MONEY IN CARIBBEAN ECONOMY: A THEORETICAL PERSPECTIVE

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I. Introduction:

The search for clearer understanding of the nature and functioning of money in Caribbean economic systems continues. Recently, Bourne [4] concluded that strong balance of payments and stable prices are indispensable for economic growth, that the monetary base (net foreign assets plus net domestic credit to government) is the primary source of money stock changes, that this in turn impacts on payments and prices, and so monetary policy cannot be development oriented unless it addresses these variables. Best and McIntyre [3] had earlier argued that monetary policy should be developmental, making investment capital available at low interest rates, rather than primarily concerned with price and exchange rate stability. To Analyst [1] must be credited the argument which in the Caribbean context did most to relax the 100 percent foreign asset backing of local currency which characterised the post-war "Sterling Exchange Standard". Hazelwood [7] had been drawn by publication of Greaves' [6] book into the debate on the deflationary nature of these colonial monetary arrangements, an essentially valid position argued at length subsequently by Thomas [10] and other Caribbean scholars. On the basis of more than two decades of experience, Bourne could now demonstrate that the monetary policies pursued have to date in the Caribbean succeeded neither in promoting growth, stabilising prices nor making for strong balance of payments positions.

Money: Money, in the Caribbean as elsewhere, is an asset, distinguished by its liquidity, in which the public chooses to hold part of its wealth. As it is with other assets there must be a supply process, stable demand function, and a price determining

mechanism. Certain peculiarities of the socio-historical context of the Caribbean and the nature of the production structures impart features to money and money market behaviour which make study of this asset in its specific context of critical importance to its proper management. The analysis here undertaken builds on such assumed foundation blocks as a money multiplier and domestic budget deficit money supply process; a demand for money function which shifts with income and relative prices, and permits substitutability with other assets including foreign money; and a change in the value of money adjustment process which may be captured by the general inflation rate. These concepts, which are well known, will not be further articulated here.

Socio-historical Context: Certain historical factors have served to condition monetary and financial institutions and attitudes in the Caribbean. We argue that the dominant fact in the formation of Caribbean society is that peoples of diverse cultures were forcibly transplanted to the region and passively incorporated into the market oriented system of production and trade of the capitalist Atlantic economy. Money and finance served this wider purpose. Today the Caribbean consists of a number of small open economies, politically independent but highly dependent on the outside world for trade, technology and finance.

A number of consequences flow from this history. By and large there has been a tendency for Caribbean peoples to behave as if they were transients and to display little loyalty to the demands of a homeland over opportunities offered in the wider world. Risk averse behaviour almost inevitably follows from small size and a tendency to market volatility. Out of this experience has also come a tendency to anti-authority attitudes and the emergence of nationalist movements advocating a key role for the state in redressing social and economic grievances. Not unexpectedly fiscal policy has tended to be expansionary and monetary policy accommodative.

Production: Efficient production in Caribbean economy, as Demas [5] has taught, entails specialisation on a relatively narrow range of goods and services for international markets and use of the foreign exchange so earned to access the full range of commodities desired for the lifestyle chosen. Prosperity is thus partly dependent on the sensibleness of past investments and current levels of domestic production and partly on the happenings on world commodity markets. An export boom invariably brings economic prosperity while a slump in exports spells widespread distress. It is therefore so important to maintain competitiveness in export production that the exchange rate is the most critical price in these economies. Lewis [8] has however strongly cautioned against promoting exports to the neglect of the domestic sector because gains from participation in international trade depend both on the productivity of factors engaged in export production and on the opportunity cost of such factors as measured by their productivity in wage goods production.

II Theory of Money:

On account of both historical and structural considerations there is a close affinity between money and foreign exchange in Caribbean economy. Savings flows out of current incomes provide the basis for the accumulation of assets. In most Caribbean economies imports constitute a substantial proportion of aggregate supply. The reverse side of this is that exports must comprise a comparable proportion of production. An extreme case is such as obtained under pure plantation economy (see Best [2]) when virtually all output was exported and all supplies imported. The point to be deduced is that in such economies in which output is substantially of exportables the surplus of current output over current use necessarily accrues in the form of foreign exchange. To the extent that historically the colonial based authorities and enterprises had as their raison d'être the extraction of surplus for repatriation at home, internationally negotiable currency would

be the form of money most suited to their purpose. Money in such a system takes the form of foreign exchange and a 100 percent backed domestic currency, such as was introduced under the "Sterling Exchange Standard", functionally equivalent. There was also the additional benefit that once the cost of administering the domestic currency did not exceed the earnings of currency backing foreign assets when investments abroad there would be a profit to be made accruing in foreign exchange.

It is not the case in the Caribbean that output was ever 100 percent exportables. However increasingly after 1838 the share of residentiary non-traded output increased. Since not all residentiary output was currently consumed, this surplus constituted an additional alternative base for money supply. The point here being established is that there is both an export base (accruing in foreign exchange) and a domestic base to money supply in Caribbean countries. Thus Analyst's [1,p.51] proposed fiduciary issue of 50 percent over foreign asset backing was not fiduciary at all but had its basis in surplus residentiary output; nor is the size of the issue to be arbitrary but can be empirically determined. It follows that for given income velocity of money and other payment institutions, the conclusion reached by writers in the 'fifties that the Currency Board system was deflationary and a hindrance to economic development is correct. However their understanding of the problem was less accurate than their insight.

It is not as they argued that import capacity for development was locked away in the foreign assets backing the currency. Instead the correct perspective is that total money supply was not allowed to grow to match output growth in both export and residentiary sectors, and it is from this money barrier that deflation derived. To the extent that criteria of credit worthiness imposed by foreign branch banks channelled funds towards the traded sectors in the situation where total money supply was arbitrarily curtailed, residentiary activity would automatically be

starved of finance. We reach this conclusion drawing on the ideas of Polak [9].

From the foregoing analysis we deduce the following theorem.

Theorem: In open economy the share of the foreign asset backing to monetary liabilities of the monetary authorities should not be less than the share of exports in production of goods and services and may approach 100 percent to the extent that output and exports converge.

Money Supply: The next area of the analysis to be developed is the process of money supply. It is firmly established that in open economy the money supply is endogenous since a choice must be made by economic agents between purchasing imports, thereby running down foreign reserves, and holding money thereby allowing foreign reserves to accumulate. Now that the domestic asset base of the money supply has been introduced into the analysis two things must be done. Firstly the nature of the domestic money base must be analysed. Secondly relationships must be traced between the components (domestic and foreign) of base money and money supply, between money supply and imports, and between import demand, import capacity and the exchange rate. We take them in turn.

Let us, as is customary, assume that the money supply is the product of an institutionally determined money multiplier and high power money, and that high power money consists of net foreign assets and net domestic credit to the central government. When the foreign payments accounts are in surplus there will be an accumulation of foreign assets and expansion of the monetary base. Similarly central bank financed fiscal deficits would expand the base. In addition the monetary authorities can expect some measure of control over the money supply process by manipulating the statutory reserve ratio and so impacting on the money multiplier. Thus the management of the money supply may be effected either by sterilisation policies, given the state of the payments accounts,

fiscal policy or by reserve ratio determination. Strictly speaking it is only the reserve ratio which is under the control of the monetary authorities; the other two instruments are in the control of the government whose prerogative it is to practise deficit finance, monetize foreign reserves (by varying the domestic budget deficit) and determine their central bank borrowing limits by use of their statutory authority and the method of finance they choose. By and large we expect that commercial banks manage the credit they extend with strict regard to the ability of clients to service loans so while fractional reserve banking is inherently expansionary of the money supply, this component of the credit pyramid will not be without constraint. The net foreign asset base of money supply also imparts a measure of automatic regulation. Thus net domestic credit to the public sector emerges as the only part of the money supply apparatus which is largely discretionary.

From this follows a theorem.

Theorem: Net domestic credit to the public sector is the source of base money in a credit money system whose growth must, if it is to be neither inflationary nor deflationary, match cet. par. the growth rate in non-tradeable output.

Money Relationships: Post-war Caribbean economies are, without exception, prone to balance of payments crises, the consequence of economic mismanagement in most cases. It is our basic hypothesis that this difficulty derives from two sources:

(a) an attempt to use, on current account, more foreign exchange than the system generates over the long run; and

(b) an attempt on the part of economic agents to hold foreign assets in larger amounts than is consistent with competing uses of current flows of foreign exchange.

Until recently this problem was addressed by demand management policies. Supply side policies aimed at augmenting the

availability of foreign exchange in the long run requires expansion of the export sector with all the ancillary investment and market development activities precedent thereto. What then needs to be understood by those responsible for macro-economic management is the process by which excessive demand, needing subsequently to be reduced, could come into being in the first place. We might then better be placed to stand firm for preventative measures rather than have to apply curative measures later.

The problem may be characterised by the following schema. To begin, money supply grows with expansion in the monetary base, comprising net foreign assets and net domestic credit to the public sector. This

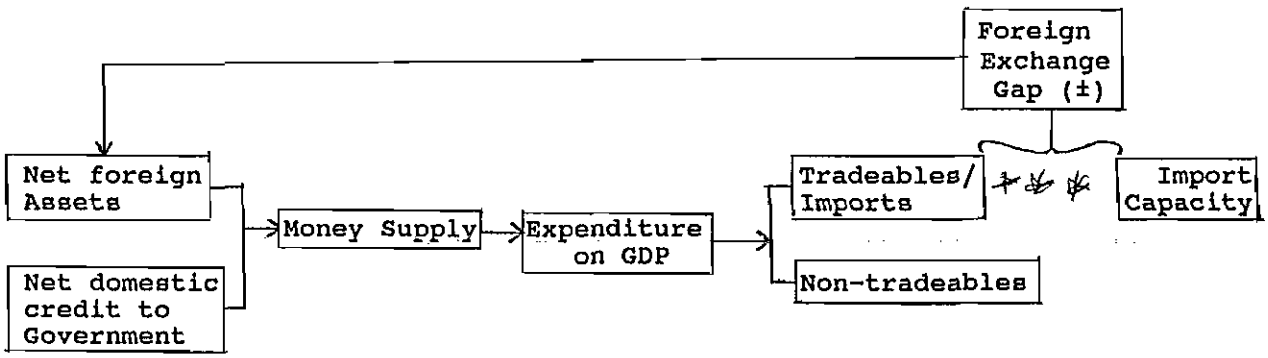

Fig. 1

triggers expenditure partly for current use and partly for capital formation. These expenditures are made either on tradeables (imports or exportables) or on non-tradeables. Import capacity, determined by export performance, sets an upper bound on imports and pressure on the exchange rate will derive from any tendency for imports to exceed import capacity. Fig. 1 illustrates.

We hypothesise that monetary expansion deriving from expansion in net foreign assets has no negative balance of payments impact if it were to trigger expenditure on tradeables. Similarly, monetary expansion deriving from increases in net domestic credit to government is neutral to the balance of payments where it

stimulates expenditure on non-tradeables. Monetary expansion originating in increases in net foreign assets has a positively benign effect were it to stimulate expenditure on non-tradeables, assuming that there is unused productive capacity in non-tradeable production. However, where money supply increases deriving from increased net domestic credit to the government lead to increased expenditure on imports, balance of payments problems will follow. There is of course no method by which the expenditure impact of money supply can be channelled to the tradeable or non-tradeable sectors, depending on the source of base money. If we assume that the balance of payments are the critical accounts in the Caribbean context the following rule of management suggests itself:

> Rule: Money supply growth in excess of that warranted by growth in net foreign assets must be accompanied simultaneously by commensurate exchange rate depreciation, the extent depending on the size of the net domestic credit money multiplier (h_2), the money supply to aggregate expenditure coefficient (p), and the import coefficient (m).

In what follows we articulate a simple structure which enables us to quantify the exchange rate adjustment necessary to maintain payments equilibrium and present estimates for various Caribbean countries.

III A Prototype Model

Let h_1, h_2, p and m be parameters, and e be the exchange rate, and let M_s = money supply, NFA = net foreign assets, NDC = net domestic credit to central government, E = expenditure on the GDP, IM = imports of goods and services, and let $\bar{X}$ = exports of goods and services measured in foreign exchange and assumed to be exogenous.

Money Supply $M_s = h_1NFA + h_2NDC$ (1)

Expenditure Function $E = pM_s$ (2)

Import Function $IM = mE$ (3)

Import Capacity $\overline{IM} = e.\bar{X}$ (4)

Import Constraint $IM \leq \overline{IM}$ (5)

From equations (4) and (5)

$$\triangle IM = e.\triangle\bar{X} + \bar{X}\triangle e \quad (6)$$

so $$\triangle e = (\triangle IM - e.\triangle\bar{X})/\bar{X}. \quad (7)$$

Using equations (1), (2) and (3) with (7),

$$\triangle e = (mph_1\triangle NFA + mph_2\triangle NDC - e.\triangle\bar{X})/\bar{X} \quad (8)$$

and $$\frac{\triangle e}{e} = \frac{mph_1\triangle NFA}{e.\bar{X}} + \frac{mph_2\triangle NDC}{e.\bar{X}} - \frac{\triangle\bar{X}}{\bar{X}} \quad (9)$$

What this result indicates is that no exchange rate adjustment is needed if import capacity and money expansion are in tandem so that positive and negative terms on the RHS of equation (9) cancel each other. Once there is growth in import capacity ($\triangle\bar{X}/\bar{X}$) the resulting increment in net foreign assets (NFA) would create room for money expansion. However as is so often the case with Caribbean economies, sagging or declining import capacity tends to go hand in hand with absence of fiscal buoyancy. The resulting fiscal deficits, when monetised, result in the potential for balance of payments disequilibrium which could only be corrected by exchange rate adjustment. Assuming for purposes of analysis no change in import capacity or net foreign assets but an increase in net domestic credit to the central government ($\triangle$NDC), then the requisite exchange rate adjustment for balance of payments equilibrium depends on the size of the import coefficient (m), the expenditure coefficient (p) and the net domestic credit money multiplier (h_2), and of course on the size of the net domestic credit extended relative to the import capacity ($\bar{X}$) expressed in domestic currency.

Data Set

Data for the empirical exercises were taken from the seven monetary jurisdictions in the English-speaking Caribbean as follows:

Country(ies)	Period	Data peculiarities
Bahamas	1973-1989	
Barbados	1972-1989	
Belize	1976-1990	Imports & Exports of goods only
ECCB	1977-1987	Not including Montserrat and Anguilla
Guyana	1965-1990	
Jamaica	1965-1990	
Trinidad & Tobago	1965-1990	

The main data source was the 1991 International Financial Statistics Yearbook published by the International Monetary Fund. However in the cases of Bahamas, Barbados, Belize, the ECCB countries and Trinidad and Tobago this was supplemented from country publications or from the Annual Economic Report of the Caribbean Development Bank for 1990.

Our first task was to establish whether, as equation (1) purports, the money multiplier can be separated into two significantly different components, h_1 and h_2. Based on a homogeneous regression, coefficient estimates from equation (1) are given in Table 1, and two-tail tests conducted at the 5 percent level indicate significance(S) or non-significance (NS). The significance of individual coefficient estimates is also indicated (*).

Table 1: Testing Significance between h_1 and h_2

Country	Narrow Money			Broad Money		
	h_1	h_2	Test result	h_1	h_2	Test result
Bahamas	.35*	1.52*	S	1.31*	5.08*	S
Barbados	1.03*	1.55*	NS	2.25	4.99*	NS
Belize	.95*	.83*	NS	2.80*	2.44*	S
ECCB	.16	1.08*	S	.58	4.28*	S
Guyana	-.13*	.12*	S	-.40*	.29*	S
Jamaica	-.50*	-.26*	S	-1.59*	-.86*	S
Trinidad & Tobago	.63*	.55*	S	2.33*	2.31*	NS

* Significant at 5 percent

Except for Barbados, and to an extent Belize and Trinidad and Tobago, we broadly conclude that the money multiplier is significantly different for changes in net foreign assets compared to changes in net domestic credit to government. In Guyana where money supply has moved in the opposite direction to net foreign assets but in the same direction as movement in credit to government h_1 and h_2 have been negative and positive respectively. The coefficients for Jamaica are more difficult to rationalise. Whereas the secular positive trend in money supply and negative trend in net foreign assets yield negative values for h_1, net domestic credit to government after rising for the years up to 1984 has been falling since 1986, and it is this latter steep decline which the negative values for h_2 have captured. All h coefficients, save three (h_1 for both narrow and broad money supply for the ECCB and h_1 for broad money supply for Barbados), are significant at 5 percent.

Our next task was to determine the Polak expenditure (p) and import (m) coefficients. These were measured as the arithmetic means of their ratios over the sample period as implied by equations (2) and (3) respectively. The coefficient estimates are given in Table 2, together with coefficients of variation V_m, Vp_1 and Vp_2 indicative of their stability. Import coefficients are relatively stable but expenditure coefficients, while generally stable, were very volatile in the case of the Bahamas and Guyana. Median values which are usually more stable are given for the expenditure coefficients for these countries but were not used in the analyses.

Table 2: Import (m) and Expenditure Coefficients (p)

	$\bar{m}$	V_m%	$\bar{p}_1$	$V\bar{p}_1$%	$\bar{p}_2$	$V\bar{p}_2$%
Bahamas	.68	25	1.13[a]	158	3.54[b]	154
Barbados	.66	17	.38	23	1.18	21
Belize	.74	18	.28	21	.83	13
ECCB	.79	10	.36	14	1.37	23
Guyana	.78	44	.40[c]	245	1.03[d]	265
Jamaica	.48	16	.24	25	.69	32
Trinidad & Tobago	.38	21	.18	14	.61	20

median values are a: 0.56, b: 1.86, c: .54, d: 1.33

These coefficients were next combined to give the analytical results implied by equation (9). Estimates of the multipliers mph_1 and mph_2 have been derived using Tables 1 and 2, and these are presented in Table 3.

Table 3

	Narrow Money			Broad Money		
	mp_1	mp_1h_1	mp_1h_2	mp_2	mp_2h_1	mp_2h_2
Bahamas	.77	.27	1.17	2.41	1.01	3.91
Barbados	.25	.26	.39	.78	1.76	3.89
Belize	.21	.20	.17	.61	1.71	1.49
ECCB	.28	.04	.30	1.08	.63	4.62
Guyana	.31	-.04	.04	.80	-.32	.23
Jamaica	.12	-.06	-.03	.33	-.52	-.28
Trinidad & Tobago	.07	.04	.04	.23	.54	.53

In an attempt to make sense of these results use was made of Spearman's rank coefficient of correlation to measure association among parameters. Strong positive correlation was found between p_1 and p_2 ($r = .86$) and between h_1 for narrow and broad money ($r = .9$) and h_2 for narrow and broad money ($r = .96$) suggesting that both definitions of money are valid for the relationships. However because in Caribbean countries savings accounts tend to be operated virtually on a current basis we opt to use broad money in preference [NB $r(mp_1, mp_2) = .96$]. We also note that high h_1 tends to be associated with high h_2 ($r = .71$) and that there is a tendency, though not quite as strong, for high m and high p to go together ($r(m,p_1) = .54$, $r(m,p_2) = .61$).

The coefficients mp_1h_1 and mp_2h_1 measure respectively for narrow and broad money the adjustment in exchange rate necessary to maintain balance of payments equilibrium when net foreign assets has increased by one percent of import capacity. Table 3 indicates that in the case of narrow money except for Bahamas, Barbados and Belize very little adjustment at all is required and this is as we think it should be since foreign exchange inflows both expand the money supply base and raise import capacity. The positive values of the parameters however suggest that even foreign asset based money expansion tends to impact negatively on the equilibrium exchange rate.

The coefficients mp_1h_2 and mp_2h_2 measure respectively for narrow and broad money the adjustment to exchange rate necessary to maintain balance of payments equilibrium when in the face of no change in import capacity or net foreign assets net domestic credit of one percent of import capacity is extended to the central government. We are, as indicated earlier, unsure of the validity of the sign of the h_2 coefficients for Jamaica. But when we consider the parameter mp_2h_2 for broad money supply we observe relatively large adjustments for the ECCB, Bahamas, Barbados (approximately 4 percent or more), middling for Belize (1.5 percent

approximately), and well under one percent for Trinidad and Tobago and Guyana. If we are to account for these inter country differences, the high import coefficient (e.g. for ECCB countries) and high expenditure coefficients (e.g. for the Bahamas) must feature strongly. By contrast, Trinidad and Tobago's low import coefficient, perhaps due to the absence of fuel imports stands out, while for Guyana the very low average value for h_2 is the telling factor. As said before, the negative parameter value for Jamaica, essentially suggesting currency revaluation with increased credit to government seems untenable and must be regarded as a statistical aberration.

IV. Conclusion:

In this paper we have sought to highlight one major concern with policy implication of the utmost profoundity. It is this. Given the size, structure and institutional configuration of Caribbean economies and the social orientation of its peoples, there appears to be an inherent tendency towards exchange rate depreciation, and persistent fiscal deficits appear to be a major contributor to this.

Because of the high import content of supply, the exchange rate is the most important single price in these economies. Its behaviour impacts on every other price, on the general price level, and so on the value of money. Money, the life blood of modern economic systems, is the bridge between the present and the future. A stable and predictable value of money is thus basic to planning current expenditures and to long-term investment decision-making. Since it is investment which expands production capacity and enhances productive efficiency, an unreliable money is the bane of economic progress.

Deficit financing constitutes an attempt by the state to commandeer more real resources than public sector revenues warrant

and ipso facto increases the quantity of money chasing after an unchanged flow of goods and services. This spills over into import demand with adverse consequences for the balance of payments and the exchange rate. If therefore price stability is a central goal of economic policy, which in our opinion it should be, persistent deficit financing is contradictory. While governments are sovereign, on this matter they may need to subject themselves to higher moral authority.

The analysis also suggests that there could be advantage in pooling the monetary jurisdictions in the Caribbean as this would on average lower import and expenditure coefficients, the money multipliers and stabilise the exchange rate. Monetary union, such as obtains in the OECS, which obtained under the 1948 British Caribbean Currency Agreement, and which was proposed by the British Colonial Office for the English-speaking Caribbean as far back as 1926, could also bring much needed fiscal discipline.

* Salve + drops
* wine + water

dev't of systemic competences as against or in addition to symbiotic competences

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