

*“The Rate of Time Preference,
the Intertemporal Utility
Function and Regional Economic
Management.”*

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INTRODUCTION

Particularly in the context of slowing regional economic activity together with the savings and investment requirements of the restructuring process, a significant part of the economic management challenge is to control consumption. Hence an understanding of the nature of consumer activity and its impact is essential for appropriate economic management. Given also the fact that one consumes over time, essential to the understanding of consumer behaviour is the concept of the rate of time preference of consumption which in regional economic literature has received scant attention but can provide new insights into economic behaviour and new perspectives on general economic management. The purpose of the paper is to reinsert this important concept into the regional economic dialogue and to demonstrate ways in which it can bring new insights into old questions and challenge economic orthodoxies and even recent economic theories that have governed regional thinking on economic management.

The paper is divided into three parts. The first section discusses briefly the concept of the rate of time preference and its use in consumer theory, underlining its particular relevance to regional economic activity. The second section uses Granger causality to explore the empirical underpinnings of some of the hypotheses arrived at in the theoretical discussion. The third section concludes.

A. REVIEW OF THEORETICAL LITERATURE

The concept of the rate of preference of consumption is the basis for some of the most well-known and accepted theories of consumer behaviour such as the permanent income and life cycle hypotheses (Modigliani and Brumberg (1954); Friedman (1957)). It underpins the intertemporal utility function which recognises that consumers attempt to maximise utility across time periods, based on their expected lifetime incomes. Consumers are willing to forego consumption in the current period provided that they are satisfactorily compensated or awarded for so doing. For example, if a consumer is willing to forego a \$1.00 worth of current consumption for \$1.06 worth of consumption in the following period, the six per cent increase which he requires for so doing is referred to as his rate of time preference. Of course, the higher the rate of time preference or the importance of consumption in the current period, the less willing will be the consumer to forego current for future consumption. Accordingly, he must receive a higher level of compensation in order to induce him to forego current consumption. Very importantly, the theory shows that consumers can, if the opportunities exist, modify and enhance consumption bundles across time periods. This is possible if the investment opportunities exist through financial or capital markets. If the interest rate on savings and/or the returns to capital investment are greater than the consumer's rate of time preference, it is assumed that the rational consumer would postpone current for future consumption to the point where his rate of time preference is equal to the interest rate. If his expected returns are less than his rate of time preference, he would borrow until his rate of time preference and the interest rate are the same. Thus in equilibrium, the consumer's rate of time preference is equal to the interest rate.

Using a simple two period model, the theory of intertemporal utility can be simply presented as the consumer's attempt to maximise the following utility function:

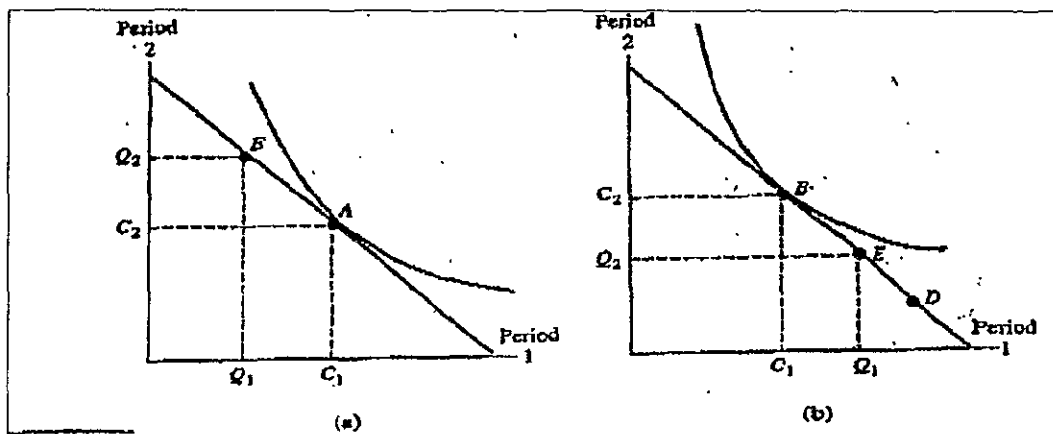
$$\text{Max } U = U(C_0, C_1)$$

subject to his income constraint

$$\begin{aligned} C_1 &= (Y_0 - C_0)(1+r) + Y_1 \\ &= Y_0 - (1+r)C_0 + Y_1 \end{aligned} \quad (1)$$

where C_0 and C_1 represent consumption bundles and Y_0 and Y_1 represent income in the first and second periods respectively. The interest rate, r , is the reward for postponing consumption from the first to the second period. The assumption is that there are no inheritances nor bequests. Using equation (1), one can generate a graph of the budget constraint as shown in Figure I below. The budget constraint passes through the endowment point (Y_0, Y_1) and its slope is $-(1+r)$. The consumer preferences are represented by a series of indifference curves showing the trade offs between consumer bundles that will afford the consumer equal levels of utility along a given indifference curve. The position of the consumer's indifference curves depends on whether he is a net borrower or net saver, and is reflective of his rate of time preference. The consumer maximises utility at the point of tangency between the budget constraint and the highest indifference curve. The point of tangency determines whether the consumer is a net saver or net borrower. The net saver, of course, has a lower rate of time preference than the net borrower. The consumer who maximises utility at point A is a net saver in that he is willing to forego some consumption in the first period so as to be able to consume more in the second period. On the other hand, the consumer who maximises utility at point B is a net borrower, willing to consume beyond income in the first period by borrowing. His consumption in the second period is lower than his income. The model can be easily extended to accommodate inheritances and bequests, but is not radically changed as a result. For more extended presentations of the model see Henderson and Quandt (1980) and Sachs and Larrain (1993).¹

Figure 1: Net Borrowers and Net Lenders



¹Figures 1 and 2 can be found in Sachs and Larrain(1993), pps. 90 and 107.

There are a few salient points of the model that require emphasis to facilitate later discussion. The first is that while the model has been used largely to explain consumer behaviour, it must be recognised that it is equally a model of savings and investment and hence deserves its rightful place in any model both of short demand management and of long term real income growth. Secondly, and very importantly, the model shows that consumers at least temporarily can live beyond their means but ultimately will be constrained by budgetary resources. Thirdly, the higher rate of time preference, the higher will be the level of current consumption and the lower will be the level of savings in the long run.

The concept of the rate of time preference though initially used as an important lynchpin in modern consumer theory, has been used extensively in other areas of economic analysis such as, for example, environmental and natural resource management (Markandya and Pearce (1987)) Unfortunately for reasons unknown, the rate of time preference has failed to cross over/ migrate into explanations of other important areas of economic activity such as fiscal and monetary policy. The paper seeks to explore possible contributions of this element of consumer theory to the abovementioned areas.

Relevance to Fiscal and Monetary Policy and Management

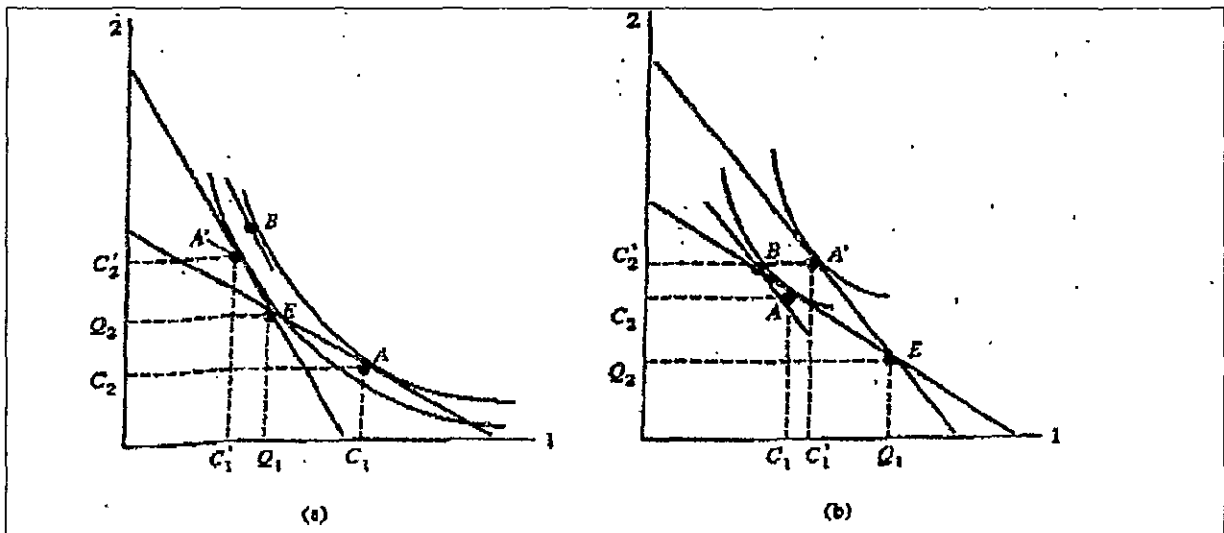
The concept of the rate of time preference can be applied equally to individuals, to society as a whole or to specific sectors such as governments as regards, for example, fiscal management since the latter is an important source of social consumption. Arguably, expansionary fiscal policies and/or persistently profligate fiscal policies can be construed as being reflective of high social or governmental rate of time preference with the contrary being true of economies with generally more conservative fiscal management.² High rates of time preference may in turn be reflective of high levels of poverty and hence persistent social demands to raise consumption levels. High social rates of time preference may constrain governments' ability to control consumption expenditure and place them in a position where they do not adjust fiscally until they are in fact forced to do so by the inability to finance further deficits. As indicated by the theory, adjustment must come sooner or later in the form of reduced future consumption to repay debt. Fiscal policies in these environments are likely to be chronically weak or of a stop/go nature. High social rates of time preference do provide one possible explanation of weak fiscal management but does not abstract from other causes or sources such as weak institutional infrastructure, corruption, poor revenue policies and management etc. However, the argument underlies the fact that even with attempts at good fiscal management, high social rates of time preference can push governments towards fiscal instability and unsustainability. The importance of integrating the concept of the rate of time preference into fiscal management is that it underlines an

While the earlier discussion has focused on the individual rate of time preference, in terms of monetary and fiscal policy it would be more appropriate to speak of a social or even governmental rate of time preference. The social rate of time preference can be considered a weighted average of individual rates of time preference. As in the case of individuals, the governmental rate of time preference can be defined as the rate of return (interest rate or rate of return on investment) which a government is willing to forego or exchange current for future consumption. Differing rates of time preference can be seen, for example, in the different approaches that governments use as regards fiscal management. For example, a government that pursues high rates of consumer spending may be considered as having a high rate of time preference as compared with another which pursues a more moderate but sustainable long-term consumption expenditure path. The same may be said of governments who pursue aggressive and non-sustainable short run investment strategies, stimulating short-run growth at the expense of stable long-term growth. While these are posited separately here, it is clear that the social rate of time preference can have a significant impact on governments' approach to spending.

additional constraint to good fiscal management (apart from the ability to raise revenue), seeing high consumption demands themselves as constraints to good fiscal management. In societies with high social rates of time preference, governments with conservative fiscal management may be short-lived because they have underestimated the social rate of time preference. Even new governments with a desire for improved fiscal management may soon find themselves in the same fiscal trap with low and even negative savings. This view of the fiscal management problem has led to radically different fiscal adjustment policies. Arguably, in addition to or apart from political considerations, the IMF's "adjustment with a human face", with its increased emphasis on social spending as part of the adjustment process, is in part an implicit recognition of consumers' rate of time preference, having seen adjustment programmes derailed by consumer revolt. To ensure success of the adjustment process, the relatively higher rate of time preference of the poorer segments of society must be addressed within the context of improved fiscal management.

With respect to monetary policy, the theory shows the impact on consumption of savers and borrowers of changes in interest rates. In the case of a rise in the interest rate, the net lender is induced to save more by foregoing current consumption, and is able as a consequence to increase future consumption. In the case of the net borrower, current consumption is reduced because consumption has now become more expensive. He can now afford to borrow less to fund current consumption. His savings in the current period go up as a result. The foregoing describe the first of two effects, the substitution effect, which for both lender and borrower is negative since it leads to a reduction in consumption in the current period.

Figure 2: The Impact of Interest Rate Changes



There is also, however, an income effect as well. In the case of the net borrower there is a negative income effect in that he is now able to afford less as a result of higher interest rates. In the case of the net saver, however, the income effect is positive since he now receives increased returns for his additional savings. This enables him to consume more in both the first and second periods. In his case, if the income effect is greater than the substitution effect, he will dissave. If the income effect is less than the substitution effect, the net effect will be reduced consumption and increased savings. (See Figure 2) The foregoing explains the ambiguity of the impact of increased interest rates on consumption and savings in that the final outcome is the result of the combined substitution and income effects across all consumers. It also underlines the fact that the transmission effect of monetary policy via consumption may not be as straightforward as thought. Generally, however, it is accepted that the substitution effect dominates the income effect. Hence the expectation more often than not is that a rise in interest rates leads to a reduction in consumption.³ Very importantly, the foregoing establishes a connection between monetary policy and consumption via the rate of time preference. This of course has implications for demand adjustment.

In the foregoing discussion, monetary policy is seen as impacting on consumption. However, it is very possible that the relationship between interest rates and consumption is bidirectional. As regards interest rate determination, application of the concept of the rate of time preference provides useful insights. For example, Keynes' model of interest rate determination can in part be explained by the rate of time preference. His transactions, precautionary and speculative demand for money can be reinterpreted as money demand for current consumption, for errors in the estimation of current consumption and money investment demand essentially for raising consumption levels via investment. When recast in this way, Keynes' money demand function is seen to be based essentially on the demand for current or prospective consumption and hence inherently on the rate of time preference. The implication is that the interest rate through the money demand function is in part determined by the rate of time preference. In fact, the rate of time preference offers an interesting explanation for the high interest rates that have plagued regional economies for many years. The oligopolistic structure of the regional banking sector, the small size of the sector, the weakness of the non-bank financial sector, high levels of inefficiency have been used to explain high lending rates. However, in addition to these considerations which explain mostly the supply side of the market, it is arguable that high lending rates may simply reflect a level of demand for consumption consistent with high social rates of time preference. The high proportion of consumer versus productive sector lending gives much credence to this argument. At the end of 2000 in the sample of countries analysed below, consumer loans as a proportion of loans and advances outstanding in the commercial banking sector was estimated at between 40.0% to 65%. High rates of time preference (and relatively lower risk levels in lending for consumption as compared with productive sector lending), offer a reasonable explanation for high regional interest rates through its impact on consumer demand for loanable funds. This gives some weight to the foregoing reinterpretation of Keynes' money demand function, and underlines the fact that the rate of time preference may impose constraints on the effective use of monetary policy to rein in consumption demand. Explanations of interest rate levels in the region, however, have generally abstracted from the distribution of loans between consumption and investment.

Keynes' investment model also can be reinterpreted to be based essentially on consumption behaviour. If savings levels are essentially consumption determined, that is, they are the residuals of

³Sachs and Larrain (1993), p. 106-9.

consumption levels, and investment eventually seeks to enhance consumption levels over one's lifetime, then the intersection of Keynes' savings and investment schedules and hence the level of investment is determined ultimately by consumer behaviour and hence by the rate of time preference. Relatively low rates of time preference would imply for any given level of real income, higher levels of savings and investment. Hence, the level of consumption ultimately plays a significant role in long-term real income growth. This is achieved through its impact on savings and investment, thus pushing consumption and hence the rate of time preference more centrally in the debate on macroeconomic management.

B. THE MODEL

From the foregoing discussion emerge a few interesting and testable hypotheses. The first two of these concern the long-term relationship between savings and consumption levels. Based on the permanent income and life cycle theories of consumption, it is desired consumption or the maintenance of targeted levels of consumption that determine long-run consumption and hence long-run savings levels as well. This is apart from transitory impacts due to temporary or short-run changes in income and consumption and more permanent impacts due to savings habits as represented by lagged savings in equation (2) below. The latter captures, for example, institutional savings such as pension savings, life insurance savings, savings through National Insurance and also savings captured through taxation (See footnote).⁴ These may be referred to as institutional or non-discretionary savings. Hence, the first hypothesis tests whether past consumption or consumption habits are impacting on savings in the long run via its impact on discretionary savings. On the other hand, savings levels in turn may or may not impact on consumption. The latter may result because of weaknesses in the productive sector, the limited availability of investment opportunities or poor investment management. Given the argument that savings and investment are not ends in themselves but rather the means to attainment of long-run desired consumption levels, the non-attainment of this objective can help to explain low savings levels. The first two hypotheses explore the long-term relationship between consumption and savings as posited in equations (2) and (3).

$$S_t = f(S_{t-1}, C_{t-1}) \quad (2)$$

$$C_t = f(C_{t-1}, S_{t-1}) \quad (3)$$

Specifically, the hypotheses tested are whether the coefficients of C_{t-1} and S_{t-1} in equations (2) and (3) respectively, in linear regression form, are jointly zero.

The third and fourth hypotheses that will be tested relate to the importance or impact of consumption on lending rates in the commercial banking sector and the impact of lending rates in turn on

⁴ The issue of discretionary versus non-discretionary savings can be presented as follows:

$$\text{Let } S_t = Y_t - C_t \quad [S_t = \text{savings; } Y_t = \text{income; } C_t = \text{consumption}]$$

$$\text{Let } C_t = \alpha DY_t = \alpha (Y_t - T_t) \quad [\alpha = \text{marginal propensity to consume; } DY_t = \text{disposable income; } T_t = \text{taxes}]$$

$$= Y_t - \alpha (Y_t - T_t) = (1-\alpha)Y_t + \alpha T_t$$

The first expression represents discretionary savings while the second represents forced savings since it is that portion of taxes that would have been consumed if available.

consumption. As argued earlier, the expectation is that current and targeted consumption levels do impact on interest rates via the rate of time preference. At a theoretical level, increases in consumption lead to increases in aggregate demand which in turn leads to a rise in the price level. Using the IS-LM model, the price rise reduces real money balances. That is, the LM curve shifts upwards and the interest rate increases. Hence, in addition to the arguments made earlier with respect to the Keynesian money demand and investment functions, at a theoretical level, there is further reason to believe that consumption, which is influenced by the rate of time preference, impacts on interest rates. The interest rate used is the lending rate. In the case of the third and fourth hypotheses, the issue is whether the coefficients of C_{t-1} and r_{t-1} in equations (4) and (5) are jointly zero.

$$r_t = f(r_{t-1}, C_{t-1}) \quad (4)$$

$$C_t = f(C_{t-1}, r_{t-1}) \quad (5)$$

The study uses Granger causality analysis to test these hypotheses in thirteen Caribbean countries over the period 1971 to 2000 using annual data. The countries in the sample are Antigua, Bahamas, Barbados, Belize, Guyana, Grenada, Haiti, Jamaica, St. Vincent, St. Kitts, St. Lucia, Suriname and Trinidad. The data is taken from the IMF Financial Statistics.

C. EMPIRICAL TESTING

The Granger causality model with up to four lags was used to test the foregoing hypotheses. The results for the first two hypotheses are presented in Table 1 below. Consumption (public and private combined) and gross domestic savings are expressed as a percentage of GDP.⁵ The relevant null hypotheses are presented at the top of columns 1 and 2 in Table 1. The results show some support for the assertion that long-term savings levels are impacted by changes in consumption habits. In seven of the thirteen countries (Antigua, Barbados, Belize, Grenada, Haiti, St. Kitts and St. Vincent) the null hypothesis in the first column of Table 1 was rejected.⁶ However, for seven countries of the sample the null hypothesis was accepted - that consumption habits do not impact on long-run savings. This suggests that in those countries, discretionary savings are not significant. This may be because tax rates are high, squeezing disposable income and/or that incomes generally are low. It is also possible that non-discretionary savings rates are crowding out discretionary savings. This is not inconsistent with findings elsewhere as, for example, in the US where some have argued that Social Security savings have crowded out private savings.⁷

There was much more general acceptance of the second hypothesis - that savings rates do not

⁵ All the savings and consumption variables have been tested for stationarity using the Augmented Dickey Fuller and Perron-Phillips tests. They have all been found to be I(1) variables.

⁶The discussions focus largely on consumption and savings as a percentage of GDP, since within the economic management framework, these are the variables generally targeted rather than real consumption or savings.

⁷Sachs and Larrain, p.100

Granger cause consumption. This hypothesis was accepted in nine of the thirteen countries. Only in St. Kitts and Grenada was this hypothesis accepted. This rejects a major thesis put forward earlier under the theory of intertemporal utility maximisation - that ultimately the purpose of savings is to elevate consumption. However, very importantly, the empirical results also show that in real terms, savings have been impacting significantly on consumption. From a macroeconomic standpoint this is good news since it suggests beneficial use of savings, that there is an incentive for at least maintaining or even raising savings levels and also, very importantly, that consumption generally has been growing in tandem with real income growth.

	Consumption does not Granger cause Savings	Savings do not Granger cause Consumption	Consumption does not Granger cause Lending Rates	Lending Rates do not Granger cause Consumption
Antigua	No	Yes	Yes	Yes
Bahamas	Yes	Yes	No	Yes
Barbados	No	Yes	Yes	Yes
Belize	No	Yes	Yes	No
Dominica	Yes	No	Yes	No
Grenada	No	Yes	Yes	No
Guyana	Yes	No	Yes	Yes
Haiti	No	No	N.A.	N.A.
Jamaica	Yes	Yes	Yes	Yes
St. Kitts	No	Yes	Yes	No
St Vincent	No	Yes	Yes	No
Suriname	Yes	Yes	N.A.	N.A.
Trinidad	Yes	Yes	Yes	Yes

"Yes" indicates agreement with the null hypothesis at the top of the column. "No" has been inserted into the column if the null hypothesis has been rejected in at least two instances.

Combined, the foregoing results present four possibilities as indicated in Table 2 below. In the first row and column (A), long-term consumption habits are impacting significantly on saving rates and savings rates in turn are impacting on long-term consumption. In the second row and first column (B), consumption habits are impacting on savings rates but not vice versa. In the first row and second column (C), long-term consumption patterns are not impacting significantly on savings rates but savings rates are impacting significantly on consumption. In the second row and column (D), long term consumption is not impacting significantly on savings rates and vice versa. Countries in the second column (C and D) can be deemed to be faring better than those in the first column as regards consumption management and the accumulation of savings in the long run in that consumption is not impacting significantly on savings rates. Those in the second column and second row (D) may be managing best in that they are able to allow consumption to grow in tandem with rather than ahead of real income, and so allow a gradual accumulation of real savings without undue repression of consumption. Those in the latter position can be deemed to be operating in a virtuous circle. Those in the first row and first column (A) are operating in a vicious circle in that the savings rate is declining, and hence the rate of investment and growth unless perhaps there is a

net injection of savings from abroad. This is the case of the net lender with the income effect overcoming the substitution effect as discussed in Figure 2. Those countries in the second row of the first column (B) are in a very difficult situation in that savings rates are not in the long term leading to increased real income and consumption levels, a situation that is both economically and politically difficult. As indicated earlier, this may be because of difficulties in the productive sector and/or inefficiencies in the management of investment.⁸ At C, savings rates are impacting long-run consumption levels and not vice versa. This perhaps best describes a situation in which savings are not being endangered by excessive consumption growth, thus permitting a more orderly and sustainable consumption growth pattern. The challenge is, via policy initiatives, to move countries from the first column to the second and perhaps ultimately to D. The data suggests that the way to achieve this is perhaps to target consumption levels so that it does not become a source of instability. As a result, gross domestic savings rates would also be stable and real consumption, provided investment is productive, would be allowed to rise without jeopardising long-term growth.

Savings ($S_{t,i}$)	Table 2: Categorisation of Countries According to the Significance of Savings and Consumption Coefficients	
	CONSUMPTION ($C_{t,i}$)	
	A	C
	B	D

$S_{t,i}$ is impacting significantly on consumption in the first row but insignificantly in the second. $C_{t,i}$ is impacting significantly on savings in the first column but insignificantly in the second.

The key would be to target a sustainable level of consumption. For most countries in the sample, government consumption has been held within 20.0% of GDP and departures from this bound has generally been the precursor to significant economic difficulties as in the case of Jamaica, Suriname and Guyana (See graphs at Figure 1 in the Appendix). The data indicate that for the countries of the Western Hemisphere during 1970 to 2000, the ratio of total consumption to GDP has been between 70.0% to 80.0% of GDP and for the industrial countries the ratio has been between 70.0% and 75.0% of GDP.⁹ The foregoing suggests a limit of 80.0% of GDP as a useful boundary for the region and hence a cap of approximately 60.0% of GDP on private consumption. Departures from these "norms" have generally quickly pushed countries in the region towards economic difficulties and forced adjustment programmes often with the IMF. This is clear from the graphs of the ratio of consumption to GDP (See graphs at Figure 1 in the Appendix). There are many examples such as Barbados in 1977, 1982 and 1992, Belize, Dominica and Guyana in 1984 and Jamaica in 1982. These trips to the IMF have all been preceded by rising and unsustainable consumption levels. The purpose of economic policy should be to impart some stability to this very important segment of economic activity through the achievement of a sustainable consumption path as suggested above. Hence high rates of time preference which, of course, introduce 'stop/go' or rather 'go/stop' policies would need to be more effectively managed. The higher the rates of time preference, the greater the instability that would

⁸The empirical results suggest the following categorisation. In group A is Haiti. In group B are Antigua, Barbados, Belize, Grenada, St. Kitts, and St. Vincent. In group C are Dominica and Guyana and in group D are the Bahamas, Suriname, Trinidad and Jamaica..

⁹IMF Financial Statistics Yearbook 2001.

most likely be introduced to the economy through consumption either via the public or private sector or both.

With respect to the third hypothesis - that consumption does not Granger cause lending rates - the empirical evidence strongly suggests that this is so. Private consumption as a percentage of GDP was used since commercial bank lending is more likely to impact on private rather than public consumption which is largely revenue-based. Both lending rates and the consumption variables with the exception of the consumption variable for Jamaica were found to be I(1) variables. Of the eleven countries for which data is available, the foregoing hypothesis was accepted with the sole exception of the Bahamas. However, the question of the impact of consumption on lending rates still remains, given the high proportion of loanable funds that is used to fund consumption.

The fourth hypothesis - that lending rates do not Granger cause private consumption levels - was rejected in five of eleven countries, four of these being in the OECS - Dominica, Grenada, St. Kitts and St. Vincent - Barbados, Guyana and Jamaica. This does suggest some leeway for demand adjustment via monetary policy impact on consumption. However, for the OECS, this would have to be achieved collectively through the Eastern Caribbean Central Bank because of membership of a monetary union. In six of eleven countries the null hypothesis - that lending rates do not Granger cause private consumption - was accepted. However, of the latter six countries, empirical evidence in three (Barbados, Guyana and Jamaica) supported the conclusion that real consumption is in fact impacted by lending rates. However, arguably, the impact is not significant enough to affect consumption levels. This may reflect the fact that in those countries while private consumption may account for a considerable portion of bank borrowings, other sources of consumption financing may be dominant such as the non-bank financial sector, hire purchase arrangements, external funding through relatives and friends and also external financial institutions in the case of those who have access. It is also possible that high rates of time preference are making monetary policy an ineffective instrument of control for consumption. The very high hire purchase rates charged by some commercial houses in the region, often much higher than commercial bank lending rates, suggest this is as a distinct possibility.

The foregoing results prompted testing of additional hypotheses. Most importantly, they prompted testing of hypotheses with respect to the relationship between investment and the interest rate. Given the fact that loans are for either consumption or investment, and the less than emphatic results as regards the role of consumption despite the significant proportion of commercial bank resources that go to consumption, testing of the relationship between lending rates and the level of investment was a logical step forward. The hypotheses tested were whether the level of gross domestic investment as a percentage of GDP impacted on lending rates and vice versa. Gross domestic investment was expressed as a percentage of GDP. The investment variables were tested for stationarity and found to be I(1). The relevant null hypotheses are presented in Table 3 below together with the empirical results.

Table3: Investment and Lending Rates		
	Investment does not Granger cause Lending Rates	Lending Rates do not Granger cause Investment
Antigua	Yes	Yes
Bahamas	Yes	Yes
Barbados	No	No
Belize	Yes	Yes
Dominica	Yes	Yes
Grenada	Yes	Yes
Guyana	Yes	No
Jamaica	Yes	Yes
St. Kitts	Yes	Yes
St Vincent	Yes	Yes
Trinidad	Yes	Yes

“Yes” indicates agreement with the null hypothesis at the top of the column. “No” has been inserted into the column if the null hypothesis has been rejected in at least two of the three tests. Haiti and Suriname were excluded because of the inadequacy of data.

As can be seen, there is very little endorsement of the assertion that the level of domestic investment has impacted lending rates or vice versa. Specifically in the case of the second of the two hypotheses, the acceptance of the null suggests a few of possibilities. It is possible that high levels of external funding either in the form of grants or loans, particularly through the public sector, may be making irrelevant the level of domestic lending rates. This may be a consequence of the high level of domestic lending rates relative to external rates. The result would be that only those sectors without access to external funding would use substantially the local banking sector. This would most likely be the non-traded sector or small trade sector. Also the results may reflect the impact of external private sector funding on gross domestic investment. The level of foreign direct investment in some of the OECS countries and also, for example in Trinidad, would tend to support this hypothesis.

The relatively low incidence of lending rates impacting on investment levels suggests that in the Caribbean, monetary policy has limited effectiveness in controlling the investment component of aggregate demand. Firmer conclusions will, however, have to await the use of more disaggregated data. Monetary policy may be a more effective tool of consumption management than of investment management. However, policy makers also need to be cognisant of the sectoral impact of high lending rates and the economic and social consequences of, for example, a tight monetary policy particularly on the non-traded sector and small trade sector. In fact, the results suggest that the exogeneity of investment to a large extent forces adjustment on to consumption and investment in the non-traded and small trade sectors.

The foregoing results prompted testing of the relationship between external lending rates and

domestic investment as a percentage of GDP. Granger causality was used to test whether foreign lending rates impact on gross domestic investment. The US prime rate, the yields on US medium and long-term bonds were used. Only in the case of Trinidad did these rates show a significant impact on domestic investment. In fact, all three rates were significant for Trinidad. This contrasts, of course, with the insignificant impact of domestic interest rates on gross domestic investment in Trinidad. This would, of course, have implications for any demand adjustment process undertaken by the Trinidad government and lends support to the earlier contention that the adjustment impact would likely fall on consumption and on the non-traded and small trade sectors.

The insignificance of external lending rates in the case of the remaining countries is likely explained by the fact that most external financial inflows for the review period have come either from bilateral, regional or multilateral donors. In all three cases, there has often been a highly concessionary element in the resources provided and hence interest rates are not reflective of market rates. Also, domestic investment, particularly in the smaller territories, has been substantially boosted by grant funding. In the circumstances, both the domestic financial sector and external financial markets seem rather tangential to the investment process in the Caribbean. Arguably, external flows are more influenced by other considerations such as the desire for political influence (it is no surprise that bilateral funding has declined substantially with the demise of communism), development needs as perceived by donors, the availability of funds as determined, for example, by economic conditions in donor countries and donor evaluations or perceptions of domestic economic management. However, with greater regional financial integration and increased capital flows, this is gradually changing.

D. IMPLICATIONS OF THE EMPIRICAL RESULTS FOR THE ADJUSTMENT PROCESS IN THE CARIBBEAN

There are a number of interesting implications for adjustment in the Caribbean that emanate from the foregoing results. First is the susceptibility of consumption to monetary policy changes in certain countries making it a useful policy tool in the adjustment process. In the case of other countries where the impact on consumption is limited, this may be explained by very high rates of time preference and/or limited sophistication of consumers. In these countries the burden of adjustment may be forced on to fiscal rather than monetary policy. The second important conclusion is that the adjustment process is facilitated obviously by those sectors over which government has control. It is those sectors that will bear the brunt of the adjustment process. Hence, there would tend to be an inbuilt inequity in the adjustment process. Unfortunately, the discussion about adjustment generally takes place at a very aggregate level without due consideration of the sectoral impact and the implications for social welfare and long run structural adjustment. Mention has been made of the likely impact on the non-traded and small trade sectors. An adjustment process in which small firms are impoverished or made bankrupt and substantial segments of the poor are pushed into unemployment is highly questionable, and begs for more rational solutions. One possible solution may be differential rates of interest for consumers and for producers, especially small producers. While the IMF has in recent years provided some support directly to the poor, even more rational and strategically important in the long run would be to provide support to those firms that employ the poor. If this cannot be achieved through monetary policy then other policy, such as, for example, tax credits or accelerated depreciation to small enterprises or technical assistance may be used. The important point is that while economic targets may be achieved in the adjustment process, these may be achieved in a way contrary to social welfare enhancement, long run growth and development. Finally, the results suggest clearly variations in economic structure in the Caribbean. Accordingly, an appropriate adjustment programme will

require measures informed by intimate knowledge of the economy and society so as to ensure that long run economic and social objectives are not jeopardised by short run stabilisation goals.

E. CONCLUSION

The foregoing results are instructive but clearly need to be supported by further research in the form of individual country studies and more disaggregated sectoral analyses that would inform much better the formulation of adjustment programmes. Also, there will generally be a mixture of monetary and fiscal policy in pursuit of economic management goals. It is important that the mix be appropriate to the economic environment. To achieve this, it is important to look at both the short- and long-term effect of each set of policies. This is an opportune time to be engaged in such analysis, given the difficulties that currently face many regional economies and the inevitability of adjustment.

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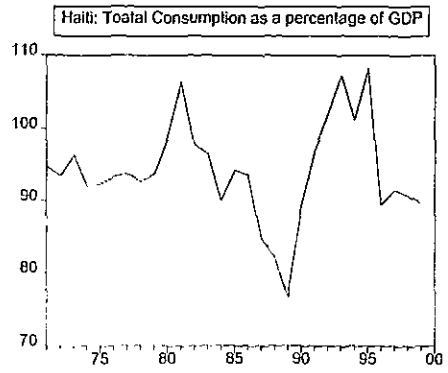
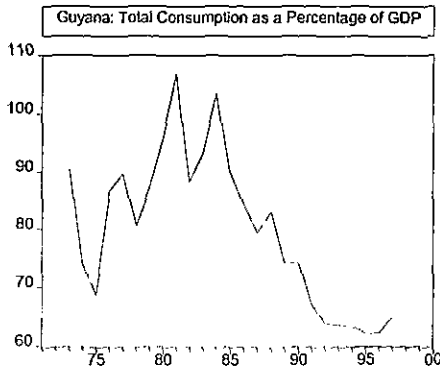
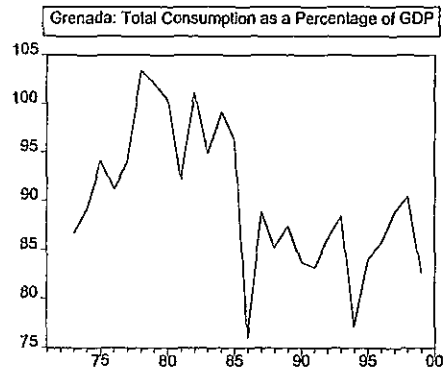
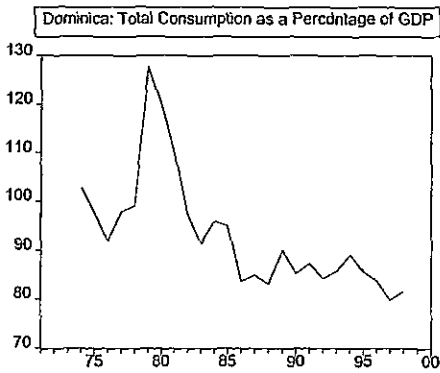
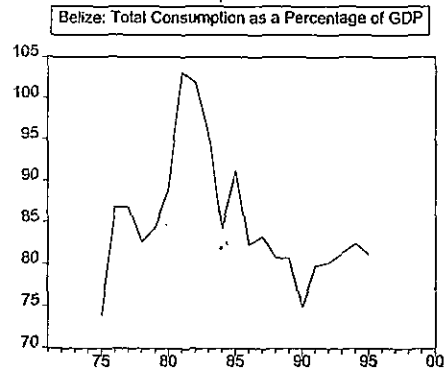
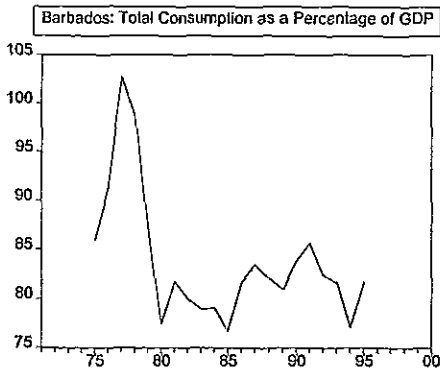
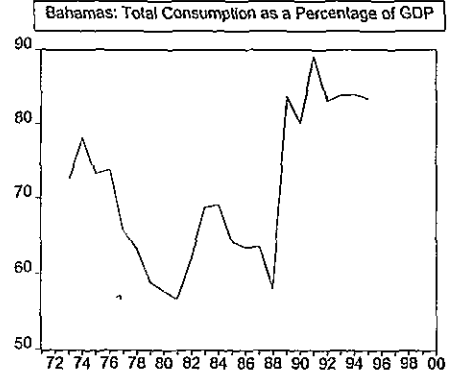
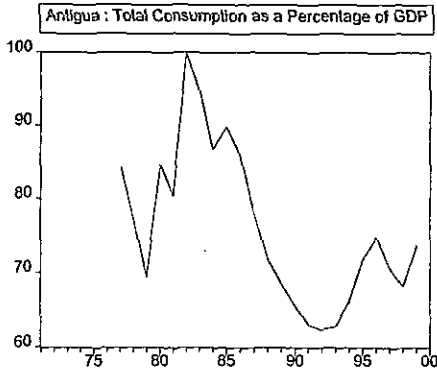
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Figure 1: Total Consumption as a Percentage of GDP



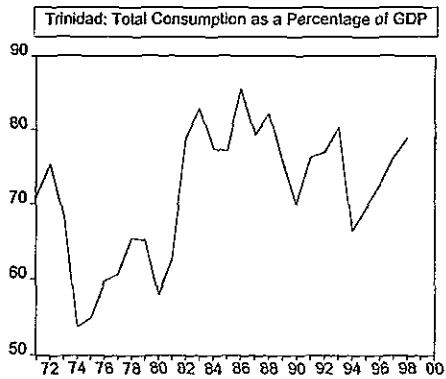
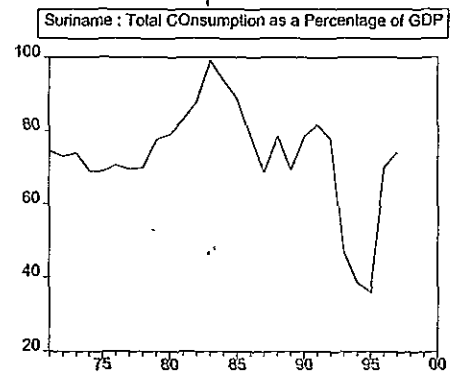
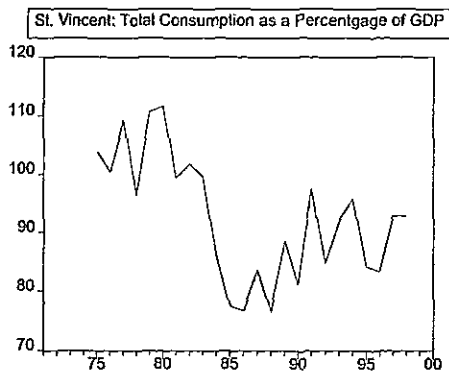
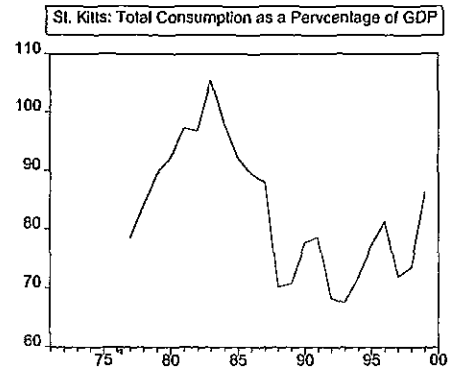
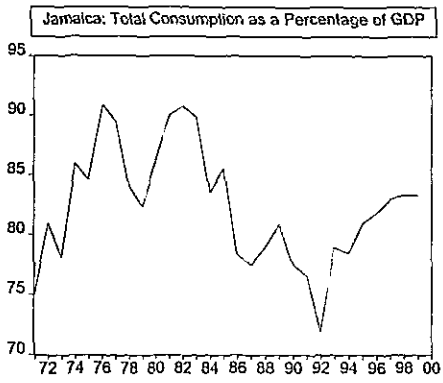


Figure 2: Public and Private Consumption as a Percentage of GDP

