An Investigation of Foreign Exchange Requirements for Economic Growth in CARICOM Countries

by

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The extent to which CARICOM member states, all of which are small open economies, will be able to realize real economic growth during the current decade, will be determined by the extent to which their earnings from commodity exports, and services, such as tourism, will be sufficient to finance the level of imports required for economic diversification and consumption needs. This study is specifically designed to gain insights into the potential problem of inadequacy of foreign exchange earnings relative to requirements likely to be faced by three of the four so called more developed member countries of CARICOM, Barbados, Guyana and Jamaica.

The study is organized in the following way. The first section involves an analysis of the sources and uses of foreign exchange for each of the three countries, on an annual basis, for the years 1965 through to 1978. The purpose of this exercise is to analyse the pattern of growth in the total availability of foreign exchange reserves, as well as, the evolution in the contribution of exports of goods and services, direct investments and loans to total foreign exchange available for use, and the disposal of these funds in financing imports and in servicing direct investments and external debt. This will provide us with some insights into the problems which might have been faced in that period or are likely to be faced in the future in financing levels of imports which are consistent with desired growth objectives.

In the second section of the study we will employ one of the standard models which have been employed in the past to analyze the potential

foreign exchange contraint on development and the associated growth in indebtedness related to the realization of specified growth targets.[1] The model will be used to illustrate the differences likely to emerge in an annual basis over a ten year period between foreign exchange earned from exports of goods and services and foreign exchange required to meet specified growth targets. This differential will indicate the potential pattern of growth in external indebtedness for the three countries and raises the question of the extent to which they would be capable of servicing this debt.

The study concludes with a brief discussion on the matter of the potential need for greater access to external financing on concessional terms to satisfy the growth objectives of countries in the region. This issue is one of considerable importance in light of what are exceedingly high interest rates in the major capital markets, which taken together with the overall uncertainty with regard to the economic growth in the major industrial countries suggests an indefinite existence of high interest rates and an associated difficulty in borrowing on a long term basis.

Sources and Uses of Foreign Exchange

Barbados

Principal sources and uses of foreign exchange in absolute values and in percentage terms are set out in Tables 1 and 2, respectively. One of the most notable features of the Barbadian situation is that travel, mainly receipts from tourism, was, since 1970, the major contributor to total foreign exchange receipts. Export earnings remained fairly stable between 1965 and 1973. Earnings in the post 1973 period were at a higher level but at the same time fluctuated to a much greater extent on a year to year basis. The pattern of earnings from exports can be attributed both to volume

Table 1

Barbados

Sources and Uses of Foreign Exchange 1965-1978 (US $ Millions)

	Sources							Uses				
Year	Exports	Travel	Transfers	Direct Invest-ment	Loans	Other	Total	Imports	Invest-ment Income	Interest and Amortization	Other	Total
1965	32.0	19.1	3.5	1.7	5.4	12.4	74.1	67.6	0.8	0.1	-	68.5
1966	34.6	21.9	2.8	7.5	3.4	4.4	74.6	76.3	1.4	-	-	77.7
1967	35.1	24.0	3.4	7.0	2.3	11.2	83.0	76.9	2.2	-	5.5	84.6
1968	33.3	30.6	3.2	7.9	1.6	20.6	97.2	84.0	3.7	0.5	2.8	91.0
1969	32.7	28.0	4.8	4.1	3.2	33.2	106.0	96.9	4.5	1.4	-	102.8
1970	35.7	40.4	5.2	8.7	11.9	51.7	153.6	106.9	4.1	2.6	35.1	148.7
1971	33.2	52.0	5.3	16.1	8.5	53.9	169.0	112.1	4.1	3.6	37.5	157.3
1972	37.7	62.5	6.6	17.3	4.0	53.8	181.9	128.0	6.1	3.4	43.1	180.6
1973	47.9	69.9	7.1	5.6	32.6	53.8	216.9	152.6	6.9	4.8	53.2	217.5
1974	67.3	109.8	7.0	10.1	6.6	56.9	257.7	185.4	5.8	11.5	65.7	268.4
1975	94.5	88.8	7.4	22.9	0.8	73.0	287.4	196.9	9.3	7.9	65.7	279.8
1976	76.1	103.8	12.6	6.9	22.0	57.2	278.6	219.2	4.6	5.1	64.2	293.1
1977	90.9	126.1	16.2	4.9	32.4	71.2	341.7	250.3	4.8	9.3	72.5	336.9
1978	111.1	167.5	16.5	9.0	29.0	89.4	422.5	287.6	5.5	12.2	95.5	400.8

Source: International Monetary Fund. Balance of Payments Yearbook, Annual.
UNCTAD. Handbook of International Trade and Development Statistics, 1980.

Table 2

Barbados

Sources and Uses of Foreign Exchange: Percentage Distribution

	Sources						Uses			
Year	Exports	Travel	Transfers	Direct Investment	Loans	Other	Imports	Investment Income	Interest and Amortization	Other
1965	43.2	25.8	4.7	2.3	7.3	16.7	98.7	1.2	0.1	-
1966	46.4	29.4	3.8	10.1	4.6	5.9	98.2	1.2	-	-
1967	42.3	28.9	4.1	8.4	2.8	13.5	90.9	2.6	-	6.5
1968	34.3	31.5	3.3	8.1	1.7	21.2	92.3	4.1	0.6	3.1
1969	30.9	26.4	4.5	3.9	3.0	31.3	94.3	4.4	1.4	-
1970	23.2	26.3	3.4	5.7	7.8	33.7	71.9	2.8	1.8	23.6
1971	19.6	30.8	3.1	9.5	5.0	31.9	71.3	2.6	2.3	23.8
1972	20.7	34.4	3.6	9.5	2.2	29.6	70.9	3.4	1.9	23.9
1973	22.1	32.2	3.3	2.6	15.0	24.8	70.2	3.2	2.2	24.5
1974	26.1	42.6	2.7	3.9	2.6	22.1	69.1	2.2	4.3	24.5
1975	32.9	30.9	2.6	8.0	0.3	25.4	70.4	3.3	2.8	23.5
1976	27.3	37.3	4.5	2.5	7.9	20.5	74.8	1.6	1.7	21.9
1977	26.6	36.9	4.7	1.4	9.5	20.8	74.3	1.4	2.8	21.5
1978	26.3	39.6	3.9	2.1	6.9	21.2	71.8	1.3	3.0	23.8

Table 3

Barbados: Trade Indices

1975 = 100

	Exports		Imports	
Year	Unit Value	Quantum	Unit Value	Quantum
1965	28	125	45	70
1966	29	131	45	78
1967	29	134	47	76
1968	28	136	46	84
1969	29	120	47	96
1970	30	123	48	113
1971	30	124	51	110
1972	38	111	55	118
1973	41	120	69	112
1974	78	102	94	100
1975	100	100	100	100
1976	66	122	102	107
1977	69	128	111	113
1978	73	167	122	118

Source: UNCTAD. Handbook of International Trade and Development Statistics, 1980.

of sales and unit prices received. In Table 3 where we have set out quantity and price indices for exports and imports, it can be seen that export volumes and unit prices were both relatively stable in the period up to 1973. There was a dramatic increase in the unit value of exports in 1974 and 1975, largely reflecting the higher prices for sugar negotiated under the Lome convention and major decline in price, averaging about 30 percent from 1976 to 1978. In spite of the lower prices export receipts were at a much higher level in the later years reflecting higher volumes of sales and a higher average level of prices than in the pre 1974 period.

Throughout the period receipts from exports, travel and transfers accounted for two thirds of total sources of foreign exchange. The other major sources of foreign exchange remained insignificant in both absolute and relative terms. Direct investment, for example, with the exception of 1971, 1972 and 1975, was on a level comparable to that of transfers as a provider of foreign exchange. In the last three years there was some indication of an increase in the significance of borrowing as a source of finance. However, even in that period loans never exceeded 10 percent of total foreign exchange acquired.

In light of what has just been stated it is then not surprising that neither the servicing of direct investment or external debt absorbed a major share of the foreign exchange budget. The share of total foreign exchange expenditure devoted to servicing direct investment was never greater than 4 percent and averaged less than 2 percent from 1976 to 1978. Between 1974 and 1978 interest and amortization payments ranged between 3 and 4 percent of total expenditure.

In the years after 1970, receipts from exports, travel and transfers financed on average in excess of 80 percent of the amounts spent on imports.

This was a period, as the information contained in Table 3 reveals, during which the volume of imports remained virtually unchanged. One might then conclude that controls were imposed on import spending to keep it in line with available foreign exchange resources. Moreover, in that period there was very limited real economic growth in the country.[2] Given the structure of the economy, not only might it be argued that the slow growth would account for the stability in the volume of imports, but also that the constrained volume of imports would partly explain the slow growth in that period.

Guyana

An examination of the sources and uses of foreign exchange reported in Tables 4 and 5 demonstrates the overwhelming significance of commodity exports as a source of foreign exchange. Consequently, changes in total foreign exchange available for use in large measure reflects the export performance of the country. The export quantity and price indices reported in Table 6 indicates fairly modest year to year fluctuations in export volumes, with the exception of 1969 and 1972, in the period up to 1973. Export prices were also relatively stable during that period. The dramatic change in export prices took place in 1974 and 1975, reflecting, as was the case for Barbados changes in sugar prices. The post 1975 period, however, was associated with a significant decline in export prices. The result of these price developments was that receipts from exports reached a peak value in 1975 and the combination of lower prices and reduced volumes led to a lower overall level of receipts in the last three years.

Direct investment flows, which had made a modest contribution to total sources of foreign exchange during the sixties, ceased to be a source of any significance in the years after 1970. Loans became the only other

Table 4

Guyana

Sources and Uses of Foreign Exchange 1965-1980 (US $ Millions)

	Sources					Uses				
Year	Exports	Direct Investment	Loans	Other	Total	Imports	Investment Income	Interest and Amortization	Other	Total
1965	103.0	9.4	1.3	15.4	129.1	105.5	15.5	1.1	6.4	128.5
1966	108.3	17.9	0.1	12.1	138.4	116.8	19.0	1.1	5.7	142.6
1967	122.0	18.9	11.6	2.6	155.1	126.2	16.1	1.1	7.5	150.9
1968	113.0	13.5	9.8	6.0	142.3	106.4	19.7	2.0	13.0	141.1
1969	123.8	9.8	6.4	2.9	142.9	117.2	19.5	1.3	6.9	144.9
1970	129.0	9.0	9.7	19.6	167.3	119.9	14.2	3.9	31.7	169.7
1971	145.9	-	15.6	75.3	236.8	120.4	16.5	4.1	94.3	235.3
1972	143.6	2.5	11.9	30.8	188.8	128.9	7.3	5.8	36.3	178.3
1973	135.7	8.2	19.9	38.2	202.0	159.4	5.4	12.3	51.1	228.2
1974	270.1	1.3	51.6	29.0	352.0	230.3	13.5	11.4	50.6	305.8
1975	351.4	0.8	44.6	58.7	455.5	305.8	7.6	20.6	71.7	405.7
1976	279.5	-	110.7	15.2	405.4	330.9	3.8	39.4	121.9	496.0
1977	259.4	-	112.3	18.0	389.7	286.7	2.6	46.4	60.3	396.0
1978	295.5	-	97.0	40.2	432.7	259.4	-	57.6	80.6	397.6

Source: Same as for Table 1.

Table 5

Guyana

Sources and Uses of Foreign Exchange: Percentage Distribution, 1965-1978

	Sources				Uses			
Year	Exports	Direct Investment	Loans	Other	Imports	Investment Income	Interest and Amortization	Other
1965	79.8	7.3	1.0	11.9	82.1	12.1	0.9	5.0
1966	78.3	12.9	6.1	8.7	81.9	13.3	0.8	4.0
1967	78.7	12.2	7.5	1.7	83.6	10.7	0.7	5.0
1968	79.4	9.5	6.9	4.2	75.4	14.0	1.4	9.2
1969	86.6	6.9	4.5	2.0	80.9	13.5	0.9	4.8
1970	77.1	5.4	5.8	11.7	70.7	8.4	2.3	18.7
1971	61.6	-	6.6	31.4	51.2	7.0	1.7	40.1
1972	76.1	1.3	6.3	16.4	72.3	4.1	3.3	20.4
1973	67.2	4.1	9.9	18.9	69.9	2.4	5.4	22.4
1974	76.7	0.4	14.7	8.2	75.3	4.4	3.7	16.6
1975	77.2	0.2	9.8	12.9	75.4	1.9	5.1	17.7
1976	68.9	-	27.3	3.7	66.7	0.8	7.9	24.6
1977	66.6	-	28.8	4.6	72.4	0.7	11.7	15.2
1978	68.3	-	22.4	9.3	65.2	-	14.5	20.3

Table 6

Guyana Trade Indices

1975 = 100

	Exports		Imports	
Year	Unit Value	Quantum	Unit Value	Quantum
1965	30	90	45	68
1966	32	95	45	76
1967	32	99	46	82
1968	31	96	46	69
1969	32	113	47	74
1970	36	104	48	82
1971	38	105	51	76
1972	43	93	55	76
1973	46	82	68	75
1974	72	104	94	79
1975	100	100	100	100
1976	75	102	102	103
1977	85	84	111	83
1978	87	93	123	66

Source: Same as for Table 3.

important source of foreign exchange. The reliance on loans increased dramatically in the years after 1975, when, as was reported above, receipts from exports declined. The result was that in the last three years external borrowing contributed between 22 and 29 percent to total foreign exchange resources.

Spending on imports absorbed most of the available foreign exchange. The year to year variation in spending on imports appeared to be directly related to the receipts from exports, with absolute outlays on imports decreasing in the post 1975 period, when there was also a decline in export receipts. Between 1975 and 1978, while the import unit value index increased from 100 to 123, the quantum index fell from 100 to 66. Further evidence of the degree to which imports were compressed during that period is revealed by the fact that the volume of imports was lower in 1978 than in 1965. One could again argue, given the structure of the economy, that such severe restrictions on the volume of imports would not be consistent with the realization of any reasonable growth target.

Jamaica

In examining the sources and uses of foreign exchange reported in Tables 7 and 8, one can see a distinct division in the structure of the important sources of foreign exchange before and after 1972. In the earlier period, although exports were the primary source of foreign exchange, the relative importance of exports declined rapidly mainly as a result of the substantial increases in direct investment flows. Travel receipts made a stable and significant contribution to foreign exchange resources, while loans were insignificant. In the post 1972 period, direct investment very quickly ceased to be a source of foreign exchange and there was also a concurrent

decline in the contribution of receipts from travel. As was the case with Guyana total foreign exchange receipts reached a peak value in 1975. The post 1975 stagnation in the quantity of foreign exchange available for use can in large part be attributed to the decline in the volume of exports. The export volume index, as reported in Table 9, declined from a peak value of 133 in 1974 to 71 in 1978, while the unit value index rose over the same period from 66 to 129. There was a major increase in the importance of loans as a source of foreign exchange. The contribution of loans to total available foreign exchange ranged between 15 and 24 percent during that period.

In reviewing the allocation of available foreign exchange one observes a decline in the share used to finance imports. In the late sixties, this could partly be attributed to the increase in the amounts allocated to servicing direct investments. However, in the years after 1975 the absolute and relative decline in spending on imports was due in large part to a sharp reduction in the volume of imports, which more than compensated for the increase in import prices. The import quantum index declined from 100 in 1975 to 65 in 1978, while the unit price index rose from 100 to 120 in the same period. The increase in external borrowing in the post 1972 period resulted in an increased share of total foreign exchange resources being used to meet interest and amortization payments.

In spite of the severe limitations imposed on the quantity of imports, the imbalance between total payments and receipts resulted in a virtual complete exhaustion of the country's foreign exchange reserves. The squeeze on imports necessitated by inadequate financing was a major contribution to the negative rates of real economic growth experienced between 1974 and 1978.

Table 7

Jamaica

Sources and Uses of Foreign Exchange, 1965-1978 (US $ Millions)

	Sources							Uses				
Year	Exports	Travel	Transfers	Direct Investment	Loans	Other	Total	Imports	Investment Income	Interest and Amortization	Other	Total
1965	216.7	52.9	17.1	14.3	8.4	18.6	328.0	254.8	42.8	3.1	27.6	328.3
1966	276.5	67.2	14.5	64.4	17.1	15.7	455.4	284.5	90.8	4.4	65.9	445.6
1967	272.9	68.1	13.4	88.8	29.7	17.9	490.8	296.1	92.3	9.9	81.3	479.6
1968	251.0	75.3	12.2	120.7	20.7	21.0	500.9	332.3	73.6	4.5	50.9	461.3
1969	291.8	78.5	14.3	101.7	16.6	27.1	530.0	381.1	87.0	1.0	63.4	532.5
1970	341.4	95.5	22.5	162.1	9.4	107.7	738.6	449.0	105.0	12.6	157.2	723.8
1971	343.6	109.3	21.6	175.2	16.9	123.1	789.7	475.5	106.6	14.8	172.4	769.3
1972	376.7	134.7	28.8	97.5	65.0	134.1	836.8	528.6	124.6	22.8	191.9	867.9
1973	392.1	127.3	27.4	73.3	132.6	155.9	908.6	570.4	125.8	40.0	202.4	938.6
1974	752.3	133.3	24.9	30.5	208.1	178.4	1327.5	811.4	47.5	67.2	331.5	1257.6
1975	808.6	128.5	27.7	-	359.4	185.0	1509.2	969.6	60.2	90.1	432.4	1552.3
1976	659.7	105.8	5.9	-	225.8	180.5	1177.7	791.5	51.1	135.6	383.5	1361.7
1977	760.3	72.0	20.1	-	184.6	162.2	1203.2	666.8	40.2	193.3	317.2	1217.5
1978	773.0	98.3	21.1	-	264.4	157.6	1314.4	750.8	-	103.8	501.9	1356.5

Source: Same as for Table 1.

Table 8

Jamaica

Sources and Uses of Foreign Exchange: Percentage Distribution, 1965-1978

	Sources						Uses			
Year	Exports	Travel	Transfers	Direct Investment	Loans	Other	Imports	Investment Income	Investment and Amortization	Other
1965	66.1	16.1	5.2	4.4	2.6	5.7	77.6	13.0	0.9	8.4
1966	60.7	14.8	3.2	14.1	3.8	3.5	63.9	20.4	1.0	14.8
1967	55.6	13.9	2.7	18.1	6.1	3.7	61.7	19.3	2.1	17.0
1968	50.1	15.0	2.4	24.1	4.1	4.2	72.0	16.0	1.0	11.0
1969	55.1	14.8	2.7	19.2	3.1	5.1	71.6	16.3	0.2	11.9
1970	46.2	12.9	3.1	22.0	1.3	14.6	62.0	14.5	1.7	21.7
1971	43.5	13.8	2.7	22.2	2.1	15.6	61.8	13.9	1.9	22.4
1972	45.0	16.1	3.4	11.7	7.8	16.0	60.9	14.4	2.6	22.1
1973	43.2	14.0	3.0	8.1	14.6	17.2	60.8	13.4	4.3	21.6
1974	56.7	10.0	1.9	2.3	15.7	13.4	64.5	3.8	5.3	26.4
1975	53.6	8.5	1.8	-	23.8	12.3	62.5	3.9	5.8	27.9
1976	56.0	9.0	0.5	-	19.2	15.3	58.1	3.8	10.0	28.2
1977	63.2	6.0	1.7	-	15.3	13.8	54.8	3.3	15.9	26.1
1978	58.8	7.5	1.6	-	20.1	12.0	55.4	-	7.6	37.0

Table 9

Jamaica Trade Indices

1975 = 100

	Exports		Imports	
Year	Unit Value	Quantum	Unit Value	Quantum
1965	33	81	42	62
1966	35	99	42	69
1967	33	86	43	73
1968	35	78	43	79
1969	36	88	43	89
1970	38	113	45	105
1971	37	112	48	103
1972	38	121	52	106
1973	38	125	65	92
1974	66	133	94	89
1975	100	100	100	100
1976	93	84	103	79
1977	116	79	112	69
1978	129	71	120	65

Source: Same as for Table 3.

Summary

In comparing the experiences of the three countries over the period the following factors were evident. Barbados was the only country for which there was any discernable increase in earnings from exports in the years after 1974. Barbados, unlike Guyana, was able to counter the effect of falling prices for its exports by increasing its volume of sales. Jamaica, because of critical failures in production, was not able to take advantage of higher prices to increase its export earnings. It was also the case that in spite of the difficulties faced by Barbados in maintaining and increasing its earnings from exports, its other major income earning source of foreign exchange, tourism, was successfully promoted and the earnings realized was able to partially offset the slow growth in exports. While Barbados experienced success in developing its tourist industry as a dynamic foreign exchange earning activity, the industry in Jamaica stagnated.

The failure of both Guyana and Jamaica to develop a new dynamic foreign exchange earning activity to counter the effect of the decline in export earnings had the effect of forcing both countries to place increasing reliance on external borrowing. This in turn meant that servicing external debt absorbed an increased share of available foreign exchange.

All three countries to varying degrees were forced to impose limitations on their imports because of an inadequacy of foreign exchange. These limitations, in light of the structures of their economies, worked to restrict real economic growth, particularly, in the period after 1974.

Economic Growth and External Indebtedness

In this section of the paper we will proceed to examine the relationship between the growth in foreign exchange earnings from the export of goods

and services and the external financial obligations for servicing imports and meeting debt service charges, associated with the realization of specified growth targets, for each of the three countries. The potential for success in realizing some reasonable rate of stable economic growth will be determined by the extent to which the growth in earnings from exports of goods and services increases at a rate, which allows for the financing of required imports without too heavy a reliance on external borrowing. Should there be a substantial differential between the growth in foreign exchange earnings from exports of goods and services and payments for imports, external borrowing requirements would lead to the burden of debt service payments rendering impossible the realization of the desired growth targets.

In carrying out this analysis, we will first estimate the potential pattern of debt accumulation for each of the three countries over a ten year period, using an estimation procedure developed by Feder in a recent paper.[3] Equation 11, drawn from Feder's model and used in our estimations is set out below.

$$B_\tau = B_0 - \frac{S.t}{1-ik} - \frac{(s - kg^*) \cdot Y_o \ (e^{g^*t} - 1)}{(1-ik)\ g^*}$$

B_τ Total outstanding debt per time period

B_0 Outstanding debt in the base year

S Savings in the base year

i Interest rate on foreign loans

k Capital/output ratio

s Marginal propensity to save

g^* Desired growth rate of GNP

Y_o GNP in the base year

The higher the values of k and g^* the higher would be the level of debt throughout the time period. Alternatively, the higher the values for S and s, the lower would be the level of debt.

The following considerations governed the use of data for estimation purposes. In view of the fact that the post 1975 period for all three countries in terms of the evolution of income growth, spending, savings and investment patterns, represented a major departure from the long term pattern of the post war period, we decided to use averages for the 1975 to 1978 period in arriving at our base year estimates for GNP and savings. In light of the dramatic changes which have taken place in interest rates it was decided for purposes of estimation to first employ interest rates prevailing in 1978 and then subsequently we made adjustments to our estimates of debt accumulation to allow for 50 and 100 percent increases in interest rates. An attempt was made to estimate the incremental capital/output ratio for each of the three countries using standard statistical methods on the basis of data for the period from 1965 to 1978.[4] Once again the distortions in the post 1975 period did not allow us to derive meaningful estimates. As a result the estimates used were those which would seem to approximate values pertaining under more normal conditions. The selection of the target growth rates for GNP for the three countries was done with reference to the maximum and minimum average annual growth rates in the post world war two decades.

The basic data used for the purposes of simulating the pattern of debt accumulation is reported in Table 10. Tables 11, 12 and 13, contains the simulation results based on different interest rates.

The estimates of external debt in the preceding Tables represents the difference between foreign exchange earnings from exports of goods and services and the foreign exchange payment requirements associated with the realization of specified income growth targets. The question to which we must now address ourselves concerns whether the burden of debt service charges associated with this pattern of debt accumulation would make it unlikely

Table 10

Data Set for Simulations

		Barbados	Guyana	Jamaica
GNP average 1975-78, US $ MN	Y_0	476.0	511.7	2839.1
National savings, average 1975-78 US $ MN	S	21.0	23.4	127.6
Marginal propensity to save[1]	s	.1614	.1290	.1461
Outstanding debt US $ MN 1978	B_0	103	635	1363
Capital/output ratio	k	3.5	4.0	4.0
Target GNP growth rate	g*	.04	.03	.03

[1] The marginal propensity to save assumed to be .95 of the savings income relationship in the base period. See Feder, op. cit.

Source: IDB, Economic and Social Progress in Latin America, Annual.

Table 11

Simulation Results: Debt Accumulation US $ MN

Barbados i = .065 Guyana i = .042 Jamaica i = .075[1]

Period	Barbados	Guyana	Jamaica
1	116.8	657.5	1437.7
2	130.0	679.8	1509.5
3	142.6	702.0	1577.5
4	154.7	724.0	1642.2
5	166.1	745.8	1703.5
6	176.6	767.4	1760.9
7	187.1	788.8	1814.4
8	196.5	810.0	1864.3
9	205.2	830.9	1909.7
10	213.1	851.7	1951.5

[1] Interest rates for 1978 estimated by taking the value of total interest payments as a percentage of external debt disbursed as of December 1977.

Table 12

Simulation Results: Debt Accumulation US $ MN

Barbados i = .0975 Guyana i = .0630 Jamaica i = .1125[1]

Period	Barbados	Guyana	Jamaica
1	119.2	660.0	1458.0
2	134.6	684.9	1549.5
3	149.5	709.5	1635.9
4	163.6	734.0	1718.4
5	177.0	758.2	1796.4
6	189.7	782.2	1869.4
7	201.6	806.0	1937.5
8	212.6	829.6	2001.0
9	222.8	852.9	2058.8
10	232.1	876.0	2112.6

[1] Interest rates increased by 50 percent above the level for 1978.

Table 13

Simulation Results: Debt Accumulation US $ MN

Barbados i = .13 Guyana i = .0840 Jamaica i = .15[1]

Period	Barbados	Guyana	Jamaica
1	122.5	663.2	1493.7
2	141.3	691.2	1619.4
3	159.2	718.9	1738.3
4	176.3	746.5	1851.7
5	192.5	773.8	1958.9
6	207.8	800.9	2059.3
7	222.1	827.7	2152.9
8	235.5	854.2	2240.3
9	247.8	880.5	2319.7
10	259.1	906.5	2392.9

[1] Interest rates increased 100 percent above the level in 1978.

that the specified growth targets could in fact be realized. In order to gain some insights into this question we estimate what would be the debt service ratio, that is, interest and amortization charges as a percentage of the value of exports of goods and services in each period. The debt service ratio in any time period will then be

$$\frac{(i + a)}{X_\tau} B_\tau$$

where i represents the rate of interest on external debt and a, the amortization rate. Once again we will employ the interest rate prevailing in 1978 and then adjust our estimates to allow for a 50 and 100 percent increase in interest rates. The amortization rate employed will be the rate of 1978. B_τ will be outstanding debt in each period as shown in Tables 11, 12 and 13. In estimating the value of exports of goods and non factor services in any time period, X_τ, we assume a growth rate of 5 percent, which approximates the best performance for each country during any decade since 1950. The value of exports of goods and services in any period will then be

$$X_\tau = X_0 e^{rt}$$

where X_0 is the value of exports of goods and non factor services in the base year, 1978, and r the growth rate, assumed to be 5 percent.

In reviewing the debt service ratios, reported in Tables 14, 15 and 16, the following conclusions could be drawn with respect to the problems likely to be encountered by the respective countries in meeting their external debt obligations. Considering, first of all, what might be viewed as being the best possible situation, that is, interest and amortization rates being at the levels prevailing in 1978, both Guyana and Jamaica would be faced with debt service ratios equal to or greater than 20 percent. The ratio for Barbados under the same conditions would range between 4 and 5 percent.

Table 14

Debt Service Ratios

Period	Barbados i = .065; a = .0388 r = .05	Guyana i = .042; a = .063 r = .05	Jamaica i = .075; a = .0998 r = .05
1	3.8	27.3	21.2
2	4.1	26.8	21.3
3	4.2	26.4	21.1
4	4.4	25.9	20.9
5	4.5	25.4	20.7
6	4.5	24.8	20.3
7	4.6	23.3	19.9
8	4.6	23.7	19.5
9	4.5	23.1	19.0
10	4.5	22.5	18.4

Table 15

Debt Service Ratios

Period	Barbados i = .0975; a = .0388 r = .05	Guyana i = .063; a = .063 r = .05	Jamaica i = .1125; a = .0998 r = .05
1	5.1	32.9	26.2
2	5.5	32.5	26.5
3	5.8	32.0	26.6
4	6.1	31.5	26.6
5	6.3	30.9	26.4
6	6.4	30.4	26.2
7	6.4	29.7	25.9
8	6.5	29.1	25.4
9	6.4	28.5	24.8
10	6.4	27.8	24.2

Table 16

Debt Service Ratio

Period	Barbados i = .13; a = .0388 r = .05	Guyana i = .084; a = .063 r = .05	Jamaica i = .15; a = .0998 r = .05
1	6.5	38.5	31.6
2	7.2	38.2	32.6
3	7.7	37.8	33.3
4	8.1	37.3	33.7
5	8.4	36.8	33.9
6	8.6	36.3	33.9
7	8.8	35.6	33.7
8	8.9	35.0	33.4
9	8.9	34.3	32.9
10	8.8	33.6	32.3

Higher interest rates would, of course, be associated with higher debt service ratios for all countries. Given, what in this instance would be the worst possible outcome, a doubling of interest rates, the debt service ratios for both Guyana and Jamaica would be in excess of 30 percent, while that of Barbados would range between 7 and 9 percent.

The findings reported in the tables would lead us to conclude that both Guyana and Jamaica would likely be faced with a level of debt service payments which would make it difficult to realize the rather modest real economic growth targets which were postulated for both countries. By the same token it would appear that meeting debt service obligations would not represent a problem for Barbados.

In estimating the pattern of external debt accumulation we have

not taken into consideration the potential contribution to the respective countries pool of foreign exchange which could be made by direct investment inflows. Success in attracting direct investment inflows would mean less required external borrowing to satisfy the external financing to support any given desired real growth rate. This might not be an option which the Government of Guyana might wish to exercise although it is apparently a central feature of current government policy in Jamaica.

Concessional External Finance Requirements

In light of the current high rates of interest prevailing in the major international financial markets and the prospect that rates will continue to remain at record high levels for an indefinite period, the growth prospects for countries in the region will be in large part determined by their ability to receive an adequate inflow of external funds on a concessional basis. The countries in the region, if they are to be faced with a level of debt service charges, which will not unduly burden their economies, must be able to satisfy a major portion of their financial requirements by being able to borrow on a long term basis and at reasonable interest rates. Table 17, below, summarizes the maturity structure of external public debt for the three countries in 1979.

Table 17
Maturity Structure of External Public Debt, 1979
Percent Total Outstanding

	0-5 Years	5-10 Years	10-15 Years	Over 15 Years
Barbados	32.0	22.9	20.5	24.6
Guyana	36.6	20.3	13.6	29.5
Jamaica	48.2	22.0	14.7	15.1

Source: I.D.B., Annual Report, 1980

It is apparent from the Table that Jamaica, with 70 percent of its outstanding public debt in 1979 having a period to maturity of less than 10 years, would in the absence of being able to negotiate some debt rescheduling be faced with a heavy burden of amortization payments in the short run. Guyana is also in a critical situation with more than 50 percent of its debt having a period to maturity of less than 10 years. Barbados, however, was in a position at that time where the maturity structure of its external debt was fairly evenly spread between short, intermediate and long term maturities.

Let us now turn to a consideration of what has been the past experience of countries in the region with respect to the amount of concessional external finance received. In an attempt to put the matter in perspective we have reported in Table 18 the total accumulated concessional finance received by Barbados, Guyana and Jamaica between 1970 and 1979 and related the amounts received to total external debt outstanding in 1979.

Table 18

Cumulated Net Concessional Financial Flows

Net Outstanding External Public Debt

US $ Mn

Country	1 Concessional Flows 1970-1979	2 External Public Debt 1979	1 ÷ 2 %
Barbados	61.7	66.0	93.5
Guyana	168.6	467.0	36.1
Jamaica	399.7	1090.0	36.7

Source: OECD, Geographical Distribution of Financial Flows to Developing Countries, 1979

I.D.B., Economic and Social Progress in Latin America

It would appear that the growth in external indebtedness of both Buyana and Jamaica, in the post 1974 period, was not supported to a major extent by concessional flows. Accumulated concessional flows represented approximately the same percentage of external public debt outstanding in 1979 for both countries. Barbados, by the same criterion, was in a much more favourable position as accumulated concessional flows approximated 94 percent of outstanding external debt in 1979.

The development of strategies for mobilizing external concessional financial flows will have to be a major component in the development plans of countries in the region. Elements of such a strategy could focus on such matters as increasing bilateral concessional flows, working with others to improve the lending capacity, as well as, bring about changes in the terms of lending imposed by the major multilateral lending agencies. Attention will also have to be paid to the possibilities of improving the scope for mutual assistance within the region.

Footnotes

1. The specific model employed is that developed by G. Feder in an article "Economic Growth, Foreign Loans, and Debt Servicing Capacity of Developing Countries", in Journal of Development Studies, April 1980.

2. Barbados realized an average annual growth rate of GNP of 2.2 percent between 1970 and 1977. See World Bank World Tables 1980, p. 39.

3. The Feder model incorporates most of the standard features associated with the two gap analytical models of Chenery and Strout (1966) McKinnon (1964) and others. Starting with the resources/uses identity, there is the assumption of a linear consumption function and constant incremental capital/output ratio. Given that GDP will be equal to GNP plus interest on external debt, with a given target growth rate for GNP the model can be solved to yield the time pattern of debt accumulation.

4. An attempt was made to estimate the incremental capital/output ratio using the standard estimating method

$$GDP_{\tau} = \alpha + \beta \Sigma GFCF_{\tau-1}$$

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