Implications of Monetary Policy Frameworks for Economic Performances in CARICOM

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Abstract

The study surveys the monetary frameworks practiced by CARICOM member countries with a view of examining whether stabilization and real side performances were related to the style of monetary policy practiced by the respective central banks. This is particularly important given that the member countries are heterogeneous in the monetary policy frameworks practiced. It is found that the exchange rate anchor has been useful in maintaining low inflation. However, there is a tendency for the exchange rate in these countries to become overvalued as economic activity picked up as evidenced by increased lending. This gave rise to two principal problems: it led to a deterioration in the balance of payments and secondly, economic agents were forced to absorb increased economic costs. On the other hand, those territories which moved off the fixed exchange rate were presented with their own challenges. Once not backed by adequate earning of foreign exchange, exchange rate tended to depreciate continuously thus leading to socioeconomic challenges. This is exacerbated by the downgrading of credit ratings thus leading to further instability in the foreign exchange market. Regional markets therefore face the question of whether to continue with a fixed exchange anchor and attain stabilization at the risk of losing market competiveness in the long run or whether to give up the exchange rate anchor and improve competitiveness while accommodating instability in the short run, the length of which is undefined. The finding suggests that monetary theory is still unable to deal with the balance of payment constraint of small open economies particularly where countries possess inadequate foreign exchange reserves.

1.0 Introduction

In analysing the implications of monetary policy frameworks in small open economies such as the Caribbean Community (CARICOM), it is useful to contrast the economic outcomes of those which continued to use a prescriptive style where the central bank maintain 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 the country experiences can provide insights into the implications of alternative styles of monetary frameworks adopted by these small open economies. This presumes that the type of monetary framework can play a role in the resilience of the region in response to negative external economic shocks. As a consequence, the study examined what were the economic consequences of the different styles of monetary policy for the CARICOM economies.

The monetary framework practiced 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, stabilization and the contribution of monetary policy to development objectives. To begin, the monetary frameworks practised in the region were noted with respect to the style of exchange rate, goals and instruments. This was 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 low inflation rate. However, it must be remarked that a hard peg potentially conveyed the risk of adverse real-side consequences. 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, thus 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. 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 of the regional economies to move off the fixed exchange rate.

On the other hand, the economies which moved off of the fixed exchange rate faced many challenges. It was noted that while the depreciation of the exchange rate can theoretically buffer the 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 as having unfavourable socioeconomic consequences on the 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 as it festered a loss of confidence in the domestic currency, thus causing an erosion of the domestic currency as a store of value thus leading to possible dollarization. In addition, during the period of depreciations, downgrades from credit rating agencies tended to destabilise the 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.

2.0 Choice of monetary frameworks practiced by the regional central banks

The Central Banks were fairly recent institutions in the Caribbean Community (CARICOM), having been constituted between the years 1961and 1983, see Table 1.[1] These Banks were formed around the time of independence when countries strived 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.

Table 1 Date of Independence and Establishment of Central Bank

Country	Date of Country Independence	Central Bank	Date that Central Bank was established
Jamaica	6th August 1962	Bank of Jamaica	May 1961
Trinidad and Tobago	31st August 1962	Central Bank of Trinidad and Tobago	12th December 1964
Guyana	26th May 1965	Bank of Guyana	16th October 1965
Barbados	30th November 1966	Central Bank of Barbados	May 1972
Bahamas, The	10th July 1973	Central Bank of the Bahamas	1st June 1974
Belize	21st September 1981	Belize Central bank	1st November 1976
Grenada	7th February 1974	Eastern Caribbean Central Bank (ECCB)	October 1983
Dominica	31st November 1978		
St. Lucia	22nd February 1979		
Antigua and Barbuda	27th October 1979		
St. Vincent and the Grenadines	27th October 1979		
St. Kitts and Nevis	19th September 1983		

Fundamentally, the regional central banks had a mandate to issue and redeem currency, act as banker to the government while seeking to maintain monetary stability, and act as advisor to the respective governments. In addition they were expected to strive after real side development, 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

[1] This can be contrasted to the UK for example, where the Central Bank was founded in 1694 and nationalized in 1946.

adopted by the Central Banks were influenced by the external balances of the various economies and the prompting by international financial institutions such as the IMF and the World Bank.

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 existed 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 comprised Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines.

At 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 begun 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 of the fixed peg with the US dollar but instead opted for a managed float.[2]

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 2. The wide disparity in the exchange rates complicated the creation of a single currency for the region as was proposed for the formation of a single Caribbean economy[3]. Indeed, the lack of unification of the various exchange rates caused the deepening of CARICOM to incur transactions costs with respect to trade in goods and services, the formation of a single stock exchange and capital transfers across the region.

Table 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)
Bahamas, The	1	Guyana	205.91 (26/3/10)
Barbados	2	Jamaica	89.65 (26/3/10)
Belize	2	Trinidad and Tobago	6.38 (26/10/10)
ECCB	2.7		

[2] We classify all the countries which moved off of the fixed exchange rate pegs as managed floats, since they have not committed to specific exchange rate and at time intervene in the foreign exchange market.
[3] See for example the West Indian Commission Report, 1989 or Nicholls et. al. (2000) for an elaboration on this point.

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.[4] Consistent with this view, monetary policy reaction in the economies using fixed exchange rates appeared to be akin to monetary policy in the advanced industrialized 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 of the fixed exchange rate embraced a neoliberalist agenda where interest 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.[5] Moreover, monetary policy involved the fine tuning of the economy, in order to steer prices in the direction signaled 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.

2.1 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 Parliaments 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 3, where it can be gleaned that the most common goals were the accumulation and preservation of reserves, maintenance of stability of the financial sector and monetary stability.

Critical here was whether monetary policy in small island states can simultaneously achieve stabilization and development or whether it was only capable of achieving stabilization. A combination of stabilization 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 stabilization goals. The rational for this was that obtaining low inflation growth was desirable, so that the central bank was the best placed agency to achieve inflation growth. The actual goals per country were detailed in Table Appendix A.

[4] 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 was seen as a monetary phenomenon so that, according to this school of thought, monetary policy should be aimed at controlling the money supply.

[5] See Birchwood (2001) for a discussion on the speed of transition to indirect instruments with respect to the CARICOM economies.

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. As such, the highest frequency of meetings was with respect to the central banks in 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 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 FX 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 programs. 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 reflected debt to GDP ratio reaching as high as 67 per cent in 1991. Guyana debt situation was urgent as its debt was 5.7 times that of 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 programs.

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 since 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 the greater propensity to use direct controls in their monetary policy regime.

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 in proportion to 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 the development objective for 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.

2.2 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 the more likely ones 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.[6] 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 4 examined 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 cooperate to attain targets prescribed by the central bank. A detailed breakdown per country is in Table A2 in the Appendix A.

Table 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	

[6] See Alexander et al (1995) for an elaboration on this point.

Equally important were the allowance for the use of rule-based instruments in the form of liquid asset ratios and reserve requirements.[7] 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 5. The Bahamas and the ECCB did not change their monetary rules since their inception. As such we classified the activity level of monetary rules in these countries as passive. The Central Banks in Barbados and Belize occasionally altered their monetary rules, but changes tended to be 'once and for all'. The activity level of monetary rules in these countries was 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.

Table 5 Frequency of use of Rules-based Instruments

	Liquidity Ratios	Activity level
Bahamas, The	Fixed at 5% for statutory reserves, and LAR 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. Secondary reserves: 23% of approved liquid assets including reserves requirements. Voluntary transfer of public institutions deposits from commercial banks to the central bank.	Moderate
ECCB	Reserve requirements: 6 % of deposit liabilities	Passive
Guyana	Reserve Requirements: 12% of all deposit liabilities including foreign liabilities.	Active

[7] The IMF occasional paper 244 defined liquid asset ratio as "Requirement for a bank to hold minimum amounts of specified liquid assets, typically as a percentage of the bank's liabilities." They also define 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." p vi.

Jamaica	Increased statutory cash reserve requirement to 13% at December 3 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.

Direct controls on intermediation generally took the form of impositions on credit, as was the case of The Bahamas. The Bank 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 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 the central bank may have 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 the countries with fixed exchange rates, the 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.[8] 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. [9] Given the embryonic stage of the development of the money markets in the region, the auction of Treasury Bills were the major instrument used to conduct open market operations and were usually denominated in terms of 91-day, 182-day and 364-day government Treasury bills, though the BOJ eventually moved on to issuing its own securities through Certificate of Deposits (CDs). 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 was set according to forecasts of inflation and

[8] The IMF occasional paper 244 defined 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 they defined open market operations as "market based monetary operations conducted by the Central Banks as a participant in the money market." p vi.

[9] See Alexander et al. (1995).

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. 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 through 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, the 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 was 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 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 deemphasize 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 September 15th of 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.

2.3 Use of Interest rates

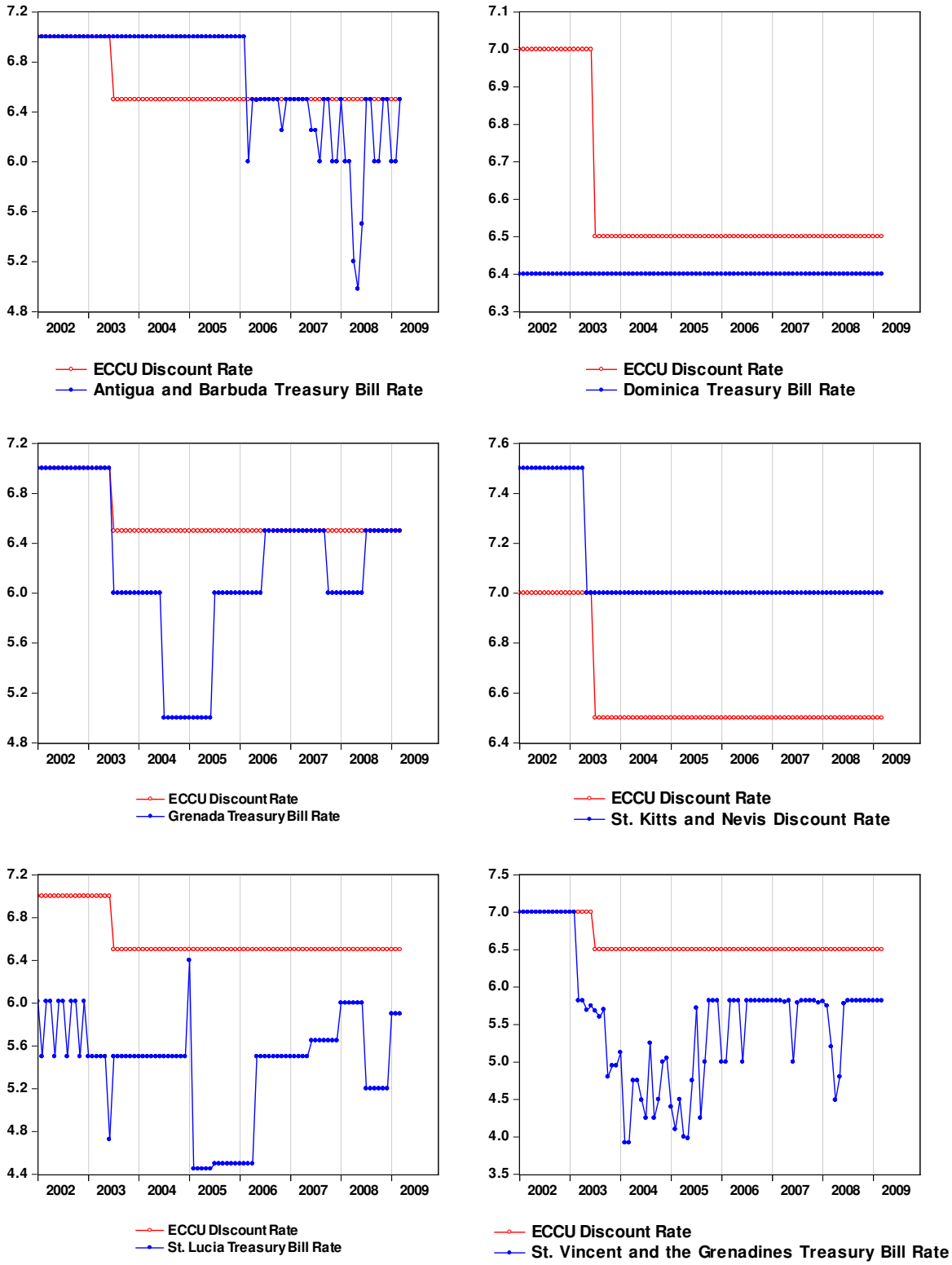
The use of the discount rate featured prominently in the active conduct of monetary policy in various countries as the majority of Central Banks were empowered by their Acts to use changes in the Bank discount rates as a monetary tool. However, given an environment of chronic high

excess liquidity, this rate was used more as a signalling device with respect to the direction 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 the Treasury bill rates been prescribed without much reference to the market, see Figure 1. As such these rates were flat such that they were set and maintained for long periods of time. Normally, the discount rate should be higher than other rates, in an effort to discourage borrowing from the central bank. However, in the case of the OECS, the discount rate were at times inefficient as evidenced where the Treasury bill rate were at times above that of the discount rate in Antigua and Barbuda as well as St. Vincent and the Grenadines. This would have suggested that at times it was cheaper for government to borrow from the central bank rather than from the public where the cost of financing was higher.

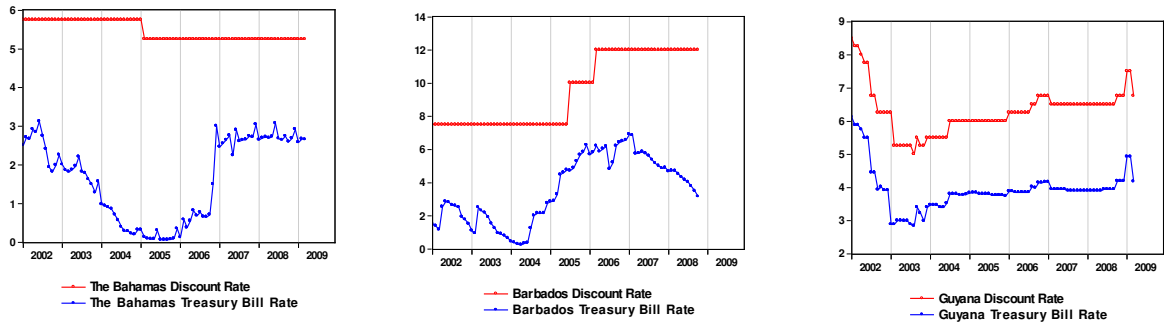
Technically, when the Bank discount rate is lower than the national Treasury bill rate, it would suggest that it would be cheaper for the government to borrow from the ECCB rather than raise funds through the use of Treasury bills. However, the ECCB Act does not permit it to lend to member governments, except where it is temporary so as to meet seasonal needs and in any event that amount must not exceed 5 per cent of average annual current revenue of government over the three preceding financial years. Moreover, the provisioning of this type of financing must be approved unanimously by the 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 once it thinks there is the risk that it would undermine the stability of the exchange rate. Thus, regulatory barriers may prevent arbitrage 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 would have led to inefficiencies in pricing of financial assets such as the Treasury bill rate in the various national territories within the ECCU.

Figure 1 OECS Money Market Rate



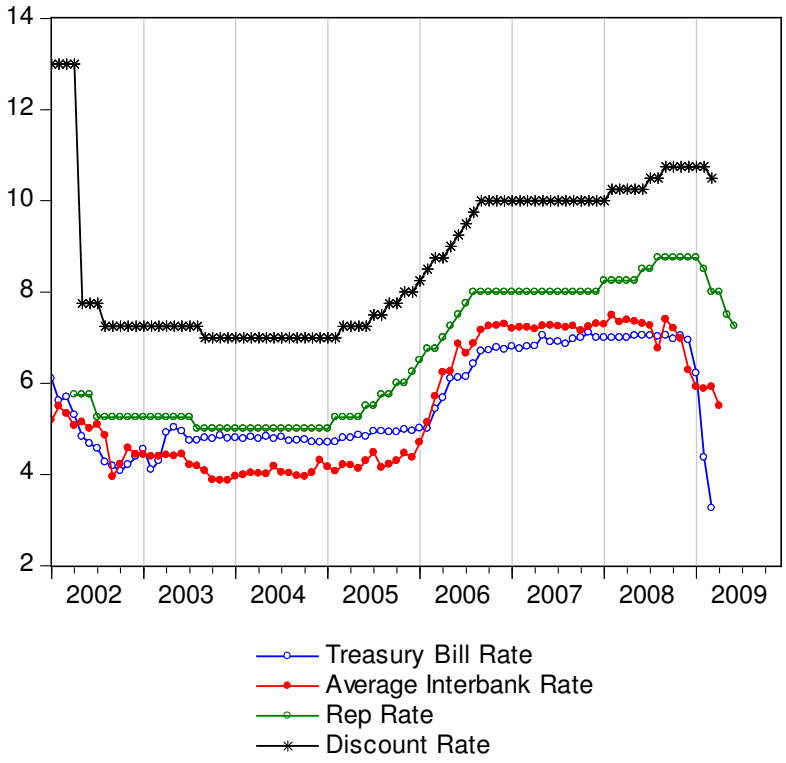
The Treasury bill rates in the Bahamas, Barbados and Guyana reflected greater volatility and remained below the respective discount rates, see Figure 2. However, it was noticeable that the movement of the Treasury bill rate had little relation to the discount rate in the Bahamas and Barbados, in the 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.

Figure 2 Money Market Rates in The Bahamas, Barbados and Guyana



Trinidad and Tobago and Jamaica exhibited greater depth in their money markets, see Figure 3. In the case of Trinidad and Tobago, the market was designed such that banks falling short of reserves had the option of borrowing on the interbank market, failing which they can access overnight financing from the central bank at the 'Repo' rate and if liquidity in the interbank market was tight then 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 them to use the other facilities. Moreover, 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 is tight liquidity.

Figure 3 Trinidad and Tobago Money Market Rates



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 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 to the point of trading various maturities, the Bank begun by trading government securities in the open market but by June 2001 it begun trading its own assets in the form of Certificate of Deposits in the market.

From a look at the instruments traded, it was clear that the BOJ 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 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.

Table 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 FIA institutions	Cash Reserve Ratio of commercial banks and FIA institutions
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

A challenge the BOJ 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. As such, at the beginning of 2007 the BOJ introduced a Special one-year instrument called the one-year Variable Rate Instrument and it was offered to primary dealers. By mid-year the bank moved to offering two year Variable Rate instruments. At the end of 2008 the Bank was complementing these by offering special certificate of deposits. The difficulty arising here was that offering instruments lead 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 the taxpayers.

3.0 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 are the regional experiences under the different styles of monetary policy.[10] Here we argue that the style of monetary policy is derived principally from the exchange rate regime of the country whether is be hard pegs or managed exchange rate regimes.[11] In order to explore the question of the 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 7. In contrast, the countries which adopted managed floats reflected a combine average inflation rate of 16.5 per cent and 7.2 per cent in both periods respectively. The evidence therefore supported the argument that the exchange rate anchor is pivotal to the attainment of low inflation in small open economies.

Table 7 Comparison of prices under market rigidity versus market based regimes

	Fixed Exchange Rate Framework					Flexible Exchange Rate Framework			
	Bahamas, the	Barbados	Belize	ECCU	**Combined average**	Guyana	Jamaica	Trinidad and Tobago	**Combined Average**
Inflation (1991-	2.6	2.9	2.1	2.9	**2.6**	15.5	28.5	5.7	**16.5**

[10] 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.

[11] 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.

1999)									
Inflation (2000-2007)	2.0	3.2	2.5	2.5	**2.6**	6.3	9.8	5.4	**7.2**

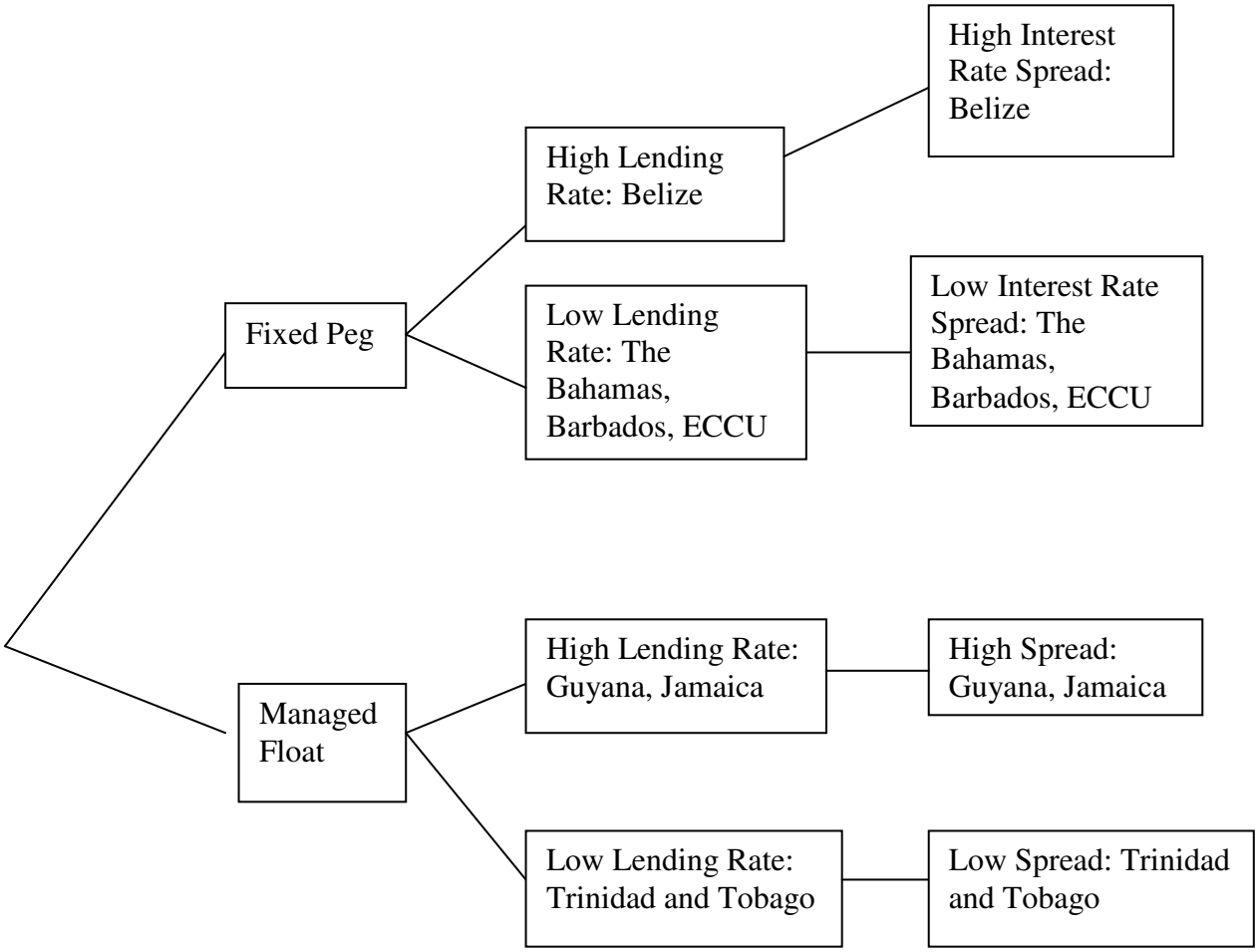
Source: Averages calculated from CARICOM Report on Economic Performance and Convergence 2007.

It should be noted, however, that inflation levels declined for the countries which practiced a managed float. The evidence emerging from CARICOM economies was therefore not supportive of Roger and Stone (2005), where they suggested that in the majority of cases inflation levels and volatility have declined after countries adopted inflation targeting. They suggested 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 did not address was whether these countries would have realized lower rates had they maintained fixed exchange rates. The evidence with respect to the CARICOM region suggest 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 by 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.

We then examine the relationship between average lending rates and intermediation spreads between regional territories, with respect to exchange rates, see Diagram 1 as well as Table A3 in the Appendix A for more detailed data. From the data it can be gleaned that the regional experience of most countries was that those with fixed exchange rates carried lower lending rates and lower interest rate spreads compared to those which moved off the fixed peg. The results also show that countries with high lending rates exhibited the higher intermediation spreads. This result remained robust to the type of exchange rate regime. This result is not surprising, as deposit rates remained sluggish to the volatility of lending rates. The results suggest that influential factors on lending rates remained the key to impacting on interest rate spreads. Since lending rates seems to have an upward adjustment path under a managed float where the exchange rate may exhibit a depreciating trend, there may be a tendency under this regime to exhibit wider interest rate spreads.

Diagram 1 Association of Monetary Framework with Lending Rates [12]



[12] 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%.

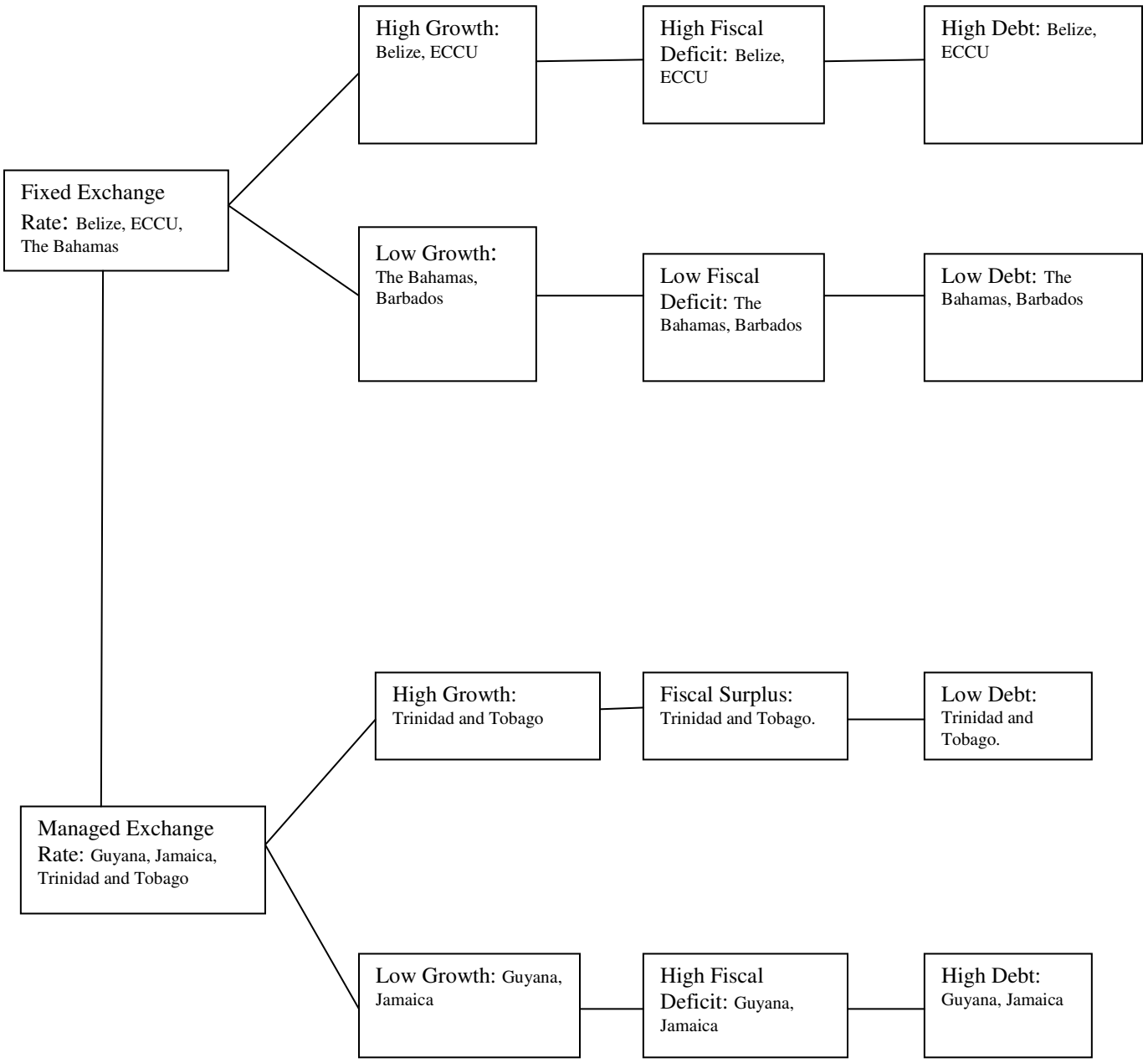
Another point to note is that the evidence uncovered suggested that the exchange rate framework did not make a fundamental difference to macroeconomic performances of the region, see diagram 2 and Table A4 in the Appendix A. Growth was random across exchange rate frameworks just as was fiscal balances, associated debt levels and import cover. The stronger relation was between fiscal balances and debt levels as countries with larger fiscal deficit also exhibited larger debt.

Useful inferences can be obtained by reading chart 2 backwards. In doing so, it becomes evident that the countries with higher debt were the ones to exhibit higher fiscal deficits. However, an important variation here is that those countries with fixed exchange rates showed a tendency to record higher growth among those with fixed pegs. On the other hand, among the countries with managed floats, higher fiscal deficit was not associated higher growth, but with lower growth.

More investigation needs to be done on this phenomenon. However, the evidence may be suggestive of the idea that the managed floaters may sacrifice expansions in output to stabilise the economy. For example, the transmission of fiscal expansion may be impacted first on the exchange rate and inflation rather than on economic growth. As such, the transmission may not be directly on growth in the same way as may occur under the fixed exchange rate regime.

Diagram 2 Exchange Rate Association with Economic Growth and Debt

Notes: Based on averages for the period 2000-2007. Median growth was 2.1% of GDP, Median Fiscal Deficit was -4.4% % of GDP, Median Import cover was 4 months and median debt was 54.3% of GDP. High is classified as those countries above median and low as those below the median.



4.0 Stabilisation outcomes of monetary frameworks

4.1 Cost of fixed exchange rate as an anchor

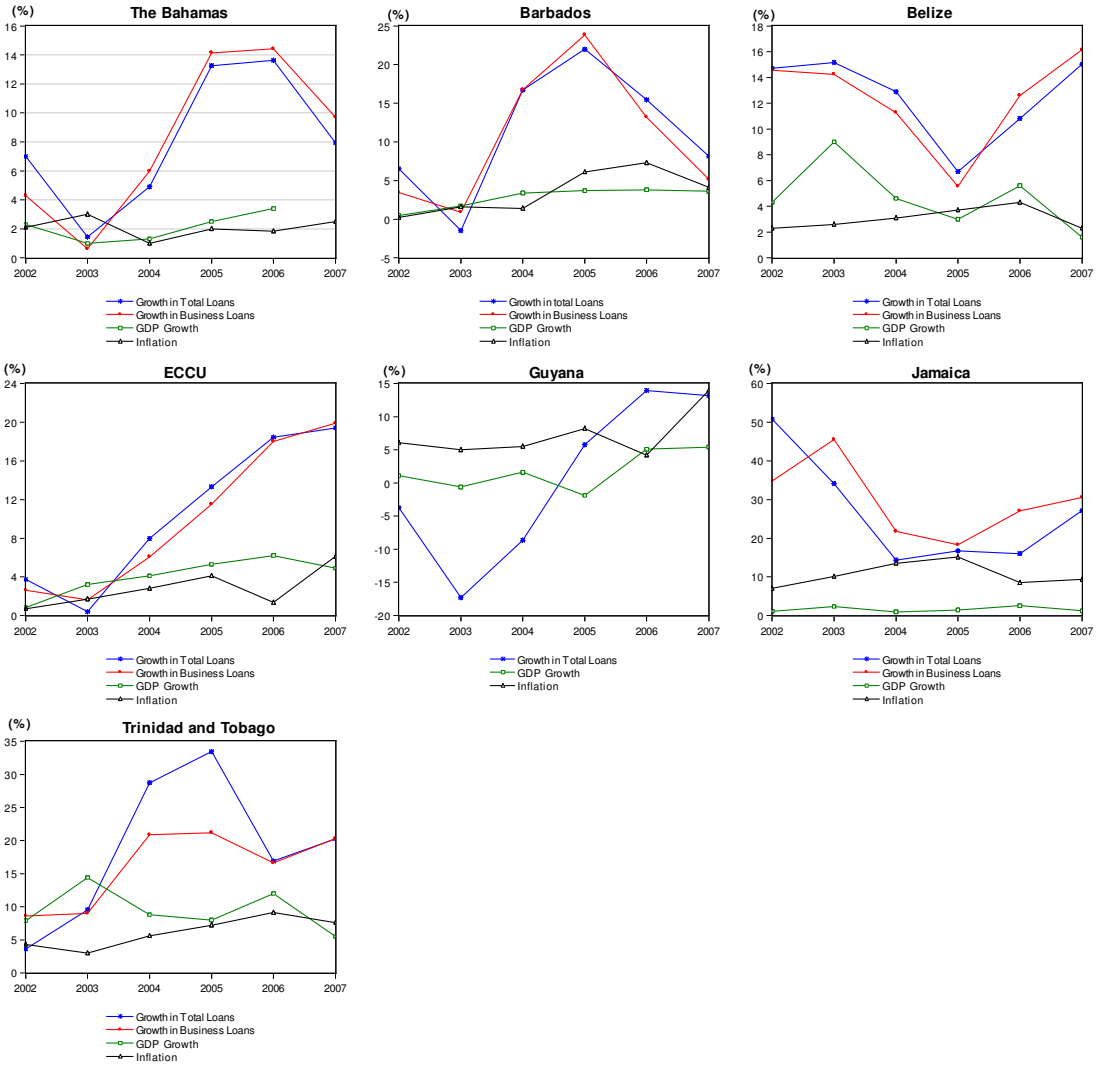
What the literature says

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. There is the argument too that if the trilemma argument held, then the country adopting a fixed exchange rate would loose monetary independence as it would lack the ability to use monetary policy to react to developments in the economy as domestic monetary policy is dominated by monetary policy of the base country, assuming that the domestic economy was open to external capital flows. Mishkin (2007) notes other drawbacks including the transmission of shocks from the anchor country to the home country and the "potentially for weakening the accountability of policy makers to pursue anti-inflationary policies." P447.

4.1.a 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 4. What is also noticeable is that there was not a one to one correspondence between credit growth and inflation. As such, growth in lending in those territories which ran fixed exchange rates was not associated with increased inflation levels. Accordingly, growth in lending telegraphed little information on movements in inflation as the association was weak.

Figure 4 Association between Credit Growth and the real side of the economy

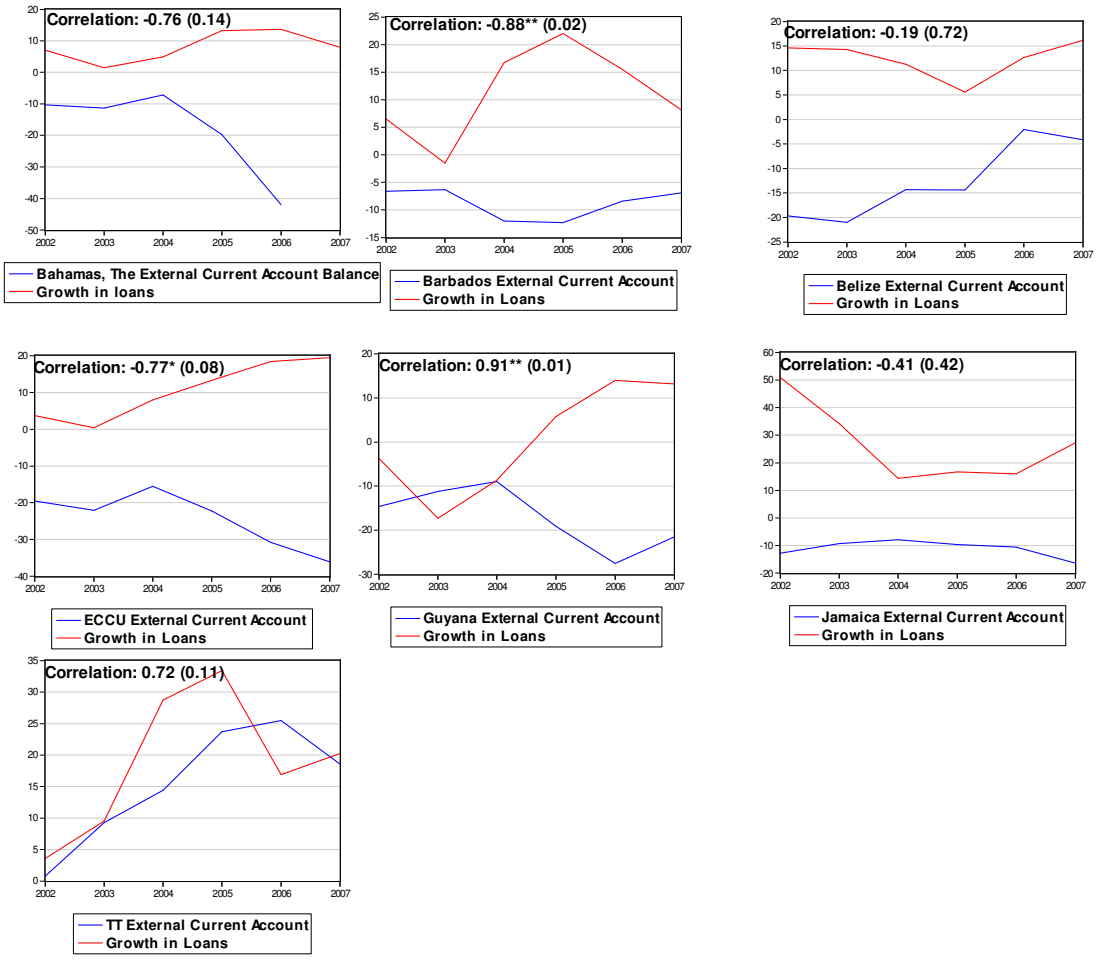


In evaluating the regional experiences, it was also found that while countries with fixed exchange rate frameworks sought to direct credit allocation to achieve growth and development, the drawback was that increases in credit posed the danger of deepening the external current account deficits and therefore militated against the goal of conserving of external reserves. This was evidenced by the high and significant correlation between increases in credit with the balance of payment deficits, see Figure 5. Thus the 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, ECCU, and Guyana.

Figure 5 Relationship between credit and external current account



The evidence, therefore, generally suggested 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 are inelastic. The results were 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 been equal.

Another factor that can militate against fixed exchange rate countries was that the exchange rate can become overvalued by increases in inflation and therefore rendering the country uncompetitive. For example, in tourist destinations such as Barbados, the 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 rises then for the hotel owners to maintain their price, they must be prepared to absorb costs to remain internationally price

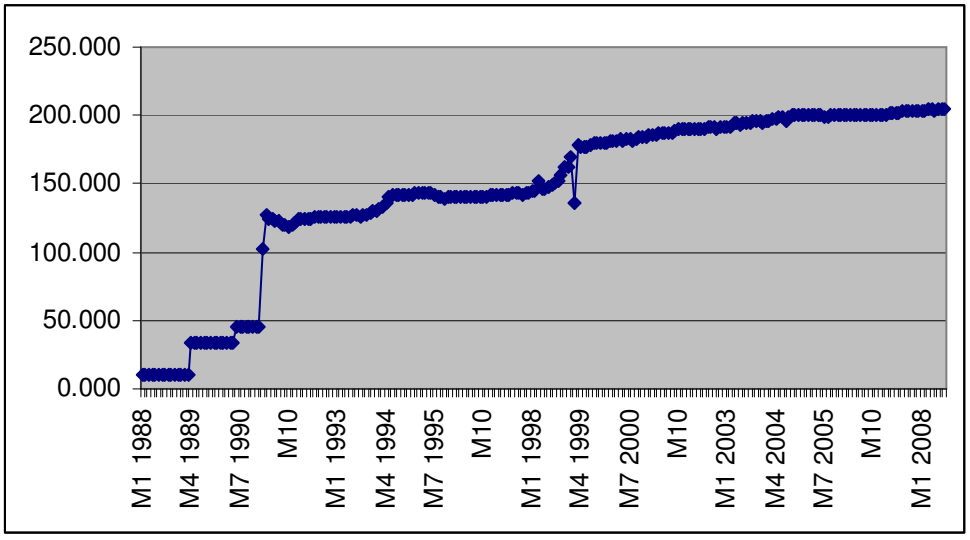
competitive. Thus, the overvalued exchange rate can impair the entrepreneual returns to arising from hotel plants as owners are forced to entertain lower returns.

4.3.a The movement of Exchange Rates in the managed exchange rate Regimes

The exchange rates of the countries which moved off of the fixed exchange rates were tracked both graphically using monthly data and in terms of their decadal point to point movements. For Guyana and Jamaica, the exchange rates continuously depreciated baring 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 6 and Table 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% of its original exchange rate in February 1991 when it was first floated.

Figure 6 Guyana Exchange Rate



Source: Graph constructed from IFS online Data base

Table 8 Guyana 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.

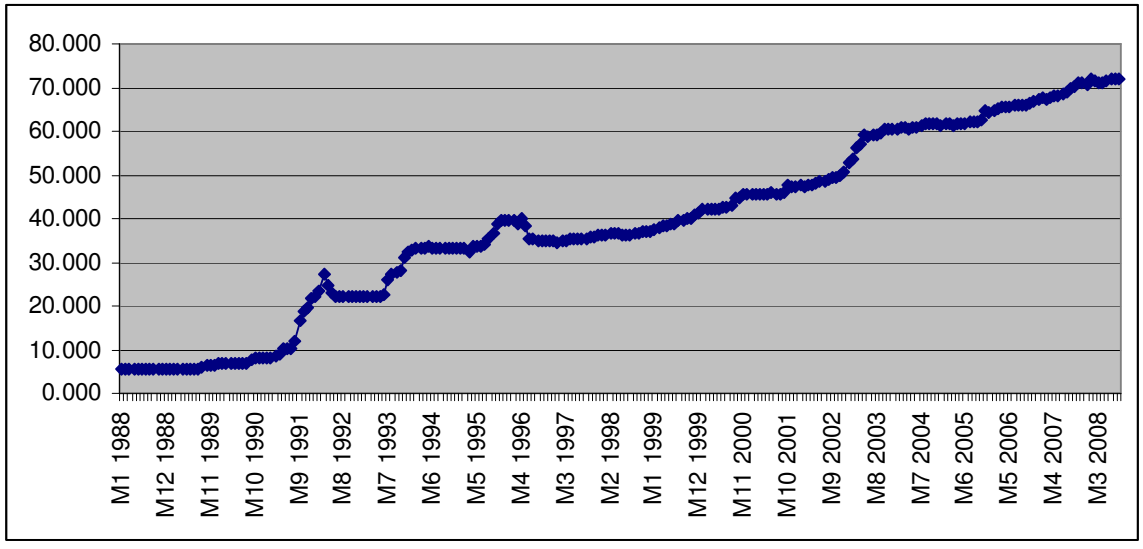
While the preset convergence criterion for debt service (i.e. Debt as a ratio of the exports of goods and services) for CARICOM member countries was 15 per cent, in the 1990s the actual debt service ratio for Guyana was above this level, reaching as high as 23 per cent in 1998. As a

ratio of GDP, external debt was three to five times GDP between 1991-1995 and twice time GDP between 1996 to 1998, before sinking to under twice time of GDP. After benefiting from the HIPC (Heavily Indebted Poor Countries) relief program, the foreign exchange market showed some stability so that the exchange rate stabilised with small fluctuations somewhere within the decadal level of G$200 to G$209 decade since September 2004.

A few observations can be made here from the Guyanese experience. The evidence suggested that under pressures of 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, an examination of Figure 7 showed that the exchange rate depreciated almost at a constant trend rate over the period of the study. Jamaica dabbled with various exchange rate regimes since 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 J$ 6.5 to US$ 1.00 However, the rate became overvalued so that by September 1991 under the prompting of the international financial institutions, exchange rate controls were abolished and the foreign exchange market was deregulated. The depreciation of the Jamaica exchange rate occurred as Jamaica struggled with high debt overhang, high fiscal imbalances and depressed foreign exchange earnings. Thus, Jamaica no longer committed itself to a fixed exchange rate at this point.

Figure 7 Jamaica Exchange Rate



Source: Graph constructed from IFS online Data base

Table 9 Jamaica exchange rate in Decadal Intervals

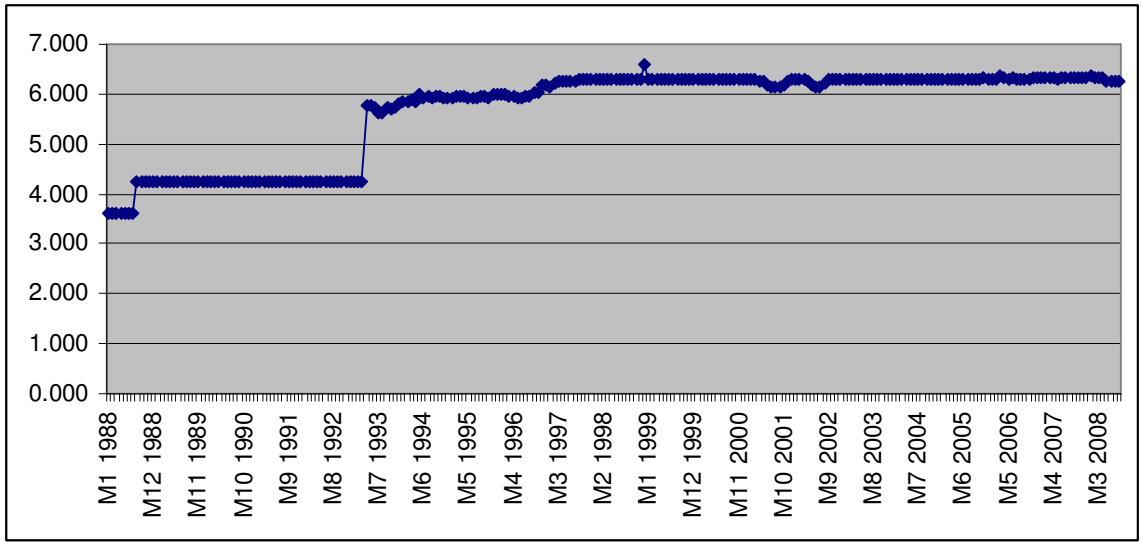
August 1991	December 1991	November 1993	October 1999	December 2002	October 2003	September 2007	December 2008
11.95	21.49	30.88	40.08	50.76	60.26	70.27	80.15

Source: Data extracted from the IFS online database.

Table 10 captures chronological movement of the Jamaica 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 6 years for the period November 1993 to October 1999. Otherwise, the exchange rate spent relatively short period within decadal banks.

In the case of Trinidad and Tobago, a visual inspection of Figure 8 suggested that the rate moved in a step like manner at the beginning of the period. Given macroeconomic difficulties, the government valued the rate from TT$3.6 in January, 1988 to TT$4.25 in August of the same year. That country maintained a hard peg against the US dollar 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 of the same year before it eventually depreciated to TT$6.3 by December of 1997 from where it oscillating around TT$6.3 to one US dollar. The stability of the exchange rate can be attributed to the sizable inflow of foreign exchange reserves and low debt service requirements, two factors that were not simultaneously present in the Guyana and Jamaica situations.

Figure 8 Trinidad and Tobago Exchange Rate



Source: Graph constructed from IFS online Data base

4.3.b 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 industrialized 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 maintaining 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 of the exchange rate to continuously depreciate once there is not simultaneously sufficient foreign exchange inflows, low debt commitments and an orderly adjustment of markets. Thus, the Guyanese situation was triggered principally by their 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 the international markets. This leads to pressures to raise salaries as locals are priced out of the international markets. As a result, continuous devaluations 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, increasing proportions of the national budget 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 that 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 fester a loss of confidence in the national currency thus 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 thus carrying up its price in terms of domestic currency and as a result further rounds of depreciation ensues.

In addition, depreciations encourage dollarization 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, locals with fixed salaries can find themselves priced out of the market. As a result the monetary authorities face an uphill battle as to how to break this cycle and restore confidence in the 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 that country 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.

5.0 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 were located in Table 12. It must be borne in mind though that the success of the managed exchange rate hinges on the successful development of the 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 the monetary frameworks were largely dependent on the foreign exchange inflows accruing to the various territories. These factors may have therefore been important considerations to the choice of monetary frameworks implemented by countries.

Table 10 Qualitative Benefit cost of exchange rate framework: Caribbean Experience

Fixed exchange peg		Managed exchange rate	
Advantage	Cost	Advantage	Cost
Low inflation	Increase in credit 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 cost 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 Leads to dollarization.
	Loss of monetary independence.		International credit rating agencies tend to downgrade and cause instability in the foreign exchange market.
	Difficult to be sustained where there is integration of international capital markets.		More meetings required to fine tune monetary policy.
			Speculatative activites tend to lead to increased foreign exchange required to defend the rate

None of the frameworks provided 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 tendency for speculation against the rate would have evaporated. Thus the territories which maintained the fixed exchange rate for the past thirty years seems to incur less speculative activities against their rates.

6.0 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.

From the analysis a few key principles emerged. First, exchange rates for managed floating regimes were not volatile, but trends in only one direction – it depreciates over time. Second, countries with fixed exchange rates exhibited lower inflation than those with managed floats. Third, countries with fixed exchange rates exhibit lower lending rates. Fourth, intermediation spreads were positively correlated with lending rates regardless of exchange rate regime. Fifth, higher fiscal deficits were correlated with higher debt and higher economic growth for fixed exchange regimes. This is in contrast to managed floating exchange regimes where higher fiscal balances are correlated with lower economic growth. Sixth, growth in credit tends to lead to external current account deficits. Seventh, 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. Nevertheless, this two relied on the attainment of adequate currency inflows to bring about stability in the exchange rate.

Bibliography

Alexander, William E., Tomas J. T. Baliño and Charles Enoch (1996). The Adoption of Indirect Instruments of Monetary Policy*, IMF Occasional Paper No. 126.*

Birchwood, Anthony. (2001). The appropriateness of monetary instruments employed by Caribbean Central Banks: A preliminary Investigation. Social and Economic Studies 50(3&4): 127-147.

Calvo, Guillermo A. and Carmen M. Reinhart (2002). Fear of Floating. Quarterly Journal of Economics Vol. 117 pp379-408.

Calvo, Guillermo and Federick S. Mishkin (2007). The Mirage of Exchange-Rate Regimes for Emerging Market Countries; in Monetary Policy Strategy edited by the Federick Mishkin. United States: London MIT Press: Pp465-485.

Caribbean Centre for Money and Finance (CCMF) (2008). Regional report on Economic Performance and Convergence. CCMF.

Frankel, Jeffrey (2000). Verifiability and the Vanishing Intermediate Exchange Rate Regime. NBER Working Paper 7901.

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 Monetary Policy Frameworks in a Global Context, Edited by Lavan Mahadeva and Gabriel Sterne. 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 Monetary Policy Frameworks in a Global Context, Edited by Lavan Mahadeva and Gabriel Sterne. Published by London, Routledge. Pp 3-17

Laurens, J. Bernard et al. (2005). Monetary Policy Implementation at Different Stages of Market Developments. Occasional Paper 244. IMF Staff Team.

McNees, Stephen K (1987). "Prospective Nominal GNP Targeting: An Alternative Framework for Monetary Policy;' *NewEngland* Economic *Review* (September/October), pp. 3-9.

Mishkin, Federick (2007). The Dangers of Exchange-Rate Pegging in Emerging Market Countries; in Monetary Policy Strategy by the author: United States: MIT Press. pp445-463.

Nicholls, Shelton, Anthony Birchwood, Phillip Colthrust and Earl Boodoo (2000). The State of and Prospects for the Deepening and Widening of Caribbean Integratgion. World Economy, VOl 23(9): 1161-1194.

Obstfeld, Maurice and Kenneth Rogoff (1995). The Mirage of Fixed Exchange Rates. NBER Working Paper 5191.

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

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

	Bahamas, The	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

	Bahamas, The	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 FOREX						√	√

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			
	Bahamas, the	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 CARICOM Report on Economic Performance and Convergence 2007.

Table A4 11 Macroeconomic performance of selected economies

	Fixed Exchange Rate Framework					Managed Exchange Rate Framework			
	Bahamas, The	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 over, 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 CARICOM Report on Economic Performance and Convergence 2007

Appendix B

Implications of the 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. TAs 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 induces changes in k.

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

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

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

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.

$$NDA \equiv f(CC, cbr) = f(liquidity = f(\omega)) \quad (5)$$

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 instrument 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 (gMB^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 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 to 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 signals changes in the monetary stance of the central bank.