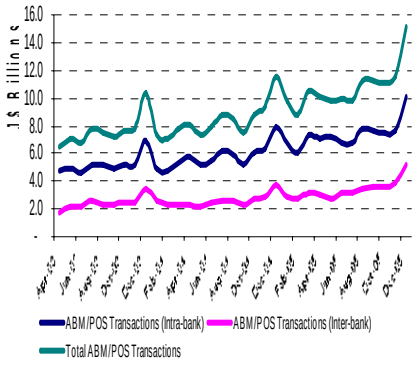


Figure 7.7
Average Monthly ABM Values



During 2005, the total value of electronic transactions through both ABM and POS expanded by 29.0 per cent to $129.0 billion. Approximately 70.0 per cent of the electronic transactions processed during 2005, as well as during 2004, were intra-bank ("on-us") rather the inter-bank ("not on-us"). This high volume of payment transactions occurring between clients within a single bank ("on-us") reflected a significant level of payment system efficiency and safety. The relatively high level of intra-bank transactions also reflected the banks' relatively low reliance on the external exchange of payment orders, as well as, low inter-bank principal and liquidity risks (see **Figure 7.8**).

Figure 7.8
Value of ABM and POS Transactions



7.3 Large Value Transfer Systems

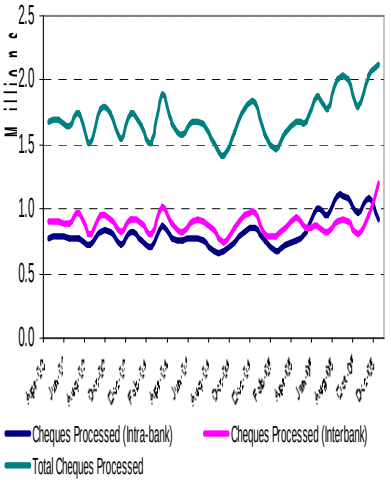
Two large value transfer systems (LVTS) exist in Jamaica, the Automated Clearing House (ACH) - a batch processing retail system which handles the electronic clearing of cheques denominated only in Jamaica Dollars - and the Customer Inquiry and Funds Transfer System (CIFTS) - a wholesale payment system which facilitates electronic credit transfers on financial institution's accounts held at the BOJ.[68] Foreign currency cheques as well as returned and unqualified cheques are cleared manually at the BOJ. The ACH is owned and operated by the six commercial banks in Jamaica. BOJ is the owner and operator of the CIFTS, which is used to facilitate electronic credit transfers on financial institution's accounts held at the Bank.

Cheques are the most popular non-cash payment instruments in Jamaica. The average volume and value of Jamaica Dollar cheques cleared through the ACH remained flat at 0.9 million and approximately $150.0 billion, respectively, for 2004 and 2005.

The average monthly volume and value of total cheques in both domestic and foreign currencies increased only marginally over 2004 and 2005. The average monthly volume of total cheque payments increased to 1.8 million for 2005 from 1.7 million at end 2004, while the average monthly value rose by 4.0 per cent to $301.0 billion at end 2005 relative to end 2004. The average monthly cheque payment fluctuated mainly between $160 000.0 and $180 000.0 for 2004 and 2005. For the most part, cheque transactions were evenly distributed intra-bank and inter-bank, in terms of both volume and value of cheques processed (see Figures **7.9, 7.10** and **7.11**).

The average cheque payment remained relatively flat between $160 000.0 and $180 000.0 for 2004 and 2005.

Figure 7.9
Volume of Total Cheques Processed



[68] Payments processed through LVTS are generally: (a) large value and (b) involve wholesale payments among financial institutions.

Figure 7.10
Value of Total Cheques Processed

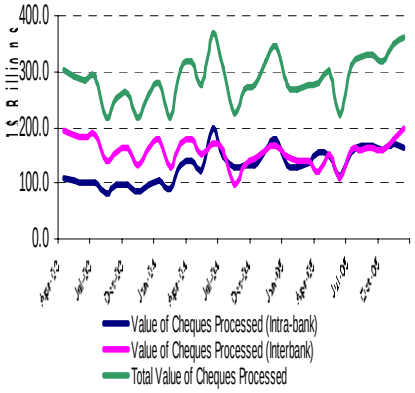
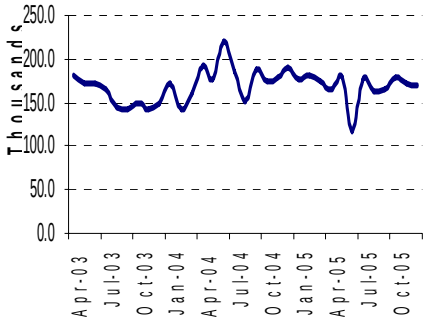


Figure 7.11
Average Total Cheque Payment



Institutions participating in CIFTS include the BOJ, commercial banks, primary dealers as well as the Jamaica Central Securities Depository and its broker institutions. Multilateral settlement positions among ACH members are also processed by CIFTS using central bank money. Specifically, the ACH operator computes and manages net settlement positions electronically while interfacing directly with the Central Bank Accounting System (CBAS) to update the current accounts of the commercial banks on the books of the BOJ. All payment orders sent through CIFTS are settled in the CBAS on the books of BOJ. Settlement is effected at the end of each business day on a deferred basis. Given large intra-day positions, there are significant credit risks on a daily basis for participants, including the Central Bank.

The volume and value of CIFTS transfers increased marginally by 0.4 per cent and 5.3 per cent, to 22 032 and $1 688.0 billion, respectively, in 2005 relative to 2004. The average CIFTS credit transfer fluctuated mainly between $60.0 million and $80.0 million during 2005 (see **Figures 7.12** and **7.13**).

Figure 7.12
Volume and Value of CIFTS Credit Transfers

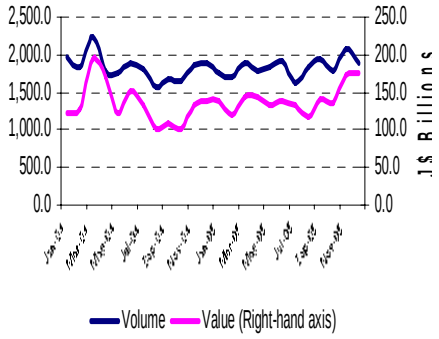
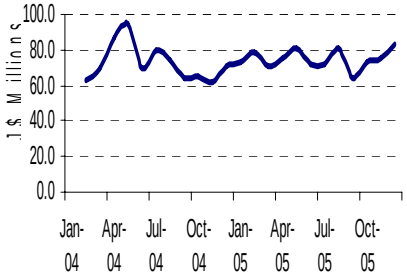


Figure 7.13
Average CIFTS Credit Transfer



7.4 Payment System Reform

In 2005, the BOJ embarked on a comprehensive reform of the payment and settlement systems.[69] Central to the reform process will be the replacement of the current CIFTS system with a LVTS on a real-time gross settlement (RTGS) function. The main advantage of the RTGS is that its lower credit risk to participants.[70]

Participants in the new RTGS system will require relatively large amounts of intra-day liquidity, compared to the current DNS system

Participants in the new RTGS system will require relatively large amounts of intra-day liquidity, compared to the current DNS system, given that obligations must be settled on a real-time transaction-by-transaction basis as they enter the clearing stage. Liquidity to cover intra-day positions may also be provided in an intra-day money market and through collateralized intra-day central bank loans.[71]

[69] For details of the payments and settlement systems reform process, see the September 2005 issue of the Banks *Quarterly Monetary Policy Repor*t.

[70] Note that small value payments may also be processed in the RTGS.

[71] See Glossary for definitions of RTGS and DNS.

BOX 6. ACH Contagion Risks

In the context of the ACH, contagion risk reflects the degree of inter-bank payments and liquidity concentrations. Contagion risk is generally a concern in large value payment systems such as the ACH due to the large size of the value of daily transfers across participants. Liquidity concentration risk refers to the case where one or a small percentage of banks extensively control the system liquidity so that a failure of any of these banks may have devastating consequences on the payment system. Alternatively, payment concentration risk occurs when the failure to honour payments by one or a small percentage of banks would result in the failure of other banks to make their own payments. This Box provides a statistical risk analysis of ACH payment and liquidity transactions.[72] The study covers the period January 2003 to December 2005 and includes all BOJ and commercial banks transactions through the ACH.

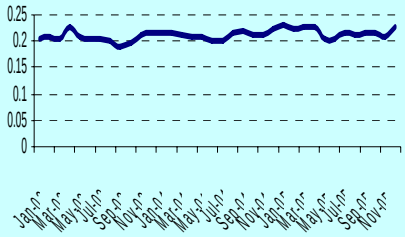
Payment Concentration Risk

Payment system concentration is measured in this Box using two methodologies: i) the Herfindahl Index (HI) approach, and ii) the payment activity risk index. The HI of payment concentration is measured as:

$$HI_P = \sum_{i=1}^{N}\left(\frac{Payments\ by\ Bank\ i}{Total\ Payments}\right)^2,\ i = 1,\ldots N\ banks$$

The value for the HI_P averaged at 0.21 for the period (see Figure I). This value corresponds to a concentration in payment activity among approximately 5 of the 7 participants. This implies that payment activity in the ACH is not very concentrated, which has favourable implications for systemic risk from a payments perspective.

Figure I.
Herfindahl Index of ACH Payment Concentration



However, it is incomplete to measure payment concentration within a particular bank by accounting for only its share of payments while excluding information on its simultaneous receipts from other banks. A more suitable criterion, therefore, would be: where:

$$Payment\ Activity = Payments + \text{Re}ceipts.$$

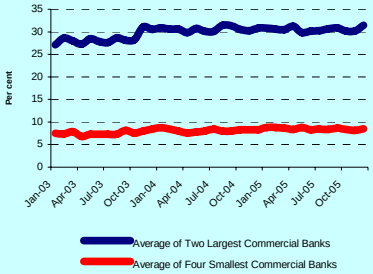
As illustrated in Figure II, risk indices for the two largest banks accounted for an average of approximately 30.0 per cent of total payment activity. This implies that

$$Risk\ Index_i = \frac{Payment\ Activity\ by\ Bank\ i}{Total\ Payment\ Activity},\ i = 1,..,N\ banks$$

almost one-third of total payment activity would shut down in the event of a failure of either institution. In contrast, the average risk index for the remaining four banks (excluding BOJ) accounted for a much lower share of around 8.0 per cent of activity.

[72] For a similar analysis see "A Statistical Overview of Chaps Sterling" in Bank of England *Financial Stability Review* 2003.

Figure II
Payment Risk Indices



Liquidity Concentration Risk

The ACH system liquidity when controlled by a small share of the banking sector may disrupt the payment process in the event of an adverse shock to any of the dominant institutions. Daily ACH bank transactions will either supply or absorb liquidity from the ACH system. The net flow of liquidity for bank i will determine whether it is a net supplier (if positive) or net demander of liquidity (if negative), where:

$$Net\ Flow_i = Payments_i - \text{Re}ceipts_i$$

The liquidity supplied by bank i to the system at time t is:

$$LiquiditySupplied_{it} = Max\left[NetFlow_{it}, 0\right]$$

Table A illustrates that the four smallest commercial banks supplied most of the liquidity in the ACH for 2003 and 2004. However, in 2005 the liquidity supplied by the four smallest banks and the two largest banks were relatively equally divided.

Table A

Share of Liquidity Supplied Through the ACH - 2003 to 2005

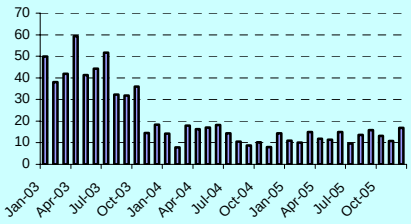
	Two Largest Commercial Banks	Four Smallest Commercial Banks
2003	10%	90%
2004	13%	87%
2005	56%	44%

Thus, the maximum daily system liquidity required to support the daily payments is:

$$Liquidity\ \text{Re}quired_t = \sum_{i=1}^{N} Liquidity\ Supplied_{it}$$

The maximum liquidity required for ACH payments over 2003 to 2005 averaged approximately $0.9 billion per day (see Figure III).

Figure III
ACH Liquidity Required Monthly



Special Articles

The Development of the Corporate Bond Market in Jamaica

By Jide Lewis
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Section I: Introduction

The purpose of this article is to provide an analysis of and prospects for development of the corporate bond market in Jamaica. Section II considers why the corporate bond market is relatively underdeveloped relative to equity markets and the banking sector loans in Jamaica as well as some of the consequences of an underdeveloped corporate bond market. Section III considers some of the market and non-market forces that have hindered the development of the corporate bond market in Jamaica. Section IV seeks to put forward some key drivers for the growth and development of bond markets by applying lessons from selected countries. This section includes some recommendations for the development of domestic bond market in Jamaica. The areas covered here are by no means exhaustive, nor is any one issue exclusive in its importance for market development.

Section II: Consequences of an Absent Bond Market

Several arguments have been put forward in relation to consequences of an underdeveloped bond market. In the first place, without a market-determined interest rate that reflects the true opportunity cost of funds, and with bank loan rates marked-up over deposit rates that are administratively determined, firms may tend to under-invest. Hence, the allocation of capital will be less efficient than if the economy had the advantage of a well-functioning bond market.

Similarly, fewer savings may be mobilized in the financial system to fund private investment because financial investments are less attractive than they would otherwise be with a deep and liquid bond market. Additionally, there is the loss of welfare to savers who are less well off than they would be with the option of investing in a well-functioning bond market.

With regard to the use of funds, firms facing a higher effective cost of funds may tend to bias their investment policies in favour of short-term assets and away from long-term entrepreneurial ventures. Further, if these firms attempt to compensate for the lack of a domestic bond market by borrowing in international bond markets, they may be obliged to accept excessive exposure to foreign exchange risk.[73] If these corporates were able to source

[73] This is especially the case for companies within emerging market economies that face high cost of borrowing funds from banks as well as equity financing costs.

longer-term, domestic currency funds, they could effectively avoid the type of currency and maturity mismatches that can have an adverse effect on the firm's solvency.

It has been argued that, in the absence of a deep corporate bond market, the banking sector would be larger than it would otherwise be, leaving the economy heavily reliant on bank lending. Since banks are highly leveraged, this may render the economy more vulnerable to crisis. Certainly, in the event that a banking crisis occurs, the damage to the real economy will be much greater than if investors had access to a well-functioning bond market. In addition, the financial restructuring process will be more difficult.[74]

Local bond markets could soften the impact of lost access to international capital markets or bank credit by providing an alternative source of funding.[75] Also, corporate bond markets can promote a more robust financial system by contributing to increased diversification of credit risk within the economy among various investors rather than being solely dependent on the banking sector for this function.

Peculiarities of the Corporate Bond Market[76]

Why, in environments with requisite financial infrastructure, do equity markets appear to flourish while bond markets flounder? Part of the answer is inherent in the difference between debt and equity contracts. Debt claims promise repayment of principal and interest, while equity claims promise payment of a pro rated share of profits and usually convey a proportionate vote in important corporate governance matters.

Table 1. The Structure of the Domestic Securities Market in Jamaica (per cent of GDP)

	2003	2004	2005
Equity Market	117.0	158.0	156.0
Bonds - GOJ Domestic	94.0	78.0	78.0
Bonds - BOJ Domestic	19.0	24.0	26.0

Source: BOJ, JSE and MOF

The maximum return on a bond purchased at par value is the promised interest payments. But the downside risk may include loss of the principal amount as well as the promised interest payments,

[74] The development of local bond markets has been offered as a key policy prescription to prevent or ameliorate financial crises in emerging markets by a number of policy analysts and international organizations (see World Bank and IMF, 2001).

[75] In Asia, for example, the growth of local bond issuance has been driven by the need to re-capitalize banking systems and more recently to finance expansionary fiscal policies.

[76] This section draws from "The Case of the Missing Market: The Bond Market and Why it Matters" by Richard J. Herring and Nathporn Chatusripitak, May 26, 2000.

in the event of default. In contrast to a bond in which the return is limited by the promised interest rate, an equity claim has an *unlimited* potential upside return which can compensate for the perceived riskiness of the claim.[77] Seen in this light, the main challenge in pricing bonds is setting an interest rate that will compensate for the opportunity cost of funds, default risk, inflation, and liquidity risk. Other features the bond may have such as a call option or sinking fund would also need to be appropriately priced.

These challenges are exacerbated by the following: -

i) In the absence of an active secondary market in risk-free debt of a comparable maturity, it will be difficult to identify the appropriate opportunity cost of funds;

ii) Estimating the probability of default and the expected recovery from the liquidation or sale of the firm in the event of default will also prove difficult in an economy with a weak financial infrastructure;

iii) In the absence of credible accounting practices, good disclosure practices or reliable bond ratings, it may be very difficult to estimate a probability of default or expected loss in the event of default.

Therefore, if households and institutional investors are concerned about a high probability of default or the expected loss in the event of default, it may not be possible to establish a viable bond market. Borrowers may not be able to credibly offer a sufficiently high interest rate to compensate for the perceived risk of loss (Stiglitz and Weiss (1981)). On the other hand, if there is reliable clearing and settlement procedures for buying and selling equity claims, active market may develop for a firm's equity even though investors would not be willing to buy its debt.

Section III: The Underdevelopment of Jamaica's Corporate Bond Market

In Jamaica, not unlike many other emerging economies, the corporate bond market remains largely underdeveloped, with limited supply of quality issues and inadequate market infrastructure. As such, corporate borrowing has centered around the banking sector and to a lesser extent the equities market with access to local bond issuance being largely restricted to Central Government (GOJ) and top-tier corporates. [78]

[77] Additionally, minority shareholders can take comfort in the fact that they share an interest with the controlling shareholders and management in a rising share price.

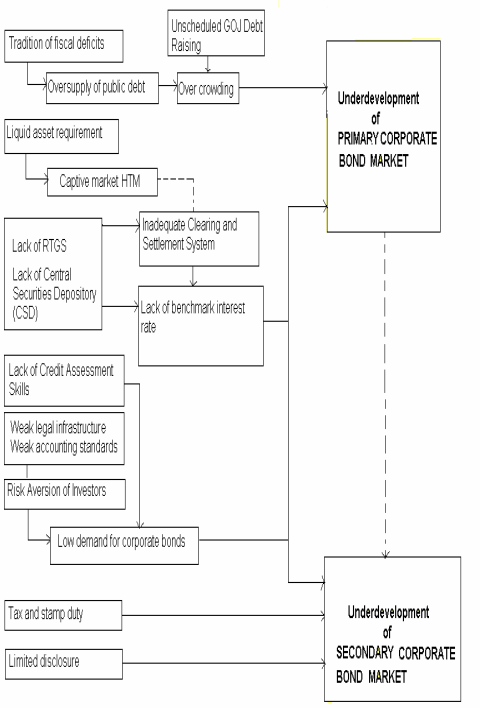
[78] Luengnaruemitchai, Pipat and Li Lian Ong, 2005, "An anatomy of Corporate Bond Markets: Growing Pains and Knowledge Gains," IMF Working Paper WP/05/152, International Monetary Fund.

The underdevelopment of the corporate bond market can be attributed to several causes (see **Figure 1**). Lack of a benchmark, market determined yield curve has been cited as a key impediment for the accurate pricing of corporate bond issues. The low credit risk and high liquidity features of government securities have made them natural providers of benchmark rates.[79] However, in the absence of an active secondary market in risk-free debt of a comparable maturity, analysts and valuators have found it difficult to price the appropriate opportunity cost of funds for corporate debt issues.

The captive market that Government of Jamaica (GOJ) has for its securities has also contributed to reduced levels of secondary market trading. In particular, the capital adequacy and liquidity regulations require banks and other financial institutions to hold substantial reserves in the form of domestic GOJ securities. Most of these securities are held to maturity, which has served to discourage secondary market trading.

The apathy of investors towards corporate bonds has also occurred against the backdrop of persistent fiscal deficit and in spite of improvements in the GOJs debt management strategies. Excessive government debt issuance has had a crowding out effect on corporate sector bond issues. The projected attainment and maintenance of fiscal surpluses will therefore be critical to the development of domestic bond market for corporates.[80]

Figure 1. Structural Challenges to the Development of the Corporate Bond Market in Jamaica



Adapted from Richard J. Herring and Nathporn Chatusripitak, "The Case of the Missing Market," Wharton School

[79] (International Monetary Fund, 2001, International Capital Markets: Development, Prospects, and Key Policy Issues, World Economic and Financial Surveys, (Washington, August).

[80] As in the case of Brazil, government securities offer domestic investors low credit risk, high yields and protection from market risks via indexation. Hence, only strong local corporates are able to bid for domestic investors' money.

Tax laws and uncertainty of further tax reforms has also been cited as potential impediments to the development of a primary and secondary corporate bond market. While the bond market does not need preferential tax treatment to grow, the implementation of a tax framework that disadvantages bonds as an attractive investment instrument has been identified as a potential factor that could hamper its development.[81]

Also, weaknesses – perceived or otherwise- in the legal infrastructure have created doubts about creditor rights in the event of default.[82] As such, factors such as the efficiency of the judicial system, rule of law, corruption, bureaucracy, risk of expropriation and risk of contract repudiation have affected the confidence with which a potential investor feels that they would be able to recover their principal in the event of a default.

Finally, low liquidity in the corporate bond market has been attributed to the highly risk averse investors on the one hand, as well as an underdeveloped market micro-structure for corporate bond trading on the other. Robust and efficient trading, clearing and settlement and depository systems, it has been argued, could lead to lower trading costs and price volatility. Such systems would also reduce market fragmentation and facilitate improved price discovery and ensure wider information dissemination.[83] Underdeveloped credit assessment skills have also contributed to general aversion of riskier investments in favour of risk-free alternatives.

Section IV: The Way Forward: Policies to Stimulate the Development of the Corporate Bond Market

The development of a deep and liquid corporate bond market requires a multi-pronged and strategic approach with regard to the sequencing of reforms.

The Role of Government in the Development of the Corporate Bond Market

For many emerging-market countries, financial-sector and capital market development starts with the development of a government bond market.

[81] The imposition of stamp duty on transfers of bond ownership has been a deterrent to secondary market trading in other countries.

[82] See Appendix for an assessment of Jamaica creditor rights.

[83] Ultimately, enhancements in this area can act as catalysts to promote investor confidence and lead to greater market liquidity.

This is a logical path not only because governments are usually the largest domestic borrowers and have the best domestic credit quality, but also because governments, by their actions or inaction, affect the scope and potential for market development throughout the economy.

(i) Debt Raising Strategy

According to Masci and Rowland (2004), two of the most important services that governments can provide are building a yield curve and creating and maintaining liquidity at critical points along the curve through the development of benchmark instruments. [84] The emergence of a yield curve and benchmark instruments create attractive venues through which large institutional funds can invest for long periods, enables more reliable pricing for longer term corporate instruments and provides a hedge for long-term corporate issuers. Chile, Hong Kong SAR, and Singapore have made efforts to develop their bond markets to this end even in the absence of explicit fiscal needs.

Historically, the Government of Jamaica (GOJ) has viewed the issuance of bonds primarily as a means of financing deficits rather than as a way of nurturing the development of a bond market. However, the development of the corporate bond market must be seen as part of the medium-term solution towards sustainable debt reduction.[85] The objective of the Debt Management Strategy (DMS) should therefore entail explicitly the development of the domestic corporate bond market. To achieve this goal, the GOJ would need to have the credibility to issue securities at these various tenors without complicated covenants across the maturities that comprise the benchmark yield curve. In addition, the GOJ should make a concerted effort to introduce a quarter-ahead calendar of regular issuance of government bonds in the primary market. This means committing to a program of regular

[84] Ultimately, however, liquidity depends on the existence of a two side market, implying the existence of institutional investors with a range of different motives and interests. Where institutional investors do not exist or are not active, the burden of liquidity provision can fall heavily on the government themselves, through open market operations. But open market operations cannot prudently be the primary source of liquidity because their fundamental purpose is not to serve the needs of investors but to support monetary policy objectives.

[85] It has been shown that recovery rates for real sector industrial firms tend to be much higher than financial firms following a default. Thus, it is probable that if the banking sector continues to grow in the absence of corporate bond market, then systemic risk exposures to the economy may well be perpetuated.

issues at the appropriate maturities - usually three months, six months, one year, three years, five years and over ten years. In addition, increased certainty about issue dates and about the volume of government securities to be issued would enable institutional investors to structure the maturity of their investment portfolios in line with the issuing calendar.

(ii) Fiscal Policy

Sound fiscal management is inextricably bound to the capacity of the Government to lengthen the yield curve. It is also crucial that the interest rate on government bonds continue be market-determined, not administratively determined. If the government attempts to manipulate the bond market to reduce the cost of government borrowing, important information will be lost which may lead to distortions in the allocation of capital. This means that the government should not devise special tax treatment of government debt that differs from that of other securities. Additionally, private placements of debt of more than a specified amount should require formal rating. This would facilitate transparency in the market as well as price discovery.

The Role of Institutional Reform in the Development of the Corporate Bond Market

Minimizing the cost, risks and hassle of raising debt to corporates will be facilitated by enhancing primary and secondary market infrastructure.

i) Improving Market Infrastructure for Bond Trading

In the mid-1990s the Hong Kong Monetary Authority (HKMA) catalyzed the development of the domestic bond market via the establishment of a paperless clearing, settlement, and custodian system and the introduction of a Real Time Gross Settlement (RTGS) payment system for securities. Likewise, a RTGS for bonds as well as a Central Securities Depository (CSD) for both government and corporate bonds will serve to stimulate the growth in the bond market in Jamaica and promote liquidity in secondary markets. An electronic real time book entry system for government securities that is closely tied to the wholesale payments system is almost indispensable in this regard. It would also be critical that this platform be amenable to settlement of corporate issues as well, since a decentralized paper based clearing

system for these issues would be deleterious for the growth of this segment of the market.[86]

Additionally, it should be mandatory that all issuers of debt register their issues with the CSD. Mandatory registration increases the level of transparency for an issue and leads to more creditability for the issuer. In most cases, CSDs operate an automated book-entry system of settlement. This increases the speed and efficiency of bond trading, reduces costs associated with settlement and custody arrangements and minimizes human errors and delays, which may be seen in a manual system. Book-entry systems are also considered a precursor to shortening the settlement cycle and implementing delivery versus payment (DvP).

ii) Enhanced Inter Dealer Privileges and Responsibilities

Dealer markets are usually regarded as especially transactionally efficient because, in addition to providing information and matching buyers and sellers, dealers also provide immediacy by buying and selling from inventory. In corporate bond markets, the primary dealer approach can be more complicated as there is no monopoly issuer of corporate bonds. Nonetheless, in other jurisdictions, certain market operators do confer market making privileges, such as exclusive access to information dissemination systems or portal to market makers in corporate bond markets. In Jamaica, the obligation of primary dealers would involve requirement to place reasonable bids in primary markets for corporate bonds, ensure a fair and orderly secondary market in a range of corporate issues, and to provide the central bank's trading desk with market information. [87]

Inter-dealers would also be required to make markets for primary corporate issues by providing underwriting services. That is, they should possess expertise in pricing and bringing issues to market. In this regard, the introduction of a "proposal method" would allow firms to solicit proposals from underwriters on the terms and condition and the associated fees rather than have these dictated by a type of corporate bond issuance committee.

[86] The standard reference for appropriate minimum standards in clearance and settlement systems is the Group of 30's Clearance and Settlement in the World's Securities Markets.

[87] Exclusive access to inter-dealer brokers' (IDBs) screens is common privilege given to market makers in corporate bond markets. In the Euro market for example, assess to the IDB's screens is one of the chief privileges of being recognized as a reporting dealer by the supervisors.

The introduction of primary dealer systems (portals) to enhance price discovery and market liquidity would also play a critical role in the development of the corporate bond market. The flexibility of these systems to accommodate diversity of corporate debt securities (maturity, duration, coupons, guarantees) will be critical in ensuring that the features of most corporate debt issues can be facilitated as well as the systems capacity to interface with other settlement systems. This automated bond system would provide quotes on all listed issues to brokers, dealers and firms that subscribe to the service, and thus facilitate the price discovery process.

ii) The Role of Rating Agencies

Encouraging the entry of domestic rating agencies is essential to help bridge the information asymmetry between investors and issuers. This is especially true in the context of bond markets that are not sufficiently large to support the entry and viable operation of an international credit rating agency. Domestic credit rating agencies also tend to assume the additional responsibility of promoting the bond market via education, information dissemination and research undertakings. The launch of the regional credit rating agency, CRISIL in the region during 2005 represents a critical improvement in this area. The ownership of CRISIL is widely spread among banks, finance companies and the other credit rating agencies. However, the use of their service is voluntary at this time.[88] For the corporate bond market to improve in depth, all corporate debt offerings with maturity greater than one year should require a rating from a regional credit rating agency. It is also helpful to have a community of bond analysts who can help investors evaluate bond quality.

CONCLUSION

Bond market development should not be seen in isolation, but rather as part of an overall capital market development objective as well as the objectives of reducing the governments funding cost and facilitating monetary policy. These objectives require a commitment to macroeconomic stability and fiscal discipline, which usually means a well-defined and independent role for the central bank. Additionally, important reforms need to be added to serve the broader objective of

[88] In certain cases, the mandatory requirement for credit rating has been imposed with the objective of encouraging the growth of the credit rating industry. This is especially true in the case of Thailand, where the mandatory requirement for credit rating had even been extended to bonds issued via private placement, as part of the efforts to support the domestic credit rating industry.

capital market development, effective corporate governance for entities that operate in the market, judicial systems capable of enforcing property rights, and regulatory agencies to oversee financial markets.

'Economic Capital' Approach to Risk Management

By Brian Langrin
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Section I: Introduction

International 'best practices' in consolidated supervision recommend the measurement of group-wide risk aggregation by the computation of 'economic capital'.[89] Economic capital represents the amount of capital necessary for an organization to hold in order to cover its exposure to all material economic risks or potential unexpected losses. Importantly, the economic capital framework allows for a 'common denominator' by enabling the aggregation of multiple risk types across business lines into a single metric. Risk aggregation is generally executed by employing quantitative procedures to compute the probability of potential economic losses.

Section II: Measurement of Economic Capital

The measurement of economic capital has emerged as international best practice to supplement accounting-based regulatory capital requirements which could overlook significant risks, as well as lead to under-capitalisation from possible misalignment with actual risks over time. Consequently, the incorporation of economic capital would assist in proper assessment of the capital needed by conglomerates to cover their risk exposures and by extension, limit contagion risk in the financial system.

The economic capital approach is commonly used to measure risk across all business lines of a conglomerate rather than within a single business line. The primary risk types impacting conglomerates are asset, liability and operating risks. These risk types may be further disaggregated into market, asset and liability management (ALM), credit, life, catastrophe, non-catastrophe, business and event risks. Identifying suitable quantitative measurement techniques for these risks are complicated by the fact that each risk type is characterized by a different probability distribution. However, these risk distributions can be combined to yield a single, cumulative loss distribution, assessed over a common confidence interval and time horizon. Following this breakdown of the various risks into a common risk standard, the economic capital requirement for the conglomerate can then be derived.

[89] See compendium of documents published by the *Joint Forum on Financial Conglomerates*.

Table 1 provides a list and description of the main risk types, as well as the typical models used to assess these risks.[90] The *Joint Forum on Financial Conglomerates* has provided examples of simple methods to generate statistical loss distributions for the computation of economic capital. These include:

1. the analytical method, which involves fitting historical data to a mathematical distribution formula,
2. the historical data method, which involves the ordering of actual outcomes by size and selecting a desired loss percentile, and
3. the simulation method, which involves conducting and then ranking numerous simulations before selecting a desired loss percentile. [91]

The Joint Forum has prescribed three techniques for measuring the capital adequacy of a financial conglomerate: the' building block' prudential, the risk-based aggregation and the risk-based deduction approaches.[92] The preferred technique for aggregating risk across diverse business lines when consolidated financial statements are available is the building block approach. This approach juxtaposes the consolidated risk-based capital of the financial conglomerate as a single entity with the sum of the risk-based capital requirements for each individual type of participant (bank, insurance company, securities dealer, or unregulated entity).

Surplus capital in a particular business line should be transferable to other business lines that have a capital shortfall. Additionally, a proxy capital requirement is assigned to any unregulated business lines within the conglomerate and intra-group capital holdings are subtracted before assessing the individual capital requirements.

Basically, the building block technique aggregates risk at three successive levels in a financial conglomerate, corresponding to the levels at which risks are typically managed: [93]

[90] Adapted from Working Group on Economic Capital Models (February 2003), 'Risk Measurement within Financial Conglomerates: Best Practices by Risk Type,' Research Series Supervision No. 51, De Nederlandsche Bank.

[91] See: *Capital Adequacy Principles Paper* in Joint Forum (February 1999), *Supervision of Financial Conglomerates*, available at http://www.bis.org.

[92] For a discussion of these techniques, see: Joint Forum (August 2003), *Trends in Risk Integration and Aggregation*, available at http://www.bis.org.

[93] For a discussion on the 'building block' approach, see: Kuritzkes, A, T. Schuermann and S. M. Weiner (March 2002), *Risk Measurement, Risk Management and Capital Adequacy in Financial Conglomerates,* Wharton Financial Institutions Center.

Table 1 Risks and Related Risk Measures

Risk Type	Risk Description	Risk Drivers	Risk Measurement	Data Requirement
Market/Asset-liability management (ALM)	The risk of losses due to fluctuations in market prices	Asset prices, interest rates, inflation rate foreign exchange rate	Gap and Duration analyses; Value-at-Risk (VaR)	Repricing data; maturity profile data, balance sheet data per currency
Credit	The risk of losses from changes in default rates or credit qualities	Bond prices, interest rates, foreign exchange rate, business cycles, real estate prices	Probability of Default; Expected Loss; Unexpected loss, VaR	Non-performing loans per institution, economic sector, currency, earners; interest rates; corporate bond defaults, etc.
Life	The risk of losses arising from unanticipated increases in life claims	Mortality and longevity expectancy; Morbidity and disability expectancies	Life Tables; Surplus Testing; Contingent Claims Analysis	Claim sizes, claim arrival times, claim degrees, reserves and risk factors per portfolio; mortality and morbidity rates
Catastrophe	The risk of losses arising from unanticipated increases in catastrophe claims (from hurricanes, earthquakes, etc.)	Frequency/severity of insured risks	Exceedence Probability Curves; Extreme Value Theory	Claim sizes, claim arrival times, claim degrees, reserves and risk factors per portfolio
Non-Catastrophe	The risk of losses arising from unanticipated increases in non-catastrophe claims (from fires, motor vehicle accidents, etc.)	Frequency/severity of insured risks	Frequency Severity Modelling; Loss Triangle Analysis; Extreme Value Theory	Claim sizes, claim arrival times, claim degrees, reserves and risk factors per portfolio
Operational: Event & Business	The risk of losses due to failed internal processes, human and systems or external events such as natural disasters and changes in the business environment	Revenues, cash flows, controls, changes in business environment	Historical Earnings Volatility; Extreme Value Theory; System Dynamics Simulation; Fuzzy Logic	P&L data and cash flow data, organisational dynamics

Level I: The standalone risks are aggregated within a single risk factor (for example, credit risk for a bank loan portfolio and catastrophe risk for a general insurance company).

Level II: The risk factors are aggregated within a single business line (for example, aggregating market, credit and operating risks within a bank and market, life and operating risks within a life insurance company).

Level III: Risk is aggregated across business lines (for example, a bank, a securities firm and an insurance company), including the risk proxy for any unregulated entity that may be part of the conglomerate. The economic capital of the conglomerate is derived at this level.

Section III: Conclusion

Economic capital models should not be solely relied on to inform risk management decisions. Despite the significant advantages for conglomerates of using economic capital models, some challenges still exist. One significant methodological drawback is the difficulty of quantifying diversification benefits over business lines within the conglomerate.[94] In theory, diversification benefits increase with the number of risk positions and decreases with greater concentration and correlation. Nevertheless, it is often argued that the existence of 'contagion' or 'reputation' risks may offset any diversification benefits.

The inconsistency across quantitative techniques and firms of incorporating diversification benefits have led many firms to assert that economic capital models should be computed on a stand-alone basis (Level II) instead of at the group-wide level (Level III).[95] Additionally, an influential study by Oliver, Wyman and Company in 2001 concluded that the sum of the capital adequacy positions for individual business lines provides a reasonable approximation of a group's economic capital. [96]

Given the current methodological issues, economic capital models should only be used to assist the decision-making process at the conglomerate level. Although the use of economic capital models is an essential factor in the monitoring of conglomerate risk, it should not displace the broad-based integrated risk management and corporate governance framework.

[94] That is, the aggregate risk may be less than the sum of individual risks, given imperfect correlations across risk types.

[95] See: Joint Forum, *Trends in Risk Integration and Aggregation* (August 2003), available at http://www.bis.org.

[96] Oliver, Wyman and Company (2001), *Study on the Risk Profile and Capital Adequacy of Financial Conglomerates*, London: Oliver, Wyman and Company.

The management of an institution is in the best position to understand its own risk exposures. Hence, it is essential that the conglomerates maintain ultimate ownership of their internal consolidated risk management systems. Additionally, senior management of conglomerates must conduct periodic examinations of their risk management systems and internal risk control policies and procedures.

This examination process should include regular discussions on the effectiveness of its risk management procedures. A primary objective of the risk assessment process should be to ensure that adequate internal controls are achieved to limit the risk exposures among affiliates. This process should be informed by the various reports and guidance papers on risk management and controls published by the Basel Committee on Bank Supervision[97], the International Organization of Securities Commissions[98] and the International Association of Insurance Supervisors. [99]

[97] Available at: http://www.bis.org
[98] Available at: http://www.iosco.org
[99] Available at: http://www.iaisweb.org

Glossary

Asset Utilization: Measurement of the effectiveness of an institution's investment in earning assets. This ratio calculates the overall yields 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 in a specific lease revenue made by a municipal or government entity and is subjected to annual appropriation.
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: An evaluation of the likelihood of a borrower's default on a loan. Sovereign credit ratings assess the likelihood that a sovereign entity will default on its obligations.
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 will be available for spending and saving.
Financial Conglomerates: Financial institutions which undertake a wide range of activities such as banking, stocking broking, insurance and fund management.
Financial Intermediation: The process of channeling funds between lenders and borrowers. Financial institutions are regarded as financial intermediaries because of their role in transforming long-term lending or investment from shorter-term deposits or savings.
Fiscal Deficit: The excess of government expenditure over revenue for a given period of time.
Foreign Exchange Risk: The risk associated with potential losses incurred by an institution by holding foreign currency-denominated instruments due to adverse movement in the exchange rate.
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.