Exchange Rate Regimes in the Caribbean

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Executive Summary

This document analyses exchange rate regimes in the Caribbean subregion. Caribbean exchange rate regimes are typified into hard and soft pegs. Hard pegs refer to those arrangements that maintain a constant value of the domestic currency in terms of the currency of a major trading partner. The Organisation of Eastern Caribbean States (OECS) economies established a monetary union in 1983. The Bahamas, Belize and Barbados also fixed the value of their domestic currency in relation to the United States dollar in the middle of the 1970s. Soft pegs are monetary arrangements characterized by a forcefully managed exchange rate. Three countries are included in this category, Guyana, Jamaica and Trinidad and Tobago.

In the Caribbean, the choice of exchange rate regime responded, initially, to a development model based on foreign direct investment flows, fiscal subsidies and an import policy destined to encourage domestic production of final goods. In the soft peg cases, the choice of exchange rate regime was also a consequence of the adoption of stabilization-cum-structural adjustment policies at the beginning of the 1990s, following deep macroeconomic disequilibria in the previous decade. Currently, there is no consensus in explanations of the choice of exchange rate regime in the Caribbean. Nevertheless, a rationale can be provided both in terms of size of the economies and also in terms of their production structure.

The choice between a hard and a soft peg determines the degree and applicability of exchange rate controls. Hard peg countries have stricter controls especially on capital and visible and invisible transactions than soft peg countries. Over time, however, Caribbean countries have been gradually suppressing exchange rate controls.

A descriptive analysis of exchange rate trends shows that variations in nominal exchange rates for the soft peg regimes have subsided over time and that there is a clear sense on convergence, at least in terms of standard deviations. The decline in variability has not contributed to dampen the appreciation of real effective exchange rates, which remain at significant levels for some economies and which affect, their external competitiveness, especially in the case of resource-based economies.

A comparison of macroeconomic indicators for three decades (the 1970s, 1980s and 1990s) classifying Caribbean economies into three groups (small economies with a hard peg, large economies with a hard peg, and economies a with soft peg) shows that performance is heterogeneous among categories and time periods chosen. Nonetheless, the comparison indicates that hard peg countries have a greater tendency to accumulate debt and are prone to fiscal disequilibria.

Determining the conditions under which exchange rate regimes can be conducive to stability and growth complements this comparative analysis. Building on previous literature on the subject, this document addresses this fundamental issue and tries to provide a tentative answer using a model suited for small open economies.

Introduction

This document analyses exchange rate regimes in the Caribbean subregion. The traditional approach found in the literature on the subject classifies Caribbean exchange rate regimes into two opposing poles, namely fixed and floating. This document confirms that all Caribbean exchange rate regimes are, in fact, closer to the former than to the latter regime. They are, in essence, pegged regimes.

Following the recent debates on this issue, Caribbean exchange rate regimes have been typified into hard and soft pegs. Hard pegs refer to those arrangements that explicitly acknowledge the existence of a currency union or that maintain a constant value of the domestic currency in terms of the currency of a major trading partner. The OECS economies established a monetary union in 1983. The Bahamas, Belize and Barbados also fixed the value of their domestic currency in relation to the United States dollar in the middle of the 1970s.

Soft pegs are monetary arrangements characterized by a forcefully managed exchange rate. Three countries are included in this category, Guyana, Jamaica and Trinidad and Tobago. The exchange rate regime of these countries is labeled in the literature and in official publications and statements as a float. However, frequent Central Bank interventions, through direct monetary policy instruments such as variations in required reserve ratios or variations in international net reserves and via indirect means such as open market operations, prevent the exchange rate from floating. In fact this managed regime has implicitly created an intra-band, within which the exchange rate 'floats,' that has markedly narrowed in the last decade.

In the Caribbean, the choice of exchange rate regime responded, initially, to a development model termed "industrialization by invitation." The model was based on foreign direct investment flows, fiscal subsidies and an import policy destined to encourage domestic production of final goods. In the soft peg cases, the choice of exchange rate regime was also a consequence of the adoption of stabilization-cum-structural adjustment policies at the beginning of the 1990s following deep macroeconomic disequilibria in the previous decade. Currently, there is no consensus to explain the choice of exchange rate regime in the Caribbean. Nevertheless, a rationale can be provided both in terms of size of the economies and also in terms of their production structure.

In smaller economies there are sound arguments that favor a hard over a soft peg. In these economies the exchange rate is the nominal anchor and thus the vehicle to control costs and prices. In addition, smaller economies have a negligible non-tradable sector, their non-traditional exports are situated in enclave zones and the development of their traditional exports is hampered by internal obstacles rather than by external constraints. Moreover, export supply is not elastic to price changes. In the case of smaller economies that specialize in services, and in particular tourism, the marked seasonality of economic activity is an additional argument in favor   of   hard   peg.

In the case of larger economies and, in particular, larger resource-oriented economies, the case for soft peg is stronger. Greater diversification in production and the positive response of the non-tradable sector to changes in the terms of trade provide a basis to justify switching expenditure policies through exchange rate adjustment.

The choice between a hard and a soft peg determines the degree and applicability of exchange rate controls. Hard peg countries have stricter controls especially on capital and visible and invisible transactions than soft peg countries. Over time, however, Caribbean countries have been gradually suppressing exchange rate controls.

A descriptive analysis of exchange rate trends shows that variations in nominal exchange rates for the soft peg regimes have subsided over time and that there is a clear sense of convergence at least in terms of standard deviations. The decline in variability has not lessened the appreciation of real effective exchange rates, which remain at significant levels, for some economies, and which affect their external competitiveness -especially in the case of resource-based economies.

A comparison of macroeconomic indicators for three decades (the 1970s, 1980s and 1990s) for a typification of economies into three groups (small economies with a hard peg, large economies with a hard peg, and economies with soft pegs) shows that performance is heterogeneous among categories and time periods chosen. Nonetheless, the comparison indicates that hard peg countries have a greater tendency to accumulate debt and are prone to fiscal disequilibria.

Identifying the conditions under which exchange rate regimes can be conducive to stability and growth can complement this comparative analysis. Sir Arthur Lewis first addressed this issue in the context of Caribbean economies. Lewis centered on the 'adequate' external conditions. Building on Lewis, this document returns to this fundamental issue and tries to provide a tentative answer using a model suited for small open economies.

The document is divided into six sections. The first section presents the current debate on exchange rate regimes. The second centers on the choice of exchange rate regime for Caribbean economies. Drawing on International Monetary Fund (IMF) documentation, the third section describes the exchange rate restrictions of Caribbean economies. While some restrictions may have been modified or suppressed, the rationale underlying the section is to provide an overview of exchange rate restrictions according to different regimes. The fourth section looks at nominal and real exchange rate trends in the Caribbean. The fifth section analyzes macroeconomic performance and volatility of Caribbean economies classifying economies according to size and exchange rate regime. The final section specifies a model comprising 20 equations for smaller economies. The aim is to delineate the conditions under which an exchange rate regime is conducive to macroeconomic stability.

1.   The debate on exchange rate regimes

Exchange rate regimes fall into two categories, fixed and floating exchange rate regimes. In fixed exchange rate regimes, governments set the value for the national currency in terms of a foreign currency. Maintaining a fixed value of one currency in terms of another requires intervention by the central bank and capital controls. Ultimately, the sustainability of a given fixed exchange rate will be governed by the market's perception of the state of the economy and by the orientation of economic policy. In the case of smaller economies with an underdeveloped capital market, the availability of international reserves plays a crucial role in maintaining a fixed exchange rate regime.

At the opposite end, in floating exchange regimes market forces determine the exchange rate. In turn, the exchange rate may be determined as any other 'normal' good. That is, it may be seen as the outcome of the interaction of flow supplies and demands. Alternatively, it may be determined like an asset in the sense that "its present value depends on expected future returns to holding assets valued in home or foreign money" (Eatwell and Taylor, 2000, p. 62).

In the first case, the focus of analysis is the trade account of the balance of payments. Capital flows are treated as 'exogenous shocks' (Hallwood and McDonald, 1994). This is easily illustrated through a theory known as the Purchasing Power Parity Theory, which in its absolute form states that a good must have the same price in different countries when corrected for the exchange rate. Letting P and P* denote the domestic and foreign price of a good or a composite good and e the spot exchange rate,

(1) $P = eP^*$

If $P > eP^*$, the price for the good in the domestic market exceeds that of the foreign market opening the possibility of making capital gains by buying in the foreign market and selling in the domestic market. This process will bring about the required equality by changes in e or in P and P.

Two other early approaches that viewed exchange rates as determined by 'normal' good supply and demand flow curves are the elasticities and the absorption approaches.

According to the first approach, a situation of excess supply over demand of foreign exchange leads to an appreciation of the exchange rate. This lowers the price of imports for the home country increasing the demand for foreign exchange. At the same time, an appreciation of the exchange rate increases the price of the home country exports in the foreign country. As a result the supply of foreign exchange declines. Provided stability conditions are satisfied, the balancing of supply and demand will ensure a tendency towards equilibrium in the foreign exchange market. Within this framework, capital inflows or outflows are viewed as external shocks without altering the mechanism by which the demand and supply for foreign exchange are brought into equilibrium.

An argument put forward to establish the conditions under which the foreign exchange market is stable (i.e., a change in the exchange rate is not cumulative) is the Marshall-Lerner condition. It states that the foreign exchange market will be stable if the sum of the export and import elasticities of national and foreign demand is greater than one. Another argument put forward in favor of stabilization is the 'stabilizing speculator' argument put forward by Milton Friedman (1953). According to Friedman (1953, p.175), speculation could be a destabilizing activity if speculators sold domestic currency when the price of the currency is low and bought domestic currency when its price is high. But this would be equivalent to saying that speculators do not maximize profits and in fact lose money.

The other approach dealing with the trade account is the absorption approach The starting point of the absorption approach is a simple national account identity stating that income (Y) equals consumption (C), investment (I), government expenditure (G), and exports (X) minus imports (M). That is,

(3) $Y = C + I + G + (X-M)$

Substracting consumption (C), investment (I) and government expenditure (G) from both sides of the identity, it obtains that the difference between income (Y) and expenditure (C+I+G) equals the trade balance result,

(4) $Y-(C+I+G) = X-M$

An excess of expenditure over income (Y<(C+I+G)) implies that the trade balance is in deficit (X-M<0). The recommended policies to correct the trade balance deficit include expenditure switching and expenditure reduction policies.

Neither the elasticities nor the absorption approach pay particular attention to capital flows. The adoption of market oriented policies, liberalization and technological innovation, changed the focus of the debate on exchange rate determination from the trade account to the capital account leading to the view of the exchange rate as an asset price.

An early exposition, by no means outdated, is that of Keynes (1923). According to Keynes, the premium on the exchange rate (i.e., the difference between the forward and the spot exchange rate) is equal to the difference in the rates of interest,

(5) $i -i^* = (f-s)/s$

Where,

i = home interest rate
i* = foreign interest rate
f = forward interest rate
s = spot interest rate

Other complementary and alternative approaches to asset exchange rate determination include the portfolio approach and the efficient market hypothesis. A main issue that the asset approach must tackle is to define the determinants of the exchange rate premium. In particular relevant aspects of the issue in the literature concern the role, if any, of 'fundamentals', the degree of efficiency of the foreign exchange rate market, the transmission mechanisms of an asset determined exchange rate to the trade account and to real variables.

In practice the divide between fixed and floating exchange rate regimes has been nebulous in part due to the announced intentions of the authorities ('de jure' exchange rate regimes) and the actual course of events ('de facto' exchange rate regimes).[1] Despite all the arguments defending the virtues of free exchange rate regimes countries have tended, with a few exceptions, to adhere to a variant of fixed exchange rate regimes (See Table 1).

Table 1
The fear of floating

Country	Period	Probability the monthly per cent change in nominal exchange rate falls within	
		+/-1 % band	+/-2.5% per cent band
United States $DM	Feb. 1973 - April 1999	26.8	58.7
Japan	Feb. 1973 - April 1999	33.8	61.2
Australia	Jan. 1984 - April 1999	28	70.3
Bolivia	Sept. 1985 – Dec. 1997	72.8	93.9
Canada	June 1970 - April 1999	68.2	93.6
India	March 1993 - April 1999	82.2	93.4
Kenya	Oct. 1993 - Dec. 1997	50	72.2
Mexico	Dec. 1994 - April 1999	34.6	63.5
New Zealand	March 1985 - April 1999	39.1	72.2
Nigeria	Oct. 1986 - March 1993	36.4	74.5
Norway	Dec. 1992 - Dec. 1994	79.2	95.8
Peru	Aug. 1990 - April 1999	45.2	71.4
Philippines	Jan. 1988 - April 1999	60.7	74.9
South Africa	Jan. 1983 - April 1999	32.8	66.2
Spain	Jan. 1984 - May 1989	57.8	93.8
Sweden	Nov. 1992 - April 1999	35.1	75.5
Uganda	Jan. 1992 - April 1999	52.9	77.9
Average a/		51.67	79.27
Standard deviation a/		17.83	11.41

a/ excludes the United States, Japan,
Source: Calvo and Reinhart (2000)

For developing economies, in particular smaller economies, this route has in fact been in complete accordance with the theory. For these economies the arguments defending pegged exchange rate regimes have prevailed over those put forward in favor of a floating exchange rate

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[1] Mundell's (1961) 'Optimum Currency Areas' concept refined the debate between fixed and floating exchange regimes by establishing criteria to determine the proper geographical area for fixed and floating exchange rates.

regime. In smaller economies, current account transactions dominate their external transactions. In addition, capital markets are incipient and not fully developed markets. Their thinness may aggravate rather than cushion exchange rate variations. Finally, the exchange can act as the nominal anchor of the economy.

In the case of these economies, the exchange rate regime debate in recent years has centered more precisely on the type of peg these economies should adopt, whether it should be a soft or a hard currency peg. The main characteristic of a hard peg is that it is bound by a rule tied to an internal policy goal, which is in general stable inflation. Hard pegs include currency boards and dollarization. Soft pegs comprise a variety of regimes and allow intervention by the authorities to maintain a certain exchange rate.[2]

Soft and hard peg exchange rate regimes have advantages and disadvantages. Soft pegs allow greater flexibility in exchange rates and economic management without incurring in greater exchange rate volatility or higher inflation. The main advantages of hard pegs include stable inflation and low or non-existant interest rate and exchange rate risks. In addition, as put forward by Mishkin and Savatano (2000), hard pegs "eliminate the time-inconsistency problem of monetary policy" and provide "simplicity and clarity, which makes them easily understood by the public." Securing these advantages in the long term requires a strict fiscal stance.

To the contrary, soft pegs may not provide the necessary credibility to sustain a given exchange rate regime (Obstfeld and Rogoff, 1995). The exchange rate can be sensitive to changes in expectations and be responsive to monetary and non-monetary factors and thus contribute to economic instability. In addition, a soft peg may not suppress the need for periodic readjustment, thus undermining the very foundation of the peg. As put by Obstfeld and Rogoff. Ibid, p.85:

> Governments often feel that if they could pull off a sudden realignment "just once" and thereby put fundamentals right, they would thereafter enjoy the fruits of a credibly fixed rate, including exchange-rate certainty and domestic discipline. They are wrong. The factors that led to the last realignment remain and contain the seeds of the next one. No one can say for sure when it will occur, but its likelihood reintroduces both exchange-rate uncertainty and inflationary pressures –the very evils a fixed rate was supposed to guard against.

For its part, hard pegs preclude the use of monetary policy and fiscal policy is completely pro-cyclical thus aggravating the fluctuations in the business cycle. More to the point, this type of regime severely limits the scope for Central Bank intervention in the form of the lender-of-last resort to mitigate the effects of liquidity shortages or financial distress in the economy. In short, as put by Eichengreen, 1996, p.184, hard pegs seek to sacrifice flexibility for credibility but in so doing, hard pegs may generate a rigidity within the system that is counterproductive to the continuation of the exchange rate regime.[3]

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[2] These regimes include a crawling exchange rate band, a crawling peg, an adjustable peg and a managed float.

[3] As put by Eichengreen, ibid. p.184: "In a sense of course, this is the reason to have the currency board, which reflects a decision to sacrifice flexibility for credibility. But the rigidity that is the currency board's strength is also its weakness. A financial crisis that brings down the banking system can incite opposition to the currency board

2.   Perspectives on exchange rate regimes in the Caribbean

Caribbean countries exchange regimes have not been an exception to the fixed exchange rate regime trend adopted by developing economies. Caribbean countries have opted either for hard pegs or soft pegs. Table 2 describes the exchange rate regimes divided into hard and soft pegs adopted by Caribbean economies between 1970 and 2002.

Table 2
Hard and soft pegs in the selected Caribbean countries
1970 – 2002

Countries	Time period	Soft Pegs	Hard pegs
OECS	1976-2002		United States dollar
Bahamas			United States dollar
Barbados	1966-July 1975 1975 – 2002		Sterling United States dollar
Belize	1976-2002		United States dollar
Guyana	1970-1975 1975-1984 1984	 United States dollar	Sterling United States dollar
Jamaica	1971 1984	 United States dollar	United States dollar
Trinidad and Tobago	1975-1993 1993-2002	 United States dollar	United States dollar

Source: Worrell (1977)

As Table 3 shows as a general stylised fact, mirroring the flexible-fixed exchange rate regime debate between bigger industrialised and developing economies, the smaller economies of the region have opted for hard pegs. The bigger economies of the region have fluctuated over time between soft and hard pegs. Barbados, Bahamas and Belize have hard pegs while Guyana, Jamaica, Suriname and Trinidad and Tobago have opted for soft pegs.

The choice of exchange rate regime was a direct consequence of the development model adopted by Caribbean economies following their political independence. The development model had four main features; the attraction of capital flows, fiscal incentives, a protectionist bent and the development of exports to the industrialised world. Arthur Lewis (1950) first formulated the main elements of this development model.

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itself. Anticipating this, the government may abandon its currency board in fear that the banking system and economic activity are threatened."

Lewis saw the need for industrialisation as a response to the existence of surplus labor in agriculture. Surplus labor was measured by the "low proportion of women gainfully employed and the growth of unproductive jobs (p.828)." Lewis thought that industrialisation provided the means to absorb the excess labour and improve the agricultural sector. As he put it (p. 832):

> There is no choice to be made between industry and agriculture. The islands need as large an agriculture as possible, and, if they could even get more people into agriculture, without reducing output per head, then so much the better. But, even, when they are employing in agriculture the maximum number that agriculture will absorb at a reasonable standard of living, there still will be a large surplus of labour, and even the greatest expansion of industry which is conceivable within the next twenty years will not create a labour shortage in agriculture. It is not the case that agriculture cannot continue to develop if industry is developed. Exactly the opposite is true: agriculture cannot be put on to a basis where it will yield a reasonable standard of living unless new jobs are created off the land.

Due to the small size of the Caribbean markets, Lewis thought that industrialization could generate the demand necessary to absorb surplus labor if manufacturing output was oriented to both the domestic and export market and if Caribbean countries formed a Customs Union. The strategy for industrialization was one of 'industrialization by invitation.'. That is, " ...what should rather be done is to try to persuade existing suppliers, with established distribution channels in Latin America, to open factories in the islands to supply their trade."(Ibid., p. 862). The main incentive to attract foreign capital to he Caribbean was lower labor costs. Lewis sought to supplement this by a policy of fiscal incentives.

The protectionist side to this development model came at a later stage. In fact, Lewis, rather than arguing in favor of protection from imports made the case for export subsidies. As he put it (Ibid, p. 886): "Most of the industries will have to export, and if they are to do this, they must be able to compete on the world market; and if they can compete there, they will not need protection in the domestic market."

Protection was an implicit component of the Chaguaramas Treaty. The need for protection responded simply to the necessity to develop.

Stable exchange rates were a crucial component of this model. Fluctuating exchange rates could alter the cost structure and thus the incentives for the attraction of foreign direct investment. In this sense the effects of changes in exchange rates could neutralise, partly if not totally, the desired consequences of fiscal incentives. Fluctuating exchange rates could alter the cost structure by changing the price in local currency of imported raw materials and capital equipment. It would also force firms to widen the gap between prices and costs as firms need a greater margin "to cover unexpected increases in debt service and/or unexpected shortfalls in foreign exchange earnings." (Worrell, 1987, p.44). Moreover fluctuating exchange rates may alter the investment plans by producing a change from long-term to short-term investment projects (Worrell, ibid, p.47).

Finally, the Treaty of Chaguaramas specifically recommended that countries maintain stable exchange rates to "promote the smooth functioning of the 'Common Market' ." The devaluation of the Jamaican dollar in the 1980's illustrates the perils of altering the exchange rate within a regional agreement. Jamaica's manufacturing exports gained in competitiveness but at the expense of those of Trinidad and Tobago and Barbados. Both countries retaliated. Barbados floated its currency against the Jamaican Dollar and Trinidad and Tobago imposed import restrictions.

The industrialization model did not materialize although Caribbean countries maintained fiscal incentives, the need for foreign direct investment and regional integration as key features of their development strategy. In addition starting from the middle 1970's they became part along with other preferential trade arrangements with other developing countries.

These preferential trade arrangements (the Lomé Convention, the Cotonou agreement, CARIBCAN (1986), the Caribbean Basin Economic Recovery Act (1984) and the Caribbean Trade Partnership Act (2000)) allowed preferential access to developed countries markets for a wide range of products. Countries used these arrangements to secure access for their major export products, mainly agricultural products, which corresponded to their pattern of productive specialization.

Currently it is thus more accurate to explain, if not rationalize, the exchange rate regime choice in Caribbean in terms of their size and their production structure.

Several arguments favor the adoption of fixed exchange rate regimes in smaller economies of the Caribbean. Smaller economies such as those of the OECS are price takers and their price level depends on the foreign price level. Also, the majority of goods are imported and these do not have a domestic counterpart. That is, the non-tradable sector is by all measures not significant. This means that these countries do not exhibit the tradable, non-tradable dichotomy and thus exchange rate variations do not result in relative price changes.

In addition, the main export products depend on preferential access to foreign markets. These products refer mainly to agricultural products exported to Europe. Finally, the export products with a higher manufacturing or technological content produced in free trade zone areas, and thus their export performance, does not depend on exchange rate variations. In the cases of St. Lucia, St. Kitts and Nevis, and Grenada) the main export products to the United States are produced in free trade zones and are not affected by exchange rate movements.

Table 3
OECS economies
Specialization export patterns to the United States
Selected export products as a percentage of the total
1990 – 1999

Country	Year		
	1990	1995	1999
Anguilla	Special products (50%)	Footwear (39%)	Rum (61%)
Antigua and Barbuda	Sand (39%) Special products (12%)	Assembly for clock movements (35%) Special products (13%)	Sand (11%) Special products (30%)
Dominica	Printed matter (11%) Apparel (10%)	Soap (25%) Footwear (8%)	Cigars (38%)
Grenada	Parts for pumps (22%) Hats (18%)	Cocoa beans (38%)	Electrical connectors (57%)
Montserrat	Insulated ignition wiring (27%) TV sets (25%)	Parts (41%) Electrical connectors (32%)	Fixed capacitors (22%) Toys and models (21%)
St. Kitts and Nevis	Transformer parts (14%) Parts of motors (12%)	Electrical switches (43%)	Electrical switches (42%)
St. Lucia	Apparel (30%) Fixed resistors (7%)	Special products (26%) Apparel (18%)	Special products (20%) Television antenna (9%) Brasseries (9%)
St. Vincent and the Grenadines	Tennis rackets (30%) Rock lobster (11%)	Gold and platinium jewelry (31%) Apparel (24%)	Gold and platinum jewelry (78%)

Source: MAGIC (2001)

Their money transactions are carried out in foreign exchange. Free trade zone entrepreneurs use imported raw materials and sell in foreign markets. Their expenses are paid for in domestic currency include labor, energy and transport, which do not form the bulk of their costs.

In the case of exporters, which are not located in free trade zones, the main challenge has been to be able to provide the supply of export products to meet the quotas granted by industrialized countries and to ensure market access for their products. In other words, their concerns are centered on internal policy considerations rather than on exchange rate movements.

A related argument is that traditional products respond asymmetrically to price changes. The available empirical evidence shows that a decline in the international price of a commodity, translates into a decline in the terms of trade for that good, and is a rapid disincentive to the

expansion of exports. But price increases have not been conducive to increasing exports. An illustrative example is bananas.

Sugar follows a similar pattern. According to an early World Bank report (1988, p.11) on Caribbean export performance, sugar exports from the Caribbean Group for Cooperation in Development (CGCD) declined from 408 to 93 US million dollars between 1980 and 1987 as a result of the decrease in sugar quotas and prices. Worrel (1987, p.196) complements this analysis by stating: "St. Kitts provides the only Caribbean example of a notable supply response to rising export prices." Table 4 illustrates this point. The first two columns show the international price for sugar and bananas for 1985-2000. The last two columns show the share of CARICOM in the European market for bananas and the world market for sugar for 2000. The correlation coefficient between the international price of bananas and CARICOM's market share is –0.08. The correlation coefficient between the international price of sugar and CARICOM's market share is –0.75. Thus, in both cases there is, contrary to what might be expected, an inverse relationship between price and market share. In addition, in the case of bananas CARICOM' share relative to its main rivals dropped from 0.13% to 0.06%.

Table 4
International price of bananas and sugar and
CARICOM's market share in the banana and sugar market
1985 – 2000

	Bananas US cents/pound	Sugar US cents/pound	CARICOM's Market Share Bananas	CARICOM's Market Share Sugar
1985	17.15	4.05	12.94	5.2
1986	17.32	6.05	13.36	5.12
1987	17.11	6.76	14.23	4.94
1988	21.73	10.19	14.22	4.75
1989	24.8	12.81	14.28	4.32
1990	24.6	12.51	12.6	4.02
1991	25.46	8.98	11.65	4.24
1992	21.69	9.07	11.16	4.64
1993	20.1	10.02	10.09	4.69
1994	19.91	12.11	8.83	4.46
1995	20.03	13.28	7.61	4.06
1996	21.41	11.96	7.13	3.98
1997	22.25	11.4	6.92	3.94
1998	21.61	8.92	6.48	3.85
1999	19.39	6.27	6.38	3.79
2000	...	8.08	6.47	3.86

Note: '…' Denotes not available.
Source: IMF International Financial Statistics 1998-2001. CAN (2002).

Finally, there is also an institutional issue. For smaller economies fixed exchange rate regimes are simpler and less costly to administer than floating regimes. A floating exchange rate can alter a country´s fiscal performance by changing the value of interest rate payments on the foreign debt or the imports of foreign raw materials and capital equipment without a compensatory change in the revenue accounts. Also unless a clean float is adopted, this type of

regime needs continuous intervention either through interest rate changes or by using foreign exchange reserves. The former instrument can have significant direct and unwanted effects on commercial banks' balance sheets, the demand and supply of liquidity and output and employment. The latter instruments can also provoke changes in the same variables but through indirect channels such as sterilization operations.

Another way to rationalize the choice of exchange rate regime for Caribbean countries is in terms of the classification of service and resource-based economies.

In the case of service-based economies, namely economies oriented towards tourism, the choice of peg may respond to the fact that tourism is a highly seasonal activity in terms of expenditure. It is also subject to discontinuities in foreign direct investment patterns. Tourism projects are accompanied by increases in capital flows, which tend to subside and dry up following their completion. For these reasons foreign exchange earnings may be subject to fluctuations depending on the seasonality and stage of completion of tourism investment projects.

During the tourism low season foreign exchange flows will decline, causing a contraction in its supply. This will translate into an increase of the price of the foreign currency in terms of the domestic currency. Subsequently, as the holding of currency becomes more attractive, relative to that of the domestic currency, the demand for foreign currency will also rise, and its price will increase further. To the contrary during the tourism high season the abundance of foreign currency will provoke the opposite result.

Assuming that the authorities intervened in the foreign exchange market, the low season would be associated with a slowdown in economic activity and transactions and a decline in monetary aggregates. The decline in monetary aggregates would push up the interest rate structure with negative consequences for output and employment. The increase in capital inflows during the high season would cause monetary aggregates to expand and interest rates to decline stimulating the level of economic activity. Viewed from this perspective a managed floating exchange rate would exacerbate fluctuations in the economic cycle in a serviced-based economy.

In the case of resource-based economies, there are two arguments favouring the adoption of a managed float. First, resource based economies in the Caribbean tend to exhibit a higher degree of diversification in the composition of their GDP. Second, in resource based economies, changes in prices in the main export commodity are associated with the expansion and development of other sectors of economic activity. In the case of Trinidad and Tobago, for example, oil price booms have enhanced the growth and development of the non-tradable sector. Between 1963 and 1998, the evolution in the terms of trade of Trinidad and Tobago underwent three distinct phases. The first one covers the period 1968-1980 and is associated with the oil boom. The oil shocks of 1973 and 1979 increased the price of crude oil improving the terms of trade for Trinidad and Tobago. The net barter terms of trade increased from 154 in 1973 to 223 in 1981 (Central Bank of Trinidad and Tobago, 1998). The favorable movement of the terms of trade strengthened the position of the oil-producing sector in GDP. In 1970 the petroleum industry represented 21% of GDP, 46% in 1975 following the first oil shock and 36% in 1981 following the second oil shock. At the same time these events led to a favorable position in the

balance of payments. The value of exports increased and so did its volume, due to the fact that petroleum has a low price elasticity of demand. In addition, the profitability of petroleum attracted capital inflows. These factors facilitated the accumulation of international reserves. Finally, the oil-price hike led to an increase in the government's revenue.

When prices collapsed in 1981-1988, the value of exports declined (due a decrease in price and quantity), capital inflows exhibited a downward tendency and government revenues were also negatively affected. As a result reserves declined. The economy was faced with a balance-of-payments and fiscal constraints. Both effects had a negative impact on growth that was compounded by the linkage between oil and domestic investment (See Table 6).

The drain in foreign exchange reserves forced the government to adopt a stabilization package.[4] This is the start of the third period. The aims of the program included a devaluation (the TT dollar was devalued from TT$3.60 to TT$4.25 per dollar on August 1988) and monetary and fiscal restraint and the management of liquidity through direct instruments, i.e., high reserve requirements. The program established ceilings on the net domestic assets of the central bank. The program contemplated the decrease in the budget deficit from 7% of GDP in 1988 to 4% in 1989 and 1% in 1991. The deficit was reduced first by reducing capital expenditures and then by the decline in current expenditures (i.e., the wage bill). Public wages and employment were reduced.[5] On the revenue side public assets were sold to the private sector and tariffs were increased.[6] The tax system was simplified, and the value-added tax was introduced to replace an array of different taxes.[7] Finally, credit ceilings were imposed on the borrowing requirements of the public sector.

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[4] In practice the government adopted two successive stabilization packages in 1989 and 1990. For expository purposes this section refers to the stabilization package, which encompasses both 1989 and 1990 programmes.
[5] Public wages were reduced by 10% (Howard, 1992 and Hilaire, 2000).
[6] According to Howard, ibid, p. 77: "transfers to public utilities, State enterprises, and statutory bodies was reduced by 0.5% of GDP…state enterprises were reduced by 1 100 employed in 1989…as it was estimated that the would be a further reduction of 3 200 employees in 1990."
[7] The value-added tax rate was set at 15%.

Table 5
Trinidad and Tobago
Basic macroeconomic indicators

	Initial conditions 1987	After a decade 2000
GDP growth a/	-1.1	3.6
Unemployment	22.3	12.8
Inflation	13.4	3.6
Money growth	3.5	11.6
Fiscal deficit	-7.1	1.2
Current account balance	-4.7	1.0
External debt	47.5	21
International reserves b/	7.7	5.8
Rate of interest c/	0.6	12.9

Source: Central Bank of Trinidad and Tobago (2002); ECLAC (2002); Hilaire (2000).
Note: a/ refers to the periods 1980-1987 and 1991-2000. b/ expressed in months of imports.
c/ real rate of interest

Trade liberalization measures included the decrease in the common external tariff rates and reduction in import restrictions. As in the case of Guyana temporary imports surcharges were also applied. Export diversification measures were encouraged to widen the productive base and develop non-oil exports. In line with this framework the exchange rate was progressively liberalized to reach a floating exchange rate regime and the capital account of the balance of payments was liberalized in 1993.

Figure 2 and Table 6 show the terms of trade and the proportion of the non-tradable sector in GDP normalized for 1970-1998. As is clear from the figure and from table 6 below the increase in the terms of trade, largely due to the oil boom was accompanied by an increase in the share of non-tradables in GDP. The non-tradable sector increased from 62% of GDP to 68% during the oil boom and to 71% during the economic downturn. During the period of adjustment, the sector suffered a slight contraction to 67%.

Table 6
Terms of trade, share of petroleum and the non-tradable sector in GDP

	Before the oil boom 1970-1972	The oil boom 1973-1980	The Dutch disease 1980-1988	The adjustment period 1988-1998
Petroleum sector	8.9	8.8	20	18
Non-tradable sector	63.6	68.6	71	67
Terms of trade	171.0	176	162.0	106.9

Source: ECLAC (2002) and Central Bank of Trinidad and Tobago (1998)

3.   Exchange rate regimes in the Caribbean: the legal framework

The legal framework of exchange rate regimes in the Caribbean is described within the hard-soft peg exchange regime classification adopted in this document.

Within the hard peg category some Caribbean countries have explicitly opted for a Currency Union. This is the case of the small economies of the Caribbean (Antigua and Barbuda, Dominica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines, Anguilla and Montserrat), following the formation of the Eastern Caribbean Currency Union and the parallel creation of the Eastern Caribbean Central Bank (1983). Others, such as The Bahamas, Barbados and Belize have pegged their exchange rate to the United States Dollar. The Bahamian dollar is fixed at a parity with the United States dollar and the currencies of Barbados and Belize are fixed to the United States dollar at a rate of 2 to 1. The soft peg category includes Guyana, Jamaica, and Trinidad and Tobago. Due to the fact that Suriname and The Bahamas, despite belonging to the hard peg category, have in practice implemented a dual exchange rate system, their legal frameworks are described jointly under the heading "dual and multiple exchange rate regimes."

3.1.   Members of the Organization of Eastern Caribbean States

The Eastern Caribbean Currency Union (ECCU) has historical antecedents in the Eastern Caribbean Currency Authority (ECCA) a relic of the British Caribbean Currency Board. The British Caribbean Currency Board was an innately conservative monetary mechanism. The local currency (the British Caribbean Currency Board dollar) in the Caribbean was pegged to sterling, with the exception of the Bahamas, and was backed by 100% sterling. Moreover, even though the regional currency boards were allowed restricted holdings of domestic government securities, this was rarely done. In reality, the currency boards performed as rudimentary functions such as issuing currency, exchanging banking sector deposits for currency and acting as clearing houses for trade and commercial transactions.

Following in the footsteps of the larger English-speaking Caribbean countries, including Jamaica and Barbados, seven Organization of Eastern Caribbean States (OECS) countries formed the Eastern Caribbean Central Bank (ECCB) in 1983. The statutory provisions of the ECCB endowed it with full central bank functions, including being the sole issuer of currency in the currency union marking a critical departure if only in the provisions from the modus operandi of the ECCA.

As outlined in its Central Bank Agreement Act (1983) the Eastern Caribbean Central Bank has four purposes. These are: i) to regulate the availability of money and credit; ii) to promote and maintain monetary stability; iii) to promote credit and exchange conditions and a sound financial structure conducive to the balanced growth and development of the economies of the participating countries and iv) to actively promote, through means consistent with its other objectives, the economic development of the member countries. Moreover, the bank manages a common pool of foreign exchange reserves for the member countries. Member countries surrender to this common reserve pool. The reserve pooling arrangement has an important check and balance in that no individual country reserves are allocated, but reserves are imputed to individual member countries based on the balance of domestic credit and reserve money.

The ECCB targets the exchange rate fixed at $2.70 Eastern Caribbean Dollars per one US$ dollar. To ensure stability of the currency, the ECCB is mandated to maintain foreign exchange reserves at not less than 60 per cent of demand liabilities. In this sense, the ECCB is a quasi-currency board. It is not a classical currency board since domestic currency is not 100% backed by foreign reserves. The bank manages a common pool of foreign exchange reserves for the member countries. Member countries surrender to this common reserve pool. The reserve pooling arrangement has an important check and balance in that no individual country reserves are allocated, but reserves are imputed to individual member countries based on the balance of domestic credit and reserve money. [8]

The exchange regime in OECS economies is backed by a series of regulations on imports, invisible transactions and transfers and capital regulations. OECS economies have in the majority of cases implemented Phase IV of the common external tariff (CET). The exceptions are Antigua and Barbuda, Montserrat and St. Kitts and Nevis.

Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Vincent and the Grenadines, and St. Lucia require licenses for certain commodity imports from non-CARICOM

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[8] The Agreement stipulates limits to lending to member governments. It allows the bank to provide the following lines of credit to member governments: a) temporary advances; b) holdings of government treasury bills; c) holdings of securities other than treasury bills; d) holdings of corporate bonds of government corporations; and e) assumption of governments' 'special deposit' liabilities to financial institutions.

Temporary advances to government, designed to smooth seasonal credit demand, are limited to 5 per cent of average annual recurrent revenue over the preceding three years. To guarantee prudence, these advances must be amortized over a period not exceeding one year. ECCB holdings of treasury bills must not exceed 10 per cent of estimated government recurrent revenue. Meanwhile, holdings of government securities of 15 -year maturity must not exceed 15 per cent of currency in circulation and demand liabilities. Holdings of corporate bonds of ten-year duration are limited to 2 1/2 per cent of average annual government revenue. The ECCB also services governments' special deposit loans to financial institutions. The loan balance was EC $30.8 million at the end of 1998.

countries. In addition, Dominica requires import licenses on selected imports from the more developed countries of CARICOM and on goods originating outside the OECS countries and Belize. Grenada also requires licenses for a given set of products imported from CARICOM. St. Lucia distinguished between three levels of licenses for goods originating outside the region, goods from CARICOM countries and goods imported from non-OECS countries.

Apart from licenses OECS countries impose additional charges on imports. These are specific duties and customs service charges. Dominica, Grenada, St. Lucia and St. Vincent and the Grenadines apply custom service charges (1%, 5%, 4% and 2.5% respectively). Grenada applies a general consumption tax with three broad rates on imports (10%, 15%, and 25%).[9] Three additional rates of 50%, 55% and 75% are levied on items such as cars (new and foreign used cars) and cigarettes. St. Vincent and the Grenadines subject imports to a consumption tax ranging from 5% to 50%. CARICOM country imports do not pay tariffs but are subject to the payment of the consumption tax. St. Lucia also subjects imports to a consumption tax.

Exports are also subject to licenses and in one or two cases to the payment of taxes or levies (Dominica charges a levy on banana exports. St. Lucia charges a small fee for the re-export of petroleum. St. Kitts and Nevis charges export duties on a few exports). Export proceeds are subject to repatriation for Grenada, Dominica, St. Kitts and Nevis and St. Vincent and the Grenadines.

Payments for invisible transactions require the approval of the respective ministries of finance above the limit of 250 000 Eastern Caribbean Dollars. Investment related payments, payments for travel, personal payments, foreign workers wages and other payments are also subject to prior approval, quantitative limits and in some cases indicative limits. In the case of proceeds from invisible transactions, the majority of countries impose repatriation requirements without quantitative limits (Dominica, St. Kitts and Nevis, St. Vincent and the Grenadines, Grenada). St. Lucia requires a repatriation requirement above proceeds of up to 250 000 Eastern Caribbean Dollars.

Regarding capital transactions, transfers exceeding 250 000 Eastern Caribbean Dollars are subject to the prior approval of the respective ministries of finance. The exception is Antigua and Barbuda, which has put into legislation only a few capital controls. For the rest of the economies capital transactions are prevalent for transactions on capital market securities, money market instruments and collective instrument securities.

Monetary policy is shaped by the need to maintain the exchange rate peg at 2.70 Eastern Caribbean Dollars per United States Dollar. The degree to which authorities are able to honor this commitment depends on the backing ratio and the foreign reserve asset ratio of the Eastern Caribbean Central Bank.

The backing ratio equals the ratio of external assets over demand liabilities. A ratio of 1(less than one), means that the growth in demand liabilities (is greater) equals the growth in external assets. In other words, demand liabilities are fully backed and thus can be exchanged at

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[9] The 25% is applied to capital equipment imports.

the given exchange rate for external assets. From 1985 to 1999 the backing ratio increased from 0.60 to 0.96 indicating almost the full convertibility of its currency.

The foreign asset ratio (defined as the ratio of the ECCB external assets less liabilities to international institutions and central banks to demand liabilities minus liabilities to international institutions and central banks) has also steadily increased for the said period from 0.69 to 0.96 (See Table 7, below). [10]

The strong reserve backing has allowed the ECCB to maintain an elastic currency responsive to changes in the demand for liquidity. The supply of money is demand driven and necessarily equal to it. The authorities ensure the equality of money demanded and money supplied by varying the level of international reserves. In turn, international reserves are mainly determined by foreign security holdings of the ECCB. Foreign security holdings represented 41% of total external assets in 1985 and increased to 69% in 1999. Also, the correlation coefficient between the change of growth in security holdings and external assets is 0.75% for the period under consideration.

As in a typical currency board, once the exchange rate is fixed and the money base responds to demand, there is no reason for the authorities to seek to control any monetary aggregate. There is in principle no active role for the monetary authorities. Since its inception, the ECCB has rarely made use of the monetary instruments at its disposal. [11] It has maintained the rate it charges on advances to the government (6.5%), and has decreased the discount rate it charges on its loans (a facility in fact rarely used by commercial banks) from 10% to 8%. More important, its main announced policy tool, commercial banks reserve ratio, has remained constant at 6%. [12] As well, commercial banks have also followed a passive monetary policy. The interbank interest rate and the lending and deposit interest rates of commercial banks have remained practically unchanged. [13] In 1991, the weighted loan rate for the ECCB area was 11.8%

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[10] The commercial bank cover ratio has oscillated between 15% and 20% of demand liabilities. While this ratio may seem low, currency board rules do not require the banking system to maintain a high cover ratio on the issue of its domestic currency.

[11] The ECCB Agreement stipulates that the Bank may use discount rates and rediscount rates, variable rates on different classes of transactions, determine priority areas for credit distribution and impose reserve requirements, including marginal required reserves by deposit category.

[12] The Central Bank also allocates foreign reserves to member countries based on a mechanism of imputed reserves. Imputed reserves are calculated for a given country according to the formula:

(1) NFA = RM − NDA

Where, NFA is net foreign assets of the banking system, RM is reserve money, and NDA, the net domestic assets of the given country. Given the limits on government borrowing from the central bank, countries can only access reserves once they have domestic currency to surrender. This prevents a domestic currency overhang that could undermine the fixed exchange rate.

[13] The inter-bank market was created in 1986 to smooth liquidity demand and supply in the banking system. Commercial banks with excess reserves at the central bank can make loans of up to 30 days to those with a shortage of reserves, to facilitate liquidity management. Previously, the loans were guaranteed by the central bank, but these guarantees have been eliminated to limit its contingent liability. In keeping with the move towards a freer market, lending rates are free to vary and banks can better assess risk through a bulletin board with the average costs of funds listed.

and 7.2% in nominal and real terms. In 1998, both stood at 11.5% and 8.2% respectively (See Table 1 below).

Table 7
The Eastern Caribbean Currency Union Monetary Indicators
1985 – 1999
Averages

	1985-1987	1988-1995	1996-1999
Real and nominal GDP			
Rate of growth of nominal GDP	15.57	7.77	5.93
Rate of growth of real GDP	7.67	3.83	3.30
Central Bank			
ECCB backing ratio	0.72	0.78	0.98
ECCB foreign reserve asset ratio	0.72	0.89	0.98
ECCB discount rate	.....	9.40	8.0
Base money growth	18.72	5.50	6.36
Interest rate on advances to government	.....	6.5	6.50
Commercial Banks			
Reserve ratio	6	6	6
Ratio of reserves to loans	18.72	10.54	7.18
Interbank market (lending)	.....	5.0	5.0
Interbank market (borrowing)	.....	5.3	5.3
Rate of growth of commercial bank loans	13.04	13.67	11.13
Time deposits over total bank deposits	44.22	39.43	38.22
Savings deposits over total bank deposits	38.59	43.04	44.61
System-wide monetary indicators			
Condensed coverage ratio of M1	131.5	109.6	78.4
Condensed coverage ratio of M2	34.8	27.1	17.4
Rate of growth of M1	20.49	11.12	7.14
Rate of growth of M2	19.84	12.66	8.74
M1 Money multiplier	0.73	1.02	1.17
M2 Money multiplier	25.76	4.18	5.27
M1 Real money supply	0.7	1.08	1.40
M2 Real money supply	0.64	1.06	1.52

Source: Eastern Caribbean Central Bank (2001)

Since interest rates are constant, banks must also satisfy, increases in the demand for credit. A change in the aggregate demand for credit by businesses or individuals (an change in the asset side of commercial banks balance sheets) must be accompanied by a change in the demand for money of the same agents (a change in the liabilities side of banks balance sheets). A mismatch between the demand for money (deposits) and the demand for credit (loans) could expose commercial banks balance sheets.

On the one hand, the demand for credit is determined by structural change, expectations of the state of the economy, individuals' consumption patterns and the extent to which business can finance their planned activity with retaining earnings. The most important sectors in the contribution to GDP are also the sectors that have the highest demand for credit (construction, tourism and distributive trades). On the other hand, the demand for money is determined by the possibility of holding alternative assets and rates of interest.

The existence of a limited capital market in the ECCB and capital controls jointly with stable transaction habits, lead individuals to funnel their monetary holdings into time and savings deposits at commercial banks. Thus the equality between the demand for credit and the demand for deposits is ultimately brought about due to the lack of financial market development.

It is the existence of a restrictive choice for portfolio investment options deriving from an underdeveloped capital market and the continuous intervention and monitoring of international reserves, which have allowed the ECCB to maintain a "neutral" policy stance and the smooth functioning of its exchange rate arrangement. Thus overall and contrary to the current view on currency boards (See, Schuler, 2000) market mechanisms have not determined the conduct of monetary policy in the ECCB currency area.

3.2   Pegged exchange rate regimes in the Caribbean: The cases of Barbados and Belize

Barbados currency (the Barbadian dollar) was pegged to sterling from 1968 to 1975. After that year, the Barbadian dollar was pegged to the United States dollar at a rate of two Barbadian Dollars per one United States dollar.[14]

Barbados applies exchange rate controls administered by the Central Bank of Barbados (CBB) to all countries with the exception of those of the OECS. The CBB delegates to authorized dealers the authority to approve normal import payments. Commercial banks are delegated the authority to approve current account transactions ranging from 7 500 to 250 000 Barbadian dollars. The Ministry of Commerce, Consumer Affairs and Business Development administers the trade controls.

Barbados requires licenses for selected import products. Within this category some products are freely imported while others are subject to seasonal restrictions. The tax base for imports comprises customs duties, which are in accordance with the Common External Tariff, a

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[14] The exchange rate parities include a commission charges of 0.125% for buying and 1.75% for selling againts the United States dollar and 0.1875% and 1.8125% selling agaist the Canadian dollar, the Euro and the Pound Sterling.

VAT of 15% and in some cases a surtax of 75%. Export proceeds are subject to repatriation requirements and licenses are required for some agricultural products.

Controls for invisible transactions and current transfers include limits of 250 000 Barbadian dollars for freight and insurance, unloading and storage costs; limits of 50 000 Barbadian dollars for individual interest payments on investment related transactions and a limit of 250 000 Barbadian dollars for profits and dividends. Exempt from the last set of regulations are the companies from the CARICOM region that are listed on the securities exchange of Barbados; these are allowed a limit of 3 million Barbadian dollars. As well, Barbados establishes limits on payments for travel (7 500 per person per calendar year for private travelling and BD$ 750 a day for business travel and up to BD$50 000 per person per calendar year); for personal expenses; foreign worker's wages, credit card use among other payments. The proceeds from invisible transactions and current transfers are subject to repatriation requirements. All foreign currency earnings may be sold only to authorized dealers.

Capital transactions are also subject to strict restrictions. In the case of capital market securities, money market instruments, and collective investment securities, the purchase of shares or securities by residents requires exchange control approval. In addition, the certificate of the title must be lodged within an authorized depository institution in Barbados. The earnings on these securities must be repatriated and surrendered to an authorized dealer. Residents are allowed to sell shares and securities but exchange control approval is required.

In the same vein, all credit operations and direct investment require the approval of the Central Bank of Barbados and exchange control approval respectively.

Regarding controls on real estate transactions, purchases abroad by residents require exchange control approval. Non residents are permitted to acquire real estate for private purposes with foreign currency finance but are not allowed to use domestic sources of finance. Non-residents can also engage in real estate sales transactions domestically and repatriate their proceeds provided these are equivalent to the amount brought into the country. Realized capital gains above this amount can be repatriated on the basis of a calculated annual rate of return on the original investment. The amounts exceeding this sum have a quantitative limit of BD $30 000.

The legislation also contemplates provisions specific to commercial banks and credit institutions. These form part of the prudential regulatory norms to avoid unwarranted financial exposure of the banking system. Authorized dealers can borrow abroad to finance their domestic operations and invest in local securities with the approval of the Central Bank. They can also assume short-term liability positions in foreign currencies to finance trade and non-trade transactions. Authorized dealers can lend to non-residents but require exchange control permission. Finally, authorized dealers are not subject to reserve or liquid asset requirements.

Belize has had a pegged exchange rate system at the rate of BZ$1 to US$0.5 since 1977. The selling of domestic currency to acquire foreign currency is subject to a stamp duty of 1.25%. All exchange controls are administered by the Central Bank. The Central Bank also has the function of supervising (auditing and keeping records) of all foreign exchange transactions.

Import licenses are imposed in part to protect the domestic industry. Import tariffs range from 5% to 25%. Selected products are subject to revenue replacement duties (15% to 25%) and specific duties and surcharges are applicable to given products. Exporters must surrender their proceeds to authorized dealers and some export licenses for agricultural products are required.

.Trade related payments, investment related and personal payments require prior approval of the the Central Bank. Payments for travel and personal payments also have quantitative limits. The proceeds from invisible transactions and current transfers have repatriation requirements.

Capital transactions restrictions include controls on capital and money market instruments, derivatives, direct investment, and liquidation of direct investment. For their part, financial institutions are allowed to maintain accounts and borrow abroad; lend to non-residents, lend locally in foreign exchange and purchase locally issued securities denominated in foreign exchange.

3.3.   *Dual and multiple exchange rate regimes: The Bahamas and Suriname*

The Bahamas has a dual exchange rate regime and Suriname has a multiple exchange rate regime.

In the Bahamas the foreign exchange market is dual. On the one hand, there is an official foreign exchange rate market where the Bahamian dollar circulates at a par to the United States dollar. Commercial banks charge a commission of 0.50% for buying and 0.75% for selling one US dollar. In addition, there is a market to negotiate among residents an investment currency with premium and offer rates of 20% and 25% respectively. The investment currency is used for purchases of foreign currency securities from non-residents and for direct investment outside the Bahamas. Outward remittances are subject to a 1.5% stamp tax.

The Central Bank of the Bahamas administers exchange controls. In certain cases the Central Bank of the Bahamas delegates the approval of the allocation of foreign exchange for selected current payments. These include payments of up to B$ 100 000. The Central Bank has established controls on the export of domestic and foreign bank notes. Only imports of domestic currency are subject to approval by the Central Bank.

Import tariffs vary from 0% to 210%. The mode tariff is 42% while the average tariff is 35%. All agricultural imports require a permit and all imports have to pay a stamp tax (2%-7%). Some tourist related goods do not pay tariffs but must pay a stamp duty raging from 8% to 20%. All exports proceeds and the proceeds from invisible transactions and current transfers must be repatriated and offered or sold to an authorized dealer when the goods have reached their destination or within six months of shipment of the goods in question.

In the case of payments for invisible transactions and current transfers, there are no restrictions. However, the legislation requires the Central Bank's approval for transactions exceeding set limits. Trade-related payments involving unloading and storage costs and

commissions exceeding B$3 000 and B$6 000 require the approval of the Central Bank. For payments for travel the statutory limits are: B$1 000 and B$500 for persons above and below 18 years of age. All foreign exchange obtained for travel must be surrendered and returned to the Bahamas.

The quantitative limits on personal payments is B$3 000 and 50% of wages and salaries for foreign workers' wages and within a range of B$1 000 and B$3 000 for other payments.

Regarding capital transactions, outward capital transfers require exchange control approval. For their part, inward transfers by nonresidents must be subject to the exchange control approval process and authorization of the use of funds in the Bahamas.

Non-residents are allowed (subject to the approval of the Central Bank) to purchase local shares or other securities and residents may purchase these abroad only with investment currency. These regulations also apply to money market instruments, collective investment securities, and derivatives and other instruments.

Controls on credit operations basically focus on commercial credits between residents to non-residents. A resident company can raise fixed capital only if it is at least partially owned by non-residents. Residents who are not considered to be authorized banks must obtain permission to borrow foreign currency from non-residents while authorized dealers are controlled in the direction of their foreign currency loans to residents. Residents can pay interest and the principal on their loans after being granted permission from the Central Bank.

Controls on direct investment abroad include limited use of the official exchange rate (B$ 100 000 or 30% of the total cost of the investment) for those investments from which the additional expected benefits will equal the total amount of the investment. They also comprise Central Bank approval on inward direct investment.

The legislation on controls for real estate transactions purchases abroad by residents require the specific approval of the Central Bank and must be carried out in investment currency. Local purchases by non-residents require a permit from the investment board.

Finally, commercial banks are allowed to borrow abroad, lend locally in foreign exchange (provided exchange control approval is obtained on loans to residents) and open positions in foreign exchange up to a limit of B$500 000.

Suriname adopted a multiple exchange rate regime in 1999. According to this regime commercial banks and foreign exchange bureaus can set their own exchange rates for foreign exchange with a 3% band around the official exchange rate. Commercial banks charge commissions of 2% on sales of foreign exchange and 9% on transfers. Suriname also applies a different exchange rate to imports of fuel and a customs rate for import taxes. Finally the regime also has a parallel market exchange rate, which is higher than the official exchange rate.

The Central Bank has the ultimate control on the exchange rate regime. In practice it has delegated its functions on the commercial banking system. The Ministry of Trade and Industry grants export and import licenses.

Suriname requires import licenses, which serve the purpose of general authorization for payment. The list of import prohibition is greater than that of any other Caribbean country including agricultural products, natural resource manufactures and textiles and apparel. A selected group of commodities is also subject to quotas. Import taxes include customs duties, a license fee of 1.5% levied on the c.i.f value of all imports, a statistical fee of 2% levied on the c.i.f value of imports of bauxite companies and a 0.5% on the c.i.f value of other imports. The government does not require the surrender of export proceeds but exports require licenses, which issued by the Ministry of Trade and Industry. Exports of selected commodities such as wood and bauxite are subject to taxes and other fees. Wood exports are subject to a tax of 100% of the f.o.b. value. Bauxite exports pay a statistical fee of 2% of their f.o.b value.

Controls on payments for invisible transactions include licenses for outward remittances on foreign exchange, quantitative limits for the transfer of profits[15] and travel allowances (1 500 per person per year), for foreign worker's remittances (10 000 Sf plus 10% of taxable earnings). The proceeds from invisible transactions and current transfers have to be surrendered to an authorized bank.

The legislation of controls on capital transactions allows residents to sell Surinamese corporate shares designated as negotiable. It also prohibits outward direct investment as well as the purchase by Suriname residents of real estate abroad, and imposes controls on inward direct investment.

Finally, banks can place part of their liquid funds abroad and use short-term credit lines as operating funds. Limits are also placed on their open foreign exchange position, which is limited to the transactions undertaken for the account of their clients.

3.4. Soft pegs exchange rate regimes: Guyana, Jamaica and Trinidad and Tobago

Guyana, Jamaica and Trinidad and Tobago adopted "flexible exchange rate arrangements" following the adoption of stabilization plans in the early 1990's. Guyana and Jamaica adopted a floating exchange rate regime in 1996 and 1991. Both countries made the transition from fixed to floating exchange rate regimes by adopting basket pegs, multiple rate and discrete devaluations. Trinidad and Tobago's opted solely for discrete devaluations as a means of transiting to a flexible exchange rate regime in 1993. In all three cases the adoption of flexible exchange rates coincided with that of capital account liberalization.

Guyana imposes a few controls on foreign exchange transactions. Import payments related to petroleum products require the approval of the Bank of Guyana. Imports of

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[15] Profits have to be transferred within three years. Otherwise they are considered as part of the firm's working capital and are transferred only in annual installments of 20%.

unprocessed meat, poultry, fruit and processed fruit items are restricted and are subject to import controls from non-CARICOM countries.[16] Guyanese authorities also impose levies on the exports of rice and sugar and apply a duty to the exports of timber, bauxite, and sugar.

Jamaica requires import licenses for pharmaceutical products, which are granted by the trade board of the Ministry of Industry and Commerce. Jamaica implemented the fourth phase of the common external tariff on January, 2000. Customs tariffs reach 20% for non-agricultural products and 40% for agricultural products. In addition, there are stamp duties of up to 95% for agricultural products.

Jamaica has a few controls on capital transactions, mainly related to capital and money market instruments. The sale of local issue by nonresidents is subject to ministerial approval as is the acquisition of collective investment securities by financial intermediaries. This regulation applies to local purchases by nonresidents, local sales or issues by nonresidents, the purchase abroad by residents and the sale or issue abroad by residents. Finally, as a precautionary measure commercial banks holding foreign exchange deposits must observe a cash reserve requirement of 14%. The foreign exchange reserve requirements for non-financial intermediaries' assets and for commercial banks are 35% and 32% respectively. The evolution of the reserve requirements has responded to a deliberate policy of reducing the cost of credit (See Table 8, below) and avoiding differential provisions for the foreign and domestic currency markets.

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[16] Guyana adopted phase IV of the CET in January 2000.

Table 8
Jamaica
Changes in domestic and foreign currency reserve requirements
for commercial banks
1990 – 2001

	Reserve requirement for domestic currency	Reserve requirement for foreign currency
1990	The liquid asset ratio was increased from 20% to 33%.	
1993	Cash reserve and liquid asset ratio of financial institutions increased from 14% to 16%.	
1994		Commercial banks' ratios declined from 25% to 22%.
1995	Commercial banks' cash reserve ratio remained at 17%. Liquid asset ratio increased from 20% to 25%.	Commercial banks' cash reserve ratio for foreign currency accounts declined from 22% to 20%.
1996	The liquid asset ratio increased from 25% to 35%.	
1998	Cash reserve ratio declined from 25% to 21%. Liquid asset ratio was reduced from 45% to 31%.	
1999	Commercial banks liquid asset ratio declined from 43% to 34%. Cash reserve ratio of commercial banks declined from 21% to 16%.	Commercial banks liquid asset ratio declined from 43% to 34%. Cash reserve ratio of commercial banks declined from 21% to 16%.
2000	Cash reserve ratio was reduced from 16% to 13%. The liquid assets ratio was reduced from 32% to 31%.	Cash reserve ratio was reduced from 16% to 13%. The liquid assets ratio was reduced from 32% to 31%.
2001	Cash reserve ratio was reduced from 16% to 10%. The liquid assets ratio was reduced from 32% to 28%.	Cash reserve ratio was reduced from 16% to 10%. The liquid assets ratio was reduced from 32% to 28%.

Source: IMF (2001); PIOJ Economic and Social Survey of Jamaica (1988-2001). Several Issues. Bank of Jamaica (1990-2001).

Trinidad and Tobago applies customs duties ranging from 5% to 20% applicable to most goods and 40% for agricultural products. Motor vehicles are taxed with duty rates varying between 5% and 20%. In 2000, the country implemented Phase IV of the Common External Tariff. CARICOM country imports are exempted from the payment of these duties. Trinidad and Tobago does not have in place any controls on payments and proceeds for invisible transactions. In the case of capital transactions, these are simply subject to the provisions of the Financial

Institutions Act and Foreign Investment Act. The country also allows cross-border trading of shares of companies for residents of Barbados, Jamaica and Trinidad and Tobago. The companies must be listed on the country's stock market. Finally, Trinidad and Tobago applies a reserve requirement on domestic deposits of 21% and a liquid asset ratio of 25% on foreign currency deposits. There is also an additional reserve requirement of 5%. These funds can be held in treasury securities.

4. Nominal and real exchange rate trends

As in the case of Jamaica, nominal exchange rate movements for Guyana and Trinidad and Tobago have exhibited two characteristics. First, they have tended to fluctuate within a narrower range over time, especially in the case of Trinidad and Tobago (See Figure 1).

. Between 1991 and 2000, the difference between the maximum and the minimum average monthly nominal exchange rate as a percentage of the monthly minimum exchange rate declined from 29% to 2% for Guyana. In the case of Jamaica, it declined from 14% to 9% between 1996 and 2000. Finally, in the case of Trinidad and Tobago, the ratio was 3% in 1993 increasing to a maximum of 5% in 1996 and declining to 0% in 1999 and 2000.

Second their fluctuations have dampened over time. That is, overall, the volatility has decreased. In the case of Jamaica, the monthly average standard deviation increased from 0.03 to 0.28 between 1996 and 1999 and declined markedly to 0.06 in 2002. For Guyana exchange rate volatility decreased from 5.5 to 0.3 between 1991 and 2001. In the case of Trinidad it dropped from 0.8 to 0.6 between 1994 and 2001 (See Table 9, below).

The behavior of Jamaica's nominal exchange rate from 1980 to 2000 is marked by episodes of alternating exchange rate stability and instability. The periods of stability are 1980-1982, 1986-1989, and 1996-2001. During 1980-1982, the exchange rate regime consisted of an official fixed exchange rate set at J$1.78 per US$ and a parallel exchange rate that reached J$3.15J in 1983. In November, the exchange rates were unified to J$3.15 with a fluctuating band of J$0.15. In 1984, the authorities introduced a foreign exchange auction system. This system sought to integrate interest rate and exchange rate policies. In an attempt to control liquidity and defend the exchange rate the authorities allowed the interest rates to increase. The weighted loan and prime lending rates rose from 17% and 13% to 20% and 18% respectively. Bearing the pressure of excess foreign exchange demand in March 1985 the authorities devalued the currency to J$ 5.50.

The rate depreciated to J$6.40 and finally reached stability at 5.50$. The stability in the exchange rate lasted for four years (1986-1989). During this period the average exchange rate was 5.55 with a 0.13 standard deviation and with an average 2.6% rate of change. The stability in the rate of exchange reflected a period of stable growth, as well as a significant decline in the public sector and external deficits, and a decline of the inflation rate from two to one-digit level.

Table 9
Monthly bilateral exchange rates for Jamaica, Guyana and Trinidad and Tobago
1996 – 2001

Year	Monthly average exchange rate	Monthly average rate of change	Monthly average standard deviation	Monthly average coefficient of variation
Jamaica				
1996	37.3	-0.50	0.03	-0.06
1997	35.5	0.13	0.05	0.36
1998	36.7	0.09	0.10	1.10
1999	39.2	0.37	0.28	0.76
2000	43.1	0.35	0.09	0.27
2001	46.1	0.15	0.06	0.41
Guyana				
1991	118.5	2.0	5.5	0.35
1992	125.0	0.2	0.7	0.25
1993	126.9	0.3	0.6	0.53
1994	138.9	0.8	1.3	0.61
1995	141.8	-0.2	0.6	-0.32
1996	140.4	0.1	0.2	0.52
1997	142.5	0.2	0.2	0.63
1998	150.47	1.1	1.2	0.91
1999	177.1	0.7	1.2	0.60
2000	181.1	0.1	0.4	0.37
2001	186.1	0.3	0.3	0.81
Trinidad and Tobago				
1994	5.92	0.3	0.8	0.34
1995	5.95	0.09	0.4	0.24
1996	6.04	0.3	0.6	0.6
1997	6.28	0.08	0.14	0.62
1998	6.29	-0.15	0.50	-0.30
1999	6.30	0.013	0.04	0.31
2000	6.30	0	0.0	0
2001	6.23	-0.02	0.6	-0.04

Trend Statistics for the logarithm of the exchange rate			
	Constant	Slope	Root mean sq. deviation
Guyana	2.81	0.0037	0.050
Jamaica	1.46	0.0058	0.038
Trinidad and Tobago	1.3	0.038	0.046

Trend Statistics for the rate of change of the exchange rate			
	Constant	Slope	Root mean sq. deviation
Guyana	0.035	0.000	0.019
Jamaica	-0.0018	0.000	0.009
Trinidad and Tobago	-0.0232	0.0004	0.010

Sources: On the basis of information provided by countries and IMF financial statistics. All computations were carried out using Modler.

At the end of 1989, the foreign exchange auction was suspended and Jamaica opted for liberalizing its exchange rate regime. The exchange rate was initially fixed at J$6.46 per U.S$ in November 1989 but depreciated to J$7.45 per U.S dollar in September 1990. In the same month the inter-bank foreign exchange system was introduced allowing the banks to fix their own exchange rates. At the end of 1990, the relevant market rate to carry out transactions was a weighted average of commercial bank's nominal exchange rates. The weighted average exchange rates was J$8.12 at the end of 1990. The liberalization strategy was part of a market oriented adjustment program seeking trade and financial liberalization.

Table 10
Jamaica
Selected foreign exchange policy measures
1995 – 2002

Year	Measures affecting the supply of foreign exchange	Measures affecting the demand for foreign exchange
1995	Phased reduction in the percentages that foreign exchange Cambios are required to surrender to the central bank. Sales of US$93 million	Introduction of reserve requirement Open market operations leading to absorption of $1918 million. Purchase of US$47 million
1996	Sales of US$146 million.	Purchase of 184 US$ million. Real interest rate increase Government of Jamaica bond offering
1997	Sales of US$564.3	Purchase of US$374.8 Purchase of GOJ loan proceeds US$ 264
1998	Sales of US$149.8	Purchase of US$305.4 Purchase of GOJ loan proceeds US$ 307
1999	Sales of US$273.9	Purchase of US$365.1 Purchase of GOJ loan proceeds US$45 Introduction of a tax on Jamaica Dollar investments at source.
2000	Sales of US$472	Purchase of US$533 Purchase of GOJ loan proceeds US$ 793
2001	Removal of trade spread limits for all licensed foreign exchange dealers. Imposition of ceiling on foreign exchange surrenders from licensed foreign exchange dealers. Sales of US$734	Purchase of US$689 Purchase of GOJ loan proceeds US$ 1093 Interest rate increases Reintroduction of certificates of deposit.

Source: Bank of Jamaica

In 1991, capital controls were lifted. The maintenance of foreign currency accounts held in Jamaica or abroad was permitted were permitted, while retained accounts were abolished. The liberalization of the foreign exchange market was reinforced by the repeal of the Exchange

Control Act in September 1992. Despite the liberalization of the exchange rate, the authorities maintained a dual exchange rate regime comprising an official and a market determined exchange rate.

From 1991 to 1995, the foreign exchange rate market experienced significant instability. The average bilateral exchange rate with the US dollar was J$22 and the standard deviation was 11.2. The rate of growth of the exchange rate reached 30% with a 22% standard deviation.

Starting in 1995 the Bank of Jamaica introduced a series of measures to affect the supply and demand for foreign currency. In part, this signaled a return back to the foreign exchange policy strategy of the late 1980's favoring a managed exchange rate regime. In addition, the government started to play an increasingly important role in the determination of the exchange rate. The government issued bonds in the international market. The proceeds of the bonds were purchased by the Central Bank. Through this channel, the government of Jamaica became in 2000 the most important single provider of foreign exchange receipts to the Central Bank. During the same year, Jamaica became the first Caribbean country to sell bonds denominated in Euros. More recently the government of Jamaica has started to sell US dollar denominated bonds in the domestic market.

In the case of Trinidad and Tobago, the country's transition to a more open exchange rate regime was brief. In 1993, the authorities decided to suspend foreign exchange trading and at the same time abolish exchange rate controls. The Trinidad and Tobago dollar was allowed to float with a value determined in the inter-bank market. This explains the initial volatility in the foreign exchange rate. Initially, exchange rate controls on transactions involving invisible transactions remained in place, although unofficially, to avoid drastic changes in the exchange rate until the end of 1993. With the abolition of exchange rate controls the government allowed the operation of exchange rate *bureaus,* which by the end of 1993 had reached 16. From the moment the exchange rate was allowed to float it depreciated, forcing the authorities to intervene to dampen its fluctuations, implicitly establishing a highly managed exchange rate regime (See Table 11 below).

Indeed, both the Trinidad and Tobago Central Bank annual report and review of the economy for 1993-2001 do not contain a reference to any significant event altering the exchange rate. The reports limit themselves to describing minor variations in the exchange rate and the Central Bank interventions. As an example, the 1996 Annual Report of the Central Bank states, p. 9: "In its efforts to maintain stability in the exchange rate with the aim of smoothing out discontinuities in supply, the Central Bank continued to work closely with the commercial banks and the major foreign exchange earners."

Table 11
Trinidad and Tobago
Exchange rate behavior and reported monetary policy interventions

Year	Bilateral exchange rate of the TT dollar with the United States dollar	Monetary policy
1993	4.29 in January 5.84 in December	The Central Bank agrees to provide US$10 million to cover shortages in the foreign exchange market. In April the Central Bank made net purchases of foreign exchange from commercial banks amounting to US$59 million.
1994	5.86 in January 5.92 in December	The cash reserve ratio is increased from 16% to 18% in April and to 20% in July
1995	5.99 in January 5.93 in December	The Central Bank introduces Open Market Operation as the main policy tool to control the level of liquidity in the economy. The Central Bank requests that commercial banks hold additional cash reserves and intervenes in the foreign exchange rate market.
1996	5.99 in January 6.23 in December	Requirement for commercial banks to hold statutory reserves equivalent to 5% of deposits. Central Bank intervention of US$102 million. Introduction of open market operations with sales of TT$90 million. Increase in the reserve cash ratio from 20 to 23%.
1997	6.12 in January 6.27 in December	Central Bank intervention of US$48 million. Open market operations intervention reported at TT $499 million. Increase in reserve requirements to 26%.
1998	6.27 in January 6.24 in December	The Central Bank is reported to have used demand management and the maintenance of appropriated levels of liquidity to stabilize exchange rate movements. Lowering of the statutory reserve requirement from 24% to 21%.
1999	6.25 in January 6.24 in December	Net sales of foreign exchange reserve totaled US$151 million constituting the largest since the "floating exchange rate regime" was adopted. Open market operations to withdraw more than TT $700 million.
2000	6.30 in January 6.30 in December	Net sales of foreign exchange of US$251million. Net open market sales of TT$1 059. 5 million. Introduction of Treasury Notes as an additional instrument to carry out open market operations.
2001	6.30 in January 6.28 in December	Central Bank is a net purchaser of foreign exchange Decline in the statutory requirement from 21% to 18%.

Source: Central Bank of Trinidad and Tobago Annual Economic Survey and Annual Report. Several Issues

Table 12

Correlation coefficients for monthly variation in nominal exchange rates
1996 – 2000

	1996	1997	1998	1999	2000
Correlation coefficients					
Guyana-Trinidad	0.80	0.13	0.07	0.75	0.03
Guyana-Jamaica	0.29	0.17	0.52	0.26	0.38
Jamaica-Trinidad	0.27	0.10	0.33	0.27	0.000

Source: Processed data using Modler

Despite the stability of the exchange rates over time the behavior of real exchange rates has been characterized by a tendency to appreciate. Table 13 shows the real effective exchange rate for Caribbean countries. The real effective exchange rate equals the nominal geometric weighted average of a country's exchange rate with its main trading partners corrected for price movements. An increase in the real effective exchange rate signals an appreciation while a decline signifies a depreciation. With the exception of Guyana and Trinidad and Tobago all countries included in the Table 13 have registered an appreciation in their currency with respect to their main trading partners. Barbados, followed by Dominica, Grenada and St. Lucia have recorded the largest appreciation in the past two decades (24%, 17%, 15% and 15%).

Table 13
Real effective exchange rates for Caribbean countries
1980 - 2000

	Antigua & Barbuda	Dominica	Grenada	St. Kitts & Nevis	St. Lucia	St. Vincent & the Grenadines	Barbados	Belize	Guyana	Jamaica	Trinidad & Tobago
1980	104.2	90.9	91.7	109.8	101.7	101	65.9	96.9	192.3	76.4	170.3
1981	109.1	98.2	106.1	113.4	111.69	106.8	69.3	105.5	208.0	73.9	180.6
1982	110.6	101.5	112.6	116.4	114.5	110.6	69.4	111.7	235.6	70.9	191.8
1983	111.6	108	118.7	117.7	116.3	114.6	58.3	117.7	276.3	69.8	199.1
1984	115.5	116.9	126.6	120	121.8	116.4	57.4	122.3	281.9	114.1	211.7
1985	114	120.2	126.7	119.5	120.3	115.3	56.8	129.8	291.2	127.2	215.2
1986	106.4	111.5	118	115.4	113.1	113.4	67.7	116.1	276.2	105.9	141.7
1987	102.1	107.2	106.1	108.3	110.9	108.2	86.6	107.7	142.2	102.1	122.3
1988	101.6	100.8	103.1	101.3	103.9	101.6	93.4	106.4	179.2	98.1	110.4
1989	102.6	105	107.7	103.6	105.8	102.5	80.8	104.9	141.6	94.3	102.5
1990	100	100	100	100	100	100	100.0	100.0	100.0	100.0	100.0
1991	101.8	101.7	99.2	99.6	102.2	102.2	95.2	100.1	86.2	118.7	100.9
1992	100.4	102.6	98.3	98.3	102.9	100.7	111.1	98.8	95.5	120.6	101.7
1993	106.6	105.6	103.8	101.1	106.9	107.7	89.6	106.6	104.6	111.9	85.7
1994	106.8	101.8	103.7	99.9	106.3	104.8	94.3	102.3	104.4	109.0	75.0
1995	103.5	95.9	100.2	97.7	105.1	99.7	96.7	92.4	104.6	100.3	72.7
1996	105.1	97.2	101.4	98.4	105.6	103.9	90.4	97.3	113.0	84.6	74.1
1997	109	102.6	104.2	107	108.1	107.6	93.3	100.3	119.0	74.1	74.4
1998	111.2	107.6	105.3	109.9	111.1	111.4	89.5	100.0	119.8	68.5	78.0
1999	113.6	106.6	105.8	112.7	116.7	110.9	82.0	97.6	108.6	70.0	80.1
2000	.....	......	.....	.....	.....	.....	70.7	99.0	114.4	75.4	83.9

Source: IMF financial statistics and on the basis of official data.

5. Exchange rate regimes and macroeconomic performance

In this section the comparative performance of the different exchange rate regimes is analyzed using macroeconomic performance indicators, proper, and indicators of volatility. The first group includes economic growth measured by GDP, per capita income growth, investment-to-GDP ratios, the rate of inflation, fiscal deficit and the external gap measured by the current account as a percentage of GDP and foreign direct investment flows. Volatility indicators include the standard deviation of income growth, volatility in private consumption, terms of trade shocks, reserve money growth, and international reserve volatility. All these indicators are shown in Tables 14 and 15 by decade from 1970 throughout the 1990's.

Following the discussion above economies are classified according to three categories. These are, smaller economies with hard pegs, larger economies with hard pegs and economies with soft pegs. The first group comprises Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines. The second group includes The Bahamas, Barbados, and Belize. Guyana, Jamaica and Trinidad and Tobago form the last group.

Overall the different indicators do not clearly favor one type of exchange rate regime over the other. Smaller economies with hard pages perform better in terms of GDP growth, domestic investment, foreign direct investment and inflation (see Table 14). However, these economies exhibit poorer export performance and higher fiscal and external disequilibrium than the larger economies with hard pegs or the economies that have adopted a soft peg. At the same time they tend to be prone to high levels of indebtedness.

These three weak features of smaller economies with hard pegs can be easily shown using a simple macroeconomic accounting framework. The set of equations (6) states the equality between the excess of savings over investment for each of these economic agents as equal to the increase in domestic debt and money supply in the case of households, and to increase in domestic and foreign debt for firms and the government.

Equations (6) and (7) further develop the savings-investment relationship for the government in the case of a smaller economy. Eq.(8) says that government investment constitutes capital expenditure and that the savings of the government are generated by the surplus in the government's current account. The excess of investment (capital expenditures) over the current account balance (s_g) is financed by domestic and/or foreign debt and by official assistance aid. The government's current balance (scu_g) is the difference between wage and interest rate payments and indirect taxes (Ti) respectively. This is shown in Eq. (9). Eqs. (10) and (12) state that the total stock of debt is financed by foreign savings and increases in money supply and that the latter is equal to the increase in net domestic assets and net international reserves. Finally foreign savings (Eq. (11)) are equal to exports (X) minus imports (M) plus current and capital transfers (CT and KT, respectively).

This accounting framework shows that any positive change in the difference between capital and current account expenditures will imply, in a given period, an increase in the stock of foreign and/or domestic debt if official foreign aid cannot finance the entire fiscal gap. A greater

stock of debt can be financed either through greater foreign savings or by increases in the money supply. If a country is unable to increase its foreign savings by greater export competitiveness, current or capital transfers or by lowering import demand, money supply must increase. In turn the increase in money supply can be sourced in net domestic assets or foreign net reserves (Eq. 12). Whatever option is adopted by the authorities the end result will be a lower level of reserves relative to the money supply and import level and thus a weakening of the external position and of the capacity to defend the exchange rate peg. Similar outcomes can be obtained by assuming an increase in private instead of public debt.

(6) $Sh + Sf + Sg = Ih + If + Ig + S^*n$

(7) $Ih\text{-}Sh = \Delta Dh - \Delta Mh$
$\quad If\text{-} Sf = \Delta Df + e\Delta D^*f$
$\quad Ig\text{-} Sg = \Delta Dg + e\Delta D^*g$

(8) $Ig - scu\_g = \Delta Dg + e\Delta D^*g + \Psi$
(9) $scu\_g = Ti - w + (rD + reD^*)$

(10) $\Delta Dh + (\Delta Df + \Delta D^*f) + (\Delta Dg + \Delta D^*g) = Sn^* + \Delta Mh$

(11) $S^*n = X - M + CT + KT$

(12) $\Delta Mh = \Delta NDA + \Delta NIR$

Also, smaller economies with hard pegs do not tend to be more volatile than the rest of the economies in most of the performance indicators provided with the exception of the terms of trade. Judging from these performance indicators, this would indicate that, smaller economies with hard pegs are not 'more vulnerable' than other economies in the region.

For its part larger economies with hard pegs maintain a similar rate of growth than the smaller economies group or the economies with soft pegs but have not been as successful in expanding their domestic and foreign sourced investment potential. Finally, economies with soft pegs have the largest outstanding debt and the biggest rate of inflation. While the inflation outcome can be explained by the nature of the exchange rate regime itself the outstanding debt responds to political and financial considerations rather than to a possible effect caused by the exchange rate regime

Table 14
Macroeconomic performance by exchange rate regime by decade
1970 – 1990

	1970	1980	1990
GDP growth			
Smaller economies with hard pegs	3.9	5.5	3.1
Larger economies with hard pegs	2.6	2.8	3.0
Economies with soft pegs	1.6	-1.1	2.8
Investment coefficient as percentage of GDP			
Smaller economies with hard pegs	33.0	32.1	32.1
Larger economies with hard pegs	21.7	20.8	20.6
Economies with soft pegs	26.0	23.8	26.7
Foreign direct investment as percentage of GDP			
Smaller economies with hard pegs	...	6.3	9.3
Larger economies with hard pegs	...	2.9	2.6
Economies with soft pegs	...	1.0	7.7
Inflation (rate of growth)			
Smaller economies with hard pegs	14.8	5.6	2.9
Larger economies with hard pegs	10.4	5.8	2.5
Economies with soft pegs	14.5	13.7	13.0
Export performance			
Smaller economies with hard pegs	...	0.42	0.30
Larger economies with hard pegs	...	0.64	0.89
Economies with soft pegs	...	1.14	0.84
Current account deficit as percentage of GDP			
Smaller economies with hard pegs	-2.9	-13.1	-15.1
Larger economies with hard pegs	-5.5	-1.4	-3.4
Economies with soft pegs	-3.9	-12.4	-10.3
Fiscal deficit as percentage of GDP			
Smaller economies with hard pegs	...	...	-4.9
Larger economies with hard pegs	...	...	-3.9
Economies with soft pegs	...	...	-1.6
Outstanding debt as percentage of GDP			
Smaller economies with hard pegs	...	...	32.8
Larger economies with hard pegs	...	...	22.7
Economies with soft pegs	...	...	46.8

Note: ... denotes not available.
Source: ECLAC (2001)

Table 15

Macroeconomic performance by exchange rate regime by decade (Volatility)
1970 – 1990

	1970	1980	1990
GDP growth			
Smaller economies with hard pegs	6.9	5.1	3.1
Larger economies with hard pegs	7.1	5.4	3.1
Economies with soft pegs	5.5	5.0	2.9
Consumption			
Smaller economies with hard pegs	6.0	11.5	9.0
Larger economies with hard pegs	11.01	9.1	8.0
Economies with soft pegs	12.5	14.1	8.7
Terms of Trade			
Smaller economies with hard pegs	8.6	8.3	18.0
Larger economies with hard pegs	3.6	10.4	5.3
Economies with soft pegs	11.1	9.7	8.3
Money growth			
Smaller economies with hard pegs	52.8	56.1	10.2
Larger economies with hard pegs	15.5	10.0	10.9
Economies with soft pegs	15.3	25.2	15.1
Fiscal deficit			
Smaller economies with hard pegs	....	....	2.9
Larger economies with hard pegs	....	....	2.8
Economies with soft pegs	....	....	2.8
External debt			
Smaller economies with hard pegs	....	....	15.6
Larger economies with hard pegs	....	....	14.0
Economies with soft pegs	....	....	20.1

Note: ... denotes not available.
Source: ECLAC (2001)

6.   A model to examine exchange rate policy in the Caribbean

In 1979, Arthur Lewis, stated: "It is now the conventional wisdom that the currencies of the developed countries should float, but the currencies of the less developed countries should not." Lewis did not agree with the 'conventional wisdom.' His concern centered on the "external conditions that must be met if the country is to be able to maintain exchange stability" and thus implicitly with the sustainability conditions of an exchange rate regime.

This section addresses this issue by delineating a model comprising twenty-two relationships to analyze exchange rate regimes in the Caribbean. These are summarized in Table 16 below. The first one establishes the equality between domestic income and expenditure. This follows simply from the fact that in any economy its uses equals its resources. That is,

i. $ycwg + Ti + z + f = ex\_pr + se\_f$

Where,
$ycwg$ = national income in a closed economy with no government
Ti = Indirect taxes
z = Current transfers
f = Capital transfers

The expression $ycwg + Ti + z + f$ represents the resources of an economy and $ex\_pr + se\_f$, its uses.

The second equation states that national expenditure (expn) is a weighted average of domestic expenditure (ex_d) and a proportion, τ, of foreign net lending (se). Formally,

ii. $expn$ $= \beta ex\_d + (1-\beta) \tau(se)$

where,

$expn$ = national expenditure
ex_d = domestic expendituer
se = foreign net lending
$0 < \beta < 1$ and $0 < \tau < 1$

This formulation assumes that only part of foreign net lending is directed to expenditure. Besides considering a propensity to spend out of income that is less than one, smaller economies possess institutional features that warrant this formulation. Exporters may, for example, be obliged to surrender their foreign currency earnings in exchange for local currency to the central bank at a rate of exchange that may not be necessarily equal to the market rate.

By definition the weights β and $1-\beta$ sum to one. The weights may change according to the importance of foreign net lending relative to domestic expenditure in total expenditure. This may vary with the degree of openness of an economy, its size, and also its composition and structure of production. In the case of a small economy the proportion of foreign net lending to

domestic expenditure is high. A small economy is open in terms of its composition of demand and its structure of production requires imports and access to foreign currency supplies. However, restrictions to foreign exchange transactions characteristic of hard peg exchange rate regimes can diminish the importance of foreign net lending in determining total expenditure. In real historical time, the said weights have changed in response to changes in economic policy and structure.

The third relation is simply the definition of foreign net lending. Foreign net lending equals net exports (X-M) and the sum of current and capital transfers,
iii. se_f = x - m + z + f

where,

x = volume of exports
m = volume of imports
z = current transfers
f = capital transfers

Notice that the definition of foreign net lending does not take into account the difference between the net income of foreign residents in the national economy and nationals residing in foreign countries. Its inclusion would complicate the model without providing a clear benefit. Current transfers include remittances and the balance of the income account representing in part foreign debt payments and the repatriation of profits. Capital transfers include both short and long term capital flows. In a smaller economy without a developed or in some cases existing capital market, capital transfers refers to foreign direct investment and official flows.

Equations iv to vii, specify functions for the components of foreign net lending (se). Exports are a function of the relative price of exports prices to international prices (px/pie) and foreign expenditure (expd_f). The price of exports is expressed in national currency. That is,

iv. x $= a(px/pie)^{\eta}(expd\_f)^{\xi}$

where,
x   =   volume of exports
px   =   export prices expressed in national currency
pi   =   import prices expressed in foreign currency
e   =   the nominal exchange rate
expd_f =   foreign expenditure

Both the relative price and the expenditure components have a parameter (η and ξ) representing the price and income elasticities of exports. The price elasticity is an indicator of the degree to which a change in the exchange rate, say a devaluation, will induce an expenditure switching effect. If η is close to zero a devaluation may, other things being equal, be neutral with respect to export performance. The income elasticity reflects the degree to which exports are driven by the growth of external demand. The type of commodity exported determines primarily the income-elasticity parameter. Industrial products and raw materials are faced with a high

foreign income elasticity of demand. To the contrary, agricultural products are faced with Engel Curve type effects. For a smaller economy exports have a low foreign income elasticity of income and are determined by preferential market access provisions granted by developed economies. Apparel, technological and agricultural exports are cases in point. In equation iv. above the parameter 'a' is a scaling factor introduced to capture this particular feature of smaller economies.

The volume of imports is a function of the relative price of imports expressed in national currency (i.e., the price of imports in foreign currency (pi) multiplied by the nominal exchange rate (e)) and a weighted average of private and government capital expenditure (ex_dpr and exk_g, respectively).

v. m $= b(pie/p)^{\theta}(\alpha(ex\_dpr)^{\rho}(1-\alpha) (exk\_g)^{1-\rho})$

As with the export function, the specification of the import volume associates parameters representing elasticities with each of the variables included. The parameters θ, ρ and $(1-\rho)$ are the import elasticity of relative prices, the import elasticity of private expenditure and of government capital expenditure. A low value of θ signifies that relative price changes induced, say, by a devaluation have little effect on import demand. Smaller economies are dependent on import for their production (imports have very few if any substitutes) and thus θ will be small. Private expenditure and government capital expenditure are in fact the main driving forces behind import growth. Private expenditure comprises firms' demand for imports for production purposes as well as household's demand for imported goods. The latter component is significant and represents for some smaller economies 40% of total import demand. Government capital expenditures also require imported inputs. In this case the elasticity parameter will reflect to some extent the effective command over foreign exchange resources to satisfy the need for imports. The specification of the import function illustrates that a balance of payments disequilibrium can be the result of either private or public expenditure or a combination of both.

Current transfers are exogenous to the model. In a more sophisticated version of the model current transfers can be endogenized. Capital transfers are equal to official transfers (Ω) and the difference and expected capital gains in the domestic economy. Expected capital gains are in turn equal to the rate of return (rr) minus the sum of the foreign rate of interest and a percentage (λ) of the expected foreign exchange rate depreciation. That is,

vii. f_f $= rr - (r^* + \lambda e^e) + \Omega$

f_f = foreign capital flows
rr = rate of return
r* = foreign rate of interest
ee = expected depreciation of the exchange rate
$0 < \lambda < 1$

Equation vii reflects three important characteristics of the capital flow behavior in smaller economies. First, exchange rate changes affect foreign capital flows and foreign direct investment behavior if investors carry out their transactions or part of their transactions in

domestic currency. In smaller economies most of foreign direct investment is undertaken in enclave sectors were a small percentage of total transactions is carried out in domestic currency. The parameter λ captures this stylized fact. As a result, exchange rate fluctuations are not decisive in determining the direction of capital flows short of a balance of payments crisis or a sudden and significant loss of confidence in the currency.

Second, the domestic interest rate does not enter directly in the determination of capital flows and thus neither in the decision of foreign direct investors. The essential variable is the rate of return. Their finance capital originates in their home country. This is the reason for correcting the rate of return for the foreign rate of interest. The rate of interest on money determines capital flows, in so far as it affects the rate of return. That is the rate of interest on money determines the rate of return or the marginal efficiency of capital (Keynes, 1936).

viii. $rr = rm - a$

Equations ix-xii model domestic expenditure. Domestic expenditure (ex_d) is a weighted function of private and public expenditure (ex_pr and ex_pu, respectively).

xi. $ex\_d = \psi ex\_pr + (1-\psi)ex\_pu$, $0<\psi<1$.

Private expenditure is a function of household and firms expected income (y^e_fm and y^e_hd respectively). Firms' expected income depends on expected sales (sl^e), changes in inventory (Δi), indirect taxes (Ti), interest rate payments to commercial banks (rlL_f), disbursed profits (π_f), and foreign debt payments (eD_f). Household expected income (y^e_hd) equals wages, firms' and banks' distributed profits (πf and πb, respectively), interest payments on deposits (rdD), minus direct taxes (Td) and interest payments on loans (rlL).

x. $ex\_pr = y^e\_fm + y^e\_hd$

xi. $y^e\_fm = sl^e + \Delta i - Ti - rlL\_f - \pi\_f - e\Delta Df\_f$

xii. $y^e\_hd = \pi f + \pi b + w + rdD - Td - rlL$

Government capital expenditure (eq. xiii) is equal to the current balance (s_g) and the increase in central bank (ΔD_ceb), commercial bank (ΔD_cob), foreign sector debt to the government, (eΔDf_f) and official financial aid (Ψ). This specification reflects the fact that government capital expenditures ultimately provide the leverage for total government expenditure. That is, in the absence of any increase in government debt, a current government balance deficit, is financed through a reduction in government current expenditures. The government's current balance (scu_g) is the difference between wage and interest rate payments and indirect taxes (Ti) respectively. Direct taxes are not considered since they account for a small proportion of total tax revenues. Indirect taxes are a weighted average of a consumption or value added tax (ytiva) and a proportion η of imports (m), reflecting the fact that a part of imports are exempt from paying taxes.

xiii. $exk\_g = s\_g + \Delta D\_ceb + \Delta D\_cob + e\Delta Df\_f + \Psi$

xiv. scu_g = w + rde − Ti

xv. Ti = δytiva + (1-δ) tt(ηm), 0<η<1 and 0<δ<1

The rest of the relationships included in the model deal with the financial sector. Equation xvi. establishes the equality between total increase in debt and the creation of credit from commercial banks (Δdc_cob) and the central bank (Δdc_cb). Equations xvi and xvii are the balance sheets of commercial banks and the central bank. Commercial banks' credit (c_cob) and net foreign assets (nfa_cob) are equal to short-term and long-term deposits (dep_ca and dep_st respectively) adjusted by the reserve requirement followed by commercial banks (rre_cob). The central banks' balance sheet states that central bank credit (dc_cb) adjusted for the reserve requirements imposed on commercial banks (rrecb) and its net foreign reserves (nfa_cb) equals to central bank profits (πcb), foreign liabilities (fl_cb) and the money base.

Equations xix and xx define the profits of commercial banks and the central bank. Equation xix states that commercial banks' profits are equal to the difference between interest income and expediture (rlL and rdde, respectively). Equation xxi specifies the interest on loans as a function of markup on a weighted function of the interest charges on central bank loans (rdc_bc) and commercial banks' deposit rates (rd_cob), and as depending on reserve requirements. Finally, equation xxii postulates that the central's bank discount rate follows a balance of payments norm.

xvi. ΔD_ceb + ΔD_cob = Δdc_cb + Δdc_cob

xvii. c_cob + nfa_cob = (1-(rre_cob/(rr_cb)) (dep_ca + dep_st)

xviii. dc_cb (1-rrecb) + nfa_cb = πcb + fl_cb (foreign liabilities) + BM

xix. πcob = ii − ie = rlL − rdde

xx. πcb =

xxi rl = rdt_cb + rre + rd_cob

xxii rd_cb = norm of balance of payments.

Table 16
A model for a small open economy
Summary

Model equations	Equation description
i. $yt = yt + Ti + z + f = expt$	Domestic Income
ii. $expn = \beta ex\_d + (1-\beta)\, \tau(se)$	Total Expenditure
iii. $se\_f = x - m + z + f$	Foreign net lending
iv. $x = a(px/pie)^{\eta}(expd\_f)^{\xi}$	Exports
v. $m = b(pm/pe)^{\theta}\alpha(ex\_dpr)^{\rho}$	Imports
vi. $z = z$	Current transfers
vii. $f = rr - (r^{*}+ \lambda e^{e}) + \Omega$	Capital transfers
viii. $rr = rm - a$	Real rate of return
ix. $ex\_d = \psi ex\_pr + (1-\psi)ex\_pu$	Domestic expenditure
x. $ex\_pr = y^{e}\_fm + y^{e}\_hd$	Private expenditure
xi. $y^{e}\_fm = sl^{e} + \Delta i - Ti - rlL\_f - \pi\_f - eD\_f$	Firm's expected income
xii. $y^{e}\_hd = \pi f+\pi b+ w + rdD - Td + rlL$	Household expected income
xiii. $exk\_g = s\_g + \Delta D\_ceb + \Delta D\_cob + e\Delta Df\_f + \Psi$	Government capital expenditure
xiv. $scu\_g = w + rde - Ti$	Government current balance
xv. $Ti = \delta ytiva + (1-\delta)\, tt(\eta m)$	Indirect taxes
xvi. $\Delta D\_ceb + \Delta D\_cob = \Delta dc\_cb + \Delta dc\_cob$	Total debt equals financial assets
xvii. $c\_cob + nfa\_cob = (1-(rre\_cob/(rr\_cb)))\,(dep\_ca + dep\_st)$	Commercial bank's balance sheet
xviii. $dc\_cb\,(1-rrecb) + nfa\_cb = \pi cb + fl\_cb$ (foreign liabilities) $+ BM$	Central bank's balance sheet
xix. $\pi cob = ii - ie = rlL - rdde$	Commercial banks profit
xx. $\pi cb =$	Central banks profits
xxi. $rl = rdt\_cb + rre + rd\_cob$	Loan rate equation
xxii. $rd\_cb =$ norm of balance of payments.	Central bank discount rate equation

Building on this model and on given parameters that are determined from the outset and based on historical values such as the tax ratio, the income elasticity of import and the income elasticity of exports two possible scenarios are presented (see Figures 3 and 4). For example it is assumed, based on empirical evidence for smaller economies, that the income elasticity of imports is greater that the income elasticity of exports. These are meant to that highlight the type of conditions needed for the sustainability over time of an exchange rate regime. The first typifies the situation of smaller economies with hard pegs and shows that an increase government expenditure. It then goes on to show a contraction in government expenditure. The second imposes a fiscal rule in each period whereby government expenditures are equal to government taxes.

The scenarios are simulated with 60 time periods and by introducing one-time changes in governments spending or other variable that are assumed to change exogenously. This should be seen as a first approximation to study the behavior of exchange rate regimes under changing circumstances and does not preclude the introduction of continuous changes in the variable here considered. Figures 3 and 4 show the behavior of selected variables flow and stock variables. These are income, the balance of trade (flows), and government debt (stock). An important feature of the model is that adjustments are worked out through income effects and price effects are absent. This responds to an attempt of the model to approximate and highlight as much as possible the features of smaller economies with hard pegs where key prices (exchange rate, interest rates, export prices) are fixed.

In the first scenario income responds positively to an increase in government expenditure. However, the stimulus to income growth lasts for a short period of time due to the existence of the automatic stabilizers (taxes) and leakages of the system (imports), which dampen the initial growth spurt. The budget deficit also increases leading to a growing stock of debt. At the same time the increase in imports leads to a rising and cumulative external imbalance. Under a fixed exchange rate regime the situation becomes unsustainable unless the disequilibria are balanced by capital inflows. There are two policy alternatives to correct these imbalances. The first is to decrease government expenditure. This decreases demand and ultimately investment decisions are affected. The decrease in government expenditure that follows is likely to have the opposite effects.

This type of adjustment highlights an important feature of hard pegs. In this type of regime increases in government expenditure are perceived as an eventual danger to the fixed exchange rate regime. As a result authorities may react by restrictive policies even before the growth impetus caused by government expenditure reaches its full potential. In the opposite situation, there is no need for authorities to react and these are likely to let a recession work itself out. In this sense, a currency board arrangement is an 'asymmetrical procyclical' regime.

The second scenario, that of the fiscal rule, leads to a decrease in income per capita and a sustainable government stock of debt. However, the fiscal rule does not correct the external imbalance and the external deficit increases over time.