

SOME MACROECONOMIC IMPLICATIONS OF
EXTERNAL DEBT FOR BARBADOS

by

Daniel Boamah
CENTRAL BANK OF BARBADOS

Prepared For Presentation At The 19th Regional Monetary
Studies Conference In Belize, November 1987

November 1987

SOME MACROECONOMIC IMPLICATIONS OF EXTERNAL DEBT FOR BARBADOS

Introduction

It can hardly be denied that a developing country (especially in the early stages of development) requires significant inflows of foreign resources to supplement its development efforts. These external inflows, whether in the form of loans or equity, constitute a charge on the country's future resources in foreign exchange through either debt service payments or dividends to foreign shareholders. A country may succeed in convincing foreign owners of equity capital to re-invest earnings in the economy. However, debt servicing on external borrowings are contractual obligations which have to be met. Adequate income should necessarily be generated with such resources for their future repayment.

The experiences of many developing countries point to a situation of a rapidly growing external debt relative to GDP. However, it should be realised that if external debt is too high and increasing it can quickly stake a claim to future streams of income, high enough to turn an otherwise growing economy into a shrinking one, unless there is access to new lending. It has been shown that for external debt to decline in relation to GDP,

and absolutely, domestic savings should increase faster than the sum investment and interest payments¹. (Selowsky et al (1986)). As long as savings are lower than the sum of investment and interest payments, the growth rate of GDP will suffer without net external borrowing.

Available evidence indicates that Barbados' external debt relative to GDP² nearly quadrupled in the relatively short period between 1972 and 1986. Over the same period debt service payments as a proportion of exports of goods and services increased more than six-fold (see chart). The ratio of interest cost as a proportion of total export earnings increased four-fold between 1972 and 1986 and projections suggest that it would reach a peak of nearly seven percent in 1988 before declining slightly thereafter. Furthermore, the amortisation profile up to 1991 should give cause for concern.

The above scenario makes it imperative for debt managers to be aware not only of the debt servicing obligations in future but also the macroeconomic implications for these payments. This paper aims to give some indications towards this end. Some of the questions we seek to explore are:

- (i) what is the possible impact on GDP growth of alternative scenarios concerning the future evolution of the external debt;

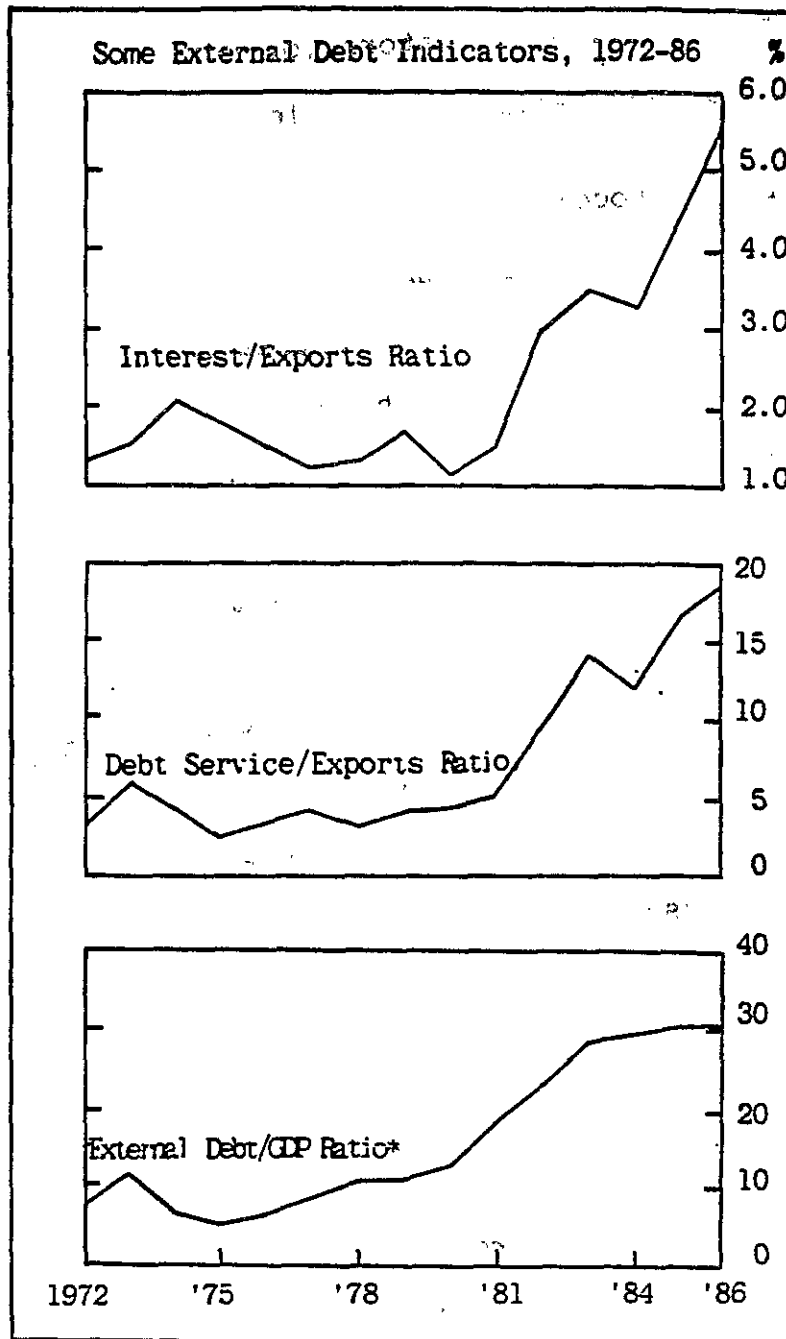
- (ii) how sensitive to alternative interest rate trajectories are these probable impacts;
- (iii) how do some of the traditional indicators of debt burden behave under such alternative scenarios; and
- (iv) how do these indicators (of debt burden) affect the savings-investment profile.

The methodology that we have adopted for the analysis is a variant of the debt with growth model (see Leopoldo Solis and Ernesto Zedillo (1984)). With an estimate of the incremental capital-output ratio (ICOR), the savings ratio and the depreciation rate of the capital stock, the model combines the usual macroeconomic identities and the characteristics of a fixed proportion production function to arrive at a numerically estimable relationship for real investment and real output. (See the appendix). The use of such a methodology has some drawbacks in as much as it ignores structural and monetary issues. However, it helps to throw some light on the main issues we have set out to discuss. Before discussing the data and results, it may be instructive to sketch a brief outline of the evolution of Barbados' external debt.

External Debt Accumulation

Zephirin (1980) provides the most extensive analysis of Barbados' external debt accumulation. Her paper identifies three stages of external debt accumulation beginning from the late 1950's. Firstly a quantity of foreign debentures were issued in

CHART 1



Sources : Zephirin (1980) and Central Bank of Barbados
 *For Public and Publicly Guaranteed Debt

the late 1950's and early 1960's to finance major infrastructural projects. When these debts became due between 1972-74, Euro-dollar borrowings were made in 1972 and 1973 partly to refinance these maturing loans and partly to finance specific projects under the 1973-77 Development Plan. The third phase of debt accumulation occurred in 1977 and 1978 when loans were made to help correct a deteriorating external payments position³. Between 1981 and 1986, external borrowings have been contracted annually at an average value of nearly \$94 million a year for specific projects as well as for balance of payments support.

External debt as a ratio of GDP grew gradually from around 10% in the early 1960's, reached a zenith in 1964 at 17.1% and then gradually fell back to about 6.4% in 1975. Thereafter it rose to about 14.6% in 1980. By 1986, external public and publicly guaranteed debt was over thirty percent of GDP (Chart 1).

Data

The results in Tables 2 to 7 utilise information on the island's debt flows as reported in the latest issue of the Central Bank's "External Debt Service Projections". The accompanying macroeconomic projections are based on the Bank's "Economic Outlook" (July and October 1987 versions), the "World Economic Outlook of the IMF (April 1987) and the author's judgement. The initial conditions refer to 1986 and the projections are all expressed in real 1986 values.

The value of the parameters σ , the inverse of the incremental capital-output ratio is based on Table 1 of Boamah (1984), ($\sigma = 0.22$). The average savings ratio, s , represents the observed average for the period 1974-86 as calculated from the national accounts data ($s = 0.15$). The depreciation rate was fixed at 0.05. Since the numerical results are sensitive to the values of the parameters, alternative values for $\sigma = 0.25$ and $s = 0.21$ were also used.

Results

Table 2 reports the results for the existing debt situation. From the initial 1986 conditions, average growth rate of real GDP is projected to fall by an average annual rate of 2.4% between 1986 and 1990. The total debt/GDP ratio would be lowered to about 32% in 1990 from about 38% in 1986. The high amortisation payments expected in 1990 will keep the debt service ratio high at 11.2% even if no new loans are contracted. Under this scenario, the relatively unchanged savings ratio (14.8% in 1990) can only support a declining level of investment in the face of large net transfer of resources out of the country. Thus the investment ratio is expected to fall from 20.1% in 1987 to under 10% by 1990. It should also be noted that real net transfer of resources into the country $(D_t - D_{t-1} - r_t D_{t-1})/Y_t$ would start turning negative (-7.6%) as early as 1988 if no new loans are contracted between 1988 and 1990. The adverse implications for real incomes associated with a cessation of net foreign inflows have been extensively discussed by Bourne (1981).

Table 3 (a) shows the results for an annual foreign inflows equal to the yearly amortisation requirements from 1988 to 1990. This scenario would arrest the rate of GDP loss by about 38%, with GDP falling by an annual average of 1.5% rather than 2.4%. However, the total debt/GDP ratio would increase sharply to about 48% in 1990. The situation with GDP is further enhanced if future annual inflows are enough to cover total debt repayments, (table 3(b)). In this situation the average GDP loss is projected at 1.1% annually compared with 2.4% in the starting scenario. The relatively large foreign inflows would tend to boost the investment ratio to 17.3% in 1990. However, the "debt overhang" becomes enormous as the Debt/GDP ratio moves to about 54.0% while the total debt service as a proportion of total exports increases to 12.3%.

In the context of this model, a near doubling of the real interest rate (10% compared with an average of 5.3%) does not prove very costly in terms of GDP growth (table 4). Only one-tenth of a percentage point is lost from such an increase in interest rate. To the extent that the effects on GDP of a rise in the interest rate are divided between consumption and savings, the results may not be illogical. However, as expected, the real damage is in terms of the debt servicing ratios. Total debt service ratio rises sharply to 14.4% in 1990 compared with 11.2% in 1986.

Table (5) outlines the situation of foreign finance required for a minimum 3% real growth in GDP⁴. As expected, this

will require significant net borrowing, estimated at an average 16.6% of GDP for the three years to 1990, increasing the debt/GDP ratio further to nearly 75% for the three years. Thus a paradoxical situation arises whereby a policy of more rapid economic growth, which is likely to be preferable as a way out of the debt situation, becomes feasible only if supported by an even higher levels of net borrowing over a number of years.

One way to achieve the required minimum growth rate with reduced foreign borrowing is to increase domestic savings while striving for more efficient use of resources. Table (6) and (7) provide alternative calculations for table (2) and (5) respectively, assuming increased savings⁵ rate (0.21) and reduced value for the incremental capital-output ratio (4.0). The results (table 6) indicate that the decline of GDP as reported for table (2) would be drastically arrested, with GDP at 1990 just marginally below that for 1986. As expected, the higher levels of savings would in turn support a relatively higher levels of investment. Table (7) also depicts a situation where the level of foreign resources required to sustain a minimum 3% growth is greatly reduced. It would take an average of only 36% of the projected foreign requirements for table (5) to achieve a minimum 3% real growth rate under the scenario of higher savings rate and greater efficiency of resource use.

A number of policy issues arise from the foregoing analysis. First it is necessary to devise policies to increase domestic savings and investment. By implication, one should expect

the increased domestic savings to be transformed into expanded export savings to help generate surpluses on the external account to meet foreign debt servicing obligations. Private sector savings may be increased through a system of incentives and/or policies to reduce real private consumption expenditure. Public savings may be achieved in a number of ways: increased taxation, higher price for public services and a reduction in government expenditure. It is important to determine the efficient mix of these policies to raise public savings without pre-empting private savings and investment. Thirdly, appropriate domestic borrowing policies may be necessary to help the public sector service its large foreign debt.

The foregoing should be supplemented with greater efficiency of resource use to increase the productivity of additional investment and thereby produce more output from existing resources. This requires that both the private and the public sectors are guided by signals and incentives that better reflect the opportunity cost of resources.

Conclusion

The study has discussed some implications of Barbados' current external debt situation for real growth, debt servicing, real investment and savings. The model provides some interesting analytical insights which could be useful for external debt policy. While increased real output may be the faster way out of the debt problem, its success in the short to medium term depends

on the availability of additional foreign inflows which are likely to worsen subsequent external debt profile. To address this potential problem we have discussed the need to adopt policies to raise private and public sector savings, and by implication, expand exports to generate surpluses on the external current account balance. We have also demonstrated the necessity to strive for greater efficiency of resource use to increase productivity of investment through policies to reduce the incremental capital-output ratio (ICOR).

It is instructive to sound a note of caution on the results of the study. The debt-and-growth model adopted for the study has several limitations some of which are quite well known. For instance, it assumes away the problem of converting increased domestic savings into foreign exchange earnings. This depends critically on the availability of export markets. Also, as has been analysed above, the quantitative results depend on the initial conditions, the structural parameters as well as on the projected levels for prices and exports. Moreover, in comparing investment projects on the basis of the ICOR, one necessarily glosses over issues of externalities which may have social implications. It may be more appropriate to look at the total implications of investment projects by comparing marginal social benefits with marginal social costs. With these caveats in mind considerable care should be exercised in interpreting the numerical results of the study.

NOTES

1. In other words the external current account surplus must be more than adequate to cover interest payments.
2. For public and publicly guaranteed debt only.
3. The deterioration in the external current account balance which had started around 1970 continued throughout the decade, culminating in a record deficit estimated at 13.2% of GDP in 1981. Since 1983, the current account has been in surplus but not in sufficient magnitude to maintain the increasing level of debt service obligations.
4. The three percent real growth rate is slightly more than the average rate since 1982 which is about 2.5%.
5. The increased savings rate (0.21) represents the average rate for the seven-year period ending in 1986.

Table 1

EXTERNAL DEBT FLOWS, 1972-86

Year	REPAYMENTS OF PRINCIPAL (\$ Million)			INTEREST PAYMENTS (\$ Million)			TOTAL DEBT SERVICE (\$ Million)			DEBT SERVICE EXPORTS (%)			INTEREST PAYMENTS EXPORTS (%)		
	PU & PUG	PR	TOT	PU & PUG	PR	TOT	PU & PUG	PR	TOT	PU & PUG	PR	TOT	PU & PUG	PR	TOT
1972	4.5	0.2	4.7	2.0	1.2	3.2	6.4	1.4	7.8	2.6	3.1	0.8	1.3		
1973	12.4	0.8	13.2	2.0	2.5	4.5	14.4	3.2	17.6	4.8	5.8	0.7	1.5		
1974	8.7	1.1	9.8	5.4	2.9	8.3	14.1	4.0	18.1	3.5	4.5	1.4	2.1		
1975	2.1	2.2	4.3	3.8	8.0	6.4	6.0	12.4	1.4	2.7	0.9	1.8	1.8		
1976	2.6	4.9	7.5	3.2	3.3	6.5	5.9	8.2	14.1	1.4	3.3	0.7	1.5		
1977	13.2	4.5	17.7	3.0	3.4	6.4	16.2	7.9	24.1	3.0	4.4	0.6	1.2		
1978	6.6	6.6	13.2	5.2	3.6	8.8	11.8	10.2	22.0	1.7	3.2	0.8	1.3		
1979	12.8	8.7	21.5	12.1	3.4	15.5	25.0	12.1	37.1	2.9	4.2	1.3	1.7		
1980	13.9	6.5	20.4	10.1	3.2	13.3	47.0	9.7	56.7	4.0	4.8	0.9	1.1		
1981	13.2	4.9	18.1	13.0	3.9	16.9	51.9	8.8	60.7	4.5	5.3	1.1	1.5		
1982	14.5	9.2	23.7	24.7	13.4	38.1	99.8	22.6	122.4	7.9	9.6	1.9	3.0		
1983	17.4	27.6	45.0	29.4	10.9	40.3	125.7	38.5	164.2	11.0	14.4	2.6	3.5		
1984	27.5	25.0	52.5	38.6	15.3	53.9	160.3	40.3	200.6	9.7	12.1	2.3	3.3		
1985	54.6	28.9	83.4	57.3	15.7	72.9	229.2	44.5	273.7	13.9	16.7	3.5	4.4		
1986	79.9	19.2	99.8	73.5	17.6	91.1	281.3	36.9	318.2	16.7	18.9	4.4	5.4		

Note: PU: Public Debt; PUG: Publicly Guaranteed Debt;
PR: Private Debt; TOT: Total Debt.

Source: 1972-79: Zephirin (1980), Table 6.
1980-86: Central Bank of Barbados.

Table 2Projected Macroeconomic Variables and Debt Flows: 1986-90

(\$ Million, 1986 Values)*

Year	P	P _{XW}	r(%)	D	rD ₋₁	A	d	X	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	99.8	91.0	1,687.7		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	139.0	146.5	1,597.0	533.9	2,660.5	388.4
1988	1.063	1.049	5.0	1,076.8	60.1	122.4	-117.5	1,594.5	260.3	2,584.7	378.7
1989	1.095	1.084	4.9	935.8	52.8	120.6	-133.7	1,602.4	233.6	2,506.9	368.2
1990	1.128	1.119	4.6	787.8	43.0	137.6	-140.7	1,610.5	216.4	2,429.2	357.9

Average growth rate of real GDP: -2.4%

*See the appendix for the definitions of the variables

Source: Central Bank of Barbados and own estimates

Table 3(a)

Projected Macroeconomic Variables and Debt Flows: 1986-90

(Effect of Future (1988-90) Annual Foreign Inflows Equal to Amortisation Requirements)

(\$ Million, 1986 Values)

Year	P	P _{xw}	r(%)	D	rD ₋₁	d	A	X	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	91.0	99.8	1,687.7		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	146.5	139.0	1,597.0	533.9	2,660.5	388.4
1988	1.063	1.049	5.0	1,201.9	60.1	7.5	122.4	1,594.5	389.5	2,613.2	383.0
1989	1.095	1.084	4.9	1,201.9	58.9	7.3	120.6	1,602.4	382.5	2,566.7	376.2
1990	1.128	1.119	4.6	1,201.9	55.3	7.1	137.6	1,610.5	376.0	2,521.1	370.0

Average GDP Growth Rate = -1.5%

Source: Central Bank of Barbados and own estimates

Table 3(b)

Projected Macroeconomic Variables and Debt Flows: 1986-90

Effect of Future (1988-90) Annual Foreign Inflows Equal to
Interest and Amortisation Requirements

(\$ Million, 1986 Values)

Year	P	P _{xw}	r(%)	D	rD ₋₁	d	A	X	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	91.0	99.8	1,687.7		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	146.5	139.0	1,597.0	533.9	2,660.5	388.4
1988	1.063	1.049	5.0	1,262.0	60.1	67.6	122.4	1,594.5	451.7	2,626.8	385.0
1989	1.095	1.084	4.9	1,323.8	61.8	69.1	120.6	1,602.4	448.0	2,594.0	379.8
1990	1.128	1.119	4.6	1,384.7	60.9	68.0	137.6	1,610.5	442.2	2,561.6	375.1

Average Growth Rate = -1.1%

Source: Central Bank of Barbados and own estimates

Table 4

Projected Macroeconomic Variables and Debt Flows: 1986-90

(Effect of Interest Rate Increase)

(\$ Million, 1986 Values)

Year	P	P _{xw}	r(%)	D	rD ₋₁	d	A	X	I	Y	S
1986	1.000	1.000	10.0	1,063.2	98.1	91.0	99.8	1,687.7		2,676.9	386.8
1987	1.028	1.025	10.0	1,201.9	106.3	146.5	139.0	1,597.0	528.5	2,659.3	383.0
1988	1.063	1.049	10.0	1,076.8	120.2	-117.5	122.4	1,594.5	250.8	2,581.8	369.2
1989	1.095	1.084	10.0	935.8	107.7	-133.7	120.6	1,602.4	224.6	2,502.1	359.2
1990	1.128	1.119	10.0	787.8	93.6	-140.7	137.6	1,610.5	207.8	2,422.7	349.4

Average GDP Growth Rate: -2.5%

Source: Central Bank of Barbados and own estimates

Table 5

Projected Macroeconomic Variables and Debt Flows: 1986-90

(Effect of Minimum 3% Growth Rate of Real GDP from 1988-90)

(\$ Million, 1986 Values)

Year	P	P _{xw}	r(%)	D	rD ₋₁	X	d	A	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	1,687.7	91.0	99.8		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	1,597.0	146.5	139.0	533.9	2,660.5	388.4
1988	1.063	1.049	5.0	1,650.7	60.1	1,594.5	448.8	122.4	967.3	2,740.3	518.5
1989	1.095	1.084	4.9	2,123.1	80.9	1,602.4	472.4	120.6	996.4	2,822.5	524.0
1990	1.128	1.119	4.6	2,601.4	97.7	1,610.5	485.9	137.6	1,026.4	2,907.2	540.5

Source: Central Bank of Barbados and own estimates

Table 6

Projected Macroeconomic Variables and Debt Inflows : 1986-90

Effect of Alternative Values for $1/ICOR$ and the Savings Ratio
($\sigma = 0.25$; $s = 0.21$; $\delta = 0.05$)

(\$ Million, 1986 Values)

Year	P	P_{xw}	r(%)	D	rD_{-1}	X	d	A	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	1,687.7	91.0	99.8		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	1,597.0	146.5	139.0	703.6	2,719.0	556.0
1988	1.063	1.049	5.0	1,076.8	60.1	1,594.5	-117.5	122.4	435.7	2,692.0	552.7
1989	1.095	1.084	4.9	935.8	52.8	1,602.4	-133.7	120.6	415.2	2,661.2	547.8
1990	1.128	1.119	4.6	787.8	43.0	1,610.5	-140.7	137.6	403.5	2,629.0	543.1

Average Growth Rate of Real GDP = -0.4%

Source: Central Bank of Barbados and own estimates

Table 7

Projected Macroeconomic Variables and Debt Flows : 1986-90

(Effect of Minimum 3% Growth Rate of Real GDP from 1988-90
with Alternative Values for $\sigma = 0.25$ and $s = 0.21$)

(\$ Million, 1986 Values)

Year	P	P_{xw}	r(%)	D	rD_{-1}	X	d	A	I	Y	S
1986	1.000	1.000	7.2	1,063.2	70.6	1,687.7	91.0	99.8		2,676.9	390.9
1987	1.028	1.025	6.7	1,201.9	71.2	1,597.6	146.5	139.0	703.6	2,719.0	556.0
1988	1.063	1.049	5.0	1,377.9	60.1	1,594.5	176.0	122.4	870.0	2,800.6	694.0
1989	1.095	1.084	4.9	1,547.6	67.5	1,602.4	169.7	120.6	896.0	2,884.6	726.3
1990	1.128	1.119	4.6	1,618.8	71.2	1,610.5	172.0	137.6	922.8	2,971.1	750.8

Source: Central Bank of Barbados and own estimates

APPENDIX

Derivation of the debt - Curve - Growth Model

Let

- Y_t = Gross domestic product at period t
 K = Capital stock
 I = Gross fixed investment
 C = Total consumption expenditure
 S = Gross domestic savings
 M = Imports of goods and services less interest payments
 X = Exports of goods and Services
 D = Total foreign debt outstanding at the end of period
 d = Net flow of foreign capital
 KF = Net foreign capital inflow other than debt
 r = Average real interest rate on foreign debt
 σ = The inverse of the incremental capital output ratio
 δ = Depreciation rate of capital stock
 s = Domestic savings rate
 A = Amortisation of foreign debt
 P = Deflator for gross domestic product
 P_{xw} = Trade weighted export price deflator

If we assume a fixed coefficient framework or a well-behaved neoclassical production function in a scenario of fixed real wages, then output is given by

$$Y_t = \sigma K_t \quad (1)$$

$$\text{Then } Y_t - Y_{t-1} = \sigma (K_t - K_{t-1}) \quad (2)$$

But by definition

$$K_t - K_{t-1} = I_t - \delta K_{t-1} \quad (3)$$

$$\text{Hence } Y_t - Y_{t-1} = \sigma (I_t - \delta K_{t-1})$$

$$\text{or } Y_t = \sigma I_t + (1 - \delta)Y_{t-1} \quad (4)$$

From the basic identify

$$C_t + I_t + X_t - M_t = Y_t = C_t + S_t + r_t D_{t-1} \quad (5)$$

and the balance of payments equilibrium condition¹

$$M_t - X_t = K F_t + D_t - D_{t-1} - r_t D_{t-1} = d_t - r_t D_{t-1} \quad (6)$$

$$\text{Where } d_t = K F_t + D_t - D_{t-1}$$

$$\text{Hence } d_t = M_t - X_t + r_t D_{t-1} \quad (7)$$

Combining (5) and (6), we have

$$I_t = S_t + d_t \quad (8)$$

Define the savings function

$$S_t = s(Y_t - r_t D_{t-1}) \quad (9)$$

Then from (4) and (9) investment may be expressed as

$$I_t = \frac{s(1-\delta)}{(1-s\sigma)} Y_{t-1} - \left(\frac{s}{1-s\sigma}\right) r_t D_{t-1} + \frac{1}{(1-s\sigma)} d_t \quad (10)$$

For given structural parameters (δ , σ , s) and initial conditions, the trajectory of y_t may be obtained from (4) and (10), under alternative scenarios for d_t and r_t . Also the balance of payments consistency may be checked by means of equation (6) for alternative scenarios of export performance.

1. Accumulation of reserves is ignored under the assumption that their effect will be similar throughout the period of analysis.

Notes to the Tables

- P: Assumes the projection in the Economic Outlook up to 1988. For 1989-90, the average rate of increase for the previous three years is used.
- P_{xw}: Defined as the weighted average of the export price indices for manufacturing, sugar and tourism, each weighted by the proportion of exports in domestic production. Projections are based on the "Economic Outlook" up to 1988. For 1989-90, based on the expected increase in developing countries' non-fuel exports as projected in the "World Economic Outlook", IMF (April 1987) table A.1.
- r: Calculated from the external debt outstanding and interest payments (INP) expected, where $INP = rD_{-1}$.
- X: Estimated from projections in the Economic Outlook up to 1988. For 1989-90 assumes 0.5% real increase per year.
- A,D: Taken from Saunders and Bynoe-Mayers (1987) A.1.

BIBLIOGRAPHY

- Boamah, D.O., (1984) "The Stock of Fixed Capital in Barbados, 1958-1981: Some Explanatory Estimates", Economic Review, Central Bank of Barbados, Vol XI No.3.
- Boamah, D.O., (1986), "Some Aspects of External Debt and Economic Growth", Mimeograph, Central Bank of Barbados.
- Bourne, C. (1981) "Government Foreign Borrowing and Economic Growth: The Case of Jamaica", Social and Economic Studies, Vol 30, No.4, pp 52-74.
- Economic Outlook (1987), mimeograph, Central Bank of Barbados, July and October.
- Orlando F. and S. Teitel (1986) "Latin America's External Debt Problem: Debt Servicing Strategy Compatible with Long-term Economic Growth". Economic Development and Cultural Change, Vol 34, No.3, pp 641-671.
- Saunders, M. & N. Bynoe-Mayers (1987), "External Debt Service Projections, 1987 to 1984", Mimeograph, Central Bank of Barbados, Version 7, September.
- Selowsky, M. and H.G.V. Tak (1986) "The Debt Problem and Growth", World Development, Vol 14, No. 19, pp 1107-1124.
- Solis, L and E. Zedillo (1984), "The Foreign Debt of Mexico" in Antonio Jorge et al (eds.) Trade, Debt and Growth in Latin America, New York: Pergamon Press.
- Zephirin, M.G. (1980), "The External Debt of Barbados", Economic Review, Central Bank of Barbados, Vol VII, No.4, pp 24-67.