INTERNATIONAL RESERVE FLOWS AND MONETARY EQUILIBRIUM IN THE COMMONWEALTH CARIBBEAN

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The early successes of the monetarist revolution in economic theory were confined primarily to the analysis of monetary equilibrium in the context of a closed economy. In recent years, however, extension of the main ideas to the analysis of open economies has brought with it a fundamental reinterpretation of the nature of international equilibrium. There has been a revival of interest in the monetary nature of balance-of-payments disequilibria, and an accompanying restoration to the forefront of balance-of-payments analysis, the classical emphasis on conditions for monetary equilibrium in a growing world economy. Portfolio choice considerations have become formally incorporated into the theory of international adjustment, and the rate of domestic credit expansion has become the central theoretical relationship around which to organise thought concerning the conduct of balance-of-payments policy.

Yet these advances in payments theory and policy have not been accompanied by any alterations in the methodology of balance-of-payments accounting, nor have published analyses of balance-of-payments performance in the region been couched in a modern theoretical idiom. Pronouncements on the balance-of-payments remain preoccupied with the behaviour of the current account and income-expenditure relationships. They direct attention to the components of aggregate demand; prominence is given to the effects of relative price changes on international trade flows, and the importance of foreign investment

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in financing imbalances is stressed. Considerations of portfolio equilibrium are ignored, the monetary implications of disequilibrium behaviour overlooked, and balance-of-payments deficits and surpluses treated as if they represented residual flows.[1]

In this paper, we offer an alternative interpretation of the balance-of-payments performance of the Commonwealth Caribbean countries over the past twenty years. Our analysis emphasises the monetary nature of balance-of-payments outcomes, and hence is in the tradition begun by Hume [9], but given its modern treatment in the work of Polak [17], Mundell [14, 15], Johnson [10] and their associates [7]. Section I provides the theoretical frame-work for our discussion by summarising some of the main analytical propositions of the monetary approach to balance-of-payments analysis, using a very simple model of the world economy to capture the essence of monetarist conclusions about the forces influencing international reserve flows. Section II reports some statistical tests to determine the empirical relevance of this approach to the case of the Commonwealth Caribbean countries. Specifically, we demonstrate the validity of monetarist assumptions about real world behaviour in the Caribbean context, and determine the relationship between the balance-of-payments and the rate of domestic credit expansion. Section III summarises our results and discusses some implications of our analysis for the formulation of public policy in the region.

I

The basic analytical proposition of the monetary approach to balance-of-payments theory and policy is that balance-of-payments deficits or surpluses, and exchange rate movements in a world of flexible exchange rates, both reflect a condition of stock disequilibrium in the market for money. In principle, such a disequilibrium could be produced either by parametric shifts in the demand function for money, or by autonomous changes in the quantity of money supplied. The monetary approach however, follows the modern quantity theory in asserting the empirical stability of the demand function for money. Fortunately, extensive empirical analysis over the past twenty years has demonstrated very conclusively, that the stable demand function for money postulated by Hume and the modern monetarists, does indeed exist for a large number of countries, with different institutional frameworks, over different historical periods, and, which is more, its characteristics are independent of the method by which changes in the money supply are generated.[2]

Given a stable demand function for money, disequilibrium in the market for money could be produced only by variations in the quantity of money supplied. In any country, the nominal stock of money can be defined as being equal to the sum of the country's net holdings of foreign exchange reserves, and the level of credit extended by the banking system to domestic borrowers; this is the well-known monetary survey identity.[3] Period to period changes in

the money supply can therefore be written as the sum of its two source components viz

$$\Delta M = \Delta R + \Delta D$$

The change in the foreign source component ΔR is by definition equal to the balance-of-payments. As such, unless the level of domestic credit outstanding always varies systematically so as to offset movements in reserves, the balance-of-payments will always have a primary impact on the money supply. Reserve inflows will increase the money supply and reserve outflows reduce it.

The monetary approach however gives prominence to the behaviour of the domestic source component ΔD, and does so for two important reasons. In the first place, it is the decision variable of monetary policy. Although reserve flows could be influenced directly by actions of the policy authorities (e.g. through changes in the level of overseas borrowing and lending), by and large, the dominant monetary policy instrument directly under the control of the authorities is the level of domestic credit and its rate of change i.e. the rate of domestic credit expansion. Secondly, and far more important, in terms of full-equilibrium comparative statics, reserve flows are completely endogenous. As the analysis will show, movements in reserves are a passive concomitant of money supply changes, being merely a part of the adjustment mechanism by which a disparity between the existing stock of money and the demand for it is corrected.

Suppose, for example, that from a state of full multi-market equilibrium there was an increase in the money supply of some country, say Country A. Residents in A would now find that their actual money holdings are in excess of the desired levels, and accordingly, would make some adjustments in an effort to restore portfolio equilibrium. The exact process by which they do so remains a matter of controversy, and the empirical evidence on the question seems open to alternative interpretations. Most economists however would agree that residents in A would alter the stream of their expenditures and receipts by running down their excess cash balances through the purchase of real and financial assets. And, which is the crucial consideration for balance-of-payments analysis, the markets in which these transactions could take place are not confined to national boundaries.

If these transactions were to take place in home markets, the increased demand for non-money assets in A will normally serve to increase the level of nominal income. But if we assumed either that output and employment tend to full-employment levels, or alternatively, in the special case of less-developed countries, that structural rigidities, market imbalances and production bottlenecks preclude output increases, then the effect of the increased aggregate demand would be to create pressures for the prices of real and financial assets in A to rise in the short-run, relative to prices in the rest of the world. As such residents in A would be encouraged to reduce their purchases and increase their sales in home markets, while at

the same time, residents in the rest of the world would be encouraged to reduce their purchases from and increase their sales to, Country A. In fact, in classical analysis, it was these divergent movements in national price levels which gave rise to equilibrating changes in trade flows, with consequential changes in the balance-of-payments and national money supplies.

The monetary approach however deemphasises these relative price adjustments, and asserts instead the essential unity of the world's commodity and security markets. This is an heroic assumption, for if true, it would imply that the output, price, and interest-rate changes which classical analysis holds necessary for the restoration of monetary equilibrium are not really needed. Money flows themselves will suffice. Nevertheless, modern monetarists find much justification for the assumption. At one level of analysis, it is argued that as a purely empirical matter, there is a demonstrable long-run tendency towards purchasing-power-parity among countries. Over long periods of time, changes in exchange rates tend to offset changes in relative price levels, and there is now abundant evidence that over the long-run, price movements around the world have been characterised more by their parallelism than by their divergence [13], [21]. The monetarists contend that since under a system of fixed exchange rates, price levels and interest rates must in the long-run move rigidly in line with one another, balance-of-payments analysis should accordingly focus attention on the long-run equilibrium price relatiosnhips and assume perfect commodity arbitrage.

But going further, it is asserted that even in the short-run, these relative price adjustments are unlikely. Because there are high elasticities of substitution among countries for most tradeable goods and financial assets, and because world markets are highly integrated, a single price must necessarily prevail in all markets for goods and assets that are close substitutes for one another. In the short run, the forces of competition will serve to quickly and directly eliminate changes in relative prices, and it is these attempts to arbitrage potential inter-country price and interest-rate differentials that are the driving force leading to the reduction of money balances and the associated temporary balance-of-payments deficit.

The adjustments described above will be captured in the balance-of-payments statistics as an overall deficit in the trade and capital accounts. The deficit represents an exchange of money balances by residents of country A for goods and assets supplied by the rest of the world. The foreign recipients of these balances will surrender them at their own Central Bank for domestic currency, and the Central Banks abroad will in turn redeem them in country A for primary reserve assets. Since these reserve assets are one component of the money supply, the end result of this chain of transactions is the restoration of monetary equilibrium in country A through the reduction of the money supply back towards its original level, albeit with an increase in the money supply of the world as a whole.

In summary then, the essence of the monetary approach to balance-of-payments analysis is the proposition that the transactions reported in balance-of-payments statistics reflect in the aggregate, portfolio decisions by domestic and foreign economic units to remove disparities between actual and desired money holdings. Any recorded deficit or surplus (or exchange rate change in a world of flexible exchange rates) represents a phase in this automatic adjustment process, and must therefore be transient in nature unless stock disequilibrium is continually being recreated through domestic credit policy. Over time, continuous increases in the level of real output will create a demand for a growing stock of real and therefore of nominal money balances. This may produce a continuous flow disequilibrium, but a balance-of-payments deficit will emerge only if domestic credit expands at a rate sufficiently more rapid than that of output at constant prices.[4]

These conclusions can be derived more formally from the following simple two-country, one commodity model of the world economy:[5]

$$M_D = kPy \; ; \; M^*_D = K^* P^* y^* \qquad (1)$$

$$P = P^*\pi \qquad (2)$$

$$M_S = R + D \; ; \; M^*_S = R^* + D^* \qquad (3)$$

$$M_D = M_S \; ; \; M^*_D = M^*_S \qquad (4)$$

$$\dot{M} = \dot{R} = H = B = -\pi H^* = -\pi \dot{R}^* = -\pi \dot{M}^* \qquad (5)$$

$$E = Py - H \; ; \; E^* = P^* y^* - H^* \qquad (6)$$

$$H = \alpha (M_D - M_S) \; ; \; H^* = \beta (M_D^* - M_S^*) \qquad (7)$$

where a dot over a variable indicates its rate of change, an asterisk indicates variables for the rest of the world, and

M_D = *desired level of nominal money balances*

k = *desired ratio of money to income*

P = *domestic price level*

y = *the level of real output*

π = *domestic currency price of foreign exchange*

M_S = *nominal quantity of money*

D = *domestic source component of the money supply*

R = *international source component of the money supply*

B = *trade-balance surplus or deficit*

E = *desired level of nominal expenditure*

H = *flow demand for money*

α, β = *domestic and foreign rates of adjustment of actual to desired nominal money balances.*

Equations (1) describe the demand function for money. They are written in Cambridge cash-balances form, and are assumed to embody the neutrality assumptions of classical monetary analysis. The level of real output is exogenous to the system, given by the general equilibrium of the commodity markets. All prices are assumed completely flexible, and k, the velocity relationship is assumed to be an empirically stable behavioural parameter. Equation (2) reflects the assumption of perfect commodity arbitrage, ensuring that in the absence of barriers to trade, a single price would previal in

integrated world markets. Equations (3) give the monetary survey identity defining the money supply in terms of its two source components, and equations (4) provide the condition for equilibrium in the money market.

The remaining equations dynamise the system. Equation (5) describes the automatic adjustment process; since we assume that the monetary authority abstains from changing the level of domestic credit except as it is necessary to maintain a fixed exchange rate, the rate of increase in the money supply is given by the balance-of-payments (definitionally equivalent to the change in the country's stock of reserves), and the equation spells out the feedback mechanism from the balance-of-payments onto the domestic money supply. Equations (6) show the interaction between the money market equilibrium and the real sectors of the economy, while equations (7) define the flow demand for money as the difference between the desired and actual stocks of money held by the community.

This simple general equilibrium model is sufficient to yield all the basic analytical propositions of the monetary approach -- that changes in the exchange rate will not systematically alter the structure of relative prices between domestic and foreign goods and will have only a transitory effect on the balance-of-payments, that monetary policy can have no lasting effect on the general equilibrium of the real economy under fixed exchange rates, and that a country's payments position is determined fundamentally by the nature of the equilibrium in the market for money. It must be

contrasted with traditional models for balance-of-payments analysis which make changes in the terms of trade a significant element in the adjustment process, which implicitly assume that the monetary authorities can sterilise the impact on the domestic money supply of reserve flows arising from payments imbalances, and which accord to foreign repercussions the status of "second-order effects" influencing the magnitude but not the direction of disturbances and policies in the domestic economy.

The model could be brought closer to conformity with the real world by extending it in several ways. The classical supply function of real output embodied in equation (1) could be replaced by an elastic supply function, making the level of real output an endogenously determined variable. The spectrum of financial assets could be broadened to include bonds or other types of interest-bearing securities, thus transforming the money-market equilibrium into one that incorporates all financial assets. And the high degree of aggregation employed in equation (2) could be relaxed to allow for the existence of traded and non-traded goods. Although these extensions and refinements will naturally introduce some qualifications of the monetarist conclusions, none of them will alter the basic qualitative result -- the balance-of-payments will remain dependent on the state of equilibrium in the market for money.

II

Manipulation of the simple monetary model described above would make clear the critical role played by stability of the demand function for money in deriving the main analytical conclusions of the monetary approach. That assumption is empirically testable, so before we examine the accuracy of the model's predictions in the Caribbean context, we should first determine whether the a priori empirical presumptions of the monetarists can in fact be supported by the available statistical evidence. Unfortunately, empirical work on the demand function for money in the region is scant. The only extensive study reported in the literature has been that of Bourne [2], but even then Bourne confined his attention to Jamaican data, and his study did not directly consider the question of stability in monetary velocity. We report some new results here, drawing heavily on an unpublished manuscript of this author [18].

A behavioural relationship is said to be empirically stable if it can be relied on to generate empirically consistent relations which remain the same from time to time. Formally, the parameter estimates should be independent of the sample period employed, and the ability of the regression equation to predict out-of-sample performance should be consistently good. We use both methods here, following a test suggested by Chow [4] to determine whether the regression coefficients in our estimated relationship are sensitive to changes in the sample period and the sample size.

The availability of data has forced us to limit our enquiry to Guyana, Jamaica and Trinidad and Tobago over the period 1953-74. Data was drawn primarily from various issues of International Financial Statistics. Money is defined broadly to include time and savings deposits (lines 34 and 35 IFS), the income variable is Gross National Product at current market prices (line 99a IFS), and it is assumed that the opportunity costs of holding cash balances can be represented by the Treasury Bill Rate for Jamaica, the British Bill Rate for Guyana and Trinidad and Tobago. The appendix to this paper summarises 12 regressions run over the sample period for the three territories involved.[6] The sample was broken at a priori chosen points and the parameter estimates across the various sample periods tested for consistency. Test A considers whether the demand function for money changed between the two time periods, while Test B determines the stability of the regression coefficients as the sample size increases.

The results of these Chow tests are summarised in Table I which compares the theoretical value of $F_{0.05}$ with our calculated F-ratio.

TABLE I: CHOW TESTS FOR MONETARY STABILITY

TERRITORY	F-STATISTIC	$F_{0.05}$	RESULT
GUYANA			
TEST A	0.62	3.48	STABLE
TEST B	0.74	3.48	STABLE
JAMAICA			
TEST A	1.20	3.11	STABLE
TEST B	1.67	3.11	STABLE
TRINIDAD AND TOBAGO			
TEST A	4.43	3.11	UNSTABLE
TEST B	1.98	3.11	STABLE

The table shows that in all three territories we can firmly reject the hypothesis that the demand function for money is sensitive to changes in the sample size. For Jamaica and Guyana, we can also reject the hypothesis that the function is sensitive to changes in the sample period, but it appears that in Trinidad and Tobago, the demand function for money changed between 1954-64 and 1964-74. We suspect however that this perverse result is traceable (data limitations aside) to misspecification of the function itself. In the later period, there is noticeable positive autocorrelation in the residuals, and our proxy for the opportunity cost of holding money is never statistically significant. Experiments with other specifications of the demand function were equally inconclusive. We therefore wish to reserve judgement on the stability of demand for

money relations in Trinidad and Tobago, while accepting the validity of the monetarist assumptions in the case of Guyana and Jamaica.

One further preliminary point. The assumption of perfect commodity arbitrage in world markets implies that under fixed exchange rates, the rate of inflation in the region will be exogenously determined since these territories are far too small to have any noticeable impact on world prices. We ran a regression using annual rates of change in the Jamaican consumer price index as the dependent variable on the annual rate of inflation in the O.E.C.D. countries as a proxy for changes in the world price level.[7] Our estimated coefficient on the rate of world inflation was significantly different from its hypothesised value of unity. However, a one-standard-error confidence region for the bounds of that estimate did include unity. We should therefore note that although perfect commodity arbitrage is not vitally necessary to establish the monetarist results, we could not firmly reject the monetarist presumption that the region is but a small part of an integrated world economy.[8]

We turn now to an empirical test of the monetarist predictions. We assume that the demand for money can be written as

$$M_D = P\, y^{\alpha}\, i^{B} \qquad \text{---------- (1)}$$

the supply of money is given by

$$M_S = R + D \qquad \text{---------- (2)}$$

and the money market equilibrium condition is

$$M_D = M_S \qquad \text{---------- (3)}$$

Substituting equations (1) and (2) into (3), differentiating logarithmically and collecting terms yields

$$\frac{R}{R + D} d \log R = d \log P + \alpha d \log y + \beta d \log i + \frac{R + D}{} d \log D \quad \text{---------- (4)}$$

This equation is estimated in the form

$$\frac{R}{R + D} d \log R = a_o + a_1 d \log P + a_2 d \log y + a_3 d \log i + a_4 \left[\frac{D}{R + D} d \log D\right] + e \quad \text{---------- (5)}$$

where e is the stochastic disturbance.

The estimated coefficients a_1, a_2 and a_3 represent respectively, the price -, income -, and interest-elasticities of the domestic demand for money. The standard homogeneity postulate of monetary theory implies that a_1 should be positive and equal to unity. Previous empirical work on the demand for money suggests that a_2 should be positive and in the neighbourhood of unity, while a_3 should be a small negative number. The monetary approach predicts that the estimated value of the coefficient on domestic credit expansion $\frac{D}{R + D} d \log D$ should be - 1, i.e. a $1 increase in domestic credit would lead, ceteris paribus, to a $1 decline in international reserves [11].

We estimated this equation for Jamaica using yearly observations over the period 1953-74. Our results are summarised in Table II.

TABLE II: INTERNATIONAL RESERVE FLOWS IN JAMAICA

Period	a_o	a_1	a_2	a_3	a_4	R^2	D.W	S.E.E.
1953-74	-7.192	1.214	1.066	-0.422	-0.870	0.996	1.91	0.0718
	(0.555)	(0.1547)	(0.142)	(0.089)	(0.022)			
1953-60	-7.749	1.600	0.871	-0.132	-1.068	0.996	3.23	0.0464
	(4.46)	(1.232)	(0.242)	(0.139)	(0.102)			
1962-70	-8.520	1.545	0.978	-0.122	-0.873	0.991	1.87	0.0464
	(0.671)	(0.505)	(0.358)	(0.143)	(0.053)			

Three equations are reported: one for the entire sample and two for sub-periods, the sample broken by the year in which the Central Bank of Jamaica was established. The results conform closely to our expectations. The high R^2 show that there is little unexplained variation in our specification of the reserve flow equation, and autocorrelation in the residuals cannot be detected. In all three periods, the income-elasticity of the demand for money was of the right sign, statistically significant, and within one standard-error of its hypothesised value of unity. The price elasticity was also of the right-sign, close to unity, but was not significant in the period 1953-60. The interest-elasticity had reasonable values and was of the right sign, but was not significant in the sub-periods of our sample.

Our main interest however is in the value of the coefficient on the rate of domestic credit expansion. In all three

equations, this coefficient is highly significant and is of the expected sign. It is within one-standard error of its hypothesised value for the period 1953-60, but falls just short of unity for both the period 1962-71 and the sample period taken as a whole. These results are to be expected for in the later period there were two minor forces at work helping to absorb any excess supply of money. Our model contains the implicit assumption that the restoration of portfolio equilibrium takes place within a single time-period, in our case, one year. This assumption is unduly restrictive, for obviously it takes time for holders of money balances to become aware of changed economic circumstances. In the later period not only may there have been slower adjustment in the presence of disturbed foreign exchange-market conditions, changes in effective exchange rates themselves also made for a less than proportionate decline in international reserve flows.

It was not possible to estimate an identical equation for Guyana and Trinidad and Tobago. A long enough series on domestic output at constant prices is not available for both territories, and in Caribbean-type economies, we consider it methodologically improper to deflate domestic output series with consumer price indices. We therefore made use of the homogeneity postulate, and assumed that the demand for nominal money balances can be written as a function of the level of nominal income. The reserve flow equation was then estimated in the form

$$\frac{R}{R+D}\, d \log R = a_0 + a_1\, d \log y + a_2\, d \log 1 + a_3\, \frac{D}{R+D}\, d \log D + e$$

Those estimates are given in Table III. Once again, the

TABLE III: INTERNATIONAL RESERVE FLOWS IN GUYANA AND TRINIDAD

TERRITORY	a_0	a_1	a_2	a_3	R^2	D.W	S.E.E.
GUYANA							
1956-74	-3.551	1.291	-0.295	-0.802	0.954	1.26	0.1464
	(0.955)	(0.208)	(0.214)	(0.059)			
TRINIDAD AND TOBAGO							
1953-74	-2.420	1.090	-0.096	-0.975	0.977	0.55	0.2271
	(1.01)	(0.194)	(0.232)	(-0.041)			

result conform to expectations. The explanatory power of the equations is quite good, although there is some positive autocorrelation in the residuals. All the coefficients have the expected sign and are of reasonable magnitude. The coefficient on the rate of domestic credit expansion in Trinidad and Tobago is within one-standard error of its hypothesised value of unity, while for Guyana, extensive foreign exchange controls together with the same considerations mentioned above for Jamaica, combined to produce an estimate just short of unity.

III

Taken as a whole, our results strongly suggest that international reserve flows in the Commonwealth Caribbean countries in the past two decades have broadly been in conformity with the

pattern implied by the monetary approach to the balance-of-payments. Our findings contradict the traditional Keynesian presumptions that output increases will generate reserve outflows by increasing imports and that increases in domestic interest rates will generate reserve inflows by attracting international capital. The monetarist predictions that reserve accumulation is positively related to the rate of growth of both domestic output and domestic prices, and negatively correlated with the rate of domestic credit expansion are strongly supported by the empirical evidence. The simple monetary model described above captures a significant portion of the systematic factors involved in determining international reserve flows in the region and suggests that it is a useful framework for analysing balance-of-payments phenomena.

Some important implications for policy follow directly from these conclusions. First, our model's emphasis on the endogeneity of the money supply in an open economy, and the requirements for money-market equilibrium in stock rather than flow terms, together rule our monetary policy as an effective instrument of economic stabilisation policy. Under a system of fixed exchange rates, and in the absence of restrictions on trade and payments, national money authorities do not exercise meaningful control over a country's money supply. Any attempt by the authorities to pursue domestic objectives by altering the domestic source component of the money supply will be inevitably frustrated by an offsetting change in the foreign source component through international reserve flows. There

is only one level of the stock of money compatible with payments equilibrium, and the monetary mechanism will ensure that the money stock converges on that equilibrium level [19].

Second, because of the model's prediction that all payments imbalances are strictly monetary phenomena, it should be clear that conventional balance-of-payments policies - import restrictions, export subsidies, exchange controls, changes in tariffs, devaluation etc. - will affect the balance-of-payments only if they alter the demand for money relative to its supply. Moreover, whatever such these policies may have, their effects will be purely transitory, lasting only until monetary equilibrium is restored through reserve flows. As such, whenever a country finds itself in a state of chronic disequilibrium on external account, the only possible long-run remedy is a reduction in the rate of domestic credit expansion.

Third, the monetary approach emphasises that not only are exchange rate changes ineffective for the achievement of payments equilibrium, they are also unnecessary. Any disturbance that moves a country away from balance-of-payments equilibrium will be automatically followed by offsetting reserve flows. There is no need to make external balance an explicit objective of national economic policy; the monetary mechanism will ensure that payments imbalances are eliminated even under conditions of fixed exchange rates. And going further, such a regime would produce a world welfare optimum, for only fixed exchange rates would make possible the international

pooling of risk and bestow the efficiency advantages associated with the existence of international money.[9]

Finally, the monetary approach in regarding the relationship between the stock demand for and supply of money as the critical determinant of the balance-of-payments, contends that the traditional emphasis on the level of particular sub-accounts in the balance-of-payments is of minor analytical and policy relevance. Since it is primarily through their effects on the domestic money supply that international transactions have any impact on domestic economic activity, the crucial balance-of-payments concept is that which captures all transactions reflecting the adjustment of actual money holdings to their desired levels. Yet this balance is not currently reported in the official statistics. This weakness in the methodology of contemporary balance-of-payments accounting not only makes more difficult the problems of balance-of-payments diagnosis, it contributes significantly to the choice of inappropriate cures, as the implications for domestic activity of disequilibrium in particular sub-accounts are grossly overstated.

APPENDIX: DEMAND FOR MONEY EQUATIONS, 1954-74

Equation	a_0	a_1	a_2	a_3	R_2	S.E.E.
GUYANA						
1. 1957-74	-0.32	0.083	-0.245	1.046	0.995	0.0440
	(-0.74)	(0.555)	(-1.234)	(1.096)		
2. 1957-66	0.224	0.00674	-0.207	1.036	0.972	0.0572
	(0.192)	(0.0205)	(-1.444)	(6.149)		
3. 1967-74	-0.625	-0.121	-0.129	1.235	0.995	0.0327
	(-0.135)	(-0.602)	(-1.989)	(7.510)		
4. 1957-70	-0.0780	+0.0444	-0.170	1.045	0.991	0.0457
	(0.1012)	(0.1870)	(1.666)	(8.130)		
JAMAICA						
5. 1954-74	-1.851	0.6865	-0.208	0.568	0.992	0.0773
	(-1.720)	(1.708)	(-1.33)	(2.116)		
6. 1954-64	-3.992	1.526	-0.327	-0.057	0.954	0.0841
	(-1.812)	(1.996)	(-1.234)	(-0.114)		
7. 1964-74	-1.187	0.5108	-0.2724	0.6836	0.990	0.0617
	(-1.035)	(1.107)	(1.260)	(2.150)		
8. 1954-69	-4.721	1.676	-0.409	-0.0715	0.986	0.0706
	(-3.002)	(2.960)	(-2.346)	(-0.1898)		
TRINIDAD AND TOBAGO						
9. 1954-74	-0.4098	0.0438	-0.0887	1.065	0.986	0.0793
	(-1.108)	(0.2538)	(-1.074)	(6.658)		
10. 1954-64	-0.00676	1.241	-0.0464	-0.5570	0.990	0.02966
	(-0.0305)	(5.536)	(-1.237)	(-2.100)		
11. 1964-74	-1.832	0.3783	-0.0914	0.8869	0.985	0.0765
	(-1.993)	(1.249)	(0.521)	(4.290)		
12. 1954-69	0.2134	0.4458	-0.0406	0.4536	0.966	0.0697
	(0.0588)	(1.505)	(0.500)	(1.242)		

N.B. The equation form is $\log M_t = a_0 + a_1 \log Y + a_2 \log r + a_3 \log M_{t-1} + e$.

Numbers in parentheses are standard errors of the coefficients.

REFERENCES

1. Bank of England, "The Importance of Money", Quarterly Bulletin, Vol. 10, No. 3, June 1970.

2. Bourne, C., "Dynamic Utility-Maximising Models of the Demand for Money in Caribbean Economies (with an application to Jamaica)" Social and Economic Studies, Vol. 23, No. 3, September 1974.

3. Brown, H., "Current Balance-of-Payments Problems and Policies: A Regional Approach" Papers, Annual Conference of the Regional Program of Monetary Studies, Trinidad, 1974.

4. Chow, G., "Tests of Equality Between Sets of Coefficients in Two Linear Regressions", Econometrica, Vol. 28, 1960 pp. 591-605.

5. Dornbusch, R., "Devaluation, Money and Non-traded Goods", American Economic Review Vol. 63, 1973, pp. 871-880.

6. Frenkel, J., "A monetary Approach to the Exchange Rate: Doctrinal Aspects and Empirical Evidence" Scandinavian Journal of Economics (forthcoming).

7. _____ and Johnson, H. (editors) The Monetary Approach to the Balance of Payments, Allen and Unwin 1976.

8. Goldfield, S., "The Demand for Money Revisited", Brooking Papers in Economic Activity, No. 3, 1973.

9. Hume, D., "Of the Balance of Trade", Essays, Moral, Political and Literary, Vol. 1. Longmans, Green, London 1898.

10. Johnson, H., "Towards a General Theory of the Balance-of-Payments" in Frenkel and Johnson [7].

11. _____ "The Monetary Approach to Balance-of-Payments" in Frenkel and Johnson [7].

12. _____ "The Monetary Approach to Balance-of-Payments Theory: A Diagrammatic Analysis", Manchester School, September, 1975.

13. Laffer, A.B., "The Phenomenom of World Wide Inflation: A Study in International Market Integration", American Enterprise Institute, 1975.

14. Mundell, R., "International Economics, Macmillan, 1968.

15. Monetary Theory: Inflation, Interest and Growth in the World Economy, Goodyear, 1971.

16. Mussa, M., "A Monetary Approach to Balance-of-Payments Analysis", Journal of Money, Credit and Banking, August, 1974.

17. Polak, J., "Monetary Analysis of Income Formation and Payments Problems" IMF Staff Papers, Vol. VI, 1957-58.

18. Somersall, T., "A Comparitive Analysis of the Demand for Money in the Commonwealth Caribbean" (mimeographed) 1976.

19. Swoboda, A.K., "Monetary Policy Under Fixed Exchange Rates: Effectiveness, the Speed of Adjustment, and Proper Use", Economica, May 1973.

20. Thomas, C.Y., "The Balance-of-Payments and Money Supplies of a Colonial Monetary Economy", Social and Economic Studies, March 1963.

21. Triffin, R., "The Evolution of the International Monetary System" Princeton Studies in International Finance, No. 12, 1964.

22. Wanniski, J., "The Mundell-Laffer Hypothesis - A New View of the World Economy", Public Interest, Spring 1975.

23. Whitman, M., "Global Monetarism and the Monetary Approach to the Balance-of-Payments", Brookings Papers in Economic Activity, No. 3, 1975.