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Interest Rates, Savings and Growth in Guyana

By

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INTEREST RATES, SAVINGS AND GROWTH IN GUYANA

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Abstract

Using the Mckinnon-Shaw model, the study reviews the relationship between the interest rate on savings deposits, gross domestics savings and real GDP growth during 1965 to 1995. The application of the Mckinnon- Shaw model is appropriate, given the evidence of financial repression that characterised most of the period. The study thus seeks to determine whether a more liberal financial policy stance would have resulted in increased savings and higher real GDP growth. The empirical results suggest that this would have been the case.

INTRODUCTION

In the context of reduced financial flows to the Caribbean region from traditional donors, the generation of domestic savings assumes critical importance. This implies the implementation of macroeconomic policy that is conducive to savings growth. Of particular importance in this regard is the appropriateness and effectiveness of monetary policy intervention. The purpose of this study is to evaluate, in particular, government's interest rate policy in Guyana during 1965-95 to determine its appropriateness and effectiveness *vis-a-vis* savings and growth objectives.

Section A reviews briefly the literature on financial repression and its impact on savings and growth. An overview of the Guyanese economy follows in section B, underlining the appropriateness of this analysis in the Guyana context. Section C discusses the model, and is followed by a presentation of the empirical results in Section D.

A. LITERATURE REVIEW

The seminal work in the early seventies of Shaw (1972) and Mckinnon (1973) placed at the heart of the development debate the issue of financial and monetary policy. Mckinnon and Shaw were of the view that financial repression had retarded the growth of many less developed countries (LDCs).[1] At the centre of the debate was interest rate policy which often resulted in the imposition of below market rates thereby creating a disincentive to save and retarding the process of financial deepening. The results were a shortage of investible resources and growth retardation. On the basis of this experience, Shaw and Mckinnon argued strongly for interest rate liberalisation as a critical input into the process of growth and development. Since then, financial reform has become a standard element of structural reform measures recommended by international financial institutions.

I would like to express special thanks to Roland Craigwell, Nelson Modeste, Dorla Humes, Carlos Holder, Tom Crowards, Wallace Joefield-Napier and my other colleagues at CDB for their comments and suggestions. However, responsibility for my mistakes are my own

[1] Financial repression is defined as the holding of interest rates below market levels.

Nevertheless, the debate has continued about whether interest rate liberalisation is as critical as these authors maintain. Several studies have been done of the McKinnon-Shaw model. The empirical results have not provided a consensus on the validity of the model. Fry (1978, 1980); Leite and Mackonnen (1987); Yusuf and Peters (1983);Watson (1992); and Modeste (1993) have found some empirical support for the Mckinnon-Shaw model. On the other hand, Giovanini (1983,1985) and Dornbusch and Reynoso (1989) and Watson (1991) have not found such support.

B. GUYANA - 1965 to 1995

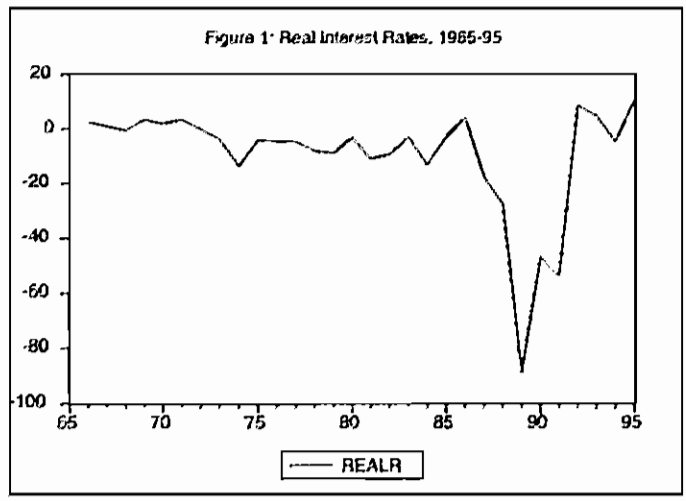
Table 1: Selected Macroeconomic Indicators (Percentages)

Item	1965-95	1965-87	1988-91	1992-95
Ratio of Gross Domestic Savings to GDP	20.4	18.2	25.2	28.1
Real Savings Deposit Rate	-9.7	-4.1	-54.3	4.9
Exports of Goods and Services/GDP	63.1	58.4	65.4	87.9
BOP Current Account Balance/GDP	-12.5	-10.0	-35.4	-4.0
Fiscal Current Account Balance/GDP	-9.9	-10.7	-16.1	0.5
Inflation	20.0	11.4	75.9	11.4
Real GDP Growth	1.1	0.3	-1.2	7.4
Real savings deposit rate	-9.7	-4.2	-54.3	4.9

Source: IMF Financial Statistics, World Bank Economic Memoranda

During 1965-95, there was clear evidence of financial repression in the Guyanese economy with average real savings deposits rate of -9.7%. As indicated in Figure 1, during most of the seventies and the eighties, beginning with the oil shock of 1973, real savings deposits rates

remained negative. It was not until the early nineties after the initiation of financial sector reform that real savings deposits rates became positive[2].



Real GDP growth during the period was also very low averaging approximately 1% and highly variable with a standard deviation of 5.7%. Other indirect indicators of financial repression include the explosion in the fiscal deficit on the current account which averaged 9.9% of GDP during the period. Most of this was financed by domestic debt.[3] This explains the rapid growth in the money supply that occurred during the mid-seventies to the late eighties. Another indirect indicator of financial repression was the ballooning of the current account deficit in the balance of payments which moved from approximately 3% of GDP in 1965 to 30.0% in 1990.[4] During most of the 1965-95 period, therefore, and particularly since the first oil shock of 1973,

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2 The return to market-determined interest rates began with a substantial increase in the Bank and Treasury Bill rates in April 1989. This was followed by the initiation of competitive bidding for Treasury Bills in June 1991 and the linking of the Treasury Bill and Bank rates in 1992.

3 Shaw (1973), in particular, notes the close relationship between weak fiscal policy and below market interest rates which permit governments access to cheap financing of fiscal deficits (p. 152) Large fiscal deficits, therefore, are looked upon as an indirect indicator of financial repression.

4 Shaw (1973) also notes the bias in favour of import based consumption and import substitution induced by below market equilibrium interest rates leading, in many cases, to a deterioration in the balance of payments (p.204-6). He thus sees a deterioration in the balance of payments of lagging economies as another indirect indicator of financial repression.

the Guyanese economy exhibited the major maladies of a lagging economy or of a financially repressed economy as defined by Mckinnon and Shaw.

In 1988, the Guyana government embarked on a structural adjustment programme with the support of the IMF and the World Bank. An important component of that programme was financial sector reform comprising the privatisation of state- owned commercial banking assets and the return to market-determined interest rates.

C. THE MODEL

The Mckinnon - Shaw model comprises two important hypotheses with respect to the impact of financial liberalisation on savings, investment and growth. These are:

(i) that a rise in the expected real deposit interest rate leads to an increased savings income ratio; and

(ii) that income expands with the increase in expected real deposit interest rate (as the quantum of investment as well as the productivity of investment rises because of the increased lumpiness of capital, the modernisation of capital inputs and enhanced allocative efficiency in the capital market).

The study seeks to evaluate these hypotheses in relation to the Guyanese economy over the period 1965 to 1995. The savings model is presented below.

$$s_t = a_0 + a_1 y_t + a_2 er_t + a_3 EXGDP_t + a_4 FSGDP_t + a_5 s_{t-1} + a_6 BBGDP_t + a_7 DEBTSERRAT_t + e_{1t} \quad (1.a)$$

where

s_t = ratio of Gross Domestic Savings (S_t) to GDP
y_t = real GDP growth
er_t = expected real deposit rate of interest
$EXGDP_t$ = ratio of exports of goods and non-factor services to GDP
$FSGDP_t$ = ratio of foreign savings (FS_t) to GDP_t

$BBGDP_t$	=	ratio of Central Government Savings to GDP
$DEBTSERRAT_t$	=	ratio of external debt service to exports of goods and non-factor services

The income and lagged savings variables derive from several theoretical antecedents - the permanent income, relative income and life cycle savings hypotheses. The coefficients of both variables are expected to be positive. In the context of an open economy, foreign savings assume a critical role either as complement to or substitute for domestic savings. In most of the empirical literature, however, the relationship between foreign and domestic savings has been found to be negative. Central Government savings are included, given the importance of the state sector for a considerable portion of the period. Central Government savings have been used as an argument in other empirical literature (Fry (1979) Modeste (1993)). The debt service ratio is included because of the substantial debt burden on the economy. During 1965-95, the ratio of the stock of external debt to GDP averaged 123.7% with a debt service ratio of 14.5%. During 1988-95, the stock of external debt averaged 270% of GDP and the debt service ratio 24.4%. The expected sign of the debt coefficient is positive since debt repayments are sourced from savings. Because of the importance of the export sector, the expectation is that export sector activity would impact significantly on the domestic savings effort. The inclusion of exports in the gross domestic savings functions of LDCs has a long empirical tradition [(Maizels (1968); Johnson and Chiu (1968); Leff (1968); Lee (1971)]. The empirical results indicate that the impact has generally been positive. With the exception of the savings and real income variables, all variables are assumed to be exogenous.

Foreign savings are defined as

$$FS_t = M_t - X_t \qquad (1.b)$$

where

M_t	=	Imports of Goods and non- factor Services
X_t	=	Exports of Goods and non-factor Services

Based on the standard neoclassical growth model of Solow (1957), the income equation is represented by a Cobb-Douglas function

$$Y_t = Af(K_t, L_t, Z_t) \qquad (2.a)$$

where Y_t represents real output, A is a measure of factor productivity, K_t and L_t are the stock of capital and labour respectively and Z_t represents a vector of other variables. Expressing (2.a) in growth terms yields :

$$y_t = A^* + b_1 k_t + b_2 l_t + b_3 z_t + e_t \qquad (2.b)$$

where the lower case letters of the variables represent growth rates and A* is the growth in factor productivity (dA/A) .

Alternatively, equation (2.b) may be expressed as follows:

$$y_t = b_0 + b_1^* I_t/Y_t + b_2 l_t + b_3 z_t + e_{2t} \qquad (2.c)$$

with b_0 replacing A* in equation (2.b), I_t/Y_t representing the ratio of investment to GDP and b_1^* the marginal productivity of capital.[5] The coefficients b_2 and b_3 are the output elasticities of labour and of other factors z_t respectively Equation (2.c) is the standard growth model used in a significant portion of the empirical literature on growth. While the first two variables in equation (2.c) are standard inclusions in the empirical literature, the z_t vector has included a long list of additional variables such as the openness of the economy, imports, the inflation rate, interest on the external debt, government expenditure, government consumption, the savings rate, the interest rate on the external debt and government expenditure on primary and secondary education (Khan and Reinhart (1990); Knight, Loayza and Villanueva (1993,1996); Stern(1991); Lee (1995); Waters (1995); Harrison (1996)).

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[5] $b_1 k_t = \partial y_t/\partial k_t * k_t = \partial Y_t/\partial K_t * K_t/Y_t * dK_t/K_t = \partial Y_t/\partial K_t * \partial K_t/Y_t = (b_1^*) * I_t/Y_t$

Using the following identity for an open economy:

$$I_t + X_t = S_t + M_t$$

and rearranging after division throughout by Y_t (GDP_t), yields

$$I_t/Y_t = s_t + FSGDP_t \qquad (2.d)$$

Substituting equation (2.d) into equation (2.c) and replacing s_t by equation (1.a) yields :

$$y_t = c_0 + c_1 y_t + c_2 er_t + c_3 EXGDP_t + c_4 FSGDP_t + c_5 s_{t-1} + c_6 BBGDP_t + c_7 DEBTSERRAT_t + c_8 l_t + c_9 z_t + e_{3t} \qquad (2.e)$$

where

$$c_0 = b_0 + a_0 b_1^* ; \quad c_1 = a_1 b_1^* ; \quad c_2 = a_2 b_1^* ; \quad c_3 = a_3 b_1^* ; \quad c_4 = a_4 b_1^* + b_1^* \quad c_5 = a_5 b_1^* ;$$
$$c_6 = a_6 b_1^* ; \quad c_7 = a_7 b_1^* ; \quad c_8 = b_2 ; \quad c_9 = b_3 ; \quad e_{3t} = b_1^* e_{1t} + e_{2t}$$

Rearranging (2.e) yields

$$y_t = d_0 + d_1 er_t + d_2 EXGDP_t + d_3 FSGDP_t + d_4 s_{t-1} + d_5 BBGDP_t + d_6 DEBTSERRAT_t + d_7 l_t + d_8 z_t + e_{4t} \qquad (2.f)$$

where

$$d_0 = c_0/(1-c_1) ; \quad d_1 = c_2/(1-c_1) ; \quad d_2 = c_3/(1-c_1) ; \quad d_3 = c_4/(1-c_1) ; \quad d_4 = c_5/(1-c_1) ;$$
$$d_5 = c_6/(1-c_1) ; \quad d_6 = c_7/(1-c_1) ; \quad d_7 = c_8/(1-c_1) ; \quad d_8 = c_9/(1-c_1) ; \quad e_{4t} = e_{3t}/(1-c_1)$$

The equations estimated are (1.a) and (2.f). The data covers the period 1965 to 1995, and is obtained from the IMF Financial Statistics, World Bank, Inter-American Development Bank and Bank of Guyana reports.

D. EMPIRICAL RESULTS

The Savings Function

To address the problem of simultaneity bias arising from the inclusion of the income variable, the savings function [Equation(1.a)] was estimated using two stage least squares

(2SLS). The instrumental variables used for both the savings and the growth functions were the constant term, er_t, $DGPOP_t$, $DEXGDP_t$, $DFSGDP_t$, Ds_{t-1}, $DBBGDP_t$, $DDEBTSERRAT_t$, GRC_{t-1}, $DGEXRAT_t$, y_{t-1} and y_{t-2}. The prefix D is the first difference operator. Differencing was used to achieve stationarity and avoid the problem of spurious correlation. Table 2 gives the results of the stationarity tests.[6] Graphs of the variables are presented in Appendix 1.

Table 2: Stationarity Test

	Computed	ADF	Computed
er_t	-2.3*	-2.0	-4.01*
y_t	-2.8**	-2.6	-3.50***
$DGPOP_t$	-4.2**	-3.7	-3.44
$DEXGDP_t$	-4.8**	-3.7	-3.07
$DFSGDP_t$	-6.7**	-2.6	-1.89
Ds_t	-6.0**	-2.6	-3.57***
GRC_t	-6.4**	-2.6	-6.32*
$DGEXRAT_t$	-4.9**	-4.4	-2.51
$DBBGDP_t$	-3.9**	-2.7	-1.09
$DDEBTSERRAT_t$	-5.7**	-2.6	-4.01*

* indicates significance at the 5% level ** indicates significance at the 1% level
*** indicates that test results are inconclusive

The critical 5% values for the Perron (1989) test for λ =0.3(based on 1988 as the intervention date) are -3.57(lower limit) and -3.48(upper limit).

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6 Given the instability in the economic indicators, especially in the structural adjustment period, it was thought necessary to supplement the ADF tests with tests suggested by Perron (1989,1990) for determining stationarity in the presence of a structural break. In this study, his Additive-Outlier (AO) model was used. The AO model is a two stage model for the determining whether a variable is stationary or non-stationary. The null hypothesis is that the variable is non-stationary subject to a single intervention/shock at a given time. The alternative hypothesis is that the variable is stationary subject to a shift in the mean after the intervention. The last column of Table 2 gives the results of the Perron test. The Perron tests were carried out using levels of the variables. Critical values were taken from Table 6 of Charemza and Deadman (1997). To a large extent, the Perron tests corroborate the results of the ADF tests. In the case of two of the variables, s_t and y_t, the results of the Perron test are inconclusive since the t statistics lie within the lower and upper critical limits for the test. In the case of a third variable, $DEBTSERRAT_t$, the results contradict those of the ADF test. However, given the doubts as to the power of the Perron test raised in Zivot and Andrews (1992), the decision was made to adhere to the results of the ADF test which indicates that the debt variable is nonstationary.

The first difference of the ratio of exports of goods and services to GDP is represented by $DEXGGDP_t$ $DFSGDP_t$ is the first difference of the ratio of foreign savings to GDP. $DGPOP_t$ is the first difference of the growth in population which, in the absence of preferred data such as the growth in the labour force, is used as a proxy for the growth in the labour stock. $DDEBTSERRAT_t$ represents the first difference of the debt service ratio. The expected real interest rate is $er_t = r_t - P_t^*$, with r_t the nominal rate of interest on savings deposits, and P_t^* the expected rate of inflation. A distributed lag model was used to estimate the expected rate of inflation. The number of lags was determined by the Akaike criterion.[7] The first difference of the ratio of gross domestic savings to GDP is represented by Ds_t. The empirical results of the model for the period 1965-95 are presented below with the t statistics in parentheses.

$$Ds_t = \underset{}{1.10} - \underset{(1.8)}{0.46}y_t + \underset{(1.8)}{0.10}er_t + \underset{(2.1)}{0.29}\,DEXGDP_t - \underset{(3.1)}{0.20}DFSGDP_t - \underset{(3.8)}{0.05}Ds_{t-1} + \underset{(0.4)}{0.64}DBBGDP_t + \underset{(6.4)}{0.10}\,DDEBTSERRAT_t + e_t$$

BG(1)=0.01 ; BG(2) = 1.3 ; BG(3) = 1.8 ; BG(4) = 2.5 ; ARCH (1) = 0.5;
RESET(1)= 1.7; RESET(2) = 1.6; RESET(3) = 0.001; CHOW (1988) = 1.3
White = 1.8; R^2 = 0.80 ; DW = 2.0; F=11.8; JB= 0.5

The Breusch Godfrey (BG) test for serial correlation with up to four lags indicated no evidence of serial correlation. Engle's ARCH (autoregressive conditional heteroscedasticity) statistic, the White test of hetereoscedasticity and Ramsey's RESET statistic were all insignificant. The Jarque Bera (JB) Chi square test and the ADF tests indicated that the residuals

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7 The equation used to model the expected rate of inflation was:

$$P_t^* = \underset{}{8.2} + \underset{(3.5)}{0.46}\,P_{t-1} - \underset{(4.8)}{0.11}\,P_{t-2} - \underset{(0.9)}{0.25}\,P_{t-3} + \underset{(2.3)}{15.0}\,DUM8895 + \underset{(2.7)}{0.028}GEXRAT_t + \underset{(7.6)}{e_t}$$

R^2=0.91 , F=43.1; DW= 1.7

DUM8895 is a dummy variable used to capture the shift in inflationary expectations during the structural adjustment period. $GEXRAT_t$ is the rate of depreciation of the exchange rate . Both $GEXRAT_t$ and P_t are I(1). Other diagnostics for the function (Breusch Godfrey serial correlation test, Granger's ARCH, Ramsey's RESET, White's test of heteroscedasticity, ADF test of stationarity of the residuals and the Jarque Bera test of normality) are satisfactory

were normally distributed and stationary. The White and Ramsey RESET test are F statistics. All other tests are Chi square statistics.

With the exception of the income and lagged savings coefficients, all coefficients are of the correct sign. The performance of the income variable is likely due to multicollinearity. Auxiliary regressions revealed that next to the debt service ratio, the income variable was the most collinear of the variables.[8] The insignificance of the coefficient of the lagged savings variable is likely due to the low and highly variable income growth that characterised the period as a whole, and is reflective of the struggle to maintain consumption levels. Average growth per annum was approximately 1% with a standard deviation of 5.7%. The negative coefficient of the foreign savings variable, suggesting substitutability between foreign and domestic savings, was expected and is found in other empirical work [Fry (1978,1980) Giovanini (1985); Bowles (1987) Modeste, (1993)]. The coefficient of the interest variable is of the correct sign and significant, providing empirical support to the Mckinnon - Shaw hypothesis that increases in the ratio of savings to GDP are due to rising real deposit rates.

The Growth Function

The growth function estimated was that of equation (2.f). The additional variables included as part of the z vector in equation (2.f) are real growth in consumption, GRC_t, and the first difference of the rate of depreciation of the exchange rate, $DGEXRAT_t$. Real growth in consumption was included because of its impact on aggregate demand. Consumption, especially government consumption, is found as an argument in the growth function in other empirical literature [(Landau(1983); Bohoun (1994)]. The consumption variable was included as an endogenous variable.

Given the openness of the economy and its vulnerability to exchange rate shocks, $DGEXRAT_t$ was included as an exogenous variable in the growth function. During the late

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[8] See Gujarati (1995) p. 337 for the use of auxiliary regressions and the F test to determine the existence of multicollinearity.

eighties and early nineties, there were substantial exchange rate changes. In recent years increasing attention has been paid to the impact of macroeconomic instability on real GDP growth. That instability was most often modeled using the rate of inflation [Dornbusch and Reynoso (1989); Sarel (1996)]. In the context of Guyana, however, it is arguable that exchange rate changes more accurately reflect the macroeconomic instability that has plagued the economy in recent years. The expected sign of the exchange rate coefficient is negative.

Other possible inclusions in the z vector such as the rate of growth of imports, the ratio of the foreign debt to GDP and the ratio of foreign financing to GDP were explored but rejected since they added little explanatory power to the model. The model was estimated using 2SLS to minimise the problem of simultaneity bias. The empirical results for the period 1965-95 are given below with the t statistics in parentheses.

$$y_t = \underset{(1.8)}{1.59} + \underset{(2.5)}{0.14}er_t + \underset{(1.9)}{0.14}\,DEXGDP_t - \underset{(0.2)}{0.01}DFSGDP_t + \underset{(0.5)}{0.07}Ds_{t-1} + \underset{(2.6)}{0.24}\,DBBGDP_t$$

$$+ \underset{(0.2)}{0.03}\,DDEBTSERRAT_t - \underset{(0.8)}{1.27}\,DGPOP_t + \underset{(3.4)}{0.34}\,GRC_t - \underset{(1.9)}{0.02}\,DGEXRAT_t + e_t$$

BG(1) = 0.004; BG(2) = 3.9 : BG(3) = 4.4; BG(4) = 6.4 ;
ARCH(1)=0.7; RESET(1)= 0.1; WHITE = 1.6; CHOW= 0.4 (1988);
R^2=0.72 F= 4.3 ; DW = 2.0; JB=3.9

Breusch Godfrey tests using up to four lags indicated no evidence of serial correlation. The Ramsey RESET test statistic for model misspecification was insignificant. Neither Engle's ARCH nor White's test revealed heteroscedasticity in the residuals. Both the Jarque Bera test of normality and the ADF test of stationarity of the residuals were satisfactory.

With the exception of the $DGPOP_t$ coefficient, all coefficients have the expected sign. The insignificance of the $DGPOP_t$ coefficient is probably due to poor data quality. The significant impact of growth in real consumption is not surprising, given the fact that consumption during the period accounted, on average, for approximately 80% of GDP. Neither the debt service variable nor the foreign savings variable shows any significant influence on

growth. The result with respect to the debt service variable should be treated with caution, given the problem of multicollinearity . As in the savings function, the debt service ratio was found to be the most collinear of the regressors. The coefficient of lagged savings is insignificant, and is consistent with the outcome in the savings function. However, the coefficient of government savings on real GDP growth is significant. The significant influence on growth of exports is expected, given the export dependence of the economy. The coefficient of $DGEXRAT_t$ is also significant at the 90% level. The results with respect to foreign savings, government savings and export growth reflect those of Modeste (1993).

As in the case of the savings function, the performance of the interest rate variable provides empirical support to the Mckinnon-Shaw hypothesis. The results indicate that a one percentage point rise in the expected real deposit rate provided a 0.14 percentage point rise in the growth of real GDP. This result is somewhat below that found in other empirical literature [(Fry 1979, 1980; Watson(1992), Modeste (1993)], and is reflective of the relatively low capital output ratios reported by the World Bank.[9]

CONCLUSION

The study provides empirical support for the Mckinnon-Shaw hypothesis and underscores the inappropriateness of the policy of financial repression. Indications are that interest rate liberalisation much earlier in the period could have led to increased savings, investment and growth. At a more general level, the study also points out the low efficiency of capital, an issue that needs to be addressed if the increased savings of a liberalised financial sector are to have maximum impact on general economic activity. In this context, there is clearly need for efficiency enhancing initiatives in the construction, operations and maintenance of economic infrastructure. Additionally, policies to stimulate the importation and diffusion of new technologies ought to be a top priority.

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[9] See World Bank, Economic Memorandum on Guyana, 1976, p. 16 and World Bank, Guyana : A Proposal for Economic Recovery, 1986, p.14.

Figure 1 Real Expected Interest Rate

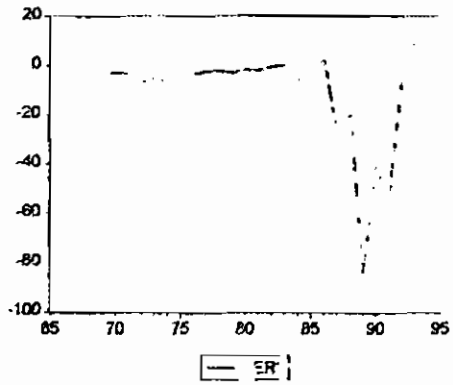


Figure 2. First Difference of Ratio of Exports to GDP

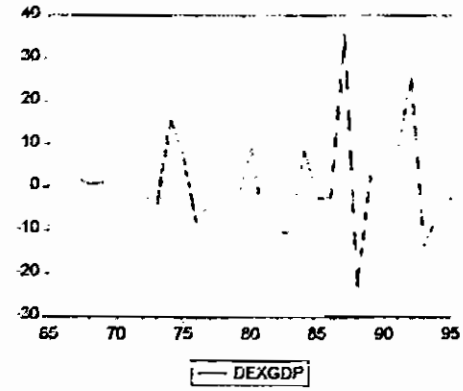


Table 3 First Difference of Population Growth

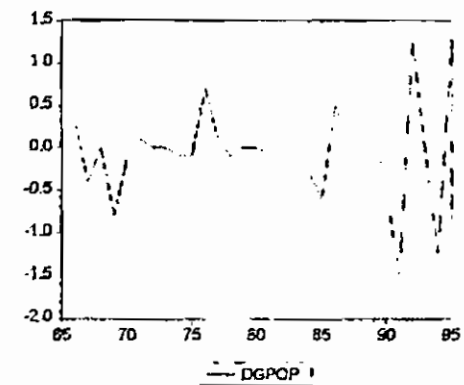


Figure 4: Growth in Real GDP(y)

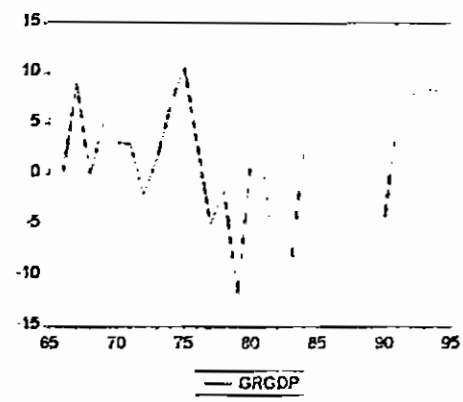


Figure 5 First Difference of Gross Domestic Savings

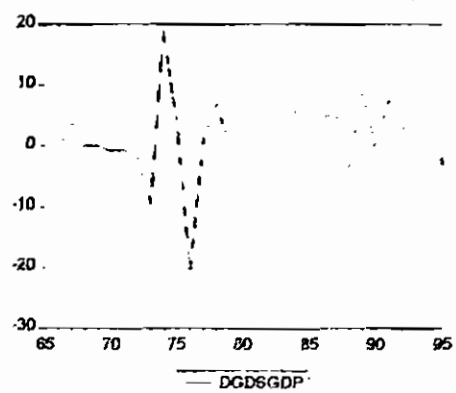


Figure 6. First Difference of Foreign Savings to GDP

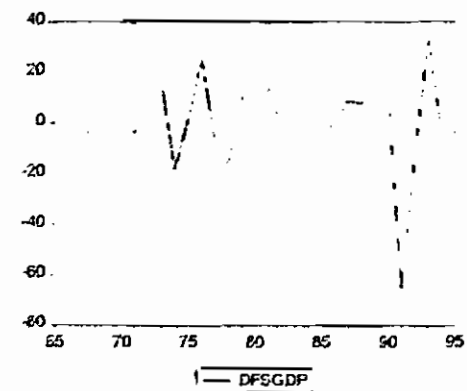


Figure 7 Real Growth in Consumption

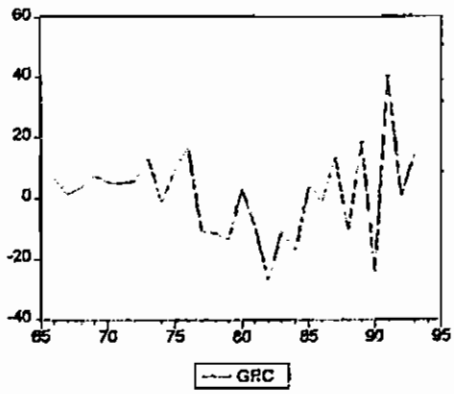


Table 8: First Difference of Exchans Rate Depreciation

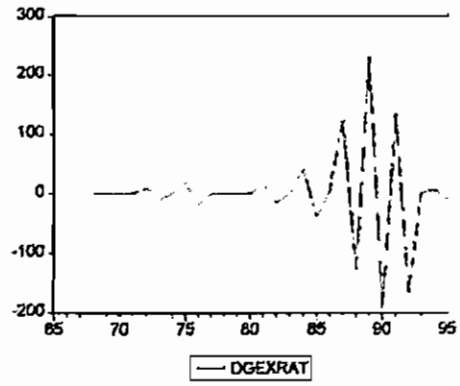


Figure 9: First Difference of Central Govt Savings

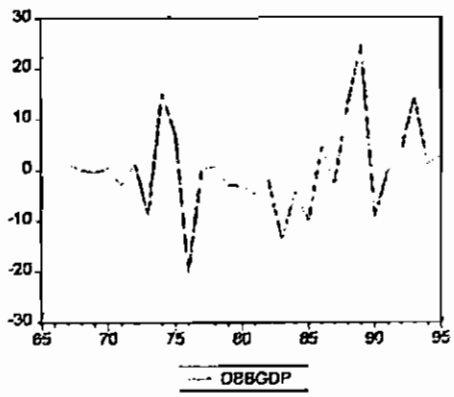


Figure 10: First Difference of Debt Service Ratio

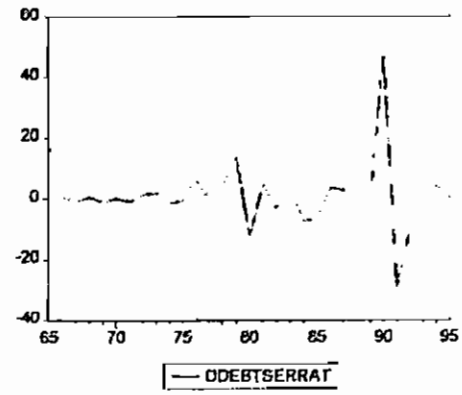
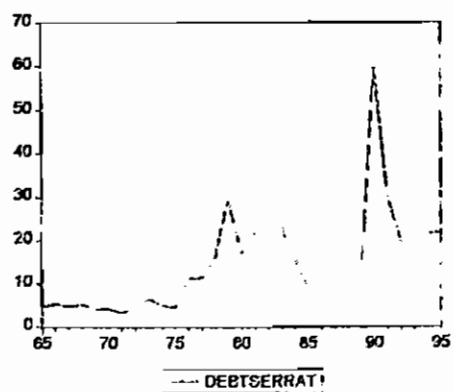


Figure 11 Debt Service Ratio (DEBTSERRAT)



BIBLIOGRAPHY

Arrieta, G.M. Gonzales. Interest Rates, Savings and Growth in LDCs. An Assessment of Recent Empirical Research, World Development, Vol. 16, No. 5 (May, 1988), p.589-605.

Bowles, Paul. Foreign Aid and Domestic Savings in Less Developed Countries, Some Tests of Causality, World Development, Vol. 16, No. 6 (June, 1988), p. 989-96.

Charemza Wojciech and Deadman, Derek F. New Directions in Econometric Practice, Edward Elgar Publising Ltd., UK, 1997.

De Aghion, B. and De Hinestrosa, P. Debt Relief, Growth and Price Stability in Mexico, Journal of Development Economics, Volume 48, No. 1 (October, 1995), p.135-49.

Dornbusch R., and Reynoso A. Financial Factors in Economic Development, American Economic Review, Vol. 79, No. 2, (May,1989), p.204-09.

Fry, Maxwell. Saving, Investment, Growth and the Cost of Financial Repression, World Development, Vol. 8, No.4 (April, 1980), p.317-27.

Fry, Maxwell. Money and Capital or Financial Deepening in Economic Development, Journal of Money, Credit and Banking, Vol. 10, No.4 (November,1978), p 464-75.

Giovanini, Alberto. The Interest Elasticity of Savings in Developing Countries : The Existing Evidence, World Development, Vol. 11, No. 7 (July, 1983), p. 601-7.

Giovanini, Alberto. Saving and the Real Interest Rate in LDCs, Journal of Developent Economics, Vol. 18, 1985, p.197-217.

Gujarati, Damodar. Basic Econometrics, McGraw-Hill, London, Third Edition, 1995

Harrison, A. Openness and Growth: A Time Series, Cross Country Analysis for Developing Countries, Journal of Development Economics, Volume 48, No.2, (March 1996), p.419-47.

Johnson, Dudley and Chiu, John S. Y. "The Saving-Income Relations in Underdeveloped and Developed Countries," Economic Journal (June 1968), p.321-33.

Khan, M. S. and Reinhart, C.M. Private Investment and Economic Growth in Developing Countries, World Development, January 1990, p.19-27.

Knight, Malcolm, Loayza, N and Villanueva, D. The Peace Dividend: Military Spending Cuts and Economic Growth, IMF Staff Papers, Volume 43, No. 1, (March, 1996), p.1-37.

Knight, M; Loayza; N and Villanueva, D. Testing the Neoclassical Theory of Economic Growth, IMF Staff Papers, Volume 40, No. 3, (September, 1993), p. 485-511.

Kouassy, Oussou and Bohoun, Bouabre. Fiscal Adjustment and Growth in Cote d'Ivoire, World Development, Vol. 22, No. 8, (1994), p. 1119-28.

Landau, Darnal. Government Expenditure and Economic Growth: A Cross Country Study, Southern Economic Journal, Vol. 49, No.3 (January, 1983), p. 783-92.

Lee, J. W. Lee, Capital Goods and Long Run Growth, Journal of Development Economics, Volume 48, No. 1 (October, 1995), p.91-110.

Lee, J.K. Exports and the Propensity to Save in LDCs, Economic Journal, Vol. 81, (June 1971), p. 341-350.

Leff, Nathaniel H. Marginal Saving Rates in the Development Processes: The Brazilian Experience. Economic Journal (June 1968), p.610-20

Leite, S.P.and Makonen, Saving and Interest Rates in the BCEAO Countries: An Empirical Analysis, Savings and Development Quarterly Review, No. 3, 1986, p.219-31.

Maizels, Alfred. Exports and the Economic Growth of Developing Countries (Cambridge University Press), 1968.

McKinnon, Ronald I. Money and Capital in Economic Development, Brookings Institution. Washington, D.C., 1973.

Modeste, Nelson. An Empirical Test of the Mckinnon Model of Unrepression and Economic Growth: The Experience of Some Caribbean Countries, Social and Economic Studies, Vol. 42, Nos. 2 and 3, (June and September, 1993), p. 81-94.

Otani, I and Villanueva, D. Long Term Growth in Developing Countries and Its Determinants. Volume 18, No. 6, (June 1990), p.769-83.

Perron, Pierre. The Great Crash, the Oil Price Shock and the Unit Root Hypothesis, Econometrica,Vol. 57, No. 6 (November, 1989), p. 1361-1401.

Perron, Pierre. Testing for a Unit Root in a Time series with a changing Mean, Journal of Business and Economic Statistics, Vol. 8, No. 2 (April 1990), p.153-62

Rogers, J. H. and Wang, P. Output, Inflation and Stabilisation in a Small Open Economy: Evidence from Mexico, Journal of Development Economics, Volume 46, No. 2 (April, 1995), p. 271-93.

Shaw, E. S. Financial Deepening in Economic Development, Oxford University Press,1973.

Stern, Nicholas. The Determinants of Growth, The Economic Journal, January 1991, p. 122-33.

Yusuf, S and Peters, K.P. Savings Behaviour and its implications for Domestic Resource Mobilisation, The Case of the Republic of Korea, World Bank Staff Working Papers, No. 628.

Walters, B. Engendering Macroeconomics: A Reconsideration of Growth Theory, World Development, Volume 23, No. 11, (November 1995), p. 1869-80

Watson, Patrick. Specification and Analysis of Savings Functions for the Organisation of Eastern Caribbean States, University of the West Indies, 1991, mimeo.

Watson, Patrick. Savings, The Rate of Interest and Growth in a Small Open Economy: The Trinidad and Tobago Experience, Social and Economic Studies, Vol.41, No. 4 (December, 1992), p.1-24.

Zivot Eric and Andrews, Donald W. K. Further Evidence on the Great Crash, The Oil Price Shock, and the Unit Root Hypothesis, Journal of Business and Economic Statistics, Vol. 10, No. 3 (July 1992), p. 251-70.