1

Monetary Policy Frameworks of Commonwealth Caribbean Economies

Anthony Birchwood

1.1 Introduction

In analysing the implications of monetary policy frameworks in small open economies such as CARICOM member countries, it is useful to contrast the economic outcomes of those which continued to use a prescriptive style where the central bank maintains a fixed exchange rate in conjunction with the use of direct instruments, as opposed to those which exercised a managed float alongside the use of market based instruments. Accordingly, an evaluation of different countries' experiences can provide insights into the implications of alternative styles of monetary frameworks as adopted by these small open economies. This presumes that the type of monetary framework used can play a role in the resilience of the region in response to negative external economic shocks. The study examines the economic consequences of different styles of monetary policy for the CARICOM economies.

The monetary framework practised in the region can essentially be divided into two camps: fixed exchange rate and managed floats. These frameworks set parameters on monetary policy responses to fiscal deficits, foreign exchange shocks, stabilisation and the contribution of monetary policy to development objectives. To begin, the monetary frameworks practised in the region are noted with respect to the style of exchange rate, goals and instruments. This is followed by an examination of outcomes, noting the cost and benefits of the various frameworks. Following this the study concludes.

Based on the regional experiences, we found that in general exchange rate stability, whether fixed or floating, hinged on adequate foreign exchange inflows and low debt levels. Moreover, the stability of the exchange rate allowed for the maintenance of a low inflation rate. However, it must be remarked that a hard peg potentially conveyed the risk of adverse real side consequences.[1] Indeed the regional experiences showed that as countries sought to realise development though the allocation of credit to productive activities, this contributed to external current account imbalances by raising demand for imports. Further, a fixed exchange rate framework tended to become overvalued when inflation increased, leaving exporters to absorb costs, since the alternative of raising export prices would leave the exporters uncompetitive once the small open economy is a price taker.[2] At the extreme,

where the credibility of the peg was undermined, it led to possible capital flight and black marketing of foreign currency if the market perceived the threat of devaluation as real. This led some regional economies to move off the fixed exchange rate.

On the other hand, economies which moved off the fixed exchange rate faced many challenges. While the depreciation of the exchange rate can theoretically buffer economies from external shocks, the experience of the regional economies showed that once foreign exchange earnings were insufficient, there was a continuous decline in the exchange rate. In addition, continuous depreciations were noted to have unfavourable socioeconomic consequences on regional economies. This included the deepening and widening of poverty as vital imports become more expensive. At the macro level, an increasing proportion of domestic resources were diverted to paying external debt as debt in domestic terms rose with currency depreciation. Depreciations also tended to be mutually reinforcing, fostering a loss of confidence in the domestic currency, thus causing an erosion of the domestic currency as a store of value, leading to possible dollarisation. In addition, during the period of depreciations, downgrades from credit rating agencies tended to destabilise foreign exchange markets and therefore frustrated the orderly adjustment of the market.

We therefore argue that adequate foreign exchange earnings were critical for a country to embark on credible monetary policy. Thus, we suggest that an important research agenda is with respect to the importance of external reserves in the establishment of a credible monetary policy framework for small island states. Monetary theory developed by advanced industrialised countries has long ignored this aspect in monetary theory formulation. Yet, external reserves impact on the ability of small island states to credibly support their exchange rate.

1.2 Choice of monetary frameworks practised by regional central banks

The central banks are fairly recent institutions in CARICOM, having been constituted between the years 1961 and 1983, see table 1.1.[3] These banks were formed around the time of independence when countries were striving after the deepening and widening of their financial sectors as they sought to accelerate the pace of economic development. They evolved from currency boards and monetary authorities that were established prior to independence. To this end, central banks were expected to support government developmental and stabilisation efforts.

Fundamentally, the regional central banks have a mandate to issue and redeem currency, act as banker to the government while seeking to maintain monetary stability, and act as advisor to their respective governments. In addition they are expected to strive after real side development and the deepening and widening of the financial sector, and to interface with overseas regulatory authorities. In spite of the ideals with which they were formulated, the styles of monetary policy adopted by the central banks have been influenced by the external balances of the various economies and by the prompting of international financial institutions such as the International Monetary Fund (IMF) and the World Bank.

Table 1.1 Date of independence and establishment of central bank

Country	*Date of country's independence*	*Central bank*	*Date that central bank was established*
Jamaica	6 August 1962	Bank of Jamaica	May 1961
Trinidad and Tobago	31 August 1962	Central Bank of Trinidad and Tobago	12 December 1964
Guyana	26 May 1965	Bank of Guyana	16 October 1965
Barbados	30 November 1966	Central Bank of Barbados	May 1972
The Bahamas	10 July 1973	Central Bank of The Bahamas	1 June 1974
Belize	21 September 1981	Belize Central Bank	1 November 1976
Grenada	7 February 1974	Eastern Caribbean Central Bank (ECCB)	October 1983

It can be observed that in the region two types of frameworks can be distinguished: those which used fixed pegs and those which used managed floats. Within the fixed exchange rate regime there exists a currency union called the Eastern Caribbean Currency Union (ECCU) for which the central bank is the Eastern Caribbean Central Bank (ECCB). This currency union comprises Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St Lucia, St Kitts and Nevis, St Vincent and the Grenadines.

At the ECCU's inception, all the countries opted for a fixed exchange rate anchor with foreign currency and direct controls. By the 1980s all the exchange rates of the various territories were pegged to the US dollar, following their earlier association with the pound sterling. However, while they all began with a hard peg, two types of exchange rate regimes emerged by the mid-1990s: those which maintained a fixed exchange rate peg with the US dollar and those which moved off the fixed peg with the US dollar but instead opted for a managed float.[4]

As can be gleaned, the countries which adopted a managed float all reflected a lower exchange rate in terms of units of local currency per unit of US dollar, see table 1.2. The wide disparity in exchange rates complicated the creation of a single currency for the region as was proposed for the formation of a single Caribbean economy.[5] Indeed, the lack of unification of the various exchange rates caused the deepening of CARICOM to incur

Table 1.2 Exchange rate regime

Fixed exchange rate	*Nominal parity with one US dollar*	*Managed exchange rate*	*Nominal parity with one US dollar (date is in brackets)*
The Bahamas	1	Guyana	205.91 (26/03/10)
Barbados	2	Jamaica	89.65 (26/03/10)
Belize	2	Trinidad and Tobago	6.38 (26/10/10)
ECCB	2.7		

Source: National Central Bank websites

transactions costs with respect to trade in goods and services, the formation of a single stock exchange and capital transfers across the region.

The difference in the fixed and managed exchange rate regimes gave rise to divergence in the style of monetary policy adopted by the various CARICOM economies. Monetary policy in the countries with fixed exchange rates tended to be more influenced by the monetarist view.[6] Consistent with this view, monetary policy reaction in the economies using fixed exchange rates appeared to be akin to monetary policy in the advanced industrialised economies in the 1960s, where the focus of monetary policy was primarily on variables such as nominal interest rates, bank borrowings from the central bank and free reserves (excess reserves minus borrowings). Consequently, a 'once and for all' type of approach was the typical style adopted under this framework.

The countries which moved off the fixed exchange rate embraced a neoliberalist agenda where interest rates were to be market determined, rather than set administratively for the execution of monetary policy. As such these countries had to make a transition to market based systems by developing the institutional infrastructure accordingly.[7] Moreover, monetary policy involved the fine tuning of the economy, in order to steer prices in the direction signalled by the monetary authorities. Nevertheless, the central banks did not fully embrace the floating exchange rate as the exchange rate was largely managed with frequent interventions into the market.

Choice of monetary frameworks

Fry et al. (2000) borrowed from McNees (1987) to define a monetary policy framework as one which 'comprises the institutional arrangements under which monetary policy decisions are made and executed' (p3). Following independence, the governments in CARICOM sought through acts of parliament to outline suitable monetary frameworks within which they identified various monetary policy goals and objectives based on the extent of institutional, real side and financial development of the economies. A summary of the goals within monetary frameworks can be observed in table 1.3, where it can be seen that the most common goals were the accumulation and preservation of reserves, maintenance of stability of the financial sector, and monetary stability.

Critical here is whether monetary policy in small island states can simultaneously achieve stabilisation and development or whether it is only capable of achieving stabilisation. A combination of stabilisation and developmental goals can be observed with respect to the countries with fixed exchange rates – The Bahamas, Barbados, Belize and the ECCB – while the other three central banks in the sample – Guyana, Jamaica and Trinidad and Tobago – dropped developmental goals from their framework but maintained stabilisation goals. The rationale for this was that obtaining low inflation growth was desirable, so the central bank was the best placed agency to achieve inflation growth. The actual goals per country are detailed in table A1 in Appendix A.

In terms of frequency of meetings, the monetary body responsible for the devising of monetary policy in those territories which primarily used direct instruments generally met with less frequency than those territories which attempted to employ indirect instruments.

This can be expected as direct instruments tend to be blunt and not well suited for short-term fine tuning. The central banks with the highest frequency of meetings were Guyana and Jamaica. In Jamaica, the Operating Targets Committee was obligated to meet on a daily basis to review the reserves of the commercial banks and their ability to meet targets while the Economic Policy Committee was obligated to meet weekly. In Guyana, the Money Market Committee was obligated to meet on a weekly basis to monitor the reserves of commercial banks against the set weekly targets, and wider economic developments. The committee then decided on further action based on current and expected inflation and exchange rate conditions, particularly with respect to the foreign exchange market and government financing needs. The committee therefore decided on the reserve money and open market operations to achieve the set growth path and inflation targets. In the case of Trinidad and Tobago, while a statutory time was not prescribed for the Monetary Policy Committee to meet, there is a Monetary Support Committee which monitors liquidity in the market on a daily basis.

Table 1.3 Goal correspondence to monetary frameworks in the Caribbean

Fixed exchange rate framework	*Managed exchange rate framework*
Core goals	**Core goals**
Stability of financial sector	Stability of financial sector
Low inflation	Low inflation
External reserves	External reserves
Additional goals	**Additional goals**
Maintenance of fixed exchange rate	Inflation targeting
Economic development	Maintenance of an orderly foreign exchange market

The major difference between the fixed and managed exchange rate frameworks lie in the monetary policy objectives. The territories which evolved to the use of managed exchange rates largely embraced a market based system, following the economic fallouts they registered in the 1980s and early 1990s. Accordingly, these economies underwent World Bank and IMF sponsored structural and stabilisation adjustment programmes. In particular, Jamaica and Trinidad and Tobago reflected a deterioration of their foreign exchange reserves as their import cover reached as low as 0.8 months in Jamaica in 1991 and 1.6 months in Trinidad and Tobago in 1994. Jamaica was also highly indebted as its external debt to GDP ratio was as high as 102 per cent in 1991, and Trinidad and Tobago debt to GDP ratio reached 67 per cent in 1991. Guyana's debt situation was urgent as its debt was 5.7 times its GDP by the end of 1992. As a result, the early 1990s was a period in which these economies were on IMF and World Bank programmes.

Accordingly, Guyana and Jamaica revised their central bank acts to specify inflation targeting as the objective of monetary policy. As a result, these countries used the inflation rate as the primary anchor. Trinidad and Tobago did not declare the inflation rate as an anchor, but a perusal of the various central bank reports would suggest that the rate became

the major monetary objective in the mid-1990s. Consequently, the inflation rate can be listed as the primary anchor for those territories with managed exchange rates.

In contrast, those countries with fixed exchange rates depended on the exchange rate anchor to stabilise prices. Consequently, monetary policy was devoted to the use of instruments to maintain the fixed exchange rate pegs. As a result, these territories had a greater propensity to use direct controls in their monetary policy regimes.

Regardless of the exchange rate regime adopted, the management of foreign exchange reserves turned out to be one of the most popular goals of monetary policy. This was not surprising given that these economies do not possess reserve currencies and the credibility of the exchange rate was highly dependent on the accumulation of external reserves. Countries therefore aimed to accumulate and preserve reserves by investing in low risk assets and if necessary, to bolster their reserves through borrowing.

Most of the central banks in the study did not explicitly outline specific external reserves targets. However, two exceptions here were The Bahamas and the ECCB. The Bahamas Act (2000) specified that the fixed exchange rate should be supported by external reserves, which should be at least 50 per cent of the value of the total notes and coins and other demand liabilities of the central bank. Further, the ECCB Act (1983) specified that the external reserves should be at least 60 per cent of its demand liabilities. These provisions limited the ability of the central banks to finance fiscal deficits by printing money.

For those territories which still embraced development as an objective of monetary policy, it was envisaged that development was to be pursued by the central banks through the channelling of credit to productive activities in a bid to achieve a high level of domestic production, employment and growth. However, credit allocation was not an explicit goal of monetary policy for territories with floating exchange rates, since monetary policy was no longer used for economic development but instead directed solely to achieving stabilisation objectives.

Use of instruments to achieve monetary goals

The monetary instruments used by the various central banks were closely related to the type of exchange rate regime adopted within the monetary framework. As such, countries with fixed exchange rates were more likely to rely on the use of direct instruments. Here we define direct instruments as those which are used to impact directly on the balance sheet of financial institutions under the jurisdiction of the respective central bank. Under a regime of direct instruments, impositions are applied to either the interest rate or the volume of funds via regulatory devices.[8] Indeed, the central banks with fixed exchange rates still maintained the use of direct instruments in their various acts, mainly to regulate and guide credit allocation. On the other hand, those which adopted managed floats were actively seeking to evolve to market-based instruments.

Table 1.4 examines the monetary instruments on the statute books of the various central banks. Not surprisingly, all the central banks adopted moral suasion as a means of influencing the market to co-operate to attain targets prescribed by the central bank.[9] A detailed breakdown per country is in table A2 in Appendix A.

Table 1.4 Instruments used in frameworks

Fixed exchange rate framework	*Managed exchange rate framework*
Core primary monetary instruments	**Core primary monetary instruments**
Moral suasion	Moral suasion
Reserve requirement	Reserve requirement
Additional primary instruments	**Additional primary instruments**
Bank discount rate	Monetary base
Selected interest rate controls	Open market operations
Selective direct credit controls	Repo rate
Liquidity asset controls	Direct sales/purchase of foreign currency
Specification of security on loans	

Source: Compiled from Appendix A

Equally important were the allowance for the use of rule-based instruments in the form of liquid asset ratios and reserve requirements.[10] There were widespread provisions for the use of rules-based instruments regardless of the style of monetary policy pursued. Central banks varied, however, in the frequency with which they utilised changes in rules-based instruments, see table 1.5. The Bahamas and the ECCB have not changed their monetary rules since their inception, and so we have classified the activity level of monetary rules in these countries as passive. The central banks in Barbados and Belize have occasionally

Table 1.5 Frequency of use of rules-based instruments

	Liquidity ratios	*Activity level*
The Bahamas	Fixed at 5% for statutory reserves, and liquid asset ratios at 15% for demand deposits and 20% for savings and fixed deposits.	Passive
Barbados	Liquid assets ratio: 12% on securities and 5% on cash. Reserve requirements 23%, down from 24%.	Moderate
Belize	10% across the board for average transferable (demand), savings and time deposit liabilities.	Moderate
	Secondary reserves: 23% of approved liquid assets including reserves requirements. Voluntary transfer of public institutions deposits from commercial banks to the central bank.	
ECCB	Reserve requirements: 6% of deposit liabilities.	Passive
Guyana	Reserve requirements: 12% of all deposit liabilities including foreign liabilities.	Active
Jamaica	Increased statutory cash reserve requirement to 13% on 3 December 2008.	Active
Trinidad and Tobago	Reserve requirements: increased to 17% by November 2008.	Active

Source: Constructed from the websites and reports of the respective central banks July 2009

altered their monetary rules, but changes have tended to be 'once and for all'. The activity level of monetary rules in these countries is therefore described as moderate. Active changes in monetary rules were made by countries which exercised managed floats. These rules played an important part in the liquidity management of the central banks.

Direct controls on intermediation generally took the form of impositions on credit, as was the case in The Bahamas. The Central Bank of the Bahamas employed this device by imposing a direct freeze on the outstanding level of credit. The Bank also limited lending to clients based on their monthly income and their level of equity. Moreover, new loans were limited to the extent of resources obtained from ongoing repayments. In Belize, the Central Bank tended not to use its powers of direct controls on the volume of loans and advances.

In addition, all the countries with fixed exchange rates were empowered to employ some form of interest rate controls. In The Bahamas, Section 22 of the Bahamas Act gave the Central Bank the power to set minimum and maximum interest rates payable on various classes of loans and deposits. In addition, the Section also allowed the bank to regulate the maximum volume of loans or advances that were outstanding at any time. Similarly, the Central Bank of Barbados was empowered to regulate the maximum interest rate payable on deposits according to maturities and other financial instruments including overdrafts, discounting of bills of exchange, commercial or financial papers, letters of credit and other forms of credit.

In contrast to countries with fixed exchange rates, countries which exercised managed floats took a more aggressive posture regarding liquidity management. Guyana and Jamaica combined reserves requirements with money market operations as the main tools of monetary policy.[11] See Appendix B for a model of the style of monetary policy that was practised in both countries.

Trinidad and Tobago also sought to make the transition to open market operations. Money market operations were geared towards the management of liquidity on the Central Bank balance sheet through the sale by auction of securities in the financial market. [12] Given the embryonic stage of the development of the money markets in the region, the auction of treasury bills was the major instrument used to conduct open market operations, and these were usually denominated in terms of 91-day, 182-day and 364-day government treasury bills, though the Bank of Jamaica eventually moved on to issuing its own securities through certificates of deposits. In the case of Guyana, the management of the money supply was exercised through the use of intermediate targets on reserves of commercial banks, which were set according to forecasts of inflation and growth. The reserves requirements were seen as useful for meeting long-term monetary objectives, while open market operations were used to fine-tune the economy.

The Central Bank of Trinidad and Tobago used three modes of monetary policy: reserves requirement, open market operation and the repo rate.[13] However, the Central Bank sought to reduce its reliance on reserves requirements, placing greater emphasis on the use of a policy repo rate to signal its monetary stance to the credit market. The policy rate was expected to be transmitted through the term structure of interest rates to the credit market. However, regular open market operations were used to absorb excess liquidity from the market. In so doing, treasury bills were auctioned so that the rates were market

determined. The repo rates were only introduced in 2002. The major form of liquidity management adopted by the Central Bank of Trinidad and Tobago was the use of open market operations. Treasury bills and treasury notes were the main form of securities traded in this respect.

To give impetus to the trading of liquidity, territories with indirect instruments actively embarked on the development of the money market. Jamaica and Trinidad and Tobago developed primary dealers consisting mostly of commercial banks to kick-start the trading of primary securities to absorb excess liquidity in the banking system. Open market operations were essentially directed at primary dealers which were chiefly commercial banks. In addition, the money market was developed into the primary securities market with government securities traded. The interbank market was also developed to allow for the trading of securities. All these developments were deemed as critical to the transmission of interest rates. Nevertheless, the markets were still limited in the sophistication of instruments for, among other things, the trading of risks.

Interestingly, even where the central banks were seeking to make a transition towards the use of market-based instruments, they still depended on reserve requirements to absorb excess liquidity. In fact in both Jamaica and Trinidad and Tobago there were policy reversals on the reserves requirement. After seeking to bring down its reserves requirement to prudential levels, the Bank of Jamaica ended up increasing its cash reserve ratio from 9 per cent to 11 per cent by the fourth quarter of 2008. In October 2003, the Central Bank of Trinidad and Tobago declared its intention to deemphasise its dependence on reserve requirement as a monetary tool by bringing down the reserve requirement in three phases in eighteen months, from 18 per cent to 9 per cent. Having reached the second phase where reserves were lowered to 11 per cent by 15 September 2004, the bank was unable to go lower owing to the chronic excess liquidity that could not be adequately absorbed by indirect instruments. Thereafter the bank reverted to rules-based instrument by increasing the reserves requirement so that by November 2008, the reserves requirement rose to 17 per cent.

Use of interest rates

The use of the discount rate featured prominently in the active conduct of monetary policy in various countries as the majority of central banks were empowered by their acts to use changes in the bank discount rates as a monetary tool. However, given an environment of chronic high excess liquidity, this rate was used more as a signalling device with respect to the direction in which the central banks would like to see the interest rate move, rather than one which forced banks to move interest rates in particular directions. Nevertheless the discount rate was meant to be a punitive device on banks which did not meet the reserve ratio and therefore needed to borrow from the central bank.

In the countries with fixed exchange rates the shallowness of the money market led to the discount rate and treasury bill rate being prescribed without much reference to the market – see figure 1.1. These rates were flat, set and maintained for long periods of time. Normally, the discount rate should be higher than other rates, in an effort to discourage

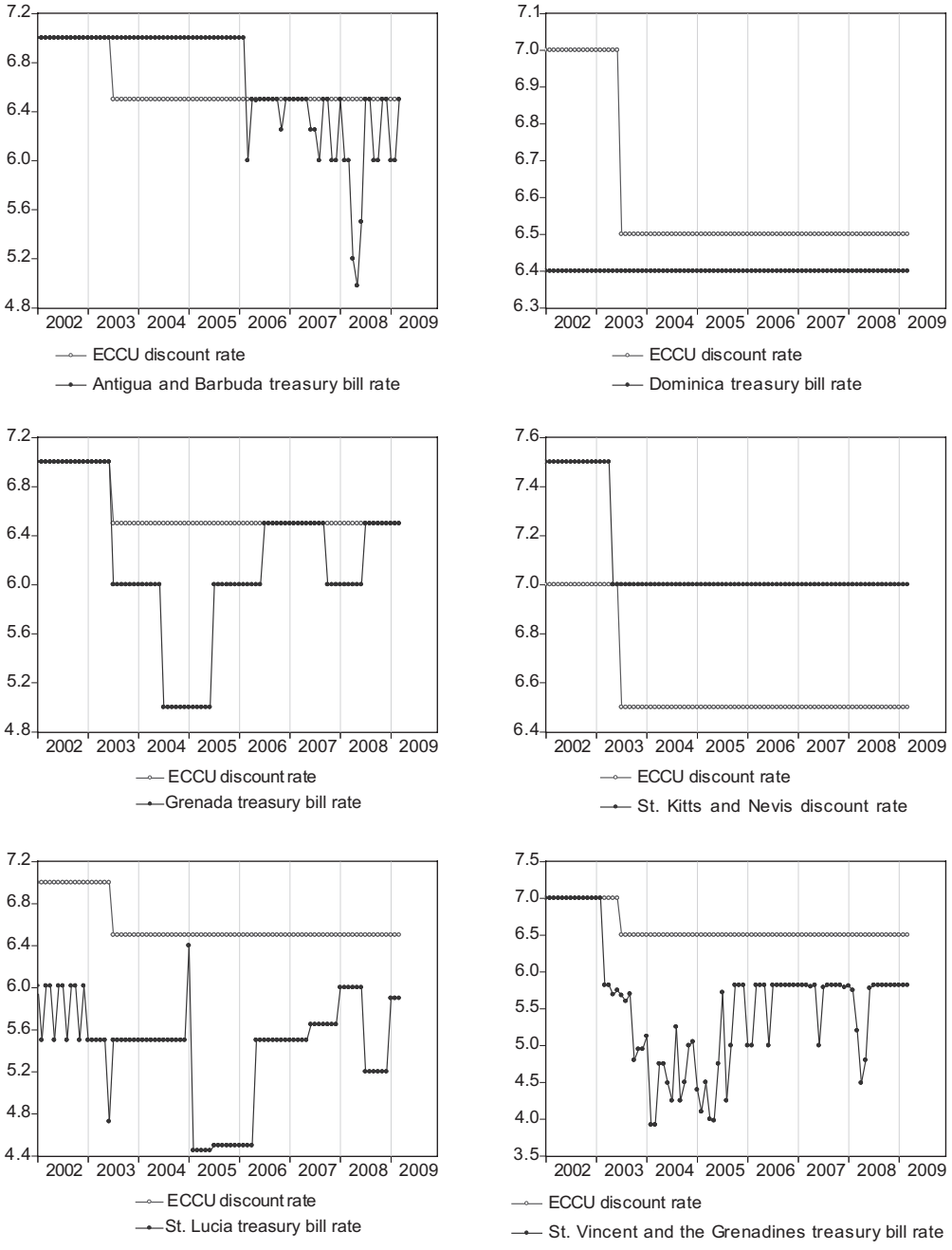

Figure 1.1 OECS money market rate
Source: Graphs constructed from data obtained from ECCB website

borrowing from the central bank. However, in the case of the Organization of Eastern Caribbean States (OECS), the discount rates were at times inefficient, for example when the treasury bill rates were at times above the discount rate in Antigua and Barbuda, as well as in St Vincent and the Grenadines. This would have suggested that at times it was cheaper for the government to borrow from the central bank rather than from the public where the cost of financing was higher.

Technically, when the bank discount rate is lower than the national treasury bill rate, it would suggest that it would be cheaper for the government to borrow from the ECCB rather than raise funds through the use of treasury bills. However, the ECCB Act does not permit it to lend to member governments, except where it is temporary to meet seasonal needs, and in any event that amount must not exceed 5 per cent of the government's average annual current revenue over the three preceding financial years. Moreover, the provisioning of this type of financing must be approved unanimously by member countries through the Board. This may be difficult to obtain, since any one member can exercise its veto power to block lending by the bank to a member country if it thinks there is the risk that this would undermine the stability of the exchange rate. Thus, regulatory barriers may prevent arbitrage[14] in the market when the discount rate is lower than the market rate. As such, the bank discount rate may lack force, and at best would be a signalling rate. It may be the case that the shallowness of the markets led to inefficiencies in the pricing of financial assets such as the treasury bill rate in the various national territories within the ECCU.

The treasury bill rates in The Bahamas, Barbados and Guyana reflected greater volatility and remained below the respective discount rates, see figure 1.2. However, it was noticeable that the movement of the treasury bill rate had little relation to the discount rate in The Bahamas and Barbados, in the sense that the latter may have been higher than it needed to be at times. This was in contrast to Guyana, where the treasury bill rate was market determined in the sense that it was determined through auctions and this served as a useful guide for the setting of the discount rate.

Trinidad and Tobago and Jamaica exhibited greater depth in their money markets, see figure 1.3. In the case of Trinidad and Tobago, the market was designed so that banks falling

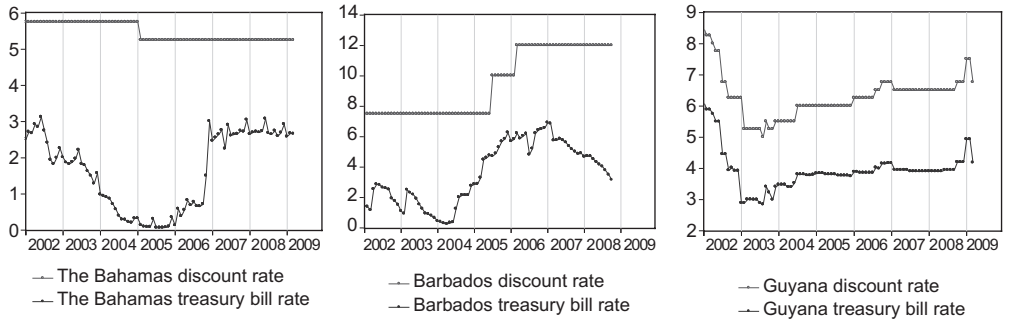

Figure 1.2 Money market rates in The Bahamas, Barbados and Guyana
Source: Constructed from data obtained from the websites of the central banks of The Bahamas, Barbados and Guyana

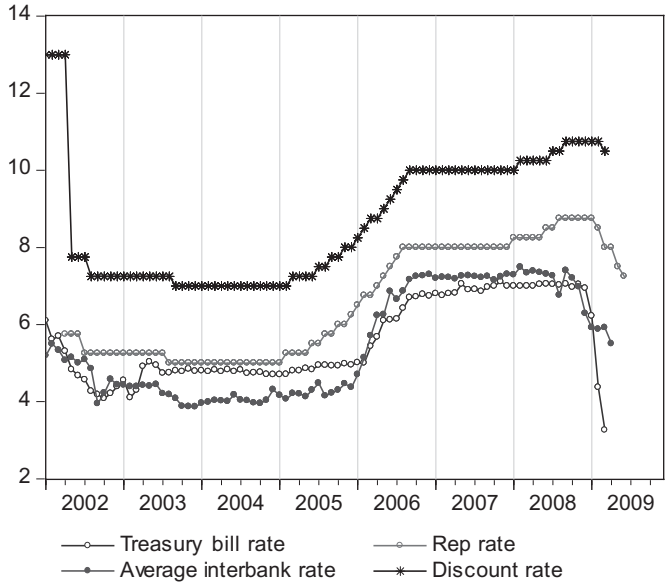

Figure 1.3 Trinidad and Tobago money market rates
Source: Constructed from data obtained from the central bank of Trinidad and Tobago website

short of reserves had the option of borrowing on the interbank market, failing which they could access overnight financing from the Central Bank at the repo rate, and if liquidity in the interbank market was tight, then they had the option of approaching the discount window at the Central Bank. The discount rate was deliberately set 200 basis points above the repo rate to discourage borrowing from this window, in order to encourage banks to use the other facilities. To foster the development of the interbank market, the interbank market rate was the cheapest when compared to the repo or the discount rates. The interest rate was most effective as a means of setting monetary policy where there was tight liquidity.

The Bank of Jamaica was the most advanced in the development of the money market. The central bank exhibited the greatest depth in terms of maturity of policy instruments as it gave investors the option of investing in instruments subject to a range of maturities. In so doing the market was presented with yield curves which were fundamental in the pricing of bonds, see table 1.6. Much of the policy response was with respect to instability in the foreign exchange market, international reserve position, excess Jamaican dollar liquidity and foreign currency liquidity. These factors were deemed to be associated with high inflation and pressures on the exchange rate. As a result the central bank used a mixture of policy rates with different maturities with varying frequency of adjustments in each year. It should be noted that to reach the point of trading various maturities, the Bank began by trading government securities in the open market, but by June 2001 it had begun trading its own assets in the form of certificates of deposits in the market.

From a look at the instruments traded, it was clear that the Bank laid particular emphasis on liquidity absorption. Moreover, in times of stability (instability) the central bank tended to slacken (tighten) monetary policy by reducing (increasing) the policy rates across the

Table 1.6 Jamaica money market certificate of deposit rates

	30-day	*60-day*	*90-day*	*120-day*	*180-day*	*270-day*	*365-day*	*Liquid assets ratio of commercial banks and other institutions under the Financial Institutions Act (FIA)*	*Cash reserve ratio of commercial banks and other institutions under the Financial Institutions Act (FIA)*
Basis points spread in 2001	14.25						20	28–30	10–12
Frequency of changes in 2001	5	7	7	7	7	10	10	3	3
Basis points spread in 2002	12.95						16.7	23–27	9
Frequency of changes in 2002	4	4	4	4	4	5	5	2	1
Basis points spread in 2003	15						24		
Frequency of changes in 2003	1	1	3	4	7	8	8		
Basis points spread in 2004	13.8						22		
Frequency of changes in 2004	6	7	8	9	10	11	11		
Basis points spread in 2005	12.6						15		
Frequency of changes in 2005	3	3	3	3	3	3	3		
Basis points spread in 2006	11.65						12.8		
Frequency of changes in 2006	4	4	4	4	4				
Basis points spread in 2008	12.65						24	25	11
Frequency of changes in 2008	5	5	5	5	5	5	5	1	1
Basis points spread in 2009								27–28 on local currency; 25 on foreign currency	13–14 on local currency; 11 on foreign currency
Frequency of changes in 2009								2	2

Source: Data obtained from the Bank of Jamaica

spectrum of maturities. In addition the Bank at times adjusted the liquid assets ratio and the cash reserve ratios to absorb or release liquidity into the system.

One challenge the Bank of Jamaica faced was how to deal with the resulting liquidity overhang arising from the maturing of domestic debt instruments of liquid assets. To absorb excess liquidity the Bank exercised a preference for the use of long-term instruments. At the beginning of 2007 it introduced a special one-year instrument called the one-year variable rate instrument and this was offered to primary dealers. By mid-year it moved to offering two-year variable rate instruments. At the end of 2008 the Bank was complementing these by offering special certificates of deposits. The difficulty arising here was that offering instruments led to the necessity of further instruments to deal with the surge in liquidity arising from the maturity of previous instruments, and this compounded the interest rate burden on taxpayers.

1.3 Comparison of macroeconomic performances according to style of monetary policy

Should the style of monetary policy matter to the relative performance of CARICOM economies, then a burning question is what the regional experiences are under different styles of monetary policy.[15] Here we argue that a country's style of monetary policy is derived principally from its exchange rate regime, whether this be hard pegs or managed exchange rate regimes.[16] In order to explore the question of relative regional performances according to exchange rate regimes, we compare our simplified exchange regimes with the average macroeconomic performances of the selected economies for the periods 1991–1999 and 2000–2007.

It is instructive that countries which predominantly combined direct instruments with fixed exchange rates still managed to attain low inflation rates, as their inflation rates exhibited a combined average of 2.6 per cent in both 1991–1999 and for the period 2000–2007, see table 1.7. In contrast, the countries which adopted managed floats had a combined average inflation rate of 16.5 per cent and 7.2 per cent in both periods respectively. The evidence therefore supports the argument that the exchange rate anchor is pivotal to the attainment of low inflation in small open economies.

Table 1.7 Comparison of prices under market rigidity versus market-based regimes

	Fixed exchange rate framework					*Flexible exchange rate framework*			
	The Bahamas	*Barbados*	*Belize*	*ECCU*	*Combined average*	*Guyana*	*Jamaica*	*Trinidad and Tobago*	*Combined average*
Inflation (1991–1999)	2.6	2.9	2.1	2.9	2.6	15.5	28.5	5.7	16.5
Inflation (2000–2007)	2.0	3.2	2.5	2.5	2.6	6.3	9.8	5.4	7.2

Source: Averages calculated from Caribbean Centre for Money and Finance (CCMF) (2008)

It should be noted, however, that inflation levels declined for the countries which practised a managed float. The evidence emerging from CARICOM economies is therefore not supportive of Roger and Stone (2005), which suggests that in the majority of cases inflation levels and volatility have declined since countries adopted inflation targeting. They suggest that these countries maintained their commitment to the target owing to its flexibility with respect to handling shocks, high standards of transparency and accountability. However, the critical question that they do not address is whether these countries would have realised lower rates had they maintained fixed exchange rates. The evidence with respect to the CARICOM region suggests the dominance of the exchange rate anchor over inflation targeting as a means of keeping inflation down.

Given the higher inflation rates in the earlier period in the countries with managed floats, higher lending rates followed, thus causing the cost of financial intermediation, reflected through lending rates, to be higher than in the countries with fixed exchange rate regimes. In keeping with the decline in inflation rates, lending rates also declined, thus lowering the cost of financial intermediation to consumers.

The results also show that the regional experience of most countries has been that those with fixed exchange rates carried lower lending rates and lower interest rate spreads compared to those which moved off the fixed peg, see figure 1.4 as well as table A3 in

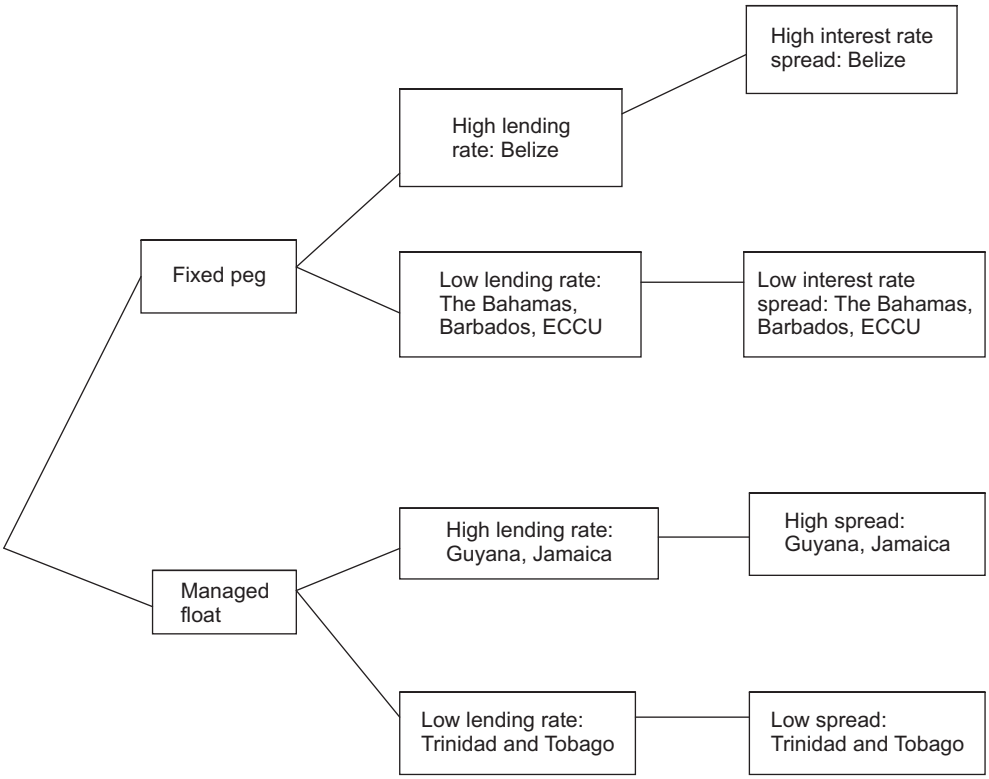

Figure 1.4 Association of monetary framework with lending rates[17]

Appendix A for more detailed data. Thus, with a fixed exchange rate, countries were able to exhibit lower than median lending rates along with lower interest rate spreads. On the other hand, most of the countries with managed exchange rates exhibited higher than average lending rates, the exception being Trinidad and Tobago. The results were practically similar with respect to intermediation spreads, with the exception of Belize, which exhibited high spreads by CARICOM standards.

Another point to note is that the evidence uncovered suggests that the exchange rate framework did not make a fundamental difference to macroeconomic performances in the region, see table 1.8 and table A4 in Appendix A. Growth was random across exchange rate frameworks just as were fiscal balances, associated debt levels and import cover. The stronger relation was between fiscal balances and debt levels as countries with larger fiscal deficits also exhibited larger debt.

The distortionary effect of direct controls in the fixed exchange rate framework did not manifest itself in growth of the economies or their ability to maintain adequate reserves. All of the CARICOM economies exhibited positive growth averages during the various sub-periods amidst low inflation in the majority of cases. Moreover, countries' growth generally improved in the period 2000–2007 compared to the earlier period. In addition, with the exception of Belize, the territories had adequate reserves in the second period, as signified by import cover of over three months as laid down by the CARICOM single market economy. Further, with the exception of Belize, the territories had adequate reserves in the second period, as signified by import cover of over three months as laid down by CARICOM.

Table 1.8 Exchange rate association with economic growth

Fixed exchange rate				*Managed exchange rate*			
High growth		*Low growth*		*High growth*		*Low growth*	
Belize, ECCU		The Bahamas, Barbados		Trinidad and Tobago		Guyana, Jamaica	
High fiscal deficit		*Low fiscal deficit*				*High deficit*	
Belize, ECCU		The Bahamas, Barbados		Trinidad and Tobago		Guyana, Jamaica	
High import cover		*Low import cover*		*High import cover*		*Low import cover*	
Barbados, ECCU		The Bahamas, Belize		Trinidad and Tobago, Jamaica		Guyana	
High debt	*Low debt*	*High debt*	*Low debt*	*High debt*	*Low debt*	*High debt*	*Low debt*
Belize, ECCU			The Bahamas, Barbados		Trinidad and Tobago	Guyana, Jamaica	

Notes: Median growth was 2.1 per cent of GDP, median fiscal deficit was -4.4 per cent of GDP, median import cover was 4 months and median debt was 54.3 per cent of GDP. High is classified as those countries above median and low as those below the median

1.4 Stabilisation outcomes of monetary frameworks

Cost of fixed exchange rate as an anchor

What the literature says

While the fixed exchange rate anchor is useful for the maintenance of low inflation, the literature has pointed out the potential risk in such a strategy. For example, Obstfeld and Rogoff (1995) underscored the difficulty in maintaining the fixed rate where there is integration of international capital markets. This is partly due to the fact that any threat of devaluation causes the exchange rate peg to lack credibility and therefore can encourage attacks on the currency as well as cause a parallel exchange rate to develop. Also, if the trilemma argument held, then a country adopting a fixed exchange rate would lose monetary independence as it would be unable to use monetary policy to react to developments in its economy, as domestic monetary policy would be dominated by monetary policy of the base country, assuming that the domestic economy was open to external capital flows. Mishkin (2007), p447, notes other drawbacks including the transmission of shocks from the anchor country to the home country and the 'potential for weakening the accountability of policy-makers to pursue anti-inflationary policies'.

Regional experiences

In examining the relation between credit growth, inflation and GDP growth, it can be noted immediately that in most cases the growth of loans amplified the positive growth enjoyed by the economies under study, in the sense that these economies recorded growth in lending in excess of GDP growth, see figure 1.5. What is also noticeable is that there was not a one-to-one correspondence between credit growth and inflation. Growth in lending in those territories which ran fixed exchange rates was not associated with increased inflation levels. Accordingly, growth in lending telegraphs little information on movements in inflation as the association is weak.

In evaluating regional experiences, it was also found that while countries with fixed exchange rate frameworks sought to direct credit allocation to achieve growth and development, the drawback was that increases in credit posed the danger of deepening the external current account deficits and therefore militated against the goal of conserving external reserves. This was evidenced by the high and significant correlation between increases in credit with the balance of payment deficits, see figure 1.6. Thus economies faced the dilemma of how to build up economic activity levels, as signalled through increases in credit, without creating balance of payment pressures.

There is a case, therefore, for monetary policy to be more aggressive in the face of economic growth since lending tends to be amplified and can lead to higher levels of demand for imports in the absence of increases in productive capacity. With the exception of Trinidad and Tobago, an increase in the growth of lending was associated with a deterioration in the external current account. In particular, the deterioration of the external current account was significant in Barbados, the ECCU, and Guyana.

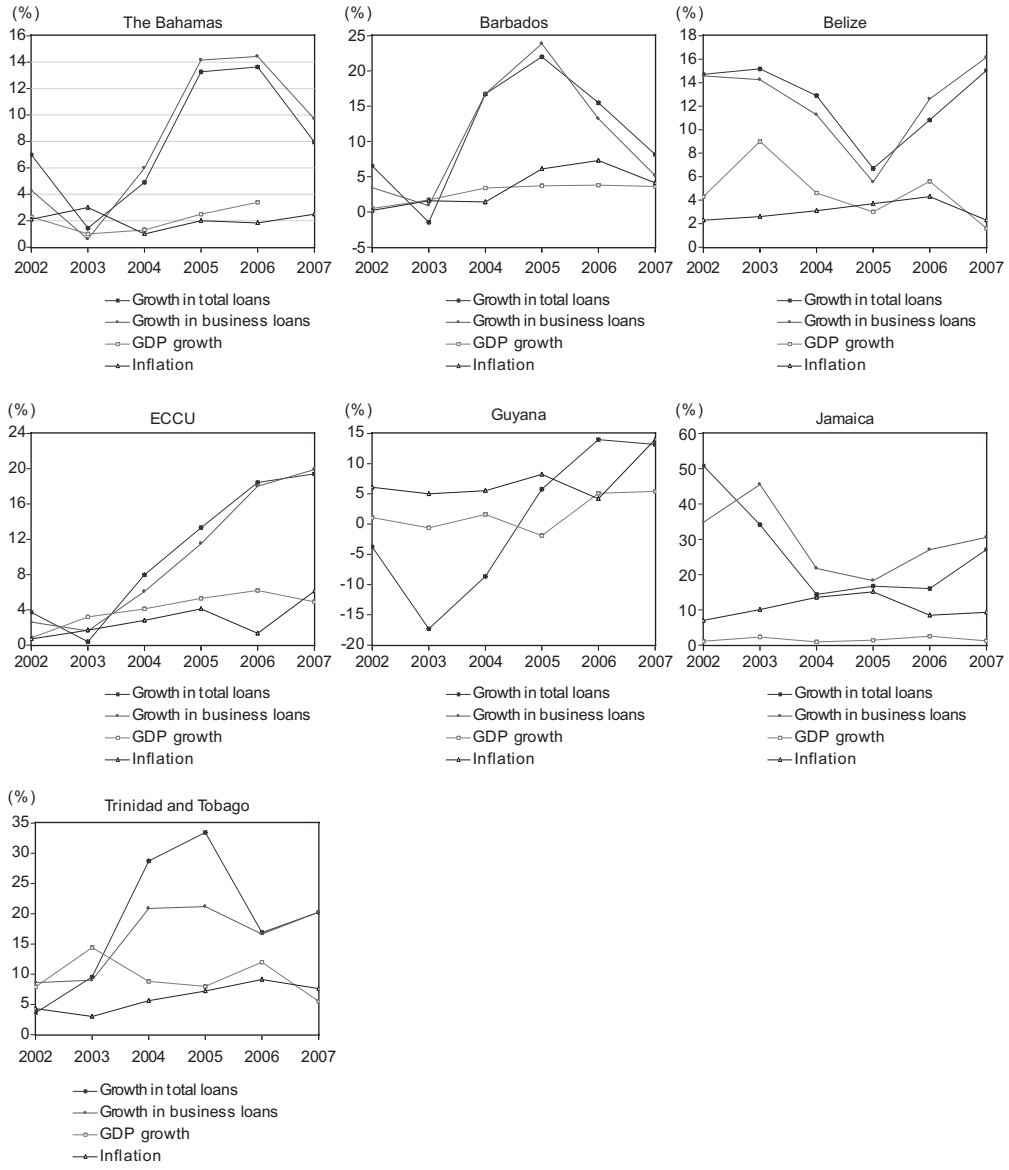

Figure 1.5 Association between credit growth and the real side of the economy

The evidence, therefore, generally suggests that in the case of small open economies, credit expansion was not only aligned to inflation and output growth, but also with respect to pressure on the balance of payments where domestic supply of exports is inelastic. The results are also supportive of the proposition that as the level of economic activity picks up, lending increases thus impacting negatively on the external current account, all things being equal.

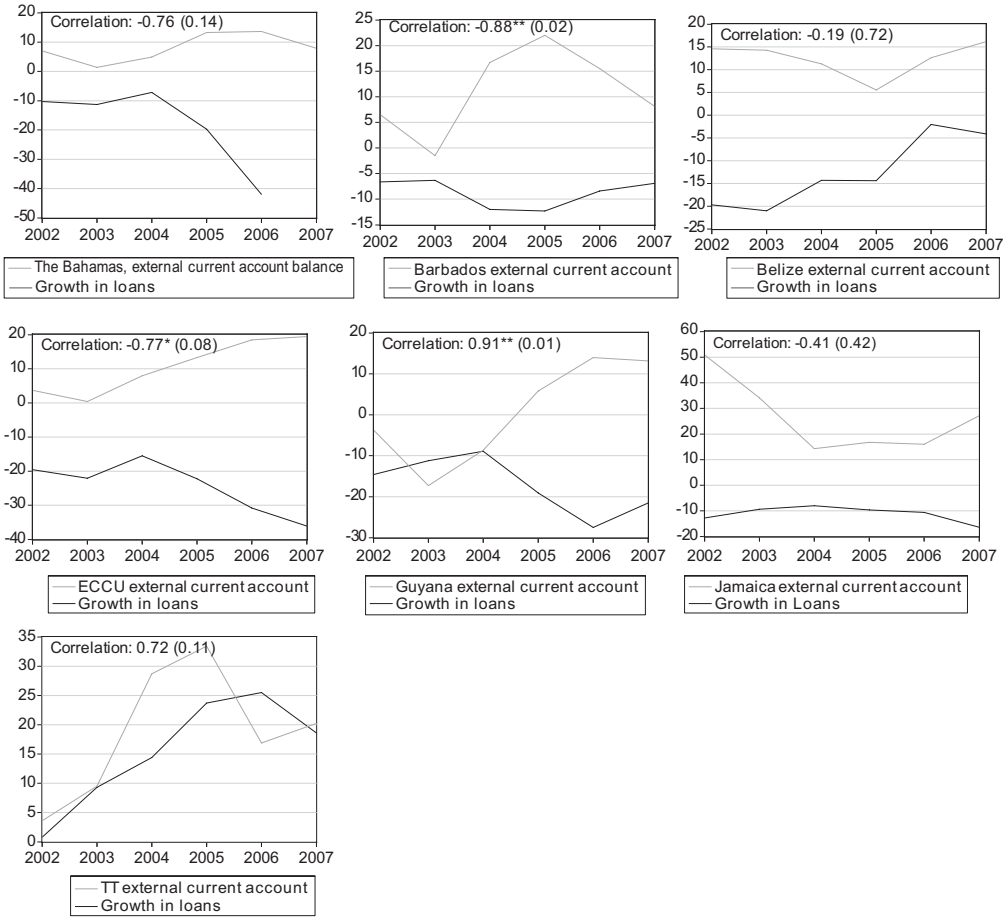

Figure 1.6 Relationship between credit and external current account

Another factor that can militate against countries with a fixed exchange rate is that the exchange rate can become overvalued by increases in inflation, rendering the country uncompetitive. For example, in tourist destinations such as Barbados, hotel owners can be hard pressed to be competitive in attracting overseas guests when inflation rises and the exchange rate does not depreciate. If the cost of their products rise then for hotel owners to maintain their prices, they must be prepared to absorb costs to remain price competitive internationally. Thus, an overvalued exchange rate can impair entrepreneurial returns arising from hotel plants as owners are forced to entertain lower returns.

The movement of exchange rates in managed exchange rate regimes

The exchange rates of countries which moved off fixed exchange rates were tracked both graphically using monthly data and in terms of their decadal point to point movements. For

Guyana and Jamaica, exchange rates continuously depreciated barring a few isolated times of appreciation. Trinidad and Tobago is unique since its exchange rate fluctuated within a narrow band.

In the case of Guyana, prior to 2004, the exchange rate remained within a point to point decadal level for short periods of time before depreciating to new decadal intervals, see figure 1.7 and table 1.9. The longest period of stability prior to 2004 was 51 months between May 1994 and August 1998. The rate depreciated and stabilised within the decade following 2004. Nevertheless the rate depreciated by 2009 by over 100 per cent of its original rate in February 1991, when it was first floated.

While the preset convergence criterion for debt service (i.e. debt as a ratio of the exports of goods and services) for CARICOM member countries was 15 per cent, in the 1990s the actual debt service ratio for Guyana was above this level, reaching as high as 23 per cent in 1998. As a ratio of GDP, external debt was three to five times GDP between 1991–1995 and twice GDP between 1996 to 1998, before sinking to under twice GDP. After benefiting from the HIPC (heavily indebted poor countries) relief programme, the foreign exchange market showed some stability so that the exchange rate stabilised with small fluctuations somewhere within the decadal level of 200 Guyana dollars (G$) to G$209 since September 2004.

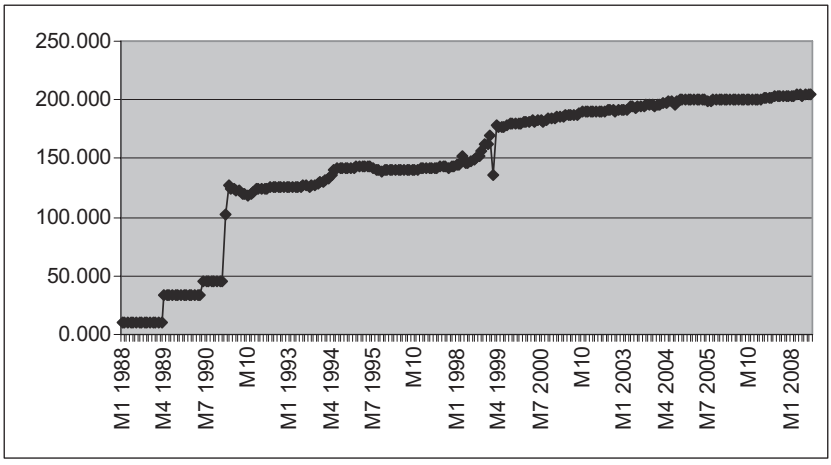

Figure 1.7 Guyanese exchange rate
Source: Graph constructed from IMF, *International Financial Statistics* (IFS) online database

Table 1.9 Guyanese exchange rate movements in decadal intervals

Jan 1988	*May 1989*	*June 1990*	*Feb 1991*	*Mar 1991*	*Dec 1993*	*May 1994*	*Aug 1998*	*Nov 1998*	*Mar 1999*	*Oct 1999*	*Feb 2002*	*Sep 2004*
10	33	45	102.75	126.5	130.75	140.75	150	162.75	179	180.5	190.25	200

Source: Data extracted from IFS online database

A few observations can be made here from the Guyanese experience. The evidence suggests that under the pressure of a high debt burden, the floating exchange rate was destined to depreciate before finding its equilibrium level. There was also a bidirectional relationship since a depreciation of the exchange rate would have increased the debt burden in terms of local resources. Moreover, as the exchange rate depreciated it led to a greater displacement of the national budget on debt servicing, if some form of debt forgiveness and debt rescheduling was not granted.

With respect to Jamaica, figure 1.8 shows that the exchange rate depreciated almost at a constant trend rate over the period of the study. Jamaica dabbled with various exchange rate regimes after it departed from the pound sterling in 1975 to move over to the US dollar as its peg. Eventually in 1987 the country used an auction system to sell foreign currency while maintaining exchange rate controls. Following the subsequent depletion of foreign exchange reserves and severe trade imbalances, the auction system was abandoned by November 1989 and the country returned to a hard peg where the exchange rate was set at 6.5 Jamaican dollars (J$) to US$1. However, the rate became overvalued so that by September 1991, prompted by international financial institutions, exchange rate controls were abolished and the foreign exchange market was deregulated. The depreciation of the Jamaican exchange rate occurred as Jamaica struggled with high debt overhang, high fiscal

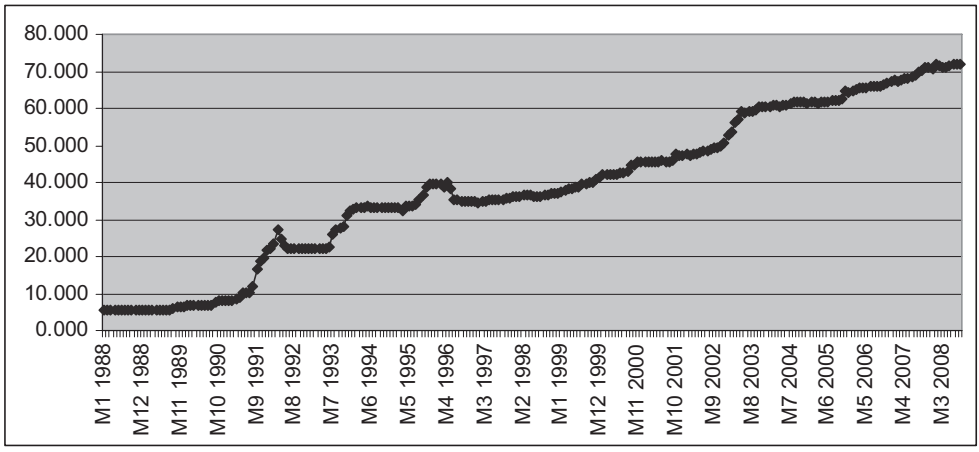

Figure 1.8 Jamaican exchange rate
Source: Graph constructed from IFS online database

Table 1.10 Jamaican exchange rate in decadal intervals

August	*December*	*November*	*October*	*December*	*October*	*September*	*December*
1991	*1991*	*1993*	*1999*	*2002*	*2003*	*2007*	*2008*
11.95	21.49	30.88	40.08	50.76	60.26	70.27	80.15

Source: Data extracted from IFS online database

imbalances and depressed foreign exchange earnings. Thus, Jamaica no longer committed itself to a fixed exchange rate at this point.

Table 1.10 captures the chronological movement of the Jamaican exchange rate as it moved through decadal intervals. The depreciation of the exchange rate may be attributable to instability in foreign exchange reserves and speculation against the exchange rate. The longest period of existence within decadal bands was six years for the period November 1993 to October 1999. Otherwise, the exchange rate spent relatively short periods within decadal banks.

In the case of Trinidad and Tobago, figure 1.9 demonstrates that the rate moved in a step like manner at the beginning of the period. Due to macroeconomic difficulties, the government valued the rate from 3.6 Trinidad and Tobago dollars (TT$) in January 1988 to TT$4.25 in August 1988. A hard peg against the US dollar was maintained up to March 1993 where the rate was initially 4.25. After this the Government removed the commitment to the hard peg following severe balance of payments and macroeconomic difficulties. The country then removed all exchange controls, following which the rate depreciated to TT$5.79 by April 1993, before eventually depreciating to TT$6.3 by December 1997; from here, it oscillated at around TT$6.3 to US$1. The stability of the exchange rate can be attributed to the sizeable inflow of foreign exchange reserves and low debt service requirements, two factors that were not simultaneously present in the Guyana and Jamaica situations.

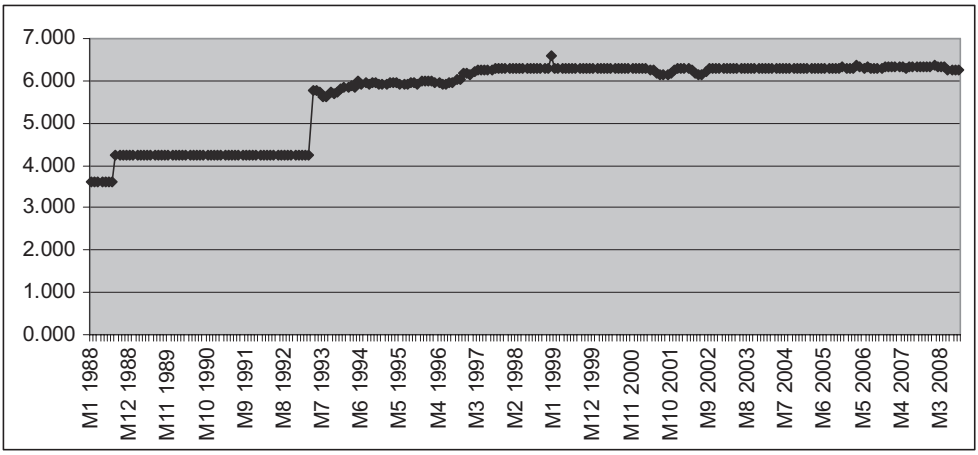

Figure 1.9 Trinidad and Tobago exchange rate
Source: Graph constructed from IFS online database

Cost of managed exchange rates: the CARICOM experience

The debate on the merits of flexible exchange rates is far from settled in the case of small island economies such as those of CARICOM. Admittedly, the debate may be settled with respect to advanced industrialised countries in favour of floating exchange rates and inflation targeting, thereby giving up the exchange rate anchor, see for example Truman (2003). However, CARICOM countries have been able to maintain low inflation under

fixed exchange rates. The CARICOM experience indicates that domestic based monetary policy was less successful in containing rising inflation within an inflation target when compared to containing inflation via the use of an exchange rate anchor.

The experience of the CARICOM economies has shown that once the exchange rate is not fixed, then there is a high tendency for it to continuously depreciate once there are not simultaneously sufficient foreign exchange inflows, low debt commitments and an orderly adjustment of markets. Thus, the Guyanese situation was triggered principally by high debt overhang while the Jamaica situation was triggered principally by the insufficiency of foreign exchange inflows and emerging high debt overhang.

Furthermore, once depreciation sets in, it can be very costly for these economies to endure. For one thing, it leads to rising inflation as countries import most of their inputs and final products from international markets. This leads to pressures to raise salaries as locals are priced out of international markets. As a result, continuous devaluation creates its own instability in the domestic economy.

Another important point to notice is that devaluations caused more domestic resources to be diverted to paying external debt as it increased in terms of domestic currency. As a result, an increasing proportion of national budgets was diverted to debt servicing, which involved meeting both principal and interest payments denominated in foreign currency. An example of this was the case of Jamaica. After the country succeeded in reducing external debt in terms of local currency by 20 per cent in 2007, it then saw its debt converted to local currency increase in 2009 by 85 per cent, partly on account of depreciations in the exchange rate.

Yet another point to be made is that depreciations tend to foster a loss of confidence in the national currency, leading to further rounds of depreciations as local agents recognise foreign currency as having greater properties as a store of value. Thus the demand for foreign currency increases, carrying up its price in terms of domestic currency, and as a result further rounds of depreciation ensue.

In addition, depreciations encourage dollarisation as domestic assets are more likely to be priced in foreign currency, in this case the US dollar. For example, fixed domestic assets like real estate are now priced in US dollars and given a depreciating exchange rate, and locals with fixed salaries can find themselves priced out of the market. The monetary authorities face an uphill battle to break this cycle and restore confidence in domestic currency.

An important point to make here is that international credit rating agencies can potentially create further instability in the foreign exchange markets. This was the case in Jamaica where adverse credit ratings caused countries exporting to Jamaica to demand payment in cash rather than extend a line of credit. This created a surge in demand for foreign exchange and contributed to further instability in the foreign exchange market.

1.5 Summary of cost benefit comparison of monetary frameworks in the Caribbean

A summary of the comparison of the cost and benefits of the various frameworks associated with the exchange rate regimes is located in table 1.11. However it must be borne in mind

that the success of the managed exchange rate hinges on the successful development of money markets. This is useful especially for intermediating excess liquidity and ensuring the transmission of the short-term interest rate as the policy rate. Moreover, the successes of monetary frameworks have been largely dependent on the foreign exchange inflows accruing to various territories. These factors may have therefore been important considerations in the choice of monetary frameworks implemented by countries.

Table 1.11 Qualitative benefit cost of exchange rate framework: Caribbean experience

Fixed exchange peg		*Managed exchange rate*	
Advantage	*Cost*	*Advantage*	*Cost*
Low inflation	Increase in credit can lead to increase in import demand.	Some degree of monetary independence.	High tendency to continuously depreciate once foreign exchange inflows are insufficient and debt levels are high.
Low intermediation rates	Conflict between the use of credit for development and balance of payments stability.	Exchange rate can be allowed to vary according to foreign exchange reserves.	Leads to rising inflation.
Growth in lending amplifies economic growth.	Exchange rate can become overvalued when inflation increases: countries can become less competitive.	Exchange rate can find sustainable level.	Pressure on salaries to increase.
Less meetings required to fine-tune monetary policy.	Producers may be forced to absorb costs in order to remain competitive.	Can react with higher frequency to economic developments.	More resources are diverted to paying debt.
	Black marketing of currency causing a parallel exchange rate.		Depreciations tend to cause a loss of confidence in national currency.
	Must be backed by sufficient foreign exchange.		Can lead to dollarisation.
	Loss of monetary independence.		International credit rating agencies tend to downgrade and cause instability in the foreign exchange market.
	Difficult to sustain where there is integration of international capital markets.		More meetings required to fine-tune monetary policy.
			Speculative activities tend to lead to increased foreign exchange being required to defend the rate.

None of the frameworks provides a perfect solution to the staging of monetary policy in small island states. What can be noticed immediately is that the fixed exchange rate contributes to internal balance regardless of foreign exchange reserves, while the managed float framework conditions exchange rate stability on the inflows of foreign exchange reserves. Moreover it was noticeable that speculation potentially played a greater role in deciding the exchange rate in the case of the managed floats. At the same time, the longer the exchange rate remained fixed, the more the tendency for speculation against the rate evaporated. Thus territories which maintained the fixed exchange rate for the past thirty years seemed to incur less speculative activities against their rates.

1.6 Concluding remarks

Central banking experience in CARICOM can be considered too short for the region to empirically address the question of which monetary framework works best for it. It was clear however that monetary policy when applied to the region must confront the foreign exchange constraint typical of non-reserve currencies. This constraint can be exacerbated by different factors including low levels of foreign exchange earnings, inadequate net capital inflows and high debt overhang. The foreign exchange constraint made it necessary for various regional economies to tighten monetary policy in order to restrain foreign exchange outflows.

From the analysis a few key principles emerged. First, the primacy of the exchange rate anchor allowed for the attainment of low inflation. Second, there were no significant differences in the real side or external performances between exchange rate frameworks. Third, the experience of the region was that the implementation of market-based instruments in the absence of adequate market development could lead to policy reversal away from the use of indirect market-based instruments.

Generally, the analysis suggested that the choice of monetary framework depended on the objective of policy-makers. Where the choice was to achieve stabilisation through low inflation, then the regional experience suggested that a hard currency peg was preferable. However, its credibility was dependent on the sustainability of adequate currency inflows. At the same time there were other costs such as the loss of monetary independence, a loss of competitiveness and internal policy conflicts between credit and balance of payments stability. Where the choice was for monetary independence, a managed float was the preferred option. However this too relied on the attainment of adequate currency inflows to bring about stability in the exchange rate.

Notes

1. We define a hard peg as a fixed exchange rate used by a country with respect to the currency of a large country.
2. By price taker we refer to the market structure where firms lack market power to influence prices and therefore must take the prevailing market price as given.

3. This can be contrasted to the UK for example, where the central bank was founded in 1694 and nationalised in 1946.
4. We classify all the countries which moved off the fixed exchange rate pegs as managed floats, since they have not committed to specific exchange rates and at times intervene in the foreign exchange market.
5. See for example the West Indian Commission Report, 1989 or Nicholls et al. (2000) for an elaboration on this point.
6. In this view, monetary policy is unable to influence employment as the economy would settle in the long run at a natural rate of unemployment regardless of the inflation rate. Moreover, inflation is seen as a monetary phenomenon so that, according to this school of thought, monetary policy should be aimed at controlling the money supply.
7. See Birchwood (2001) for a discussion on the speed of transition to indirect instruments with respect to the CARICOM economies.
8. See Alexander et al. (1995) for an elaboration on this point.
9. Moral suasion implies that the central bank is able to appeal to altruistic sentiments of the regulated entities or they are able to imply a threat of coercion to these entities.
10. IMF occasional paper 244, p vi, defines liquid asset ratio as the 'requirement for a bank to hold minimum amounts of specified liquid assets, typically as a percentage of the bank's liabilities'. It also defines the reserve requirement as 'requirements for a bank to hold minimum balances with the central bank, typically as a percentage of its liabilities. When averaging provisions are allowed, banks can fulfil reserve requirements on the bases of average reserve holdings during the maintenance periods'.
11. IMF occasional paper 244, pvi, defines money market operations as 'money instruments that are used at the discretion of the central bank and bearing an interest rate linked to money market conditions.' In addition it defines open market operations as 'market based monetary operations conducted by the central banks as a participant in the money market'.
12. See Alexander et al. (1995).
13. In this case the repo rate is the official policy rate of the central bank at which it sells securities to the private sector bank needing to raise liquidity by borrowing from the central bank.
14. We use arbitrage to refer to the exploitation of the price differential between markets to make a gain.
15. Calvo and Mishkin (2007) noted that this was an active debate in the aftermath of various financial crises in emerging economies and they suggested that the exchange rate regimes were expected to spring different results in economies depending on their institutional mix.
16. We suggest that the regional economies have not yet emerged into a bipolar world of either fixed exchange rates or fully floating exchange rates as noted by Frankel (2000) and Calvo and Reinhart (2002) with respect to various economies around the world.
17. The median lending rate was calculated using annual data across fixed and managed exchange rate frameworks for the period 2000–2008. The rate was 11.5 per cent.

References

Alexander, William E, Tomas J T Baliño and Charles Enoch (1996). The adoption of indirect instruments of monetary policy. International Monetary Fund (IMF) Occasional Paper No. 126. Washington, DC: IMF.

Birchwood, Anthony (2001). 'The appropriateness of monetary instruments employed by Caribbean central banks: a preliminary investigation'. In *Social and Economic Studies* 50(3&4), pp. 127–147.

Calvo, Guillermo A and Carmen M Reinhart (2002). 'Fear of floating'. In *Quarterly Journal of Economics* Vol. 117, pp. 379–408.

Calvo, Guillermo and Frederic Mishkin (2007). 'The mirage of exchange rate regimes for emerging market countries'. In Mishkin, Frederic (ed.) *Monetary policy strategy*. Cambridge, Massachusetts London: MIT Press, pp. 465–485.

Caribbean Centre for Money and Finance (CCMF) (2008). Regional report on economic performance and convergence. Trinidad and Tobago: CCMF.

Frankel, Jeffrey, Sergio Schmukler, Luis Serén and Luis Servén (2001). 'Verifiability and the vanishing intermediate exchange rate regime'. *Journal of Development Economics*: 66:2, pp. 351–386.

Fry, Maxwell, DeAnne Julius, Lavan Mahadeva, Sandra Roger and Gabriel Sterne (2002). 'The use of explicit targets for monetary policy: practical experiences in 93 economies in the 1990s'. In Mahadeva, Lavan and Gabriel Sterne (eds.) *Monetary policy frameworks in a global context*. London: Routledge, pp. 29–56.

Fry, Maxwell, DeAnne Julius, Lavan Mahadeva, Sandra Roger and Gabriel Sterne (2002). 'Key issues in the choice of monetary policy framework'. In Mahadeva, Lavan and Gabriel Sterne (eds.) *Monetary policy frameworks in a global context*. London: Routledge, pp. 3–17.

Laurens, J Bernard et al. (2005). Monetary policy implementation at different stages of market developments. IMF Occasional Paper No. 244. Washington, DC: IMF.

McNees, Stephen K (1987). 'Prospective nominal GNP targeting: an alternative framework for monetary policy'. In *New England Economic Review* (September/October), pp. 3–9.

Mishkin, Frederic (2007). 'The dangers of exchange rate pegging in emerging market countries'. In Mishkin, Frederic (ed.) *Monetary policy strategy*. Cambridge, Massachusetts: MIT Press, pp. 445–463.

Nicholls, Shelton, Anthony Birchwood, Phillip Colthrust and Earl Boodoo (2000). 'The state of and prospects for the deepening and widening of Caribbean integration'. In *World Economy,* Vol 23(9), pp. 1161–1194.

Obstfeld, Maurice and Kenneth Rogoff (1995). The mirage of fixed exchange rates. NBER Working Paper 5191.

Roger, Scott and Mark Stone (2005). On Target? The International Experience with Achieving Inflation Targets. IMF wp/05/163 Washington, DC: International Monetary Fund.

Truman, Edwin M (2003*). Inflation Targeting in the World Economy*. Washington, DC: Institute for International Economics.

Witter, Michael, Lino Briguglio and Assad Bhuglah (2002). 'Measuring and managing the economic vulnerability of small island developing states'. Presented at the Global Round Table on 'Vulnerability and Small Island Developing States: Exploring Mechanisms for Partnerships', Montego Bay, Jamaica, 9–10 May.

Appendix A

Table A1. Ultimate goals of monetary objectives

	The Bahamas	*Barbados*	*Belize*	*ECCB*	*Guyana*	*Jamaica*	*Trinidad and Tobago*
Stability of the financial sector	√	√	√	√	√	√	√
Low inflation	√	√	√	√	√	√	√
Maintenance of fixed exchange rate parity with the US dollar	√	√	√	√			
Inflation target					√	√	√
Balance of payments stability	√						
External reserves	√	√		√		√	√
Maintenance of an orderly foreign exchange market					√		√
Channelling credit to productive activities	√	√	√	√			
Fostering credit and exchange conditions conducive to sustained growth Monetary base		√	√	√		√	

Source: Constructed from the central bank websites and laws of the respective countries

Table A2. Monetary instruments adopted

	The Bahamas	*Barbados*	*Belize*	*ECCB*	*Guyana*	*Jamaica*	*Trinidad and Tobago*
Moral suasion	√	√	√	√	√	√	√
Bank discount rate	√	√	√	√			√
Selective direct credit controls	√		√				
Interest rate controls	√		√				
Minimum deposit rate		√	√	√			
Maximum lending rate			√				
Type of security required for loans			√				
Securities requirement as a ratio of total deposits		√					
Requirement on commercial banks to deposit a percentage of their foreign currency to the central banks		√					
Reserve requirements	√		√	√	√	√	√
Liquid asset ratios		√	√				
Monetary base					√	√	
Money supply			√				
Money market operations	√				√	√	√
Repo rate						√	√
Direct sales/purchases of foreign exchange						√	√

Source: Constructed from the websites from the respective central banks

Table A3. Comparison of prices under market rigidity versus market-based regimes

	Fixed exchange rate framework					*Flexible exchange rate framework*			
	The Bahamas	*Barbados*	*Belize*	*ECCU*	*Combined average*	*Guyana*	*Jamaica*	*Trinidad and Tobago*	*Combined average*
Lending rate (1991–1999)	13.6	12.2	15.6	11.8	13.3	21.7	38.7	13.6	24.6
Lending rate (2000–2007)	11.1	10.7	4.6	11.0	11.8	14.7	18.6	11.6	15.0
Interest rate spread (1991–1999)	8.3	7.3	9.3	7.4	8.1	8.3	14.3	6.8	9.8
Interest rate spread (2000–2007)	7.4	6.9	9.5	7.3	7.8	10.7	8.9	8.1	9.2

Source: Averages calculated from Caribbean Centre for Money and Finance (CCMF) (2008)

Table A4. Macroeconomic performance of selected economies

	Fixed exchange rate framework					*Flexible exchange rate framework*			
	The Bahamas	*Barbados*	*Belize*	*ECCU*	*Combined average*	*Guyana*	*Jamaica*	*Trinidad and Tobago*	*Combined average*
GDP growth 1991–1999	3.1	1.2	3.9	3.1	2.8	5.9	0.9	2.4	3.1
GDP growth 2000–2007	1.9	2.1	5.7	3.3	3.2	1.5	1.5	8.5	3.8
Overall fiscal balance 1991–1999	(2.2)	(1.7)	(2.6)	(2.5)	(2.3)	(2.0)	(1.2)	(0.8)	(1.4)
Overall fiscal account balance 2000–2007	(2.8)	(3.0)	(5.6)	(4.4)	(4.0)	(6.2)	(5.0)	2.2	(3.0)
External debt to GDP 1991–1999	10.2	10.3	34.8	31.9	–	325	66.8	16.9	–
External debt to GDP 2000–2007	8.0	25.5	72.8	56.4	–	158.9	54.3	12.8	–
Import cover 1991–1999	2.5	2.7	2.1	6.1	3.3	5.5	2.8	3.5	3.9
Import cover 2000–2007	3.9	7.2	2.3	7.3	5.2	3.6	4.0	9.2	5.6

Source: Averages calculated from Caribbean Centre for Money and Finance (CCMF) (2008)

Appendix B Implications of exchange rate frameworks for the style of monetary policy in Guyana and Jamaica

We present a model of the conduct of monetary policy by Guyana and Jamaica where it is noted that these countries continue with the monetary targeting approach while seeking to implement the market approach to inflation targeting. As such,

$$\pi = f(Ms.Yg) \quad (1)$$

where π is the inflation rate, *Ms* is the broad money supply and *Yg* is output growth.

$$Ms = f(kMB) \quad (2)$$

where *MB* is the monetary base and *k* is the money supply multiplier with $k = \frac{1}{\alpha}$ where $0 < \alpha < 1$. The reliability of the model depends on a stable multiplier, so that by controlling reserves the central bank can successfully forecast the money supply. The Bank of Jamaica points out that changes in the reserve requirements induce changes in *k*.

$$MB = f(NFA, NDA) \quad (3)$$

Where *NFA* is net foreign assets and *NDA* is net domestic assets.

$$NFA = f(\text{intervention in FX market}) \quad (4)$$

The central bank intervenes in the foreign exchange market (*FX*) by selling and buying foreign currency on the domestic market and by so doing is able to reduce or increase domestic assets of commercial banks respectively. This is based on the fact that commercial banks are the main private sector actors in the foreign exchange market.

$$NDA = f(CC, cbr) = f(\text{liquidity} = f(\omega)) \quad (5)$$

where CC is defined as currency in circulation and *cbr* commercial bank reserves, ω is factors which influence liquidity in the banking system inclusive of government net expenditure and net external capital inflows.

Some important differences can be obtained between the monetary frameworks for fixed exchange rate regimes and managed exchange rate regimes. The countries which staged fixed exchange rates were likely in the case of (5) to use direct instruments aimed at commercial bank balance sheets. These instruments include interest rate controls and credit controls. On the other hand, the countries which used managed exchange rates are assumed to aim at manipulating liquidity on the central bank balance sheet rather than directly on the balance sheet of financial institutions. As such, the style of monetary policy was indirect.

Monetary programming framework

The Guyana and Jamaica central banks set a targeted path for growth of broad money supply consistent with output growth and inflation. As such, the targeted growth is set at

$$Msg^T = f(Yg, \pi) = k(gMB^T) \quad (6)$$

where Msg^T is the targeted growth of broad money supply. This is based on the idea that the central bank can set a target on the growth of the monetary base ($g\{MB\}^{\uparrow}T$). Substituting (5) in (6)

$$gMB^T = f(\omega^f) = f(CC, cbr) \quad (7)$$

where $\omega^f = \omega_0, \omega_1, \omega_2, \ldots \omega_n$, with ω^f is the forecast of changes in the items which influence domestic banking system liquidity and $\omega_0, \omega_1, \omega_2, \ldots \omega_n$ are the forecast of the different components that act on the liquidity of the commercial banking system.

The central bank conducts annual forecasts of the monetary base in accordance with forecasted output growth and inflation. For Guyana and Jamaica, the deviations of the forecasted money supply from the targeted money supply causes the central bank to intervene through open market operations to push money supply along its targeted path.

$$OMO \rightarrow Msg^f - Msg^T = fk(gMB^f - gMB^T) \quad (8)$$

where *OMO* is open market operations, Msg^f is the forecasted growth of the money supply, gMB^f is the forecasted growth of the monetary base. Hence, *OMO* is used to bring the forecasted growth of the monetary base in line with the targeted growth of the monetary base.

Using *OMO*, the central banks trade liquidity through the auctioning of treasury bills, so as to minimise the variation between forecasted and targeted reserves. Open market operations were actively used to auction the volume of treasury bills in the primary market. In the case of Guyana, the volume of treasury bills issued acted as a signal of the monetary policy stance of the central bank.

Specifically, Guyana and Jamaica would have utilised open market instruments to bring the money supply towards its targeted levels in (8) above. For Jamaica, the money supply target is followed by the base money target which is broken up into quarterly, monthly, weekly and daily targets in relation to the multiplier. The Bank had the greatest depth of money market instruments of different maturities which allowed the market to construct yield curves. Changes in the yield curve of the central bank signal changes in its monetary stance.