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An Examination of Monetary Policy Tools used in Jamaica: A Comparison to International Best Practices

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Abstract

In keeping with the need to continually review monetary policy, this paper seeks to ascertain whether the monetary policy tools used in Jamaica are in keeping with international best practices. Since the early 1980s, particularly within developed economies, there has been less reliance on the use of traditional monetary policy tools, to the use of open market operations for liquidity management. This shift has been complemented by the addition of new tools to the menu of instruments, such as interest rate arrangements, since the 1990s. Notwithstanding the reduced reliance on traditional instruments, the use of cash reserves is still widespread. While Jamaica has reduced its reliance on reserve requirements since the mid 1990s, these requirements remain higher than those of the group of countries studied. In addition, the use of the liquid asset requirement in Jamaica is not in keeping with international best practices as this has been abolished by a number of central banks, including those of developing economies. Also, in contrast to the group of countries studied, Jamaica has not added any new instrument to its menu, since shifting to the use of open market operation in 1985. As it relates to countries that have successfully eliminated reserve requirements, a similar experience could be replicated in Jamaica. However, the application of such requires a new monetary policy framework and would be more beneficial under a real time gross settlement system.

[1] The views expressed in this paper are those of the author and in no way represent an official position of the Bank of Jamaica.

1.0 Introduction

Since the early 1980s, central banks in a number of economies have shifted their focus from short-term control of reserves to exercise more stringent control over short-term interest rates. In this context, direct tools and reserve requirements have either been eliminated or deemphasized while there has been a shift towards the use of market based instruments such as open market operations[2]. Using open-market operations, central banks can either increase short-term interest rates to reduce inflationary pressures within the domestic market, or reduce rates to stimulate weak economic activity and promote growth[3]. As a consequence, reserve requirements now play a secondary role in monetary policy management, resulting in a steady decline in the percentage of eligible bank deposits held at central banks.

The major issues which have led to the declining use of the traditional instruments include the increased incidence of evasion as financial markets develop increased inefficiency in the allocation of resources, inequity during implementation as well as a lack of credible enforcement. There is also the view that these requirements constitute a tax on deposit taking institutions. In some central banks, including France and the United States, assets held to meet reserve requirements have fallen to minimal levels due largely to the emergence of financial innovations. These innovations have enabled an increasing number of deposit-taking institutions to evade reserve requirements, by shifting funds from reservable deposit accounts to non-reservable accounts.

In response, some central banks have chosen to pay interest on reserve holdings, albeit, generally at sub-market rates. Many central banks have effected reductions in reserve requirements, resulting in an improvement in bank profitability and increased competition, on more even terms, between banks and other financial institutions[4]. In more extreme cases, a number of countries including Canada, United Kingdom, New Zealand, Japan and Australia have fully eliminated reserve requirements. The transition away from these instruments has also been facilitated by relatively stable macroeconomic

[2] Direct tools and reserve requirements are separated here to ensure consistency throughout the paper.
[3] See Sellon Jr. and Weiner (1996)
[4] See Sellon Jr. and Weiner (1996)

conditions and sound fiscal policies, sound and competitive financial systems. The change has also been complemented by an adequate supervisory framework, as well as a sufficient degree of institutional autonomy and operational capacity at central banks. Although all these conditions are not evident in emerging market and developing economies, the central banks in these jurisdictions have been gradually following the trend initiated by the industrial countries.

Consistent with this trend, monetary policy implementation by the Bank of Jamaica has evolved over the past two decades, albeit not at a rapid pace. The Central Bank has fully eliminated the use of direct instruments such as credit ceilings and interest rate controls, greatly reduced the frequency of use and the level of reserve requirements for deposit-taking institutions and since the mid 1990s, has increased the use of open market operations in its conduct of monetary policy.

In keeping with the need to continually review monetary policy in Jamaica, this paper seeks to ascertain whether the tools used by the central bank are in keeping with international best practices. The paper will firstly outline the evolution of the conduct of monetary policy within the Jamaican context. The paper will then focus on a survey conducted by the International Monetary Fund on monetary policy instruments utilized worldwide as well as provide a brief review on the level of reserve requirements within some of our Caribbean neighbours. It will then examine three countries that have chosen to conduct monetary policy without the use of reserve requirements. Of particular interest are the process by which the reserves were eliminated and monetary policy formulation and implementation following the elimination of the requirement.

The study finds that while Jamaica has reduced its reliance on reserve requirements since the mid 1990s, these requirements remain higher than those of the group of countries studied. Moreover, the use of the liquid asset requirement in Jamaica is not in keeping with international best practices as this has been abolished by a number of central banks, including those of developing economies. In addition, in contrast to the group of countries studied, Jamaica has not added any new instrument to its menu, since shifting to

the use of open market operation in 1985. As it relates to countries that have successfully eliminated reserve requirements and have added new instruments to the menu, a similar experience could be replicated in Jamaica. However, the application of such would require a new monetary policy framework and would be more beneficial under a real time gross settlement system.

2.0 Historical Overview of Monetary Policy Implementation in Jamaica

During the first few decades after the Bank's establishment in 1961, reserve requirements were readily utilized to impact liquidity conditions within the Jamaican financial landscape. The requirements comprised a cash reserve and a non-cash (liquid assets) component. The cash reserve requirement (CRR) stipulates that a pre-determined fraction of eligible prescribed liabilities within financial institutions is to be held on deposit at the central bank in the form of cash[5].

In the 1960's when significant inflows of foreign capital influenced a build up in Jamaica Dollar liquidity conditions and facilitated an increase in domestic credit, the Central Bank tightened monetary policy by increasing other credit controls as well as the total liquid asset requirement (LAR) to 17.5 per cent from 15.0 per cent, the rate at which it was instituted. Again, in the 1970's, against the background of a mounting fiscal deficit as well as a worsening balance of payments deficit coupled with significant declines in the BOJ's foreign reserves, the Bank increased the total liquid asset requirement to a high of 29.5 per cent in an effort to contain consumer expenditure on imports.

The use of these policy tools was fully pursued particularly during the mid 1980s as the BOJ concentrated its policy actions on containing aggregate demand to avoid further erosion of the external accounts without placing unnecessary pressure on the exchange rate[6]. The Bank tightened monetary policy by increasing reserve requirements with an aim to curb the demand for imports. In an effort to restrict excessive credit expansion, the Bank increased the cash reserve ratios for the commercial banks in 1985 to 20.0 per cent

[5] The stock of prescribed liabilities excludes private repurchase agreements.
[6] See Bank of Jamaica 2004, *Bank of Jamaica: The First 40 Years 1961-2000*

of deposits from 14.0 per cent at the beginning of the year. The liquid asset requirement, which includes the cash reserve ratio, also increased to a record-high of 48.0 per cent of eligible commercial bank liabilities. This action resulted in an upward adjustment to interest rates by the commercial banks, which proved a formidable barrier to excessive credit expansion.

Distortions within the Jamaican framework, with respect to varying reserve requirements for the different financial intermediaries, became apparent during the 1980's. The CRR and LAR for the institutions licensed under the Financial Institutions Act (FIAs) were 5.0 per cent and 25.0 per cent respectively, well below the reserve requirements mandated for the commercial banks[7]. In this context, financial conglomerates were able to circumvent higher reserve requirements faced by the commercial banks by placing deposits within affiliated FIAs.

Within the context of less stringent reserve requirement applicable to other financial entities as well as the absence of minimum capital requirements, there was strong growth in merchant bank activity in the 1980's. The number of merchant banks in operation increased to 21 in 1990 from 8 institutions in 1985. Towards the end of 1985, the Bank embarked on the implementation of a financial sector reform programme with the aim of, among other things, improving its monetary policy formulation and implementation procedures and eliminating distortions within the financial system. One aspect of the programme entailed the reduction of reserve requirements for both commercial banks and FIAs. This action influenced a decline in interest rates within the banking system and the domestic money market and an expansion in banking system credit to the private sector, most of which was used for investment in the real sector. Further adjustments to the reserve requirements were made in the 1990's as the Bank sought to address the differential in the CRR and LAR for different classes of financial institutions (see **Charts 1A & 1B**). The amendments implemented allowed the Bank to eliminate loopholes with

[7] The entities which comprise the group of FIAs include merchant banks, trust companies and finance houses.

respect to statutory liquidity requirements and more effectively manage liquidity conditions within the financial system.

Chart 1A

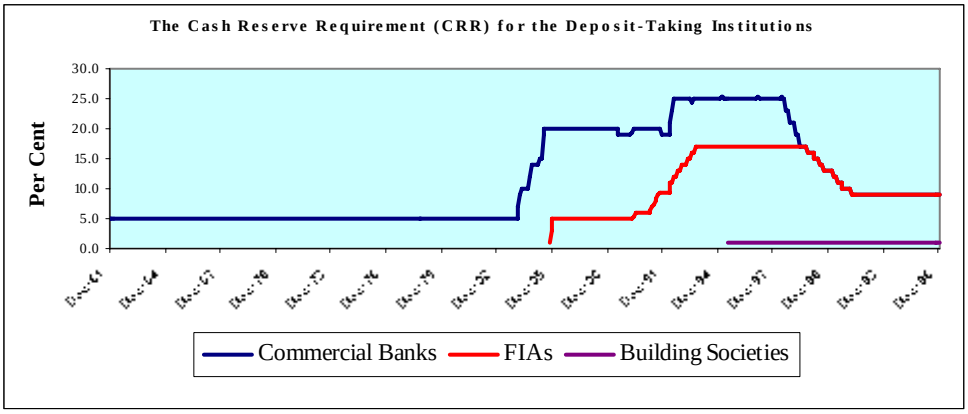
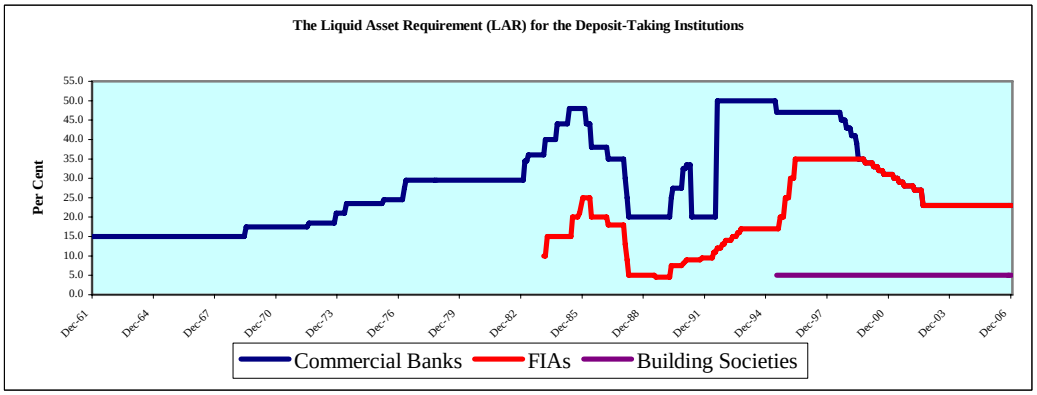


Chart 2B



N.B. The data for the building societies in Charts 1A and 1B represents the lower LAR and CRR applicable when the institution holds residential mortgages of at least 40.0 per cent of savings funds. If this stipulation is violated, the building societies will be required to maintain an LAR and CRR equivalent to the requirements for the FIAs.

These adjustments to the reserve requirements occurred in a context where the Bank sought to enhance its capacity to manage liquidity by incorporating base money management within its monetary policy framework. With the adoption of this new approach to liquidity management, the Bank shifted towards the use of open market operations as its main monetary policy tool in November 1985. At that time, open market operation involved the sale and purchase of the Bank's own certificates of deposits (CDs). These instruments enhanced the Bank's capacity to manage liquidity

conditions over a short time frame as their tenors generally ranged between one – three months.

2.1 Developments since the mid 1990s

The Bank's use of open market operations intensified in the mid 1990s with the trading of GOJ and BOJ securities with authorized traders known as Primary Dealers as well as the commercial banks. These risk-free securities are either sold directly to the traders or utilized as collateral for loans over a short-term period at a pre-determined interest rate[8].

Traditionally, open market operations involved the use of reserve repurchase instruments, as the Bank would sell its holdings of GOJ instruments to the market at a specified rate of return over a short-term period to reduce the level of money supply within the market. Since June 2001, the Bank has been issuing its own instrument in the conduct of open market operations, a Certificate of Deposit, which has the same effect as a reserve repurchase agreement. This instrument is collateralized by the Bank's guarantee to repay the funds deposited at an agreed maturity date. The Bank ceased using reverse repurchase agreements to conduct open market operations in May 2005. However, in a period of low domestic currency liquidity, the commercial banks may approach the Bank, utilizing their holdings of eligible securities to secure a short-term loan in a transaction referred to as a Repurchase Agreement[9].

Although open market operations have become the primary instruments utilized by the Central Bank since the 1980's, there have been instances when direct monetary tools were employed to significantly limit the money supply during the 1990's and early 2000's. In particular, in January 2003, the BOJ temporarily implemented a special deposit requirement for commercial banks and FIAs which made it necessary for the institutions to hold an additional 5.0 per cent of prescribed liabilities in cash at the Bank[10]. The policy was aimed at significantly tightening Jamaica Dollar liquidity to

[8] In August 2007, the longest open market instrument had a tenor of 180 days.
[9] See Bank of Jamaica (2000), *Pamphlet No. 1*
[10] See Bank of Jamaica, *Annual Report 2003*

provide an immediate fix to problems that emanated within the foreign exchange market. Although the deposit scheme offered a fixed rate or return of 6.0 per cent per annum, this rate was significantly below market rates. This special deposit requirement had a positive impact on the day of its introduction, however, subsequently, the slippage in the exchange rate resumed and there was no noticeable effect on the interest rates offered by the commercial banks and FIAs. The special reserve was fully eliminated in May 2006 in a context of continued stability in the foreign exchange market.

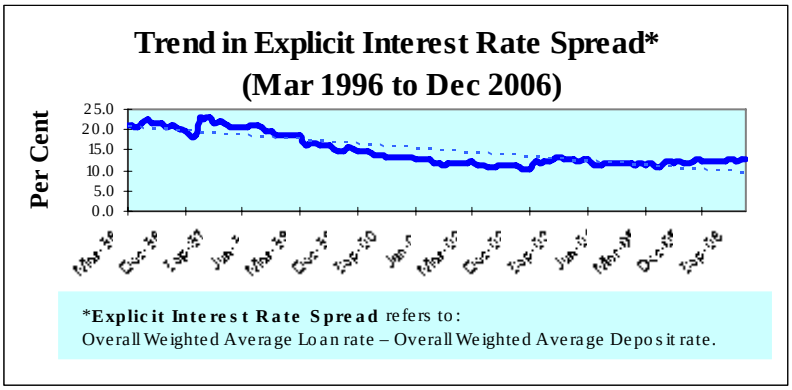
Given the decision by the Central Bank to switch towards the use of market-based instruments to implement monetary policy, the CRR and LAR for commercial banks and FIAs were gradually reduced to the current lows of 9.0 per cent and 14.0 per cent, respectively since September 2002. The rates have remained unchanged since then. For the building societies, a dual cash reserve system is applied which varies according to the proportion of residential mortgages to savings fund for each individual institution. If a building society holds 40.0 per cent of total savings funds in residential mortgages, it will currently be required to hold a CRR of 1.0 per cent of eligible liabilities. In cases where institutions hold less than the stipulated ratio, the applicable CRR will be equivalent to the statutory ratios for the FIAs.

In calculating the reserve requirement, the Bank of Jamaica uses a four-week averaging period ending on the third Wednesday of the previous month to calculate the cash reserves to be held in the current month. However, if the previous month has five Wednesdays then the averaging period ends on the fourth Wednesday of the previous month. The non-cash component of the reserve requirement stipulates that an additional fraction of deposits and other eligible liabilities be held as risk-free liquid assets, typically in the form of notes and coins or Government of Jamaica (GOJ) or Bank of Jamaica securities, with maturities less than one year.

The liquidity that was generated by the reduction in the cash reserves was mainly channeled into money market instruments and had little impact on the foreign exchange

market. Further, the removal of these reserve restrictions contributed to an improvement in interest rate spreads (see **Chart 2**).

Chart 2



Some members of the financial sector have argued that the cash reserve ratio has hindered a more substantial reduction in the banks' interest rate spread. The impact of the cash reserve on the interest rate spread has significantly diminished since 1998 while intermediation costs (add-on by banks) recorded robust growth (see **Table 1**). Specifically, for FY 2006/2007, the average cost of the cash reserve, using a cost of prescribed liabilities approach, declined to 0.38 per cent from an average of 3.33 per cent in FY 1996/1997. As a proportion of the loan rate, the cost of the cash reserves declined to 2.2 per cent from 9.0 per cent, thereby negating concerns that the CRR continues to promote high interest rate spreads. In this context, intermediation costs continue to account for the largest proportion of costs applicable to lending rates and would have largely facilitated the maintenance of high interest rate spreads in recent years.

Table 1

Impact of the Cash Reserve Requirement
Cost of Prescribed Liabilities Approach

Year	(a) Reserve Requirement *	(b) Average Cost of Prescribed Liabilities **	(c) = (a) x (b) Cost of Cash Reserve	(d) Average Loan Rate	(e) = (c)/(d) Cost of reserve relative to loan rate (%)
Mar-97	0.250	13.33	3.33	37.00	9.00
Mar-98	0.250	9.88	2.47	32.13	7.69
Mar-99	0.225	10.46	2.35	31.00	7.59
Mar-00	0.166	8.85	1.47	25.76	5.70
Mar-01	0.135	8.53	1.15	22.62	5.09
Mar-02	0.105	5.68	0.60	20.01	2.98
Mar-03	0.090	5.18	0.47	18.03	2.59
Mar-04	0.090	3.97	0.36	19.30	1.85
Mar-05	0.090	4.93	0.44	17.73	2.50
Mar-06	0.090	4.03	0.36	17.33	2.10
Mar-07	0.090	4.22	0.38	17.60	2.16

* Average Cash Reserve Requirement
** Excludes Repos

The removal of the cash reserve requirement has nonetheless, remained a topical issue especially in the context of the opportunity costs of these reserves. Examination of the opportunity cost to the banks of holding the cash reserve in a non-income generating form rather than investing these funds in a market instrument revealed that the interest foregone from holding these balances amounted to $1 385 million in 2006 (see **Table 2**) [11]. In assessing the impact on the return on assets (ROA), the interest foregone from holding the CRR solely influenced a 0.23 percentage point change in the ROA from 3.05 percentage point in 1998[12].

[11] The market instrument used in the calculation of the cost of reserve requirements is the six-month GOJ Treasury Bill rate, averaged over each year.
[12] The Return on Assets ratio measures pre-tax profits as a proportion of assets.

Table 2

Impact of Cash Reserve Requirement
Opportunity Cost Approach

Period	(i) Cash Reserve (J$ Million)	(ii) Pre-Tax Profits (J$ Million)	(iii) 180-day T'bill (Per Cent)	(iv) = (i) x (iii) Interest Foregone (J$ Million)	(v) Unadjusted ROA * (Per Cent)	(vi) Adjusted ROA ** (Per Cent)	(vii) = (vi) - (v) Change (PP)
1998	19 979.2	-758.2	24.78	3713.5	-0.71	2.34	**3.05**
1999	16 232.8	2 149.0	20.84	2536.7	1.66	3.17	**1.51**
2000	14 619.5	4 874.9	16.63	1823.8	3.11	3.89	**0.78**
2001	12 597.6	5 965.8	16.71	1578.4	3.22	3.80	**0.57**
2002	10 955.7	6 958.8	15.54	1276.7	3.38	3.78	**0.40**
2003	10 974.4	12 309.8	25.48	2097.0	5.19	5.80	**0.62**
2004	11 790.6	11 351.7	15.28	1351.4	4.16	4.47	**0.31**
2005	12 905.5	13 215.1	13.39	1295.5	4.44	4.68	**0.24**
2006	14 447.6	13 848.1	12.79	1385.4	4.11	4.34	**0.23**

** ROA prior to adjustment for interest foregone from the cash reserve requirement*
*** ROA adjusted for interest foregone from the cash reserve requirement*
****Interest foregone adjusted for witholding tax*

From a liquidity management perspective, concerns have however been raised about the negative impact which the removal of reserve requirements may have on the Jamaican financial market. In particular, there is the view that the resultant influx of domestic liquidity may cause increased volatility of short-term interest rates, adversely affecting the Central Bank's ability to implement monetary policy if proper operating procedures are not instituted to combat the significant increase in liquidity conditions.

In addition, Jamaica's current payment and settlement system infrastructure presents constraints to effectively managing the resultant increase in liquidity conditions that would emanate from the removal of the cash reserve requirement. The Central Bank operates a Customer Inquiry and Funds Transfer System (CIFTS) which allows participants to enter instructions for payment to be effected throughout the day on their accounts held at the BOJ. The BOJ guarantees all funds transferred in response to these payment instructions, an action which exposes the Central Bank to significant settlement risk. This risk would increase with the elimination of the reserve requirement given the additional liquidity which would be released.

The structure of Jamaica's financial market is another constraint to the phasing out of reserve requirements. Similar to the experience in other developing and emerging markets, the Jamaican financial system is characterized by shallow or thin financial markets with a few dominant institutions. More specifically, two major commercial banks in the Jamaican financial system affect the vast majority of intra-day liquidity and operate as 'market leaders'. Given the limited investment options on the domestic market, the complete elimination of reserve requirements may have a negative impact on the Bank's operations if the BOJ is required to absorb the liquidity which would be released. The Bank forecasts that the cash reserve will be approximately $17.2 billion at the end of FY 2007/08, and is expected to increase to $21.7 billion at the end of FY 2010/11. The cost which would be incurred by the Bank if these funds were invested in OMO instruments would increase interest expenses of the BOJ given the current rates being offered on the instruments.

Another constraint to the complete elimination of reserve requirements is fiscal dominance which is evidenced in a number of ways and has traditionally been cited as a deterrent to effective monetary policy implementation and liquidity control. As at June 2007, variable rate and foreign currency instruments accounted for 61.05 per cent and 51.4 per cent of the total GOJ debt stock resulting in the debt servicing requirements which are highly sensitive to movements in both the exchange and interest rates. This is likely to weigh heavily in the Central Bank's decision making process when developments arise which require adjustments to interest rates and responses to limit exchange rate movements. This problem is further exacerbated by the absence of central bank independence. The foregoing suggests that the arguments against the use of reserve requirements within the Jamaican monetary policy framework are not necessarily strong. Nonetheless, a closer examination of international best practices as it relates to monetary policy tools is warranted.

3.0 Monetary Policy Implementation – International Experiences

In an effort to examine if the use of monetary policy tools in Jamaica is in keeping with international best practices, this section of the paper reviews an International Monetary Fund survey on the use of monetary policy instruments worldwide. This is followed by a brief review of the use of reserve requirements within the Caribbean.

Monetary policy implementation involves the use of both direct and indirect instruments to regulate the amount of liquidity in the system. Given advances in market development and increased openness of the global financial market, monetary policy implementation across countries has evolved in recent years. This evolution is reflected in a general shift away from direct monetary policy instruments as central banks move towards a greater reliance on market-based instruments to affect domestic liquidity conditions. This section of the paper examines the use of monetary policy instruments in three groups of countries, namely developing, emerging and developed countries. The instruments are categorized as direct instruments, reserve requirements, statutory liquidity requirements, standing facilities and discretionary monetary policy instruments.

In some countries, the implementation of monetary policy does not entail the use of direct instruments while in other countries the use of these instruments is deemphasized. The countries that have fully eliminated the use of direct instruments such as credit ceilings and interest rate controls are for the most part, major industrialized countries which possess well developed, mature and competitive financial market structure. In 2004 for example, of the developed countries surveyed, none of these countries used these instruments[13]. In contrast, direct instruments were used in 15.0 per cent of developing countries and 18.0 per cent of emerging market economies. The use of these instruments has been on a declining trend since 1998 (see **Table 3**). The major problems which have led to the declining use of direct instruments include the increased incidence of evasion as markets develop increased inefficiency in the allocation of resources, inequity during implementation as well as a lack of credible enforcement.

[13] See Buzeneca and Maino (2007)

Table 3

Use of Monetary Instruments in a Sample of Countries

(Percent of countries having the instrument in each group)

	Developing Countries			Emerging Countries			Developed Countries		
	1998	2001	2004	1998	2001	2004	1998	2001	2004
Direct Instruments	54	15	15	27	18	18	10	5	0
Reserve Requirements	92	100	100	91	91	91	71	67	71
Statutory Liquidity Requirements	38	46	46	64	27	18	24	10	14
Standing Facilities	100	100	100	100	91	100	86	100	100
Discretionary Monetary Instruments	92	85	92	91	100	91	95	100	100

Source: Buzeneca and Maino (2007)

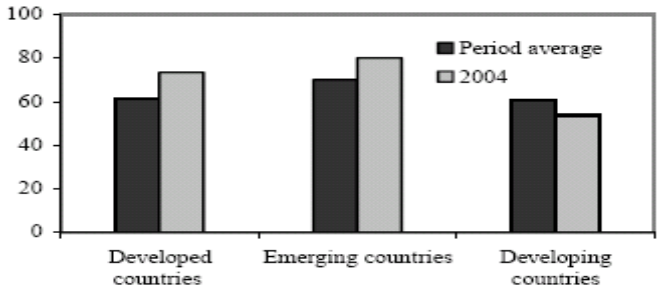
While some countries have completely eliminated the use of cash reserve requirements, it remains a highly utilized monetary policy instrument among all groups of countries, especially emerging and developing economies. As much as 71.0 per cent of all developed countries surveyed used the instrument (see **Table 3**). Several justifications for the continued imposition of reserve requirements are: (i) to help ensure banks' individual liquidity, in particular against bank runs; (ii) to help monetary control as a reserve market management tool of the central bank; (iii) to help monetary control by serving as a built-in stabilizer; (iv) to contribute to generating central bank income; (v) to influence competition between banks; (vi) to create or enlarge a structural liquidity deficit of the banking system, stabilizing the demand for reserves above working balances, and (vii) to provide an averaging facility, such that short-term transitory liquidity shocks are buffered out without a need for open market operations and without related volatility of short-term interest rates[14]. The role of reserve requirements as a monetary policy tool has shifted in recent years. There are however, concerns about the lack of flexibility of reserve requirements. In addition, there is a view that frequent changes in the required ratios may be disruptive and generate costs for the financial institutions.

For most developed and emerging economies, the reserve requirement policy has shifted towards the use of uniform ratios for different maturities and currencies. In 2004, more than 60.0 per cent of these countries which used reserves had a uniform ratio. These uniformed ratios allow for more efficient liquidity management given the lower

[14] See Bindseil (2004).

probability of errors in forecasting the demand for reserves as a result of shifts within the different component of the monetary aggregates targeted and also within currency denominations (see **Chart 3**). Developing economies on the contrary, have increased the use of varying ratios for different classes of deposits. This non-uniformity of reserve ratios is likely to complicate monetary policy management and create market distortions influencing disintermediation and evasion by economic agents.

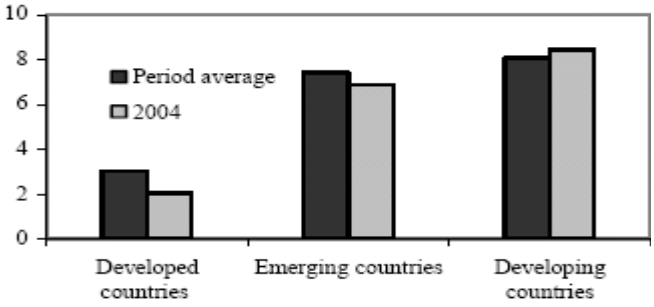
Chart 3: Use of Uniform Required Reserve Ratios
(in per cent of countries using reserve requirements, 1998 – 2004 averages)



Source: Buzeneca and Maino (2007)

Among the countries that use uniform rates, developed economies have, on average, the lowest reserve requirement ratios and this ratio continues to follow a downward trend. In 2004, the reserve ratio of developed economies averages 2.0 per cent, compared to an average of 7.0 per cent and 8.0 per cent for emerging countries and developing economies, respectively (see **Chart 4**).

Chart 4: Ratios of Required Reserves
(Uniform rates in per cent, 1998 – 2004 averages)



Source: Buzeneca and Maino (2007)

An examination of the cash reserve requirement in five Caribbean territories suggests that the average cash reserve requirement is 11.7 per cent, higher than the cash reserve requirement of 9.0 per cent that currently obtains in Jamaica in 2007 (see **Table 4**). Two countries, Barbados and the ECCB, have cash reserves requirements lower than ratio observed in Jamaica. These ratios were higher than those of developed countries but in line with the cash reserve ratios of emerging and developing economies. A possible reason for the lower ratios could be due to the generally lower inflationary environments which obtain in these countries. The annual five-year average inflation rate over 2002 to 2006 for Barbados and the ECCB were 3.7 per cent and 2.4 per cent, respectively, which is relatively low as compared to 10.7 per cent annual average inflation rate for Jamaica.

Table 4

Cash Reserve Requirement (CRR)	
Barbados	5.0%
Trinidad & Tobago	11.0%
ECCU	6.0%
Suriname	25.0%
Guyana	12.0%
Jamaica	9.0%
Average (excluding Jamaica)	**11.8%**
Developed Economies	2.0%
Emerging Economies	7.0%
Developing Econonies	8.0%

Reserve requirements are traditionally imposed on demand and time deposits. In 2004, solely 20.0 per cent of developed economies required reserves to be held on foreign currency denominated deposits, while for emerging and developing countries, an average of 80.0 per cent of these economies imposed reserve ratios on foreign currency deposits. The reserve base, particularly for developed countries may also include ratios imposed on other liabilities, such as deposit and debt securities with maturities up to two years.

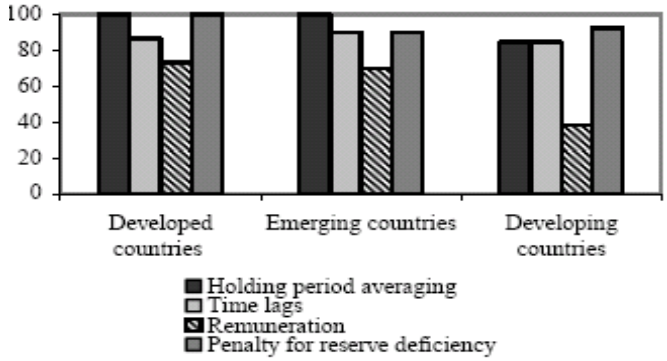
Eligible reserve assets in developed and emerging economies typically include cash deposits held at the central bank, and to a lesser extent, vault cash. A higher proportion of

developing countries accept vault cash to fulfill reserve requirements, as well as other eligible assets including government securities and gold.

The majority of the central banks which impose reserve requirements institute a specific reserve maintenance requirement as a period average where participating financial institutions are charged a penalty if reserve balances are not met over this period (see **Chart 5**). Remuneration of required balances is largely utilized by developed economies in an effort to address the tax on financial intermediation which may influence increases in interest rate spreads and disintermediation.

Chart 5: Maintenance Requirements and Remuneration of Required Reserves, 2004

(in per cent of countries using reserve requirements)



Source: Buzeneca and Maino (2007)

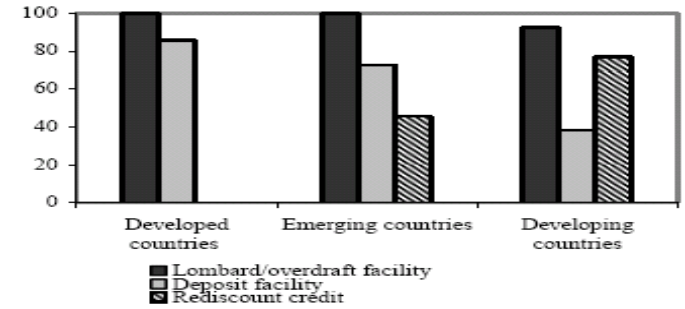
Statutory liquidity requirements oblige financial institutions to hold a proportion of prescribed liabilities in holdings of government and/or central bank securities. This tool has not been utilized by a number of central banks across all groups given the many disadvantages advanced. Liquidity requirements may influence market distortions such as hampering financial institution's asset management, distorting the pricing of government securities in the financial markets, causing disintermediation influencing a loss in the effectiveness to control monetary aggregates and restraining growth in secondary markets. The intensive use of reserve requirements and statutory liquidity requirements may affect the design of the lending facility in developing countries, given that inter-bank markets remain relatively underdeveloped. Against this background, the use of these instruments has declined substantially to 14.0 per cent and 18.0 per cent in emerging and

developed economies, respectively, in 2004 from 18.0 per cent and 64.0 per cent in 1998. In developing countries, liquidity requirements were utilized by 46.0 per cent of countries surveyed (see **Table 3** and **Charts 10A & 10B**).

Standing facilities appear to be the most widely used tool of monetary policy. These monetary instruments are voluntarily activated at the initiative of the commercial banks and other market participants. Standing facilities provide short-term uncollateralized credit at an established penalty rate. The refinance standing facility or Lombard window is utilized to meet short-term liquidity needs of the financial institutions at their request and is usually priced above any alternative source of funds at a pre-specified interest rate. As such, it acts as a signal of changes in the central bank's policy stance. In many developing countries, the Lombard window also allowed banks to obtain liquidity from their treasury bills at a pre-determined rate. There is the concern that this system may represent a key part of the payment system, particularly as it relates to less developed economies with underdeveloped interbank markets and weak financial institutions. There is the view that illiquid banks may resort to frequent use of this facility, especially in a context where the penalty rate is just slightly above market rates. In 2004, standing facilities were utilized by 100.0 per cent of the countries in all groups surveyed.

Deposit facilities, a type of standing facility where financial institutions can deposit excess liquidity at a fixed pre-determined rate, have also been utilized increasingly over the years, particularly by emerging and developed economies. Developing economies tend to rely more on rediscount credit facilities. This facility allows financial institutions to obtain loans or advances from the central bank using eligible bonds of its borrowers as collateral. It operates as a standing credit facility to assist the financial institution to increase its liquidity position by refinancing the loans extended to clients (see **Chart 6**).

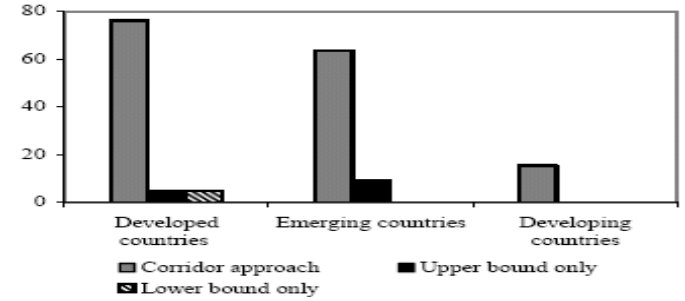
Chart 6: Use of Standing Facilities, 2004
(Percentage of countries using the instrument in each group)



Source: Buzeneca and Maino (2007)

Interest rate arrangements, in particular, the corridor approach is a relatively new monetary policy tool utilized since 1998 primarily by developed economies, and are growing in use within emerging market economies (see **Chart 7**). This arrangement allows financial institutions to deposit or borrow funds from the central bank within a specified interest rate band. The upper limit of the band would reflect the interest rate at which the financial institution borrows funds, while the lower limit reflects the lending rate. A wide corridor makes it more costly for the market to make frequent use of this facility, while a narrow corridor (small bid/ask spreads) prevents the development of liquid markets deterring institutions from the interbank market to manage liquidity conditions. In this regard, central banks aim to design the corridor instrument to allot for funds to be traded on the interbank market and prevent the central bank from increasing its credit risk. Approximately 86.0 per cent and 73.0 per cent of developed economies and emerging economies, respectively, utilized this monetary policy tool in 2004, while the use of this instrument was not utilized in 1998 (see **Charts 10A & 10B**).

Chart 7: Use of Interest Rate Arrangements, 2004
(Percentage of countries using the instrument in each group)

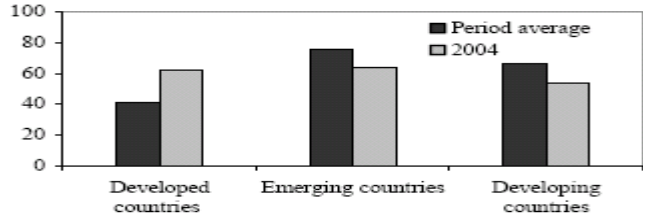


Source: Buzeneca and Maino (2007)

The conduct of monetary policy within most economies largely reflects the use of discretionary monetary policy instruments. The utilization of these instruments was evident in 100.0 per cent of developed economies and 92.0 per cent and 91.0 per cent of developing and developed countries, respectively. Increasingly, open market operations (OMOs) are the main instruments utilized to manage liquidity conditions and influence market interest rates because they can be deployed frequently and in the amount necessary to stabilize money market conditions. OMOs can be performed in either the primary or secondary market by issuing short-term central banks or government bills to the market.

Primary market operations involve the primary issuance of central bank securities or government securities to affect monetary conditions as well as the acceptance of fixed-term deposits and credits. There has been a general increase in the use of central bank securities during 1998 to 2004 by developed and emerging economies, while the primary issuance of government securities in developing countries have increased. Generally, primary market operations in all three groups are usually undertaken at short notice. The primary method of sales continues to be multi-price auctions. A central bank may incur losses if a large primary issuance is required to sterilize liquidity (see **Chart 8**).

Chart 8: Use of Primary Market Operations, 1998 – 2004
(Percentage of countries using the instrument in each group)

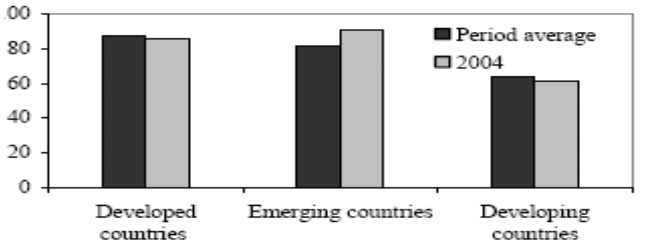


Source: Buzeneca and Maino (2007)

In an aim to encourage development of the secondary market, central banks have introduced secondary market operations which involve the purchases and sales or repo and reverse repurchase arrangements. These are typically undertaken on a continuous basis allowing for increased monetary policy transparency and flexibility. The effectiveness of secondary market operations for government securities in influencing

liquidity conditions will depend on the depth of the secondary market and that the central bank has an adequate stock of marketable instrument to undertake these operations. Secondary market operations with government securities are largely utilized by developing and emerging economies through repo transactions. Central bank bills are more widely used by developed economies that are characterized by liquid and deep secondary markets (see **Chart 9**).

Chart 9: Use of Secondary Market Operations, 1998 – 2004
(Percentage of countries using the instrument in each group)



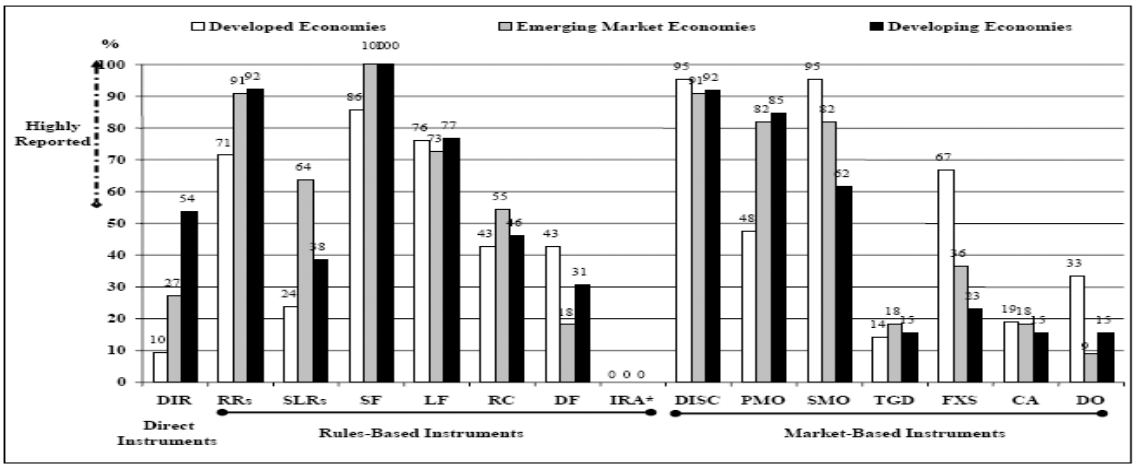
Source: Buzeneca and Maino (2007)

The foregoing suggests that within the context of the increased complexity of financial transactions and growing global linkages between financial markets in recent years, central banks have increased the diversity of monetary policy instruments used to influence liquidity conditions and market expectations. The instrument mix within developed economies, which are generally characterized as possessing liquid, deep and well-developed money markets, have increasingly focused on market-based instruments, in particular open market operations, in conjunction with standing facilities and to a lesser extent continued use of reserve requirements. On the other hand, the instrument mix in emerging and developing economies is considerably less diverse. While these economies have been gradually catching on to the use of market based instruments, the use of traditional tools such as reserve requirements is highly utilized (see **Charts 10A & 10B**).

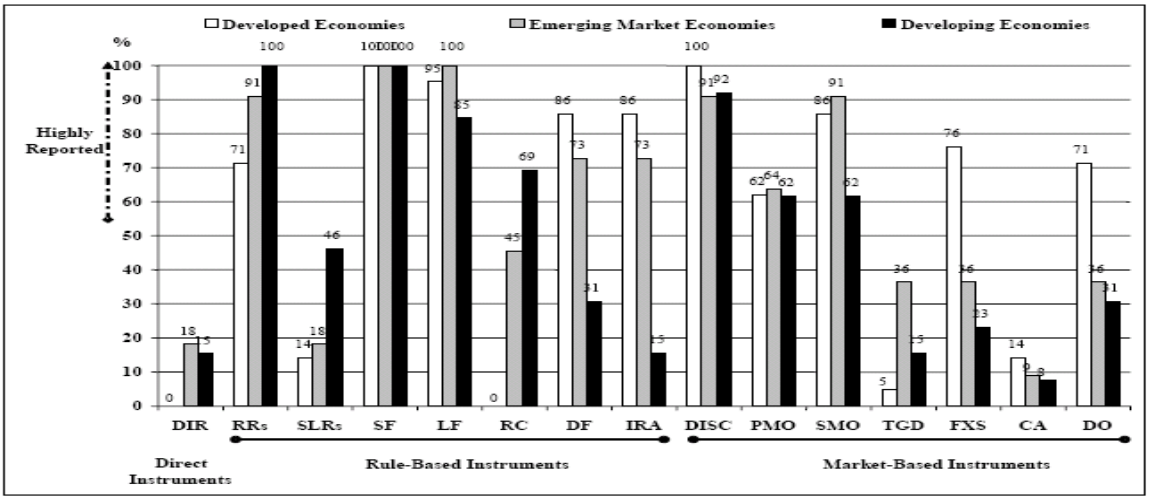
Charts 10A & 10B

Monetary Policy Instruments by Group of Countries, 1998 & 2004

1998



2004



Legend: DIR: direct instruments; RRs: reserve requirements; SLRs: statutory liquidity requirements; SF: standing facilities; LF: Lombard facility; RC: rediscount credit; DF: deposit facility; IRA: interest rate arrangement; DISC: discretionary instruments; PMO: primary market operations; SMO: secondary market operations; TGD: transfer of government deposits; FXS: foreign exchange swaps; CA: credit auctions; DO: deposit operations/facility.

Source: Buzeneca and Maino (2007)

4.0 Case Studies of Countries That Conduct Monetary Policy without Reserve Requirements

One of the major findings from the international survey is that the use of the cash reserves have either been deemphasized or totally abandoned by the leading central banks. While the paper has not presented a case for such elimination, it is necessary to examine the processes by which these countries eliminated these requirements to provide useful information should future conditions warrant such a change in Jamaica. In an attempt to examine the operating procedures which have been implemented in those countries which have eliminated the use of reserve requirements, the paper highlights the experience of three countries[15]. In each instant, there is an examination of the pre-elimination framework and the factors that influenced the change in the central banks' conduct of monetary policy. Post-elimination conditions are then explored and the challenges to economic stability within the new monetary policy framework are outlined.

4.1 Canada

The Bank of Canada instituted reserve requirements as a monetary policy tool when it was established on 11 March 1935. This reserve requirement was enforced by dissuading mandated banks from frequently accessing central bank credit through charges and rules against excessive borrowing[16]. Participating banks were only able to access advances from the Bank of Canada if the institution had inadequate funds to settle a net deficit in clearings on a given day or if the bank possessed a reserve deficit at the end of the maintenance period. Central bank credit extended to the banks was charged at the prevailing Bank Rate or higher and this interest charge would increase as the scale and frequency of borrowings by a given institution increased[17].

In 1935, banks were required to hold a minimum daily cash reserve of 5.0 per cent of eligible deposit balances. Further revisions to the Bank Act in 1954 allowed the Bank of

[15] The three countries that will be explored are Canada, United Kingdom and New Zealand.
[16] See: http://www.bankofcanada.ca/en/financial/rules_05.pdf for *Rules Governing Advances to Financial Institutions.*
[17] See Clinton, *Implementation of Monetary Policy in a Regime with Zero Reserve Requirements* (1997)

Canada to vary the minimum reserve requirement within the range of 8.0 per cent – 12.0 per cent. At that time, the reserves for the month were calculated using the average of the Wednesdays' deposit balances for the preceding month. This methodology of using an averaging period for calculating the reserve requirement allowed for a reduction in uncertainties for the participating banks as it enabled the institutions to forecast and monitor the required reserve position. This also allowed for an improvement in the management of excess reserves by the monetary authority.

Since 1954, the reserve requirement within the Canadian system changed on several occasions. In 1967, for example, the requirement incorporated different percentages for varying types of deposit balances. In 1980, the Bank of Canada instituted two reserve-averaging periods per month, where the requirement was calculated as the average daily deposits for the first fifteen days of each month and again for the remainder of each month. The statutory minimum reserve requirements prior to full elimination were as follows[18]:

(1) 10.0 per cent in demand deposits

(2) 2.0 per cent on notice deposits totaling less than $500.0 million

(3) 3.0 per cent on notice deposits in excess of $500.0 million

(4) *3.0 per cent on residents' foreign currency deposits.*

The adjustments to reserve requirement policy outlined in the 1980 Bank Act resulted in a noticeable decline in required deposits held at the Bank of Canada. This occurred as chartered banks transferred deposits to mortgage loan subsidiaries, which were not subject to reserve requirements; as anticipated, these deposits increased significantly. In addition, there was also an increase in term deposits relative to demand deposits.

A full elimination of reserve requirements in Canada was authorized by Federal Parliament in the 1991 Bank Act. This decision was mainly influenced by the distorting effect of reserve requirements on the banking sector, as the requirement applied solely to banks. There was also the view that reserve requirement operated as a preferential tax which served as a competitive disadvantage of the depository institutions relative to other

[18] See Clinton, *Implementation of Monetary Policy in a Regime with Zero Reserve Requirements* (1997)

financial entities. Also, the role of reserve requirements had been further diminished by financial innovations which allowed the banks to bypass the requirement by shifting from reservable deposits to non-reservable liabilities. The usefulness of the reserve requirement also became questionable given that the central bank was instituted to make credit available to illiquid banks, thereby reducing the need for banks to hold reserves for solvency purposes. In addition, there existed a view that if solvency was the main reason for the establishment of the reserve requirement, then the stipulation that banks hold a proportion of deposits in a non-income generating form would be counterproductive[19].

Against this background, the Bank of Canada gradually phased out the cash reserve over a two-year period commencing June 1992. As at this date, fractional requirements applicable to bank deposits were fully abolished. Actual reserve holdings at the Bank of Canada was reduced from the average level of the preceding twelve months by 3.0 per cent every six months until June 1994, when the remaining requirement was entirely removed (see **Chart 11A and 11B**).

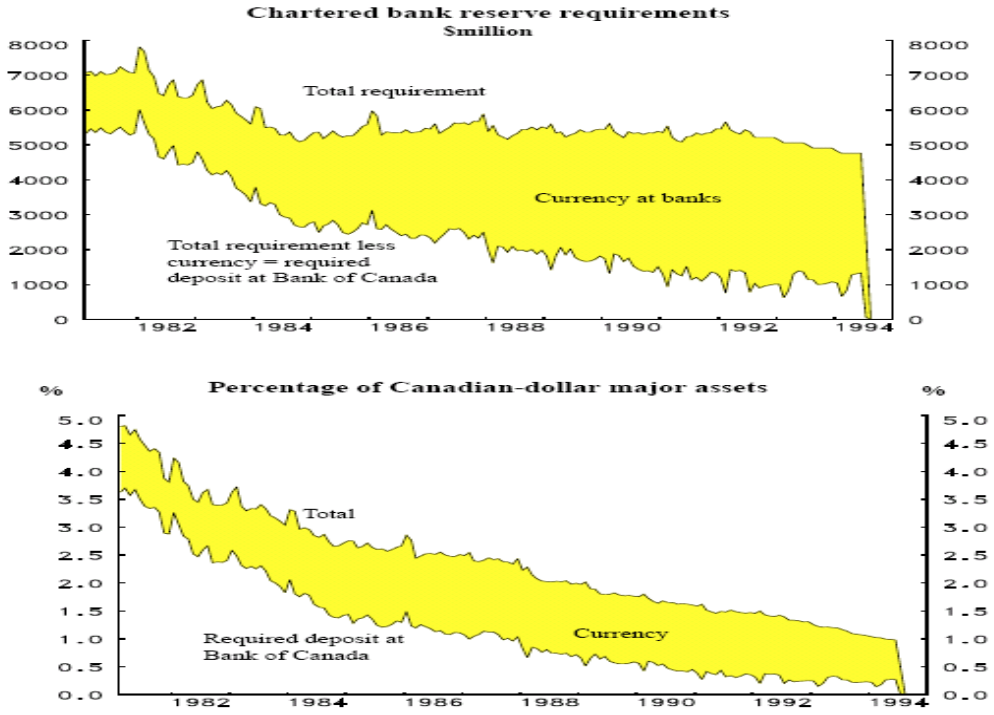
The reduction of the reserve requirement to zero had minimal effect on liquidity conditions within the Canadian monetary system. The institutions' required holdings remained relatively flat from 1984 to 1992 (see **Chart 11A**). In terms of the components, currency held by the banks, particularly for re-stocking automatic banking machines (ATMs) grew over the period, while there was a notable reduction in required deposits held at the Bank of Canada. At the commencement of full elimination of reserve requirements in early 1992, the institutions' holdings of required deposits were already substantially low amounting to approximately $1.5 billion or 0.5 per cent of Canadian Dollar major assets. The declining quantitative importance of the reserve requirement prior to full elimination was also evident as total reserve requirements fell to 1.5 per cent in early 1992 from over 4.5 per cent at the beginning of the period. Simultaneously, required deposits held at the Bank of Canada declined to less than 0.5 per cent prior to removal of reserve requirements from over 3.5 per cent in 1981[20]. This signalled that the

[19] See Montador, *The Transmission of Monetary Policy*, page 22.
[20] See Clinton, *Implementation of Monetary Policy in a Regime with Zero Reserve Requirements* (1997)

cash reserve requirements were already playing a significantly reduced role within the monetary policy framework and full elimination would not have a major impact on liquidity condition within the Canadian money market.

Charts 11A & 11B

Reserve Requirements in Canada: 1981 to 1994



Source: Clinton (1997).

After the elimination of the reserve requirement, the monetary policy framework was focussed on the Bank of Canada's ability to influence the demand and supply of settlement balances and affect the overnight rate. While an explicit reserve requirement no longer exists, direct clearers were still required to maintain accounts at the Bank of Canada but solely for the purpose of facilitating and settling transactions with other authorized clearing institutions[21]. Each direct clearer had an incentive to target a zero balance after settlement, as either a positive or negative balance imposes a cost on clearing institutions. Positive balances incur a cost relating to interest foregone while

[21] Direct clearers refer to the institutions that are members of the Canadian Payments Association and participate directly in the clearing and settlement or transactions system which is facilitated by the Bank of Canada.

negative balances incur an interest fee from the Bank of Canada. This gave rise to the need for the Bank of Canada to forecast prospective demand for settlement balances to determine the level at which it must adjust the supply of balances to attain a desired interest rate. The demand for settlement balances was directly determined by the funds needed by the banks to clear payments on any given day. The framework required that payments made during the day would be cleared overnight. Even though this process occurred on the following day, it was backdated to the previous day[22]. For example, if Institution A, at the end of a given day, net owes Institution B a total of $10 million on behalf of its customers, then the following morning, the Bank of Canada will transfer this $10 million from the settlement account of Institution A held at the Bank of Canada to Institution B's account, with effect retroactive to the previous day.

This mode of operation created a level of uncertainty for the clearing banks with regard to their settlement balance. Also, at the instant when the true settlement balance is ascertained, the deadline for adjusting their settlement position (at approximately 8:15 am) would have expired. Given this uncertainty about the true settlement position, the Bank was challenged to affect interest rates as a direct clearer may target a specific clearing balance and yet may not be able to achieve it. To resolve problems relating to uncertainty of settlement balances, within this new system, the clearing institutions were required to maintain an average excess settlement over a one-month calculation (averaging) period, which culminates the third Wednesday of a calendar month[23]. After settlement, if the direct clearer possesses a negative balance, the institution is required to obtain a collateralized loan from the Bank of Canada at the published Bank Rate, which is aligned to short-term money market rates. Also, institutions that maintain a negative cumulative settlement balance over the monthly averaging period are also required to take a collateralized loan at a minimum of the established Bank Rate[24] or pay a fee in lieu of the loan at the Bank Rate at the end of the period.

[22] See Sellon Jr. and Weiner (1997).
[23] This end period was defined so as to avoid technical distortions that may result from month-end or Friday-end dates. The averaging period may have four or five weeks. See: Clinton and Howard (1994).
[24] The Bank Rate, which represents the minimum rate at which the Bank of Canada makes short-term loans, has been set at 0.25 percentage points above the weekly tender rate on the three-month Government of Canada treasury bill rate since March 1980.

Direct clearers were required to pay interest for negative balances which arise on a daily basis as well as over a monthly averaging period; they however receive no interest compensation for positive balances. In this regard, under this monetary policy regime, the costs of borrowing from the Bank of Canada would roughly equate to the cost of maintaining an equivalent non-interest bearing excess balance at the central bank[25]. In this context, the Bank of Canada was able to establish a well-defined demand for settlement balances, which aided in the achievement of a target for the overnight rate.

The Bank of Canada stilled faced some challenges regarding its attempt to achieve a desired effect on interest rates solely by influencing settlement balances. This occurred for several reasons including an uneven distribution of balances after clearing, a change in market expectations on interest rate movements as well as the influence of the foreign exchange market. Consequently, the Bank of Canada supplemented its operations with the use of indirect monetary tools, in particular, open market operations (OMO) to counteract undesirable interest rate movements or to present a clear signal of the Bank's operating objectives[26]. Open market operations were used extensively after 1994 when the Bank of Canada established an explicit operating band[27] for the overnight rate which allows the overnight rate to fluctuate within a range of 50 basis points[28].

Once the desired overnight rate is determined, the Bank engaged in open market operations with the financial sector to ensure that the overnight rate remained within the operating band. If the rate threatened to move above the upper limit of the operating band, the Bank of Canada would enter into Special Purchase and Resale Agreements (SPRAs) with jobbers[29] to limit upward pressures on interest rates. A SPRA transaction allows the Central Bank to purchase treasury bills from designated market players and sell them back typically in a day or a few days at a pre-determined rate. This transaction significantly reduces the upward pressure on the overnight rate as it increases the supply

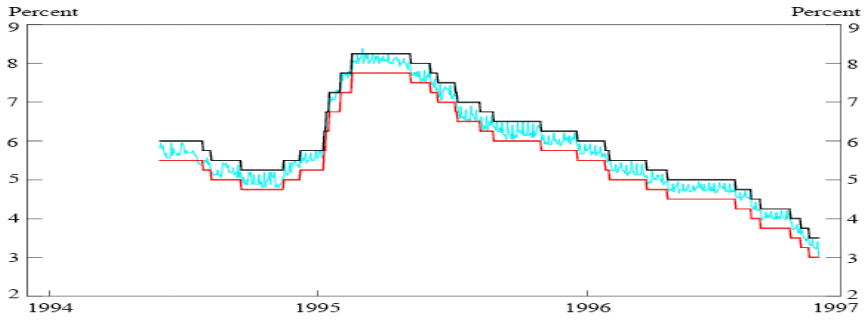
[25] See Clinton and Howard (1994).
[26] See Clinton and Howard (1994).
[27] The rate charged on advances from the Bank of Canada was typically equivalent to the upper limit of the operating band for the overnight rate.
[28] See Sellon Jr. and Weiner (1997).
[29] Jobbers refer to a select group of designated investment dealers and banks. This group of institutions is similar to primary dealers which operate within the Jamaican monetary framework.

of settlement balances. Conversely, if the overnight rate is poised to fall below the lower limit of the operating band, the Bank of Canada conducts Sale and Repurchase Agreements (SRAs)[30], by selling treasury bills to select financial institutions for repurchase on the following day at a pre-determined rate. While, SPRAs are generally always transacted when offered to designated market players, the SRAs are often declined by the market institutions. Nonetheless, this open market operation typically achieves its objective of maintaining the lower level of the operating band through the signal effect. In 1994 when reserve requirements were eliminated, the Bank intervened more frequently in the overnight money market to keep the overnight rate within the target range. The Bank intervened 38 times to keep the rate from going above the upper limit of the range and 16 times to prevent it from falling below the range.

The Bank of Canada also relied on its control of government accounts as a tool to affect the overnight rate. Government deposits can be transferred to the books of the direct clearers to increase the supply of settlement balances when the demand for these balances threatens to push the rate outside of the operating band. With the transfer of these government deposits, typically over an overnight period to seven days, and the use of open market operations, the Bank of Canada has been successful in maintaining the overnight rate within the operating band (see **Chart 12**). This underscores the ability of the Bank to conduct effective monetary policy without the use of reserve requirements.

Chart 12

OVERNIGHT RATE AND OPERATING BAND



Source: Bank of Canada; Sellon Jr., and Weiner 1996

[30] The SRAs are similar to the reverse repurchase agreements.

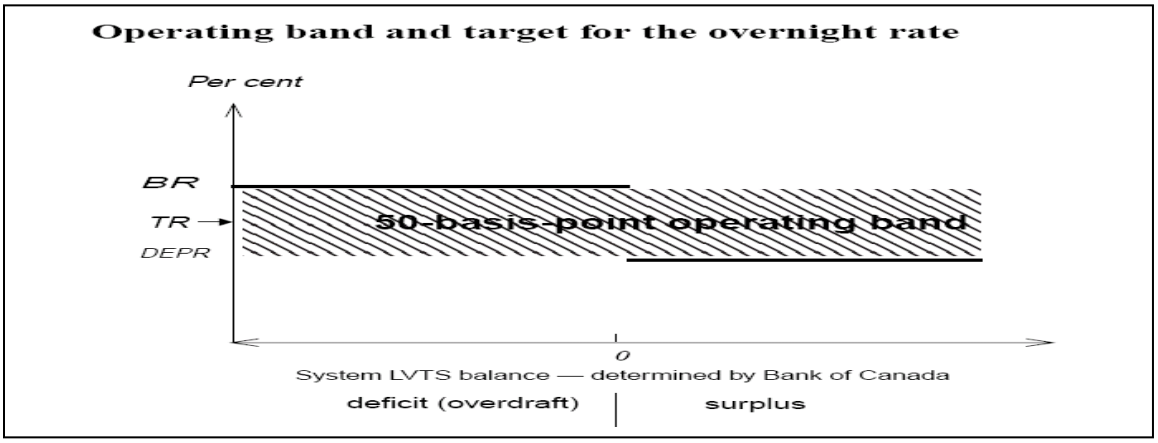
On 4 February 1999, the Bank of Canada improved its monetary policy framework by introducing the Large Value Transfer System (LVTS). This system allows direct clearers to track LVTS receipts and payments on their settlement accounts as they occur and it permits them to adjust balances during pre-settlement periods throughout each day and know with certainty the net outcome of these flows at the end of the day. This allows for the full elimination of uncertainly of settlement balances previously faced by the direct clearers. The LVTS framework was designed to promote more direct interaction among the direct clearers to adjust positive or negative settlement balances, rather than solely with the Bank of Canada. Under this LVTS framework, the demand for settlement balances is different as clearing banks are able to maintain zero clearing balances, thereby allowing for the complete elimination of the system of averaging negative cumulative balances within this framework.

For this framework, the supply of settlement balances is fixed at zero each day using an afternoon auction of government deposits. Once this is achieved, the direct clearers trade with each other to eliminate any excess demand or supply of individual settlement balances. This system left on its own would exhibit extreme volatility in the overnight rate, however, the Bank of Canada continues to maintain the 50 basis point operating band for the overnight rate, as with the previous monetary framework, with a few adjustments to the implementation of the operating band. Under the LVTS regime, the Bank of Canada is the residual supplier or purchaser of residual balances[31]. Direct clearers that possess negative balances are again required to take a collateralized overdraft at the Bank Rate, which would be equal to the upper limit of the operating band. This rate will place a cap on the interest rates they are willing to pay during that day for overnight borrowing in the market. Under this new regime, direct clearers with a positive settlement balance receive interest on balances equal to the lower limit of the operating band. The lower end of the operating band acts as a floor on overnight rates as it is unlikely that institutions with positive balances will lend funds overnight at a rate below this rate. Consequently, the mid-point of the operating band is effectively the Bank of Canada's target for the overnight rate (see **Chart 13**). Changes in the operating band

[31] See Sellon Jr. & Weiner (1997).

are announced at 9 a.m. (Eastern Time) on the effective date, in this regard, rates applicable to all accounts at the central bank are known with certainty early in the day. In this context, the Bank of Canada is better able to exercise control over the overnight rate and achieve its operating targets.

Chart 13



BR = Bank Rate; DEPR = Interest rate on positive balances; TR = target overnight rate

Source: Bank of Canada (March 1991)

The LVTS system includes a *pre-settlement trading period* of half an hour, after the close of client business each day (6:00 – 6:30 p.m.). This period allows direct clearers to achieve a near-zero balance. Participants with positive balances can lend to those with deficits, with movements in interest rates being constrained by the limits of the operating band. The Bank of Canada has a specific policy target rate (the midpoint of the operating band) at which it will enter into SPRA or SRA transactions. On the following day at 11:45 a.m., if overnight rates generally exceed the target rate the bank will engage in a predetermined amount of SPRAs. In contrast, if overnight rates trade below the targeted rate, the Bank will offer SRAs in amounts up to a predetermined level[32]. The Bank of Canada does not intervene in the market if the rate remains close to the target rate. Given that the target rate is known early in the morning and the central bank does not intervene

[32] The pre-determined limits for either SPRAs or SRAs were initially established at $950.0 million.

in the market until midday, direct clearers are encouraged to trade with each other during the morning when most of the major client transactions occur[33].

In its attempt to target a zero settlement balance each day, the Bank of Canada has neutralized certain public sector flows that affect the financial system. These include all receipts and disbursements of the federal government as well as transactions carried out by the Bank of Canada. Government flows affect settlement balances because the central bank acts as the government bankers therefore a net government disbursement will increase settlement balances and the converse is also true. Most government transactions will settle through the LVTS system including large disbursements, receipts (for example, Receiver General (RG) deposits) and issues and redemption of government debt. Other clearing and settlement systems (including the Debt Clearing System (DBS) will also settle through the LVTS system. The Bank of Canada continues to transfer Government deposits to affect the level of settlement balances within the payments system via a daily auction process (see **Appendix 1**).

The Bank of Canada continues to hold in place a retro-active settlement process for paper-based payment items such as cheques. These items continue to be cleared overnight utilizing the Automated Clearing Settlement System (ACSS). Rather than the previous framework where negative balances were charged against the averaging period, the new framework allows for interest to be charged on overdraft positions while positive balances will be remunerated. Under the ACSS system, the interest rates applicable for daily overdraft balances is 150 basis points above the operating band while positive balances will receive recompense equal to 150 basis points below the rate paid on positive LVTS balances. Utilizing this framework, the Bank of Canada has been successful in eliminating the use of reserve requirements within its monetary policy framework without there being extreme volatility in short-term interest rates.

[33] See Bank of Canada, *The Framework for the Implementation of Monetary Policy in the Large Value Transfer System Environment* (1999)

3.2 United Kingdom

The use of reserve requirements was commonplace in the United Kingdom during the 1950s. The Bank of England required a cash ratio deposit of 8.0 per cent on eligible deposits and a liquidity ratio of 30.0 per cent of assets to be maintained by subjected financial institutions. Unlike most central banks which use reserve requirements as a monetary policy tool to restrain credit growth, the Bank of England utilized the cash ratio deposit scheme as the main source of income in supporting its operations[34]. Generally, the liabilities which were subject to reserve requirements were interest-bearing deposits, while the reserve balances held at the central bank were non-interest generating. In that regard, the banks incurred a regulatory cost burden[35]. This unremunerated cash deposit scheme was tantamount to an official reserve requirement system as it operated as significant distorting burden on the eligible financial institutions.

Given strong protest from the six member banks required to hold reserve balances, which cited that this imposed a competitive disadvantage upon member banks of the London Clearing House, the Bank of England expanded the range of institutions which were required to participate within the cash deposit scheme in 1981. This reform required all financial institutions under the Banking Law that possess reserve-carry liabilities of £10 million and over to hold reserve balances at the central bank.

Given that the cash ratio deposit within the United Kingdom system was widely viewed as a discriminatory tax that distorts financial intermediation, this reserve requirement was subsequently lowered over a period of years to 0.15 per cent of deposits in 2000[36]. It is noted that the remaining 0.15 per cent component has no real effect on the operations of the member financial institutions and can be viewed as a tax for operating within the United Kingdom financial market and to provide an alternative source of income for the

[34] See Bank of Japan, *Reserve Requirement Systems and their Recent Reforms in Major Industrialized Countries: A Comparative Perspective* (May 1995)
[35] Given that financial institutions will still have to maintain additional cash balances for settlement purposes then the regulatory cost burden would equal the official reserve requirement balances held at the central bank multiplied by market interest rates. See Bank of Japan (May 1995)
[36] See Sellon Jr. and Weiner (1997)

Bank of England. Consequent upon the significant lowering of the cash ratio deposit, the financial market essentially operates in a zero-reserve requirement framework.

Similar to the case of the Bank of Canada, the Bank of England focused its monetary policy on managing the supply of settlement balances to influence short term rates and thereby meet its long run objective of price stability. However, the operating procedures employed by the central banks within the United Kingdom and Canada significantly differed due largely to differences in market structures in both countries. In the case of the United Kingdom, the Bank of England largely interfaces with two main types of financial institutions, settlement banks and discount houses. The settlement banks are large commercial banks that utilize the clearing facilities at the central banks while the discount houses are financial institutions that specialize in sterling money market trading and traditionally operate as an intermediary between the central bank and the settlement banks[37]. Up to March 1997, the Bank of England affected settlement balances by conducting open market operations and via a discount lending window facility primarily through the discount houses.

The settlement/clearing banks are required to hold positive settlement balances at the end of each business day but they earn no interest on these surplus balances. However, these institutions have the option to transact with other financial players to adjust their balances, by either buying or selling financial assets. The Bank of England can also conduct open market operations to adjust settlement balances within the financial system. This manipulation of the supply of settlement balances gives the Bank of England leverage in affecting short-term interest rates. A settlement bank which requires additional settlement balances could withdraw secure deposits from a discount house which it would sell to the central bank in one of the three daily rounds of open market operations. The Bank of England limits the type and the dealing rate at which it will purchase financial assets. The dealing rate at which the Bank conducts open market operations has a significant impact on money market rates, as generally the overnight

[37] Discount houses are similar to the primary dealers which operate in the Jamaican money market and are the main intermediaries through which the Bank of Jamaica affects liquidity conditions.

rate, although volatile in the short run, shadows the dealing rate over the medium to long run.[38]

In an effort to improve the payment system and implementation of monetary policy within the United Kingdom's financial market, the Bank of England effected a few changes to its money market operations in March 1997. The central bank expanded the types of instruments it used in open market operations from solely treasury bills and a few other eligible commercial bills to include fixed rate and variable rate repurchase agreements in government securities (also referred to as gilt repos) [39]. This was due to the limited supply of these eligible instruments which occasionally resulted in tightened liquidity conditions and interest rate volatility when insufficient eligible bills were available. The central bank also expanded the range of financial institutions with which it conducts monetary policy and discount lending to include market participants which are active in the gilt repo and/or bill markets. This was in an effort to improve the efficiency of the monetary framework and quickly redress liquidity pressures emanating from limited availability of eligible bills.

The Bank of England introduced a Real Time Gross Settlement (RTGS) payment system in 1996, which was aimed at reducing credit risk by ensuring that sufficient funds are available to facilitate large-dollar transactions before it is processed and cleared. This reform to the payment system increased intra-day liquidity pressures therefore the Bank of England developed an intra-day repo facility to these provide requisite funds to meet additional credit demands. Under this new payments regime, settlement banks are able to attain additional settlement balances during the day via interest-free collateralized repurchase agreements with the central bank. However, these instruments have to be unwound before settlement occurs at the end of the business day to remove excess liquidity pressures. The RTGS framework employed within the United Kingdom

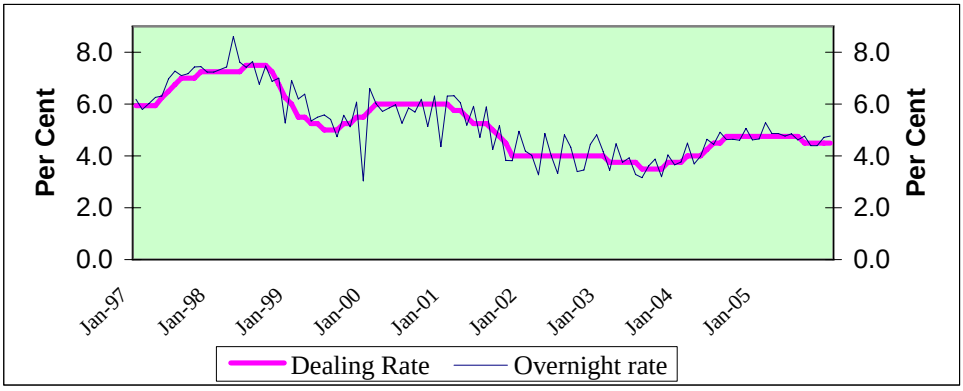
[38] See Sellon Jr. and Weiner (1997).
[39] An eligible bank bill refers to a bill of exchange accepted by a bank whose acceptances are eligible for discount at the Bank of England. These eligible bills purchased by the central bank from counterparties are three-name paper, the names being those of the drawer, the acceptor and the counterparty. The Bank will not purchase from counterparty its own acceptances, either on repo or outright. See Bank of England (1997).

payments system requires that each payment be processed and settled individually by means of a credit transfer at the Bank of England. This differs from the Canadian LVTS system which is a net-settlement system, in which the net payment obligations among system participants are settled by means of offset and/or end-of-day credit transfers at the Bank of Canada, thereby necessitating less intra-day liquidity requirements[40].

Within the United Kingdom RTGS framework, there was concern that the provision of intraday liquidity would cause volatility in the overnight market, and affect the central banks ability to control overnight liquidity conditions and the interest rate. However, RTGS system was designed to allow the Bank of England to retain control of short-term interest rates. These adjustments to the monetary policy framework have enabled the Bank to reduce the high volatility of the overnight rate (see **Chart 14**).

Chart 14

The Overnight Rate and Dealing Rate for the United Kingdom since January 1997.



3.3 New Zealand

A reserve requirement arrangement, referred to as the cash ratio system, was employed within the New Zealand financial system dating back to the 1930s. In 1973, a reserve asset ratio was introduced which involved a wide range of compulsory requirements for the retention of government securities and other financial ratios which was imposed on trading banks, trustee and private savings banks, building societies, private

[40] See Johnson and Steigerwald (2006)

superannuation funds, life insurance companies and finance companies[41]. The utilization of a reserve asset ratio by the New Zealand monetary authorities was firstly to provide a consistent market for government securities at lower market interest rates. Also, the reserve requirement was used as a direct monetary instrument to constrict growth in credit and divert private sector funds for public sector use. It also served to impose a profit penalty on financial institutions for inappropriate lending behaviour[42].

In July 1984, the New Zealand financial system was significantly liberalized as a number of direct controls on the operations of the financial institutions were eliminated. Interest rate controls were removed and government debt instruments were sold at market-determined rates. This policy move facilitated a review of the reserve asset ratio system, and on 11 February 1985 the mandate for the full abolition of all compulsory reserve requirements imposed on the financial sector was implemented (see **Table 5**). The removal of these reserve requirements came against the background that these restrictions facilitated distortions within the financial market; in addition, it placed upward pressure on market lending rates, as institutions aimed to improve their profitability by raising the margin between deposit and loan rates. There was also the concern that the ratio requirement promoted 'disintermediation' where financial flows were diverted to markets or institutions to which the requirements are not applied.

[41] See Reserve Bank of New Zealand (1985).
[42] See Reserve Bank of New Zealand (1985).

Table 5

RATIO REQUIREMENTS ABOLISHED AS OF 11 FEBRUARY 1985

Institutional Group	Type of Ratio(s)	Ratio Base
Private Savings Bank	— Government securities (GS)	Deposits, less statutory cash and low start mortgages
	— Statutory cash ratio (SC), requiring 5% of the first $20m. in deposits and 2.5% of additional deposits to be held in the form of certain liquid assets.	Deposits
Trustee Savings Banks	— GS ratio of 38% (with special 15% ratio on outstanding housing bonds)	Deposits, less statutory cash, low start mortgages and housing bonds.
	— SC ratio, as for private savings banks	Deposits
Life Insurance Offices	Public sector (PS) securities ratio of 31%, of which minimum GS of 20%, and 11% optional GS or local authority securities (LA)	Total assets, less bank overdraft
	Minimum housing/farming investments ratio (HF) of 20%	
Private Superannuation Funds	Overall ratio of 41%, of which minimum GS of 20%, optional GS or LA ratio of 11%, and optional GS or HF ratio of 10%	Total 'residual' assets
Finance Companies	GS ratio of 30%	'Investments'
Building Societies	PS ratio of 19%, of which minimum GS of 14%. Also, special GS ratios of 30% for holdings of 'savings bank' deposits, and 50% for home/farm ownership account deposits.	Total assets (less some exclusions)
Trading Banks	Reserve asset ratio of 27% set at beginning of February 1985 (virtually all held in GS)	Average reserve asset holdings for month as proportion of average total deposits through previous month

Source: Reserve Bank of New Zealand, *Abolition of Compulsory Ratio Requirements* (1985)

Post-elimination of reserve requirements, the Reserve Bank of New Zealand focussed its monetary policy on the level of settlement balances within clearing institutions. As was the case with Bank of Canada and Bank of England, the central bank of New Zealand required the clearing banks to maintain a positive settlement balance at the end of the business day or face a significant interest cost. This requirement allowed the central bank control over short-term interest rates given the interplay between the demand and supply of settlement balances. The central bank utilizes open market operations to attain the target level of settlement balances. The target level is set that errors in forecasting balances at the end of the business day will lead to a shortage of balances; therefore, the sole recourse for the clearing banks would be to garner additional funds from the central

bank. To obtain these additional funds, the clearing banks see assets called "Reserve Bank bills"[43] at a stated interest rate. Given the limited supply of these Reserve Bank bills, quite often clearing institutions would attempt to source settlement funds from the money market, which result in upwards pressure on money market rates. The Reserve Bank of New Zealand pays interest on positive settlement balances, albeit below market rates causing institutions to actively seek to dispose of excess balances in the money market.

At times, when conditions within the monetary environment change, the Reserve Bank of New Zealand alters the settlement cash target or issue public statements of its intention. This affect liquidity conditions within the market as a reduction in the settlement target will increase the likelihood of a negative settlement balance. This places upward pressures on market rates as clearing institutions attempt to attain additional balances. The converse is also true as an increase in the settlement cash target should ultimately put downward pressure on short-term market rates.

In recent years, the New Zealand monetary authorities have improved the monetary framework by introducing a combination of the policy tools used in the United Kingdom and the Canadian financial systems. The Reserve Bank of New Zealand has generally moved away from a settlement cash target in favour of an explicit operating band for interest rates, similar to that utilized in the Canadian market. This is done in conjunction with the introduction of a Real Time Gross Settlement (RGTS) system which allows for instantaneous settlement of large payments. The RTGS system tends to increase intraday liquidity pressures so the central bank within New Zealand also introduced an intraday repurchase facility to control the volatility in the overnight and short-term interest rate market, as was the case in the United Kingdom.

[43] The Reserve Bank bills are discount bills, similar to Treasury Bills, issued by the Reserve Bank of New Zealand, which serve the sole purpose of facilitating transactions with the central bank. They have an original maturity of 63 days and are discounted on demand at the central bank to obtain settlement cash if the period to maturity is 28 days or less. The interest on these bills is 90 basis points above market rates for other short-term instruments. See Sellon Jr. and Weiner (1997)

The explicit operating band for the overnight rate was legislated to range between 20 to 50 basis points. The upper limit of the operating band would be the rate at which the central bank will offer settlement balances via open market operations. The lower limit of the band would reflect the rate at which the Bank compensates the clearing banks for positive balances. This switch in the implementation of monetary policy has improved the Reserve Bank of New Zealand's ability to affect short-term interest rates and the exchange rate by adjusting the cash rate band, and has simultaneously enhanced transparency within the payment system with the utilization of real time settlement system.

5.0 Summary and Policy Recommendations

The examination of international best practices in the conduct of monetary policy revealed that Jamaica was generally in line with some of the practices exhibited by developed economies. However, the country tended towards the operating procedures used by the group of developing countries. These countries generally possess less developed financial markets and face problems primarily associated with the presence of fiscal dominance, structural liquidity surpluses, inefficient money markets and weak financial market infrastructures.[44]

The study showed that a number of developed countries have abandoned both the cash reserve and liquid assets requirements. However, the use of the cash reserve requirement remains high internationally as an average of 70.0 per cent of developed economies and 98.0 per cent of developing economies still require banks to hold this instrument. These ratios are generally uniformed. In contrast, the use of the liquid asset ratio was particularly low, being utilized by 14.0 per cent and 18.0 per cent of developed and developing countries, respectively. This ratio was utilized by 46.0 per cent of developing economies.

[44] See Buzeneca and Maino (2007).

In the three countries examined that eliminated the use of reserve ratios, the move towards the removal of this monetary policy tool was largely driven by the view that reserve requirements operate as a distortionary tax which places upward pressure on lending rates, inducing an increase in interest rate spreads. On a broader scale, since 1990, the removal of reserve requirements have been aimed at reducing the burden on requisite financial intermediaries, improving competitiveness among varying financial market players and stimulating economic activity to promote growth (see **Appendix 1**)[45].

The experience of the countries surveyed also shows that reserve requirements can be phased out smoothly and that volatility can be effectively managed by operating in an overnight market. A common thread which emerged in each case was the improvement of clearing and settlement facilities. Prior to this improvement, weak domestic payment systems had hindered efficient liquidity management and acted as a deterrent to the development of the money market[46]. In the cases of the United Kingdom and New Zealand, RTGS systems were introduced which facilitated the settlement of interbank payments continuously throughout the working day rather than at a specified period, typically at the end of the working day combined with appropriate intra-day lending facilities to provide adequate funds to the participant clearing institutions. In the case of Canada, the institution of interest rate operating bands as well as frequent intra-day use of open market operations assisted in liquidity management and the containment of volatility in the money market.

New monetary policy tools, such as interest rate arrangements, have been added to the menu of policy instruments since 1998 and are especially popular among developed and emerging market economies. There has also been increased usage of instruments such as deposit operation facilities among developed economies.

During the last decade, the Bank of Jamaica has significantly reduced its use of reserve requirements in its conduct of monetary policy relative to that which obtained during the

[45] See Bisignano, J. (1996).
[46] See IMF (2004) for further details.

first few decades after its establishment. However, the ratios in Jamaica, although relatively uniformed, are above those observed internationally. During the period 1998 – 2004, the CRR for banks in Jamaica was 5.9 percentage points above the period average for the institutions in developing countries, while for emerging and developed economies it was approximately 6.2 percentage points and 10.4 percentage points, respectively, higher. The average CRR for selected countries in the Caribbean was also 3.8 percentage points above the period average for developing economies but there were countries, such as Barbados, that held much lower ratios than that of Jamaica.

While reducing its reliance on reserve requirements, the Bank has instead, relied heavily on open market operations in its pursuit of price stability, in keeping with international best practices. However, with respect to more modern monetary policy instrument utilized since the late 1990's which includes the use of interest rate arrangements, foreign exchange swaps, credit auctions and deposit operations, Jamaica in August 2007 did not use these instruments in the conduct of monetary policy. As is the case in most developing and emerging economies, Jamaica largely utilizes primary and secondary market operations to affect liquidity conditions within the financial market.

There are strong arguments for and against the use of the cash reserve in Jamaica. Studies using the cost of prescribed liabilities approach show that the impact of the cash reserve on interest rate spreads was found to be negligible[47]. In 2006, this accounted for 2.2 per cent of the spread. When the opportunity cost is examined, the cash reserve requirements reduced the profitability of banks by $1.4 billion, although its impact has dwindled significantly in recent years. However, the impact on institutions ROA is minimal.

Macroeconomic conditions in the Jamaican economy in 2007 do not support a reduction or elimination of the cash reserve requirement given the ensuing liquidity and the possible foreign exchange market pressures which this could fuel. In addition, recent reductions in the CRR did not stimulate economic activity as most of the funds released were largely invested in OMO instruments, thus contributing to the Bank's interest

[47] See Robinson, J (2002) and White, O (2005) for further details.

expense. The Bank could however explore the possibility of remunerating the cash reserves when it becomes profitable, in keeping with international practices. A suggested rate for this is the current overnight rate of 1.0 per cent. The Bank could also explore the possibility of eliminating the LAR, especially in a context where this is not in keeping with international best practices and institutions have continuously held liquid assets in excess of the statutory requirement. A feasibility study could also be done to explore the benefits of adding additional instruments to the menu of monetary policy instruments.

Presently, preparatory work is underway for the introduction of a RTGS system as the platform for payment and settlement of all large value transactions. Each payment processed within the RTGS system would be settled on a gross (individual) basis and there would be an immediate transfer of funds across participants' accounts held at the Central Bank. This would provide the Bank with information on the liquidity flows in the system at any point in time, thus allowing it to be more flexible in its monetary policy operations.

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Appendix 1

Objectives of a decline in reserve requirement ratios in some major countries

Country		Objectives
Canada	June 1992	To address the issue of competitive equity of imposing non-interest-bearing reserve requirements on banks and not on other deposit-taking institutions.
France	October 1990	To prevent the shift of domestic funds to Euro-deposits.
	December 1991	To offset the effect of monetary tightening caused by the intervention rate increase in November 1991 to defend the French franc.
	May 1992	To stimulate the economy without depending on lowering interest rates, considering the impact on the exchange market.
Germany	March 1993	To prevent the shift of domestic funds to Euro-markets by reducing the reserve burden.
	March 1994	Same as above.
Italy	February 1993	To reduce the reserve burden.
	July 1994	To reduce the reserve burden.
Japan	October 1991	To facilitate smoother and more efficient monetary operations.
United Kingdom	January 1992	To ease the reserve burden on commercial banks, due to the Bank of England's cost-reduction efforts.
United States	December 1990	To strengthen competitiveness of subjected financial institutions and to activate lending by reducing costs of depository institutions.
	April 1992	To activate lending by reducing costs of depository institutions.

Source: Bisignano, J. (1996), BIS Working Paper No. 35

Appendix 2

The Market Timetable

9 a.m.	Announcement of change in operating band (if any) (a change implies change in target, i.e. intervention rate)
9:15 a.m.	Cutoff time for bids for Receiver General (RG) term deposit auction
9:30 a.m.	Release of RG term deposit auction results
11:45 a.m.	SPRAs or SRAs offered and transacted (if any)
3 p.m.	Cutoff time for presentation of government items to Bank of Canada
4 p.m.	Payment exchange for DCS
4:15 p.m.	Cut-off time for bids for RG deposit auction
4:30 p.m.	Release of RG auction results
6 p.m.	Close of LVTS client (third-party) transactions
6-6:30 p.m.	Pre-settlement trading
8 p.m. or earlier	Settlement of LVTS balances at the Bank of Canada

Source: Bank of Canada, *The Framework for the Implementation of Monetary Policy in the Large Value Transfer System Environment* (1999)