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LC/CAR/L.63
14 December 2005
ORIGINAL: ENGLISH

LONG TERM GROWTH IN THE CARIBBEAN
A BALANCE OF PAYMENTS CONSTRAINT APPROACH

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Executive summary

Since the 1980s CARICOM economies have witnessed a decline in their long-term growth trend attributable mainly to the deterioration in the economic performance of its smaller States. In addition since the middle of the 1990s most economies have shown a process of growth stagnation.

The growth performance is associated with the workings of the existing international financial order. The development of smaller economies depends to a great extent on the acquisition of a means of payments accepted in international transactions, which they themselves cannot issue. Smaller economies can only build their economic infrastructure and develop by importing capital and raw materials as well as technology. It follows that countries must earn the foreign exchange required to finance their imports. In other words, they must export or, more to the point, their export potential must be commensurate with that of their import capacity.

As a result over the long run countries must maintain equilibrium in the balance of payments or at least in the basic balance. Countries can only grow over the long run at rates of growth compatible with their external position. In this sense countries are said to be balance-of-payments constrained.

This document explains the evolution of the long-run economic growth in CARICOM economies using a balance-of-payments constrained growth model. It states that the difference in the rates of growth between any country and that of the rest of the world is determined by the ratio of the income elasticity of demand for a country's exports by the rest of the world to the income elasticity of demand for its imports. The model is estimated for Caribbean economies and the results are compared to those obtained for Latin American economies.

The document outlines the policy options that can allow countries to overcome their external constraint. These include the overhaul of the current financial architecture, the change in the relationship between the export and import elasticities and a focused policy to attract foreign savings.

CARICOM countries have opted for the last solution. However, the policy efforts have not managed to spur growth or develop countries' export potential. In fact, the current policy centred on the attraction of foreign savings has hardened the balance-of-payments constrained and may well be the cause of the stagnation of growth that has prevailed for most Caribbean economies in the 1990s.

Introduction

The long-term growth of economies of the Caribbean Community (CARICOM) exhibits three characteristics. First, the aggregate rate of growth of CARICOM economies has declined over time. Second, the decline is attributed mainly to the Less Developed Countries (LDCs) as the More Developed Countries (MDCs) have in fact improved their growth performance. Third, all economies show a stagnation in growth since the middle of the 1990s. Fourth, a process of increasing divergence characterizes the growth performance of CARICOM economies.

From the point of view of this document, the growth performance of smaller economies such as those of CARICOM is determined by the existing financial architecture. The current system is anchored on the United States dollar and countries must be able to acquire the currency they cannot issue to pay for their imports. Due to their inherent limitations, smaller economies can only build their economic infrastructure by importing. In order to import they must export.

In short, the expansion of growth for any economy that does not issue the international reserve currency is constrained by the need to maintain balance-of-payments equilibrium. This means that the rate of growth of an economy that is compatible with balance-of-payments equilibrium is equal to the rate of growth of the main trading partners multiplied by the ratio of the export to import elasticities of income. Alternatively, the balance-of-payments equilibrium rate of growth can be shown to be equal to the rate of growth of exports divided by the income elasticity of imports.

There are three policy options to overcome the balance-of-payments constraint. The first is to call for an overhaul of the current international financial arrangements. The second is to change the relationship between the export and import elasticity parameters. The third is to attract foreign savings. CARICOM countries have opted for the third solution.

For the past 30 years, almost since their independence, the current account of CARICOM economies has steadily deteriorated. This trend has been particularly pronounced in the 1990s decade as countries have adopted more outward oriented policies. At the same time, as official financial aid flows have declined over time, countries have become more dependent on long-term private capital flows to equilibrate their external accounts. The perennial need to attract foreign inflows has shaped the orientation of their economic policy.

Most Caribbean economies have witnessed an increase in foreign direct investment. But this has been accompanied by a pattern of productive specialization that is biased towards sectors of economic activity that are highly intensive in foreign capital to the detriment of other more traditional sectors (agriculture and non-export or domestic manufacturing) and stagnating domestic investment. Moreover, the policy option geared to attract foreign direct investment has not been conducive to growth of the development of exports. It has in fact aggravated the foreign exchange constraint.

The document is divided into three parts. The first describes long-term growth trends for CARICOM economies and the export performance of CARICOM economies for goods and services. The second section sets out the balance-of-payments constrained growth model, also

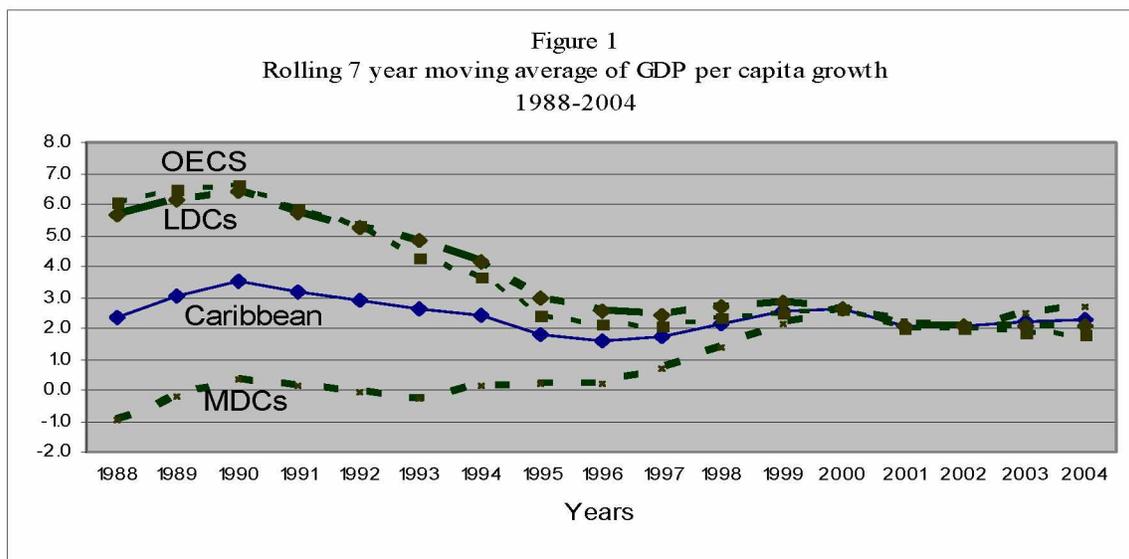
estimates the balance-of-payments constrained growth model using long-run econometric techniques. The third section explains the policy options of the balance-of-payments constrained growth model using a simple two-country model. The fourth section addresses the consequences of the policy option of attracting foreign exchange flows for growth and the development of exports.

I. GROWTH TRENDS IN CARICOM ECONOMIES

A. The growth trajectory for Caribbean economies

On average the long-run Caribbean macroeconomic performance is characterized since the middle of the 1980s by a declining growth trend and an increased disparity around that trend. CARICOM countries witnessed an increase in their average per capita GDP growth between 1980-1985 and 1985-1990 (0.8% and 3.6%, respectively). Thereafter the growth performance has stagnated.

However, on closer inspection (as shown by the Figure 1 below which plots a 7 moving average from 1980 to 2004 for the OECS, LDCs and MDCs) the downward trend is due mainly to the Organisation of Eastern Caribbean States (OECS) and the LDCs, as the MDCs actually improved their performance over time. Between 1988 and 2004 the rolling average GDP per capita of the OECS and the LDCs declined from 6% to 2%. Contrarily in the case of the MDCs it increased from -1% to 2%.



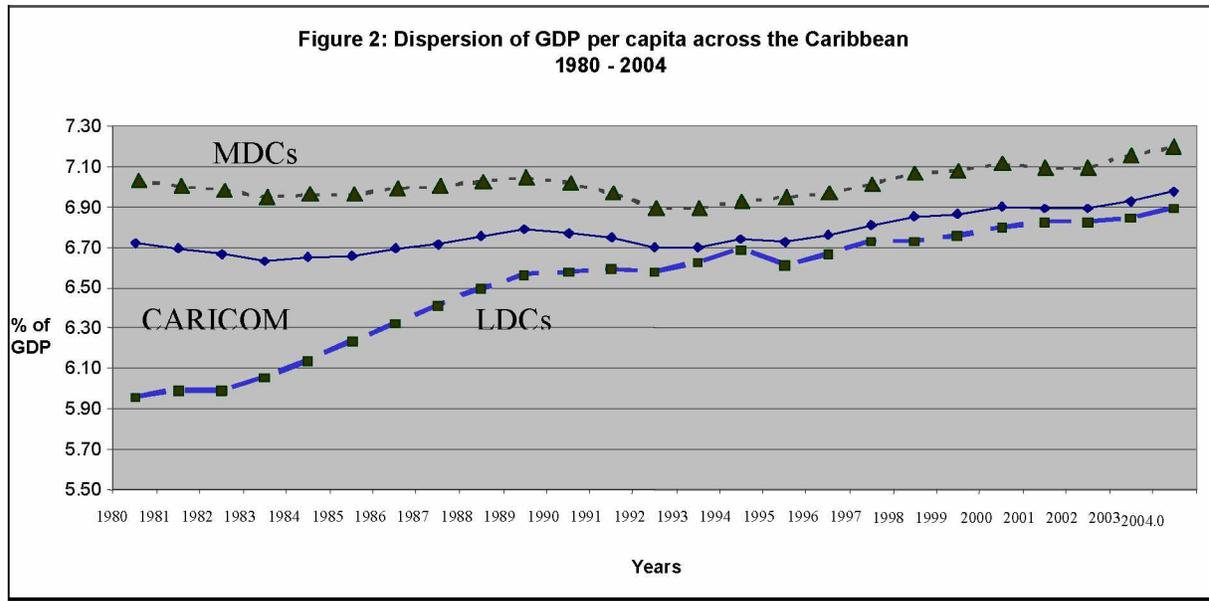
Nonetheless growth has either stagnated or declined for all economies since at least the middle of the 1990s. The average rate of growth for LDCs decreased from 2.6% to 1.6% between 1995-2000 and 2000-2004. For the MDCs the rate of growth has not budged (see Table 1 below).

At the same time that countries have converged in their growth rates they have deviated in terms of GDP levels over time. The cross-sectional variance for all CARICOM groupings without exception shows an increase between 1980-1985 and 2000-2004 (see Table 1 and Figure 2 below).

Table 1					
GDP per capita trends in the Caribbean					
1980-2004					
	1980-1985	1985-1990	1990-1995	1995-2000	2000-2004
Averages					
OECS	4.6	6.6	1.9	2.6	1.2
LDCs	4.0	6.5	2.5	2.6	1.6
MDCs	-2.0	0.4	-0.2	2.6	2.7
CARICOM	0.8	3.6	1.4	2.6	2.0
CARICOM	2.3	0.4	0.9	0.4	1.0
Dispersion of GDP per capita in levels across the Caribbean					
CARICOM	6.67	6.73	6.73	6.82	6.92
OECS	6.06	6.43	6.61	6.71	6.84
LDCs	6.07	6.46	6.60	6.68	6.78
MDCs	6.98	7.01	6.94	7.03	7.13
Source: ECLAC (2005)					

This conclusion is further verified by a simple convergence analysis. Available data does not demonstrate the existence of absolute GDP convergence for CARICOM members (that is, the States situated at the lower end of the output scale do not tend to grow faster than those situated at the higher end in order for the former to catch up with the latter)¹. This is shown in Figures 6 and 7 in the annex which plots the relationship between the real gross domestic product per capita of 1980 and the real gross domestic product per capita growth for the period 1980-1995 and 1995-2004 for all countries.

¹ The literature distinguishes two concepts of convergence. These are termed sigma and beta convergence. Sigma convergence refers to a decline in the dispersion across a group of countries or regions over time. Sigma convergence can be measured by the standard deviation say of GDP per capita or by a coefficient of variation (defined as the ratio of the standard deviation over the mean). Beta convergence refers to the relationship between the rate of growth of a variable over time (say GDP) and the level of that variable for a given year. The existence of sigma convergence between a lower and higher level income countries implies that there is a process of catching-up between the former and the latter. That is, the lower income level countries grow at a faster rate than the higher level income ones. Sigma convergence is compatible with absolute convergence (See, Barro and Xala-i-Martin, 1995, pp.26-28 and 383-386). More recently some authors have explored the possibility of simultaneous convergence and divergence. See, Elmslie and Milberg (1996) and Carter (2004).

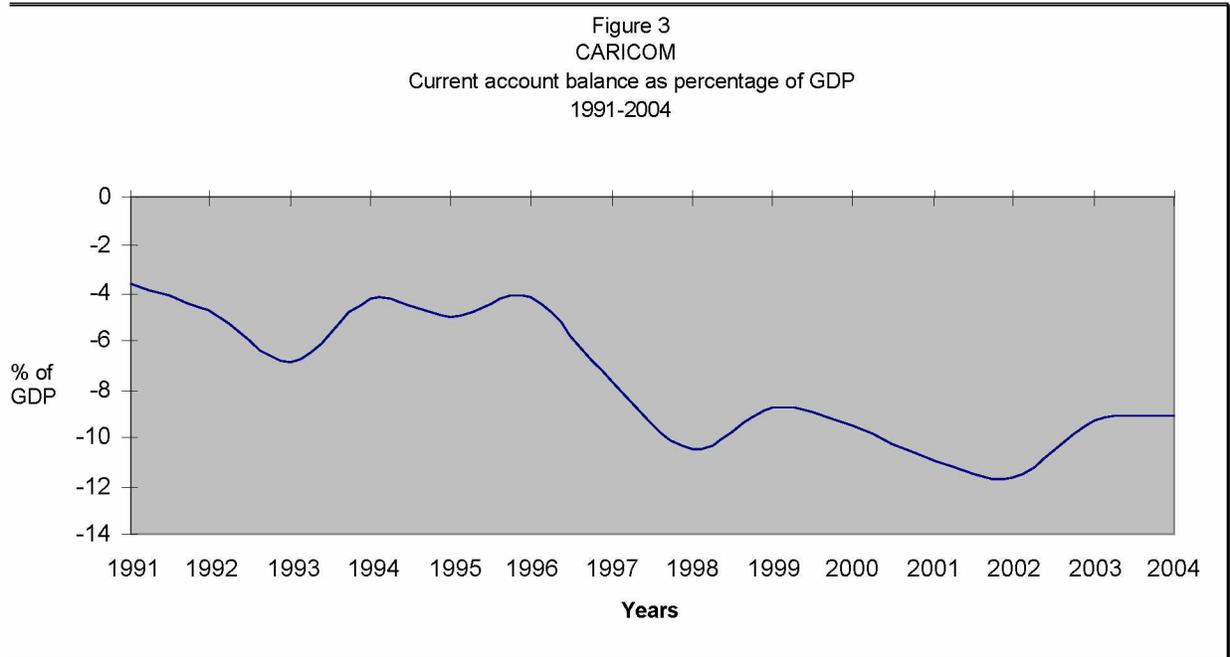


B. The growth performance and the balance-of-payments constraint

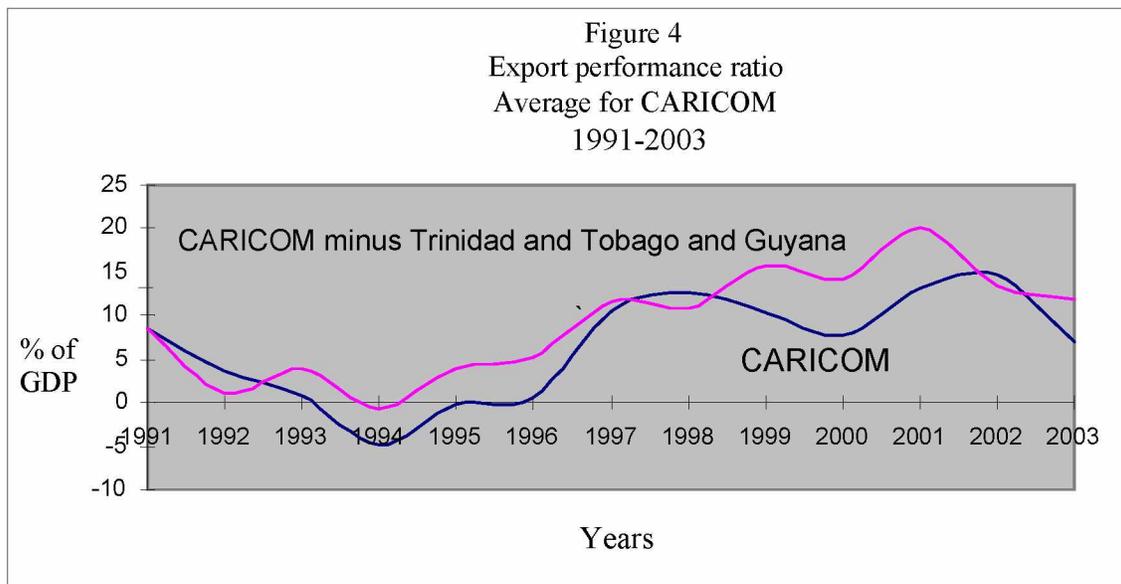
The growth performance of CARICOM economies is directly related to the organization of the financial system. The current system is anchored on the United States dollar, which is the means of payments that is used to settle international transactions. Countries, other than the United States, must acquire a means of payments they cannot themselves issue.

The expansion for growth for any economy that does not issue the international reserve currency is thus constrained by the need to maintain balance-of-payments equilibrium. The potential rate of growth that countries can achieve is that rate of growth that is consistent with balance-of-payments equilibrium. As a result, “countries’ performance in overseas markets, and the response of the world financial markets to this performance, constrains the rate of growth of the economy to a rate which is below that which internal conditions would warrant” (McCombie and Thirlwall, 1994). It is in this sense that countries are said to be balance-of-payments constrained.

For most CARICOM economies the stagnation in growth has been accompanied by deterioration in their external performance. The average current account deficit for CARICOM, which stood at -4% of GDP in 1996 widened to -9% in 2004 (see Figure 3 below).



The widening of the current account is the reflection mainly of a deteriorating export performance and, to a much lesser extent, that of an increase in import demand. Figure 2 below shows the export performance ratio expressed as a percentage deviation from GDP, for CARICOM as a whole and for a subgrouping, excluding Trinidad and Tobago and Guyana.



Export performance is measured by the ratio of exports to the average propensity to import (i.e. the ratio of imports to GDP). When exports are equal to imports, the export performance ratio is equal to GDP. The export performance ratio can be computed in terms of per cent deviation from GDP. A value of 0 would indicate a state of external equilibrium. A value greater than 0 in percentage shows the percent deviation of the external account from its equilibrium value. This measure was obtained for each CARICOM economy and then an average was obtained. The export performance ratio is characterized by three movements (See figure 4 above).

The first is a decline lasting from 1991 until 1994. During this period the export performance of CARICOM economies on average improved. The year 1994 marks a point of inflection from the previous trend after which the export performance deteriorates steadily until 2002. In 1994, CARICOM economies showed, on average, an equilibrium in their balance of payments. Eight years later in 2002, their export performance had deteriorated to a value equivalent to 20% of their combined GDP. The third period shows some improvement in the export performance ratio.

The worsening of CARICOM's export performance is reflected in the loss of market share in its major export markets both in goods and tourist services including CARICOM, the European Union (EU) and the North American Free Trade Agreement (NAFTA) (see tables 2 and 3 below). Between 1985 and 2002, the export market share of Caribbean countries in regional trading blocs such as NAFTA and Western Europe has decreased from 0.71% to 0.27% and from 0.15% to 0.10%, respectively (see table 3 below).

	1980	1985	1990	1995	2000	2003
Intra-regional trade share (exports)						
Antigua and Barbuda	0.27	0.26	0.27	0.00	0.13	0.00
Barbados	0.92	2.30	1.66	1.79	1.59	1.70
Belize	0.10	0.10	0.21	0.11	0.12	0.30
Dominica	0.10	0.31	0.34	0.38	0.42	0.43
Grenada	0.04	0.23	0.17	0.12	0.16	0.18
Guyana	0.91	0.53	0.33	0.00	0.90	...
Jamaica	0.99	1.38	1.76	1.19	0.66	...
Montserrat	0.00	0.01	0.01	0.01	0.00	0.02
St. Kitts and Nevis	0.07	0.17	0.09	0.04	0.04	0.01
Saint Lucia	0.25	0.29	0.53	0.34	0.17	0.46
St. Vincent and the Grenadines	0.11	1.09	0.69	0.54	0.31	0.34
Suriname	0.00	0.00	0.00	0.23	...	...
Trinidad and Tobago	5.88	6.88	6.60	11.94	13.19	17.22
CARICOM	9.66	13.36	12.39	16.70	17.17	20.65
OECS	0.85	2.35	2.11	1.45	1.24	1.44
LDCs	0.95	2.45	2.32	1.56	1.36	1.75
MDCs	8.70	11.09	10.34	15.15	16.35	18.91
MDCs without Trinidad a/	2.82	4.21	3.75	3.21	3.98	1.68
MDCs without Trinidad b/	9.06	10.56	7.52	6.39	7.59	...
Intra-regional trade share (imports)						
Antigua and Barbuda	0.73	0.77	0.68	...	...	...
Barbados	1.69	2.22	2.16	1.71	2.14	4.24
Belize	0.04	0.06	0.26	0.18	0.13	0.22
Dominica	0.22	0.34	0.50	0.44	0.37	0.57
Grenada	0.28	0.39	0.51	0.49	0.54	0.9
Guyana	1.54	1.98	0.49	0.00	0.91	...
Jamaica	1.45	1.07	1.74	3.52	3.72	...
Montserrat	0.07	0.10	0.16	0.00	0.04	0.04
St. Kitts and Nevis	0.16	0.25	0.32	0.32	0.34	0.56
St. Lucia	0.45	0.60	0.96	0.94	0.74	1.16
St. Vincent and the Grenadines	0.28	0.36	0.56	0.50	0.46	0.67
Suriname	0.00	0.00	0.00	0.70	...	...
Trinidad and Tobago	1.92	2.45	1.57	1.08	1.17	1.21
CARICOM	8.81	9.72	9.21	9.86	10.96	9.58
LDCs	1.62	2.03	2.65	1.60	1.54	2.40
MDCs	6.60	7.72	5.95	6.99	7.94	5.45
MDCs without Trinidad a/	4.68	5.27	4.39	5.92	6.77	4.24
MDCs without Trinidad b/	10.13	7.96	5.55	8.16	6.78	...
Note: ... denotes not available. a/ Adjusts for intraregional trade. b/ Accounts for intra and extra regional trade.						
Source: CARICOM Secretariat (2003 & 2005) and CAN (2002)						

In the same vein intraregional trade has also declined for the majority of CARICOM member States. The OECS, the LDCs and the MDCs (if Trinidad and Tobago is excluded) have lost intraregional market share. The OECS intraregional share dropped from 2.4% to 1.4% of the

total between 1980 and 2003. For the same period, the LDCs share declined from 2.5% to 1.8% of the total. Finally, the MDCs share (excluding Trinidad and Tobago) decreased from 4% to 2% in the said period. Moreover, the share of intraregional trade has declined for most CARICOM countries (see Table 2 above).

The stagnation/deterioration of export performance is not limited to goods but also affects services, which is important because services also play an important social role and have a major impact on the financial stability of a country, growth and the balance of payments. Moreover, the services sector has traditionally been identified as the sector that will provide the impetus for growth in the future and thus should be the main contributor to output, growth, employment and the provision for basic needs.

Regional bloc	1985	1990	1995	2000	2002
NAFTA	0.71	0.43	0.32	0.24	0.27
Western Europe	0.15	0.13	0.12	0.10	...
Andean Community	0.40	0.96	0.41	0.24	0.56
Mercosur	0.30	0.34	0.19	0.11	0.14
CACM	0.20	0.18	0.38	0.74	1.34
Note: ... denotes not available. Source: Competitive Analysis of Nations (2002) and WITS (2005).					

The available empirical evidence shows that, as expected and reiterated, Mode 2 is the main form of CARICOM provision of services. For the OECS Mode 1 has increased its share over the total provision of services over time and represented 20% of the total in 2001. As a result the gap between both has narrowed over time. Contrarily the MDCs have witnessed an opposite trend with Mode 2 increasing as a percentage of the total (i.e., Mode 1 falling as a percentage of the total). Overall for the last period for which data is available (1995-2000) Mode 1 and 2 represent on average roughly the same share of export services for both OECS and MDCs (see Tables 4 and 5 below)²

² The state of existing data allows the classification of services exports only for General Agreement on Trade in Services (GATS) Modes 1 and 2. Mode 1, which is defined as 'the supply of a service from the territory of one Member into the territory of any other Member' is measured as the sum of the commercial services in the disaggregated balance of payments data minus travel. Mode 2, which is defined by GATS as 'the supply of a service in the territory of a Member to the service consumer of any other member,' is measured as the sum of travel found in the balance of payment statistics. Mode 3 (defined as 'the supply of a service by a service supplier of one member through commercial presence in the territory of any other member) is proxied by the Foreign Affiliates Trade in Services (FATS) accounts and Mode 4 (defined as 'the supply of a service by a service supplier of a member, through presence of natural persons of a member in the territory of any other member) by the balance of payments line, compensation of employees. Data to provide estimates for Modes 3 and 4 is not available.

Table 4
Exports of services
Decomposition by Mode 1 and Mode 2 of services delivery
1985–2002

	1980-1985	1985-1990	1990-1995	1995-2000
OECS				
Mode 1 Value (US\$ million)	22.67	104.50	888.70	306.83
Mode 2 Value (US\$ million)	174.17	378.33	1,004.04	854.17
Mode 1 Share in total service exports	11.09	20.80	22.88	26.17
Mode 2 Share in total service exports	88.91	79.20	77.12	73.83
Mode 1 Share in GDP	4.09	7.75	10.18	12.12
Mode 2 Share in GDP	26.68	29.14	34.40	34.14
MDCs				
Mode 1 Value (US\$ million)	743.2	765.3	1,079.2	1,444.0
Mode 2 Value (US\$ million)	1,524.8	2,268.0	2,838.3	3,447.0
Mode 1 Share in total service exports	32.96	25.33	27.31	29.57
Mode 2 Share in total service exports	67.04	74.62	72.69	70.43
Mode 1 Share in GDP				
Mode 2 Share in GDP				
Source: On the basis of UNCTAD (2002) for the first three columns (1980) and CARICOM (2005) for the last column.				

Table 5						
Exports of services - Decomposition by category						
In percentage of the total (1985 -2002)						
	1980-1985	1985-1990	1990-1995	1995-2000	1992-1995	1995-2002
OECS						
Percentage contribution of services subcategories to the total						
Transport	0.44	9.40	10.94	9.31	8.57	8.67
Travel	88.91	79.20	77.12	73.83	74.6	66.6
Communications	....	1.64	1.27	....	...	...
Construction	....	....	0.12	0.08	0.00	0.09
Computer and information services	....	....	....	....	0.00	0.09
Insurance	....	1.01	1.20	2.01	1.93	2.03
Financial services	....	....	....	1.78	0.00	2.28
Royalties and license fees	....	....	0.12	....	0.00	0.02
Other business services	10.49	7.70	9.17	11.92	13.40	18.36
Personal, cultural and recreational services	....	....	....	....	...	...
Government services n.i.e.		1.71	1.02	1.44	0.21	1.18
MDCs						
Transport	15.6	11.7	11.41	10.76	15.6	11.29
Travel	67.07	74.67	72.69	70.43	63.43	65.68
Communications	0.56	0.72	2.66	5.92	4.88	7.52
Construction	...	...	...	0.04	1.96	3.68
Computer and information services	...	...	0.39	1.18	1.18	2.21
Insurance	1.71	1.67	1.63	2.45	4.35	4.44
Financial services	...	...	0.22	1.45	5.13	4.86
Royalties and license fees	0.03	0.20	0.11	0.12	0.09	0.17
Other business services	10.54	7.21	7.93	5.25	1.60	2.48
Personal, cultural and recreational services	...	...	0.05	0.18	0.39	0.53
Government services n.i.e.	4.47	3.30	2.90	2.21	2.62	3.48
Source: On the basis of UNCTAD (2002) for the first four columns (1980-2000) and CARICOM (2005) for the last two columns (1992-2002).						

In terms of tourist services, the Hispanic Caribbean has the lion's share of tourist arrivals (70% in 2003). CARICOM's market share of Caribbean tourist arrivals increased slightly from 28% to 30% while that of the OECS has declined (7% and 5% in 1996 and 2003) (see Table 6 below).

Table 6			
Market share of tourist arrivals for the English and Spanish speaking Caribbean			
1996-2003			
Subregion	1996	2000	2003
OECS	6.51	5.34	5.38
CARICOM	27.54	28.66	29.65
Hispanic Caribbean	72.46	71.34	70.35
Note: The Hispanic Caribbean includes Cancun, Cozumel, Cuba, the Dominican Republic and Puerto Rico. Source: Caribbean Tourism Organization (2004)			

The relationship between growth and external performance is analysed in the next section using a balance-of-payments constrained model developed by A. Thirlwall (1979). In a nutshell, it states that the rate of growth of a country compatible with the equilibrium in the balance-of-payments is a function of the rate of growth of its main trading partners multiplied by the ratio of income elasticity of demand for a country's exports by the rest of the world to the income elasticity of demand for its imports.

II. THE BALANCE OF PAYMENTS CONSTRAINED-APPROACH TO GROWTH

A. The basic model

The balance-of-payments constrained growth model determines the rate of growth of an economy that is compatible with equilibrium in the balance of payments. This requires that exports and capital flows equal imports valued at current prices. Formally,

$$(1) \quad XP_x + Fp_f = e(MP_m)$$

Where,

P_x = price of exports

X = export volume

F = real capital flows

p_f = price of capital flows

E = nominal exchange rate

M = import volume

P_m = price of imports

In turn the volume of exports and imports are specified as constant elasticity multiplicative functions. Export volume is a function of the relative price of exports and international prices and of world income. In a symmetric fashion, import volume depends on the relation between import prices and the domestic price level and of domestic income. That is,

$$(2) \quad X = a(P_x/P_f e)^\eta Z^\pi$$

$$(3) \quad M = b(P_m e/P_d)^\varphi Y^\xi$$

Where,

P_f = foreign prices of goods that compete with domestic export goods

P_d = domestic prices

Z = world income

Y = domestic income

π = income elasticity of demand for exports ($\pi > 0$)

ξ = income elasticity for imports ($\xi > 0$)

φ = price elasticity of demand for imports ($\varphi < 1$)

η = price elasticity of demand for exports ($\eta < 1$)

The specification of both equations follows the conventional approach known as the imperfect substitutes model. It is built upon the assumption that domestic and foreign goods are not perfect substitutes. And, by taking for granted an infinite elasticity of supply- the model claims that exports and imports are essentially demand-determined. It thus argues that the two main determinants of say imports are the importing country's income, the own price of imports, and the domestic price of locally produced tradable goods and services. Correspondingly, the

main determinants of exports are the rest of the world's income and the price of export goods relative to the price of foreign made goods that compete with them in the international market. In addition, monetary illusion is typically assumed away and a zero-homogeneity restriction is imposed to guarantee that the foreign and the domestic price-elasticity of import (export) demand have the same magnitude in absolute terms.

Since in essence the model is a two-good model, it is generally assumed that the price of exports is equal to the domestic price (i.e., $P_x = P_d = P$) and that the import price equal the price of foreign goods that compete with exports (i.e., $P_f = P_m = P^*$). Expressing Eqs. (1), (2) and (3) in rates of change and defining a parameter, θ , as the ratio of the value of exports to that of imports, the basic balance-of- payments constrained model can be specified in the following four equations, where the logarithm of a variable is represented in lower case letters.

$$(4) \quad dp^*/p^* + dm/m = \theta(dp/p + dx/x) + (1-\theta)(df/f + dp/p)$$

$$(5) \quad \theta = px/p^*m;$$

$$(6) \quad dx/x = \eta(dp/p - dp^*/p^* - de/e) + \pi dz/z;$$

$$(7) \quad m/m = \phi(dp^*/p^* + de/e - dp/p) + \xi dy/y;$$

The solution to this four equation model permits the expression of the rate of growth of real output compatible with the dynamic expression of the balance of payments equilibrium (i.e., Eq. 1). Real output growth is a function of the initial export/import ratio, the growth rate of the world's real income, and the rate of growth of capital flows measured at constant domestic prices, and the real exchange rate. Formally,

$$(8) \quad y_{bpc} = [\theta\pi dz/z + (1-\theta)(df/f) + (\eta\theta + \phi + 1)(dp/p - dp^*/p^* - de/e)]/\xi$$

B. The balance-of-payments constrained growth approach and its usage

Starting from Eq.(8) is generally assumed that the current account is initially equal to zero, that is $\theta=1$, the exchange rate is a constant and equal to 1 so that $de/e=0$ and domestic prices approximate foreign prices ($dp/p = dp^*/p^*$). In this way, the balance of payments constrained rate of growth is expressed as a function of the rate of growth of world income and the income elasticities for exports and imports,

$$(9) \quad y_{bpc} = \pi(dz/z)/\xi$$

Dividing both sides of Eq.(9) by the rate of growth of world income leads to the expression of the ratio of domestic to world rate of growth as a function of the ratio of exports to import elasticities. That is,

$$(10) \quad y_{bpc}/(dz/z) = \pi/\xi$$

Equation (10) is known as Thirwall's Law. It indicates that if the ratio of elasticities is less (greater) than one, the said country will grow at lower (faster) rate than the rest of the world.

A more frequent use in the literature of Eq.(9) is to use the export demand function (Eq. 6) and to substitute the rate of growth of exports (dx/x) for the rate of growth of income multiplied by the export elasticity of income (i.e., $\pi(dz/z)$) This leads to express the balance of payments rate of growth as a function of the rate of growth of exports and the import elasticity of income. That is,

$$(11) \quad dy/y = (dx/x)/\xi$$

Eq. (9) sees the balance of payments approach as an export-led approach. For a given import elasticity of income the greater is the rate of growth of exports the higher will be the rate of growth of income. The equation also highlights that shifts in the income elasticity of imports that are not accompanied by an expansion of exports lead inevitably to a decline in the rate of growth of domestic income.

Eq.(9) is used in the literature to obtain the growth rate of output compatible with the balance of payments constraint and to compare it to the actual growth rate. In general, with a few exceptions, the balance-of-payments constrained rate of growth tends to approximate the actual growth rate, thus validating this approach to growth.

C. The empirical estimation

The first step in the econometric analysis of the long-run import and export demand is to apply Dickey Fuller and Augmented Dickey Fuller (DF & ADF) tests to assess stationary properties of the time-series considered in Equations 8 and 9 for 1980-2004.³ The Akaike Information (AIC) and the Schwarz Bayesian (SBC) criteria were used to select the optimum lag “k” for the ADF tests. The findings indicate that, for each country, the log-levels of real GDP, real imports, real exports and the real terms of trade are I(1) processes and their first differences are I(0) processes (see Table 7).

³ The results are only shown for those CARICOM economies that exhibited cointegration between imports, terms of trade and GDP.

Table 7			
DF and ADF Unit Root Test for Caribbean countries, 1980-2004			
Country	Variable	DF (ADF)	
		AC	SC
Dominica	LGDP	-2.13	-2.13
	DLGDP	-3.90*	-3.90*
	LX	-1.00	-1.00
	DLX	-1.70	-1.70
	LM	-0.63	-0.63
	DLM	-4.00*	-4.00*
	LTOT	-1.41	-1.41
	DLTOT	-3.80*	-3.80*
Grenada	LGDP	-2.19	-2.19
	DLGDP	-3.75*	-3.75*
	LX	-2.67	-3.11*
	DLX	-2.75*	-2.75*
	LM	-2.62	-2.62
	DLM	-2.78*	-2.78*
	LTOT	-15.0	-1.50
	DLTOT	-2.85*	-2.75*
St. Kitts and Nevis	LGDP	-0.97	-0.97
	DLGDP	-3.70*	-3.70*
	LX	-0.67	-0.67
	DLX	-3.82*	-3.82*
	LM	-2.21	-2.21
	DLM	-3.90*	-3.90*
	LTOT	-0.66	-0.66
	DLTOT	-3.95*	-3.95*
Saint Lucia	LGDP	-2.10	-2.10
	DLGDP	-3.75*	-3.75*
	LX	-1.45	-1.45
	DLX	-3.68*	-3.68*
	LM	-2.22	-2.22
	DLM	-4.02*	-4.02*
	LTOT	-1.72	-1.72
	DLTOT	-4.20*	-4.20*
St. Vincent and the Grenadines	LGDP	-1.68	-1.68
	DLGDP	-3.75*	-3.75*
	LX	-2.21	-2.21
	DLX	-3.85*	-3.85*
	LM	-2.66	-2.66
	DLM	-3.95*	-3.95*
	LTOT	-1.72	-1.72
	DLTOT	-3.85*	-3.85*

Table 7 (continued)			
Country	Variable	DF (ADF)	
		AC	SC
Barbados	LGDP	-1.64	-1.64
	DLGDP	-3.79*	-3.79*
	LX	-1.65	-1.65
	DLX	-4.05*	-4.05*
	LM	-1.78	-1.78
	DLM	-3.80*	-3.80*
	LTOT	-2.90	-2.91
	DLTOT	-3.90*	-3.90
Jamaica	LGDP	-1.23	-1.23
	DLGDP	-3.80*	-2.43
	LX	-1.98	-1.98
	DLX	-3.67*	-3.67*
	LM	0.77	0.77
	DLM	-3.95*	-3.95*
	LTOT	-2.62	-2.62
	DLTOT	-3.95*	-3.95

Note: "DX" stands for the first difference $X_T - X_{T-1}$. DF and ADF are the Dickey-Fuller and augmented Dickey-Fuller unit root tests statistics. AC and SC are the Akaike Information and Schwartz Criterion statistics. The asterisk "*" denotes significance at a 5% confidence level.

Then vector autoregressive equations were run in each case and the lag was chosen on the basis of the Akaike and Schwartz criteria. All equations were tested for autocorrelation using the Lagrange Multiplier test. The lag length varied for the different countries ranging from one in the cases of Barbados and Saint Lucia to four in the case of Dominica. None of the equations displayed autocorrelated residuals (see Table 8 below).

Table 8 Trivariate VAR's optimal lag structure and tests of residual serial correlation of single import equations							
Country	VAR Variables	Test Diagnostic/Lag order			Lagrange Multiplier Test $\chi^2(1)$		
		AIC/Lag	SC/Lag	ALR p- value/ Lag chosen			
Import Equation							
					LM	LGDP	LTOT
Dominica	LM, LGDP, LTOT	4	4	4	0.43	0.21	0.10
Grenada	LM, LGDP, LTOT	3	3	3	4.41	1.04	0.80
St.Kitts and Nevis	LM, LGDP, LTOT	3	3	2	0.11	1.10	0.90
Saint Lucia	LM, LGDP, LTOT	1	3	1	1.42	1.02	0.80
St. Vincent and the Grenadines	LM, LGDP, LTOT	3	3	1	3.84	1.12	2.10
Barbados	LM, LGDP, LTOT	1	4	3	0.16	0.70	1.05
Jamaica	LM, LGDP, LTOT	3	3	3	1.23	1.05	1.25
Note: Optimal order selection of VAR's according to Akaike Information (AC), Schwartz (SC) criteria and the Adjusted Likelihood Ratios (ALR) calculated with up to a five year lag. The asterisk "*" on the results of the LM-tests of residual serial correlation indicates significance at the 5% confidence level.							

Table 9 shows the results of the Johansen's cointegration analysis for the import demand. In each case, with the exception of Barbados and Dominica, the results indicate -at a 5% significance level- the existence of one cointegrating vector of import demand as given by Equation 8. In the case of Barbados, the results showed the existence of two cointegrating vectors. The one associated with the largest eigenvalue was chosen. For Dominica, the results could not reject the existence of one cointegrating equation at the 10% level of significance.

The magnitude of the income elasticity parameter ranges from 0.81 (in the case of Jamaica) to 2.92 (in the case of Barbados). For its part, the long-term price elasticity of imports turned out to be non-significant in most cases. This is indicated by the value of the chi-square likelihood ratio test corresponding to the overidentifying restriction that the price elasticity of imports is equal to zero. This finding is also that for other countries of Latin America (see Table 10 below).

Table 9 Trivariate Johansen Cointegration Procedure for Caribbean countries 1980-2004							
Country	Lag	Johansen Cointegration test results			Cointegrating vector	Likelihood ratio test $\chi^2(1)$	
Import Equation							
Barbados		Ho: r=0 r<1	H1: r<1 r=2	LRS 23.9 17.9	5%CV 22.0 15.9	LM= -18.43+2.92LY+2.09LTB (3.36) (1.16) (0.52)	2.51
Dominica		Ho: r=0 r<1	H1: r<1 r=2	LRS 20.9 12.0	5%CV 22.0 15.9	LM = 8.02+2.07LY+0.68LTOT (0.82) (0.22) (0.38)	5.64
Grenada		Ho: r=0 r<1	H1: r<1 r=2	LRS 29.9 8.9	5%CV 22.0 15.9	LM = -4.92 +1.19LY+0.84LTOT (1.25) (0.22) (0.48)	1.87
Jamaica		Ho: r=0 r<1	H1: r<1 r=2	LRS 61.0 10.6	5%CV 22.0 15.9	LM=-9.61+0.81LY+2.31LTOT (0.38) (0.41) (0.39)	1.23
St. Kitts and Nevis		Ho: r=0 r<1	H1: r<1 r=2	LRS 61.0 10.6	5%CV 22.0 15.9	LM=-4.43+1.72LY+0.19LTOT (1.37) (0.31) (0.54)	0.11
Saint Lucia		Ho: r=0 r<1	H1: r<1 r=2	LRS 61.0 10.6	5%CV 22.0 15.9	LM=-3.95+1.22LY+0.66LTOT (0.90) (0.17) (0.32)	2.92
St. Vincent and the Grenadines		Ho: r=0 r<1	H1: r<1 r=2	LRS 61.0 10.6	5%CV 22.0 15.9	LM=-4.48+1.94LY+0.01LTOT (3.61) (0.97) (1.63)	0.00
Note: The values in parenthesis in the fourth column correspond to the asymptotic standard errors. The likelihood ratio test $\chi^2(1)$ in the fifth column refers to the chi-square with one degree of freedom under the null hypothesis that the terms of trade parameter in the cointegrating vector equals zero. The asterisk "*" denotes significant at the 5% level.							

On the basis of the econometric analysis undertaken, the rate of growth consistent with balance-of-payments equilibrium was computed for each of the Caribbean economies. For comparison purposes a similar exercise was undertaken for all Latin American economies. The result is then compared with the actual average rate of growth. In most cases the balance-of-payments equilibrium rate of growth approximates within reasonable bounds the actual rate of growth. In the case of Caribbean economies the difference exceeds one per cent in the cases of Jamaica and St. Vincent and the Grenadines.

Table 10
Latin America and the Caribbean
Income and price elasticities of imports and long-term economic growth for Latin
American and Caribbean countries.
1980-2004

Country	Income elasticity	Price elasticity	y_a^*	y_e^*	$y_e^* - y_a^*$
Argentina	3.01	3.55	1.53	2.11	0.58
Barbados	2.92	----	1.14	1.91	-0.83
Bolivia	1.4	---	2.09	4.63	2.54
Brazil	3.26	---	2.16	2.29	0.12
Colombia	1.94	1.96	3.17	3.21	0.03
Costa Rica	2.17	---	3.74	4.21	0.47
Chile	1.48	---	4.58	4.79	0.21
Dominica	2.07	0.68	2.50	3.26	0.86
Ecuador	3.93	---	2.48	1.06	-1.42
El Salvador	2.32	---	2.05	2.26	0.21
Grenada	1.19	---	3.68	4.34	0.66
Guatemala	2.43	---	2.47	2.92	0.44
Honduras	2.84	---	2.93	2.00	-0.93
Mexico	n.a	n.a	n.a	n.a	n.a
Jamaica	0.81	----	1.59	2.91	1.32
Nicaragua	n.a	n.a	n.a	n.a	n.a
Panama	n.a	n.a	n.a	n.a	n.a
Paraguay	3.87	5.26	2.51	2.56	0.05
Peru	3.20	4.60	1.91	1.45	-0.45
Dominican Republic	1.89	1.61	3.89	5.50	1.61
St. Kitts and Nevis	1.72	----	4.58	4.44	-0.14
Saint Lucia	1.22	---	3.72	4.42	0.63
St. Vincent and the Grenadines	1.95	----	4.47	2.81	-1.66
Uruguay	1.35	---	1.53	2.99	1.46
Venezuela	1.37	0.65	1.32	2.30	0.97

Source: On the basis of official information.

N.A = Not available, due to the fact that the co-integration tests identified no cointegration vector.

--- = the price elasticities are not significant at the 5% level.

y_a, y_e = actual and balance-of-payments constrained growth.

III. THE IMPLICATIONS OF THE BALANCE-OF-PAYMENTS CONSTRAINT

A. A simple theoretical framework

The policy implications of the balance-of-payments-constrained growth model can be better understood when viewed within the context of macroeconomic relationships for the economy as a whole. These are expressed below in terms of simplified and summarized accounting identities for four sectors, namely household, business, financial and external sectors. These include the production accounts, as in the first section, and also the accumulation accounts.

Formally start with a production accounts basic national accounting identity where the level of real output (Y) is equal to consumption of household and the government (Ch and Cg), investment (I), and net exports (X-M) less household and business tax payments (Th and Tb). It is assumed that households, government and the business sector undertake investment activities. These are denoted by Ih, Ib, and Ig. The level of output is also equal to the sum of wages (W) and profits (Π).

$$(12) \quad Y = W + \Pi = Ch + Cg + Ih + Ib + Ig - (Th+Tb) + (X-M)$$

Assume that consumption(C), government expenditures (G), investment (I) and imports (M) have an autonomous and an induced component. Formally,

$$(13) \quad \begin{aligned} C &= f(C_o, Y) \\ I &= f(I_o, Y) \\ G &= f(G_o, Y) \\ M &= f(M_o, Y) \end{aligned}$$

Eq.(12) can then be expressed in terms of induced and autonomous components denoted by the subscripts o and i respectively.

$$(14) \quad Y = W + \Pi = A_o + B_i + X_o - M_i,$$

Where,

A_o = domestic autonomous expenditure.

B_i = induced domestic expenditure.

Eq.(14) can be expressed into the product of income shares and exponential growth rates (McCombie and Thirlwall, 1994, p.439). That is,

$$(15) \quad y = \omega w + \pi \psi = \alpha_1 a + \alpha_2 b_i + \alpha_3 x - \alpha_4 m_i$$

Where,

α_1 = Share of in total income of domestic autonomous expenditures.

α_2 = Share of in total income of domestic induced expenditures.

α_3 = Share of in total income of exports.

α_4 = Share of in total income of imports.

a, b_i, x, m_i = rate of growth of domestic autonomous and induced expenditures and exports and imports respectively.

Assuming that the rate of growth of exports is equal to that of the rest of the world. Eq.(15) then becomes,

$$(16) \quad y = \lambda_1 a + \lambda_2 \xi r_w y_r w,$$

Where,

$$\lambda_1 = \alpha_1 / (1 - \alpha_2 b_i + \alpha_4 \xi) = \text{autonomous expenditure multiplier.}$$

$$\lambda_1 = \alpha_3 / (1 - \alpha_2 b_i + \alpha_4 \xi) = \text{foreign trade multiplier.}$$

Eq. (12) above can also be used to derive the investment-savings balance, which will then be used, in turn, to obtain the accumulation accounts of the economy. As with the investment notation, the savings of the different sectors (households, business, government and foreign sector) are denoted by the subscripts h, b, g and f respectively. That is,

$$(17) \quad (W - C_h) + \Pi - C_g + (M - X) = I_h + I_b + I_g$$

$$(18) \quad S_h + S_b + S_g + S_f = I_h + I_b + I_g$$

$$(19) \quad (I_h - S_h) + (I_b - S_b) + (I_g - S_g) = S_f$$

The accumulation accounts are equal to:

$$(20) \quad (I_h - S_h) = \Delta D_h - \Delta M_h$$

$$(I_b - S_b) = \Delta D_b + e \Delta D_{fb}$$

$$(I_g - S_g) = \Delta D_g + e \Delta D_{fg}$$

Where, D =debt (with the subscripts denoting the different sectors of the economy), Δ denoting the discrete change between t and t-1 and e the nominal exchange rate.

The accumulation accounts have a direct counterpart in the financial and foreign sectors. That is,

$$(21) \quad \begin{aligned} \Delta M_h - e \Delta R_f &= \Delta D_h + \Delta D_g + \Delta D_g \\ S_f &= e(\Delta D_{fb} + \Delta D_{fg} - \Delta R_f) \end{aligned}$$

Where, M_h is money supply and R_f international reserves.

B. The policy options

In light of the model developed before and the balance-of-payments constraint, there cannot be an expansion of demand (say an increase in investment) without endangering the

fulfilment of external equilibrium. This can be readily seen by setting $S_f=0$ in Eq. (19) above. The resulting relationship shown below demonstrates that any increase of investment over and above savings for any sector must be offset by an equivalent increase in savings over and above investment in another sector of the economy.

$$(22) \quad (I_h - S_h) + (I_b - S_b) + (I_g - S_g) = 0$$

Equivalently in terms of the accumulation accounts set out above, this implies that any increase in the debt stock of one sector must be offset by a decrease in the debt stock of another sector.

$$(23) \quad \Delta D_h - \Delta M_h + (\Delta D_b + e\Delta D_{fb}) + \Delta D_g + e\Delta D_{fg} = 0$$

The only exception is to allow an increase in one sector's debt stock to be monetised, that is, to be accompanied by a rise in the money supply (M_h). Note however, that in this model the money supply is endogenous (in the sense that loans create deposits) and that as a result an increase in the money supply is simply the monetary reflection of an increase in the level of transactions brought about by an increase in the debt. That is, the increase in the money supply is not an additional source of injections to the economy.

The main policy implication is that economies are condemned to grow at levels below their full employment potential. There are three ways to avoid this outcome. The first is to overhaul the organization of the international financial system. One such proposal that takes into account developing countries is that of Davidson (2003) which is a reformulation of John Maynard Keynes' Clearing Union.⁴

Davidson's proposal consists of eight provisos. The first two are the creation of a unit of account and reserve asset (the International Money Clearing Unit (IMCU)) to settle international transactions and creation of a clearinghouse. The IMCU would be held by central banks and not by the public. Each nation guarantees a one-way convertibility between the IMCU deposits at the ICMU and its domestic money. Third, the monies of all nations continue to function as means of exchange and payment. Fourth, the exchange rate between any nation's domestic currency and the ICMU is determined by the corresponding nation. Fifth, Davidson's proposal considers an overdraft system allowing the financing of productive international transactions. Sixth, the IMCU proposal introduces a trigger mechanism allowing the expenditure of excessive credit balances as a result of current account surpluses. Seventh, Davidson proposes a system to stabilize the purchasing power of the IMCU whereby requiring a fixed exchange rate between nations' local currency and the ICMU which would change reflecting changes in efficiency wages. Finally, countries that are at full employment and exhibits persistent external imbalance must reduce its standard of living by exchange rate devaluation.

⁴ The following three quotations reflect the spirit of Keynes' proposal.

(i) The idea underlying my proposals for a Currency Union is simple...to generalise the essential principle of banking...the necessary equality of credits and debits, of assets and liabilities'. CW, Vol. XXV, p.44.

(ii) 'The plan aims at the substitution of an expansionist, in place of a contractionist, pressure on world trade'. CW, Vol. XXV, p.74.

(iii) 'The proposal differs from the existing state of affairs by putting at least as much pressure of adjustment on the creditor country, as on the debtor...The main point is that the creditor should not be allowed to remain passive. For if he is, an impossible task is laid on the debtor country'. CW, Vol. XXV, p.49.

Davidson's proposal and in particular proviso 6 addresses the issue of resource transfers to developing economies. Proviso six contemplates the re-spending of excessive credit balances on: (i) products of any other member of the clearing union; (ii) on new direct foreign investment projects; or on (iii) unilateral transfers.

Other authors that have proposed some resource transfer mechanism include Stiglitz (2003) who proposes a sort of equivalent of global money that would permit countries to free reserves to be spent on productive uses.

The second option, to avoid a rate of growth below compatible with full employment, is to change the ratio of the elasticities. There are three competing hypotheses in the balance-of-payments-constrained literature regarding the determinants of the import and export elasticities.

The first follows from Prebisch and Singer and relates the size of the elasticity parameters to the manufacturing and technological content of the exported and imported products.

According to this reasoning the income elasticity of exports increases as external sales move up the value-added chain ladder from primary commodities, to labour-intensive and resource-based manufacturing, to manufactures with low, medium and high skill and technological intensity. Developing economies have a lower export elasticity of income than those that are labour intensive. In other words, the income elasticity of demand for their exports by the rest of the world is low and the their income elasticity of demand for imports is high. The less developed countries, which export commodities subject to Engel's Law are especially prone to be in this category (Davidson, 1992). The main policy implication following the logic of Thirlwall's Law is that unless countries undergo a process of structural change that changes the elasticity parameters, the cleavage between developed and developing economies will widen over time and less developing countries are condemned to poverty.

The second hypothesis states that while the income elasticity of demand for imports tends to remain more or less constant, the income elasticity of demand for a country's exports by the rest of the world varies over time with the level of development (Bairam, 1997). More specifically the income elasticity of demand for a country's exports by the rest of the world is inversely related to the level of development and tends to decline with the level of development. As a result an increase in external demand or the expansionary phases of the world cycle (or that of main trading partners) have a positive effect on developing countries' external position.

The third hypothesis sustains that changes in the said income elasticities are brought about by shifts in commercial policy and/or through measures designed to transfer liquidity among countries. Changes in commercial policy involve changes in trade barriers (tariffs and quotas). Measures to recycle liquidity comprise the increase in surplus nations imports and unilateral transfers from the surplus to the deficit nations (Davidson, 1992, p.153).

Thus far the empirical work shows that the import elasticity of income rises with trade liberalization and that the export elasticity of income depends on what the market and consumers and producers are demanding at certain times. Thus while the income elasticity of income depends on institutional factors which include changes in commercial policy as put forward by

the third hypothesis above there seems to be no clear core factor determining the export elasticity of income.

The third solution to overcome the balance of payments constraint is to attract foreign savings. This has been the policy option adopted by Caribbean economies.

Combining both the production and accumulation accounts foreign savings (S_f) is equal to the current account result ($X-M$) plus net long-term private capital inflows (PCI), government and private sector foreign borrowing ($e\Delta D_{fb}$ and $e\Delta D_{fg}$) and official assistance aid (OAA) less gross private short term capital outflows (PCO). Formally,

$$(24) \quad S_f = (X-M) + PCI + e(\Delta D_{fb} + \Delta D_{fg}) + OAA - PCO$$

When foreign savings are underpinned by long-term private sector capital inflows or official assistance aid economies can sustain rates of growth above the balance-of-payments constrained growth rates⁵. The focus of policy of many developing economies and also of most CARICOM economies has been to try to create a foreign direct investment-enabling atmosphere.

C. The policy response of CARICOM economies and its consequences

As stated in the previous sector, CARICOM economies have tried to overcome the external constraint by focused efforts and policies to attract foreign exchange flows. These policies have not always been successful and, in fact, have ultimately aggravated the binding character of the external constraint.

Foreign direct investment flows have evolved at an uneven pace and have only slightly increased in the past decade. For the CARICOM region, between 1990 and 2001, foreign direct investment as a percentage of GDP moved from 8% to 10%. For the OECS, foreign direct investment expanded from 11% to 13% (see Table 11 below).

Key to these efforts have been the policies to attract foreign direct investment. The policies oriented to attract investment flows have not improved export performance or been conducive to economic growth.

First, in most cases, especially in the case of the smaller CARICOM States these policies have consisted of a gamut of fiscal incentives. Governments have actively promoted those activities, which are foreign exchange intensive through a scope of fiscal incentives. This has impaired the use of taxation as a tool to achieve a more equitable distribution of income or to

⁵ As an example, the Monterrey Consensus asserts that foreign direct investment has the main benefit of “contributing toward financing development in the long term, in a more stable orderly fashion than portfolio investment. In addition foreign direct investment is an important vehicle for the transfer of knowledge, skills, technology, the creation of jobs, to increase productivity, enhance competitiveness and entrepreneurship and to reduce poverty. As a result countries must step-up efforts to attract foreign direct investment.” As part of these efforts countries must concentrate on creating the adequate macroeconomic environment and the appropriate regulatory framework to allow foreign direct investment to operate efficiently. Long-term capital inflows should also be complemented with other types of flows as, for example, remittances and official aid. In addition international organizations should provide support through “the provision of export credits, risk guarantees, co-financing, and leverage of aid resources and venture capital, as well as provision of information on investment opportunities.”

equilibrate the budget. Fiscal policy is mainly a microeconomic tool providing incentives to develop activities in selected economic sectors. The instruments include profit tax holidays, tariff exemptions, export allowances for extraregional exports following the expiration of the tax holidays, dividend payments, loss-carry forward, and depreciation allowances.

The cost of fiscal incentives has been exceptionally high as illustrated by some of the smaller economies of the Caribbean. Estimates based on customs data indicate that during the first part of the past decade import related tax concessions averaged between 4% and 6% of GDP for Antigua and Barbuda, Dominica, St.Kitts and Nevis, Saint Lucia, and St. Vincent and the Grenadines and were above 10% of GDP for Grenada. In the first part of the present decade import related tax concessions for Dominica, Grenada, Saint Lucia and St. Vincent and the Grenadines. However a substantial increase was noted for Antigua and Barbuda, and St.Kitts and Nevis (9% and 13% of GDP, respectively).

The high opportunity cost is compounded by the fact that incentives are not correlated either with the level or change in foreign direct investment. That is, those countries that have the most significant level of incentives (measured as a percentage of GDP) do not exhibit the highest level of foreign direct investment as a percentage of GDP. In the same vein, the countries that have increased their incentives are not the ones that have also experienced an increase in foreign direct investment flows. According to the International Monetary Fund (IMF) estimates, the correlation between the change in foreign direct investment flows and the increase in tax concessions is negative for Antigua and Barbuda, Dominica, Saint Lucia and St. Vincent and the Grenadines.⁶

This fiscal policy has partly contributed to a tax to GDP ratio, which has declined over time setting the stage for the accumulation of debt given any increase in government expenditure, whose effect on demand is offset by the current account deficit. As is well known, Caribbean economies are amongst the most indebted countries among emerging market economies.

In addition to directing resources away from the development of the internal resources to the economy, foreign direct investment flows have not been able to crowd-in domestic investment flows. At the same time that foreign direct investment inflows have increased, for some economies domestic investment as a percentage of GDP for the economies of the Caribbean have remained unchanged at the regional level, for the past 20 years, and in many country cases this ratio has decreased. The stagnation/decline of domestic investment is the product of the decline in private investment and the increase in public investment. The decomposition of domestic investment into its private and public components shows that at least in the case of the OECS, private domestic investment has experienced a marked decline in the past twelve years (25% and 15% of GDP between 1990 and 2003).

Table 11 below shows gross domestic investment as a percentage of GDP for Caribbean economies for the past two decadal averages and for the years 1998 to 2003. In most cases, gross domestic investment as a percentage of GDP has remained roughly constant for the period under

⁶ IMF. Tax Concessions and FDI in the ECCU. Mimeo.

study. In average terms for the entire sample, domestic investment remained roughly around 27% of GDP for the period 1980-2003.

Country	1981-1990	1991-2000	1998-2003
Antigua and Barbuda	33.8	33.6	29.0
Barbados	18.6	15.2	15.0
Belize	23.6	25.9	19.0
Dominica	31.1	29.0	21.0
Grenada	34.0	37.0	37.0
Guyana	28.0	31.3	22.0
Jamaica	23.1	28.1	30.0
St. Kitts and Nevis	37.7	42.6	46.0
Saint Lucia	26.8	23.6	26.0
St. Vincent and the Grenadines	28.9	28.7	32.0
Trinidad and Tobago	20.3	20.7	22.0
Average	27.8	28.7	27.2

Source: World Bank (2002; 2004)

The evidence indicates that there is a negative statistical relationship between the levels of foreign direct investment and domestic investment (the correlation coefficient is -0.21 and -0.22 for 1990-1997 and 1998-2003) (see Table 12 below). This may provide an indication that, contrary to common belief, foreign investment may not have acted as a catalyst for growth. In fact, it may have simply replaced domestic investment. In other words, foreign investment may have crowded-out domestic investment.

	Growth	Private Investment	FDI	Domestic Savings
Growth	1.00	-0.27	0.68	-0.39
	1.00	-0.17	0.11	0.19
Private investment	-0.27	1.00	-0.21	0.69
	-0.17	1.00	-0.22	0.48
FDI	0.68	-0.21	1.00	-0.48
	0.11	-0.22	1.00	0.24
Domestic savings	-0.39	0.69	-0.48	1.00
	0.19	0.48	0.254	1.00

Source: On the basis of World Bank (2005)

The revealed preference for foreign over domestic investment, encouraged by national economic policy, has underpinned a pattern of productive specialization that in some cases, is reflected in the change in the composition of GDP. This change is often viewed, perhaps

erroneously, as a process of structural change brought about by globalization when in fact it is a result of the policy options implemented.

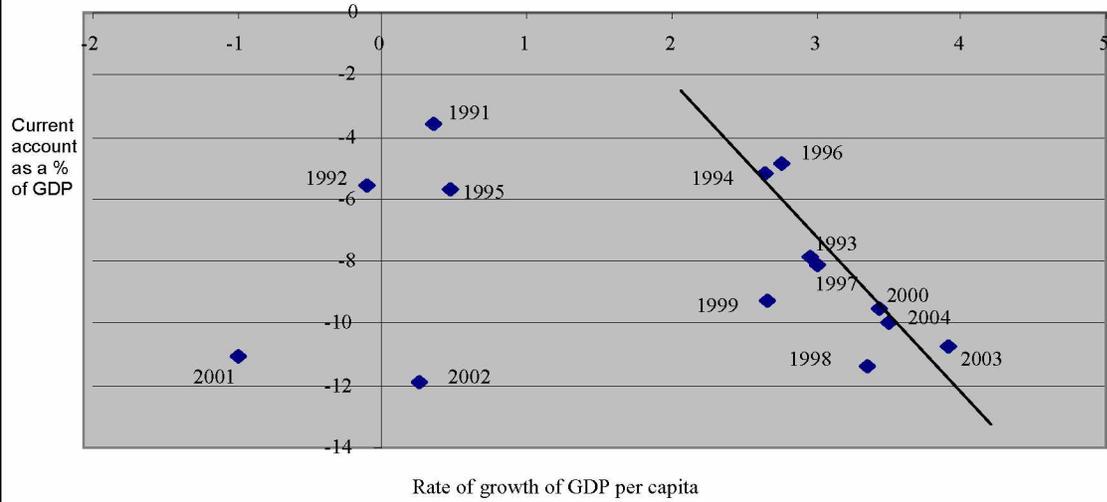
The case is most clear for Caribbean countries where the manufacturing and agricultural sectors have stagnated. On the contrary, service and some mining-based activities have increased their contribution to GDP significantly. The contributions of manufacturing and agriculture to GDP have declined from 14% and 38% in the 1960s to 10% and 25% in the 1990s. Contrarily the contribution of services has increased from 50% to 61% in the same period (see Table 13 below).

	Agriculture	Manufacturing	Services
Sectoral growth			
1960s	1.4	4.9	5.3
1970s	0.5	7.0	5.8
1980s	0.3	4.6	4.9
1990s	1.2	3.9	3.3
GDP shares			
1960s	13.7	37.6	49.9
1970s	16.6	25.8	54.3
1980s	12.5	25.3	58.9
1990s	9.8	25.1	61.6
Contribution to GDP			
1960s	0.2	2.0	3.9
1970s	0.0	2.0	3.3
1980s	0.1	1.1	2.8
1990s	0.1	0.8	2.4
Source: World Bank (2005)			

In turn this pattern of productive specialization has not managed to spur export growth in services and has aggravated the loss of competitiveness of the manufacturing and agricultural sector. The rate of growth of the services sector has declined in real terms from 5.3% in the 1960s to 3.3% in the 1990s. The overall end-result has been a continual loss in the competitiveness of exports.

The deteriorating export performance has, in turn, hardened the trade-off between economic growth and the current account balance as shown in Figure 5 below. Most of the data points in the graphs show a definite positive relation between the rate of growth of GDP per capita and the current account deficit. This indicates that there is little possibility for CARICOM countries to grow or for that matter for countries to undertake demand-based policies without worsening their external position.

Figure 5
The Caribbean
The economic growth/balance of payments trade-off
1991-2004



Conclusion

The introduction a newly published book on growth states: “What makes some countries rich and others poor? Economists have asked this question since the days of Adam Smith. Yet after more than two hundred years, the mystery of economic growth has not been solved.”⁷ The mystery has not been solved because the explanations of growth pertain to non-monetary economies.

The state of the art explanations on growth have four strands. The first deals with accumulation of physical and human capital. The second centers on total factor productivity. The third acknowledges the interrelationships among economies. Knowledge flows, foreign trade and investment influence the “incentives to innovate, imitate and use new technologies.” The final strand views growth as determined by economic and political institutions. Thus far none of these views has prevailed over the other and none has provided, either at the conceptual or empirical level, a satisfactory explanation of growth.

The explanation is simple. They do not take into account the most essential feature of market economies. That is, market economies are by definition monetary economies. Most growth theories belong to the realm of real analysis. That is, they provide analyses of barter economies where money does not enter into any fundamental way in the decisions of economic agents.

Money is fundamental because it possesses properties that no other asset or commodity has. It is fully liquid and cannot be substituted by any other asset or commodity, more so the monetary unit used as the international reserve currency.

The balance-of-payments growth constrained approach recognizes that countries can only achieve higher rates of growth if they are able to acquire the international means of payments. This means that ultimately the export capacity of an economy is the main determinant of economic growth.

Exports are an important source of job creation, foreign exchange earnings and growth. Taking a demand-oriented approach and assuming that demand constraints bite before the supply constraints do, exports can promote growth for three reasons. First, they are the only autonomous component of demand that is determined from outside the system. Second, they are the only component that can finance its import components. There is no such thing (unless for a short period of time) as a consumption, government or investment led growth. In other words the rate of growth of an economy must be ‘attuned’ to that of its exports. An economy can foster the development of human and physical capital. However, this may fail to materialize in a higher growth plateau unless the capacity of that economy to acquire foreign exchange increases *pari passu*.

⁷ Helpman (2004), p.1.

The balance-of-payments approach to growth has important implications for economic policy design.

One way to overcome the external constraint is to attract foreign savings. However, maintaining a continuous flow of foreign savings has proven to be a difficult task. Foreign capital flows are pro-cyclical (they vary with the fluctuations in the trade cycle) and are subject to discontinuities (the supply of private flows may not respond to reforms and adjustments undertaken by developing countries). Most important there is no market mechanism that ensures that capital flows are directed to those sectors and countries that would benefit the most. Also countries may need foreign savings at short notice. As a result, countries may have no option other than to access foreign borrowing. At this stage macroeconomic management can be caught in a financial knife-edge financial situation. Finally there is no definite empirical proof that a higher level of foreign savings is correlated to higher levels of economic growth.

CARICOM economies have opted for policies aimed to capture foreign savings. Apart from the caveats mentioned in the previous paragraph, this policy has not been successful in enhancing growth or in improving the region's external performance. More to the point, these have aggravated the external constraint.

An alternative solution is to increase the income elasticity for the country's exports over and above any increase it may bring about in the country's income elasticity of imports. However, changing the ratio of the export to import elasticities is easily said than done. Any policy aimed at changing the export elasticity may at the same time modify the import elasticity. Changing the ratio of elasticities means placing export promotion measures at the center of economic policy while ensuring means to control the import elasticity of income from increasing.

Annex

The external constraint: From Evsey Domar to the Two-gap model

In its origins, development was conceived as a process of factor accumulation and more specifically as a process of capital accumulation. Capital accumulation and industrialization was an essential requirement to break the cycle of poverty and ‘underdevelopment’ especially for those countries that were most affected by declining terms of trade for primary commodities. Investment led to development, growth and to the creation of employment.

The development strategy consisted of obtaining the supply of capital required for development, creating the inducement to investment and generating the savings capacity to finance that investment. This idea was clearly encapsulated in Domar’s approach to economic growth and full employment. Economic growth was determined by two parameters, the productivity of investment and the marginal propensity to save, embodying the forces of supply and demand. In Domar’s fundamental equation, the demand side was captured by the multiplier and the supply side by the accelerator. The rate of growth of investment was thus determined by the product of both parameters,

$$(25) \quad \Delta I (1/\alpha) = I\sigma \Leftrightarrow \Delta I/I = \alpha\sigma$$

Where,

Δ = change

I = investment

α = marginal propensity to save

σ = potential social average productivity of investment

As stated by Domar (p.282): “the maintenance of a continuous state of full employment requires that investment and income grow at a constant annual percentage (or compound interest) rate equal to the product of the average propensity to save and the average productivity of investment.”

Viewed from the savings perspective, this equation provided the basis for development economics. The recurrent issue was how to generate a level of savings compatible with a given average productivity of investment. This was clearly formulated early on by one of the pioneers of development economics, Ragnar Nurske. As put by Nurske (1953, p.142): “the country’s incremental saving ratio –or to vary the jargon, the marginal propensity to save – is the crucial determinant of growth”. It soon became clear, however, that in developing countries growth is constrained not only by a lack of domestic savings but also by a shortage of foreign exchange. This led to the development of the Two-Gap approach developed at the World Bank by Hollis Chenery and Michael Bruno.

The essence of the two-gap model is that domestic production requires the importation of capital goods and that the availability of foreign exchange to purchase these goods constrains growth. Foreign exchange plays the dual role of narrowing both the savings and the foreign exchange gaps. The two-gap model can be stated starting from the basic national accounting identity stating that income (Y) equals consumption (C), investment (I), government savings (G-T) and net exports (X-M),

$$(26) \quad Y = C + I + (G - T) + (X - M)$$

Excluding government operations and rearranging terms, Eq. (26) can be expressed as stating that the difference of investment over savings (the savings gap) equals that of imports over exports (the foreign exchange gap), *ex post*. That is,

$$(27) \quad I - S = M - X$$

The two-gap model can then be explained by developing both sides of Eq.(27). Starting with the left-hand side, it can be stated that a savings gap exists when actual savings is smaller than that required (S^*) to finance a target growth rate of output ($\Delta Y/Y^*$). In other words,

$$(28) \quad I^* - S = S^* - S$$

Assume furthermore that domestic savings is a fixed proportion of income and that the level of savings associated with the target growth rate, i.e., S^* , can be expressed as the ratio of the target rate of growth to the inverse of the average productivity of capital.⁸

The savings gap can then be expressed as,

$$(29) \quad I^* - S = (1/\sigma_d)(\Delta Y/Y)^* Y - sY$$

Turning to the right hand side of Eq.(27) a similar reasoning can be developed to explain the foreign exchange gap. There is a foreign exchange gap when the maximum level of export earnings is smaller than the import requirements (M^*) corresponding to a target rate of growth of income ($\Delta Y^*/Y$). As with the case of savings, imports are specified as a function of income and at the same time since it is assumed that the developing country in question imports capital goods imports are set equal to foreign

⁸ This second assumption follows from Domar. Domestic capital K_d an average productivity σ_d so that $Y = \sigma_d K_d$, $\Delta Y = \sigma_d \Delta K_d + K_d \Delta \sigma_d$. Taking $Y = \sigma_d K_d$ and taking the change in Y , we obtain $\Delta Y = \sigma_d \Delta K_d + K_d \Delta \sigma_d$. Assuming that productivity is the only source of growth and dividing by Y , the rate of growth of output is equal to the average productivity of investment multiplied by the ratio of investment to income.

$$\Delta Y/Y = \sigma_d (I_d/Y)$$

Setting $\Delta Y/Y$ as the target growth rate (i.e., $\Delta Y/Y^*$), postulating the equality of the ratios of investment and savings to income ($s = S/Y = I/Y$), we obtain,

$$s = S/Y = I/Y = (1/\sigma) (\Delta Y/Y)$$

investment. As a result M^* can be specified as a function of the inverse of the average productivity of investment for foreign capital (σ_f) and the target rate of growth of output ($\Delta Y/Y$). If in addition it is assumed that X is a fraction (γ) of output, the foreign exchange gap is expressed as

$$(30) \quad M^* - X = (1/\sigma_f) (\Delta Y/Y)Y - \gamma Y$$

Thus the equality of savings and investment and imports and exports imply in turn,

$$(31) \quad I^* - S = (1/\sigma_d)(\Delta Y/Y)^* Y - sY = 0 \Leftrightarrow (\Delta Y/Y)^* = s\sigma_d$$

$$(32) \quad M^* - X = (1/\sigma_f) (\Delta Y/Y)^* Y - \gamma Y \Leftrightarrow (\Delta Y/Y)^* = \gamma\sigma_f$$

Eq.(32) is nothing but Domar's equation (See Eq. above). It states that there will be a savings gap when $(\Delta Y/Y)^* > s\sigma_d$. Eq. (33) states that the target rate of growth of output is equal to the fraction of output exported multiplied by the average productivity of foreign investment. There will be a foreign exchange gap if $(\Delta Y/Y)^* > \gamma\sigma_f$. The savings and foreign exchange gap will be filled with foreign capital inflows. Full equilibrium implies that the ratio of the propensity to save to that of the proportion of output exported must be in direct proportionality with the ratio of the average propensity of domestic investment to that of foreign investment. That is full equilibrium implies, $s/\gamma = \sigma_d/\sigma_f$.

The thrust of the two-gap model is that in a developing foreign capital flows must fill the larger constraint which is taken to be the foreign exchange constraint.

The two-gap model was conceived as a planning exercise to determine the financing requirements of a target rate of growth. An important underlying assumption of the model, which is clear in Eq.(27) is that the government budget is in balance, $G=T$. As this is not generally the case in developing economies, the model was extended to include the government's financial constraint giving birth to three-gap models. More recently the three gap has been extended to a four gap model to include also price adjustment. The contribution of the three and higher gap models is to show that the solutions to gaps are not unique and indeed can be multifaceted. But in essence these complications do not necessarily constitute a distraction from the essence of the two-gap model.⁹

Notwithstanding the change in focus from the savings to the foreign exchange constraint explicit in the two gap model and the further refinements brought about by the diverse solutions to a three gap and four gap model, mainstream theory remains anchored in the savings gap. It is in this sense only that the Domar model can be said to 'haunt development economics.'

⁹ The three-gap model can be expressed in semi reduced forms maintaining the relation between growth and foreign transfers. See Taylor, 1991.

A recent formulation of the savings constraint is the Revised Minimum Standard Model of the World Bank (RMSM, hereafter). The RMSM can be presented starting from Eq.(27) above and postulating as in Eq(30) that the rate of growth of output is equal to the investment to income ratio multiplied by the average productivity of investment (i.e., $\Delta Y/Y = \sigma(I/Y)$). Using Eq.(30) we obtain,

$$(33) \quad \Delta Y/Y = \sigma(I/Y) \Leftrightarrow I = 1/\sigma[(\Delta Y/Y)(Y)] \Leftrightarrow I = (1/\sigma)\Delta Y$$

Where $1/\sigma$ is the incremental capital-output ratio (ICOR). Replacing Eq.(33) in the basic national accounting identity (Eq.27) we get,

$$(34) \quad Y = C + (1/\sigma)\Delta Y + (G - T) + (X - M) \Leftrightarrow (1/\sigma)\Delta Y = (Y - C) + (T - G) + (M - X)$$

In the RMSM formulation Y , M and X are given variables of the model even though M and X are specified as functions of domestic and foreign elasticities of income and of the real exchange rate. The main issue the RMSM addresses is to calculate the investment resources to arrive a target rate of growth of output. The adjustment variables are private consumption and government savings. Thus in this model resources are obtained by increasing private savings ($Y - C$) or government savings ($T - G$). In essence the model is a return to Domar's analysis of growth which is dependent for a given average propensity of investment on savings behavior.

Table 14
Imports, exports and GDP in real terms
Rates of growth and correlation coefficients
1980-2004

Country	Rates of growth			Correlation coefficients	
	GDP	Exports	Imports	GDP and exports	GDP and imports
Antigua and Barbuda	4.6	4.9	5.7	0.46	0.26
Barbados	1.1	4.3	1.8	0.61	0.54
Belize	8.5	5.6	7.6	0.03	-0.14
Dominica	2.4	6.9	4.5	0.63	0.40
Grenada	3.6	4.2	7.1	0.65	0.49
Jamaica	1.6	1.0	3.6	0.22	0.20
St. Kitts and Nevis	4.4	8.0	7.0	0.40	0.25
Saint Lucia	3.6	4.7	5.7	0.69	0.68
St. Vincent and the Grenadines	4.3	4.8	6.0	0.59	0.20
Suriname	1.0	-2.2	-2.8	0.29	0.48
Trinidad and Tobago	1.5	2.9	3.2	0.61	0.44

Source: On the basis of ECLAC data.

Table 15
The Current Account and fiscal deficit as a % of GDP
The Caribbean
1990-2003

Country	Fiscal deficit		Current account	
	1990-1997	1998-2003	1990-1997	1998-2003
Antigua and Barbuda	-5.0	-8.0	-4.0	-10.4
The Bahamas	-2.0	-2.0	-3.6	-10.6
Belize	-3.0	-5.0	-4.0	-15.1
Barbados	-6.0	-11.0	2.0	-5.0
Dominica	-3.0	-8.0	-18.4	-14.8
Grenada	-4.0	-7.0	-17.2	-24.3
Guyana	-4.0	-6.0	-17.3	-14.5
Haiti	-4.0	-4.0	-1.8	-1.2
Jamaica	0.2	-9.0	-2.9	-8.0
St. Kitts and Nevis	-2.0	-11.0	-19.2	-25.9
Saint Lucia	-1.0	-3.0	-11.5	-12.8
Suriname	-4.0	-6.0	1.0	-9.0
Trinidad and Tobago	0.	-2.0	1.9	2.4
St. Vincent and the Grenadines	-1.0	-4.0	-17.8	-16.9

Source: On the basis of official data and World Bank (2005)

Table 16
Foreign Direct Investment (as a percentage of GDP)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Anguilla	19.7	11.3	25.6	10.1	15.0	23.7	42.1	23.8	29.8	36.3	36.4	24.9	13.7
Antigua and Barbuda	15.5	13.3	4.6	3.3	5.0	6.4	3.6	4.0	4.4	5.6	5.0	7.8	50.5
Barbados	1.2	2.0	1.7	0.1	2.3	-0.3	1.2	1.4	0.7	2.2	6.0	3.6	6.8
Belize					3.3	3.1	1.8	1.3	7.5	7.2	2.5	5.0	2.7
Dominica	7.7	8.4	10.7	6.6	10.5	24.7	7.6	10.3	3.0	8.0	4.7	6.4	4.3
Grenada	5.8	6.3	9.0	8.1	7.3	7.2	6.6	10.6	13.9	11.0	8.8	8.6	19.8
Guyana	4.1	8.0	36.9	13.6	8.8	8.6	8.4	7.0	6.7	6.7	9.5	7.9	...
Jamaica		1.4	9.8	7.3	10.2	5.5	8.1	-0.1	2.0	-0.1	6.0	12.1	5.4
Montserrat	14.3	14.4	7.9	7.8	11.3	5.0	-0.7	6.3	6.8	23.4	9.9	10.2	0.6
St. Kitts and Nevis	6.0	4.9	2.5	6.9	6.9	8.9	14.3	7.2	11.1	19.0	29.2	24.1	22.8
Saint Lucia	10.8	1.8	0.9	6.9	6.3	5.9	3.2	8.3	13.3	12.4	7.1	7.7	7.2
St. Vincent and the Grenadines	3.9	4.2	6.4	13.2	19.4	11.6	15.3	31.5	28.0	16.9	8.4	10.2	9.2
Trinidad and Tobago	2.2	2.5	3.1	8.8	10.5	5.5	6.2	17.2	11.6	5.5	8.1	6.2	7.1
Average all	8.3	6.5	9.9	7.7	9.0	8.9	9.1	9.9	10.7	11.9	10.9	10.4	12.5
Standard deviation	6.0	4.6	10.7	3.7	4.7	7.4	11.0	9.2	9.1	9.9	10.0	6.7	13.1
Average OECS	10.5	8.1	8.5	7.9	10.2	11.7	11.5	12.7	13.8	16.6	13.7	12.5	16.0
Average Larger	1.9	3.5	3.6	7.4	8.0	4.8	6.0	6.4	5.2	3.6	7.4	7.5	14.5
Average RBE with Guyana	2.1	3.5	13.3	7.5	7.6	5.7	5.5	8.5	8.6	6.5	6.7	6.4	....
Average RBE without Guyana in 1992	2.1	5.4	1.0	7.5	7.6	5.7	5.5	8.5	8.6	6.5	6.7	6.4	....
Average SBE	8.4	6.0	5.4	4.4	5.8	6.2	8.0	6.4	8.3	12.4	11.7	9.8	15.0

Note: SBE = service based economies. RBE= resource based economies. ...denotes not available.
Source: ECLAC on the basis of official data.

Figure 6
Absolute convergence for CARICOM economies
1980-1995

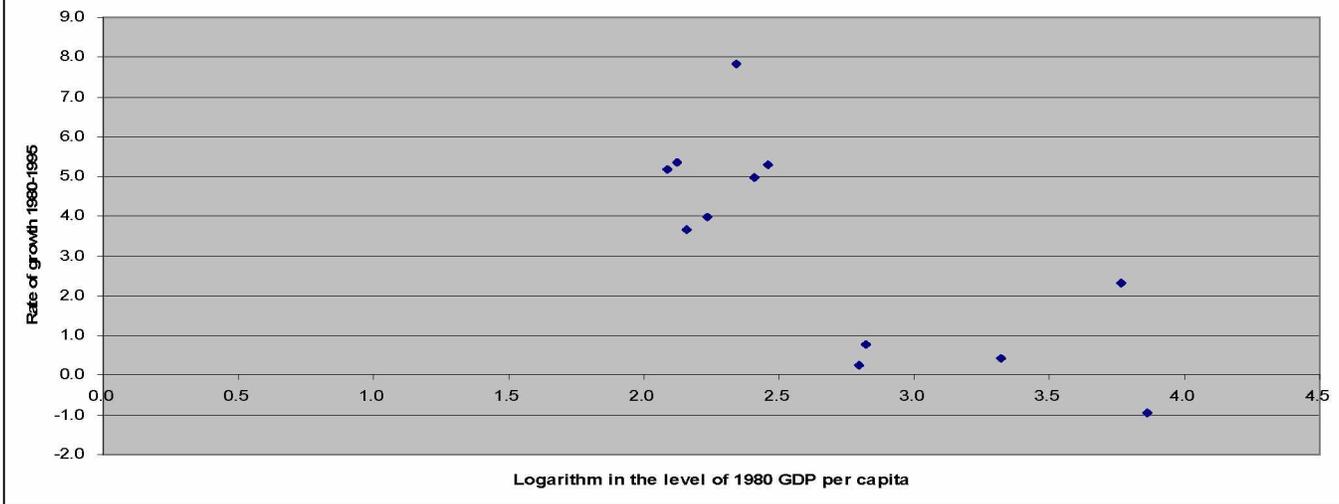
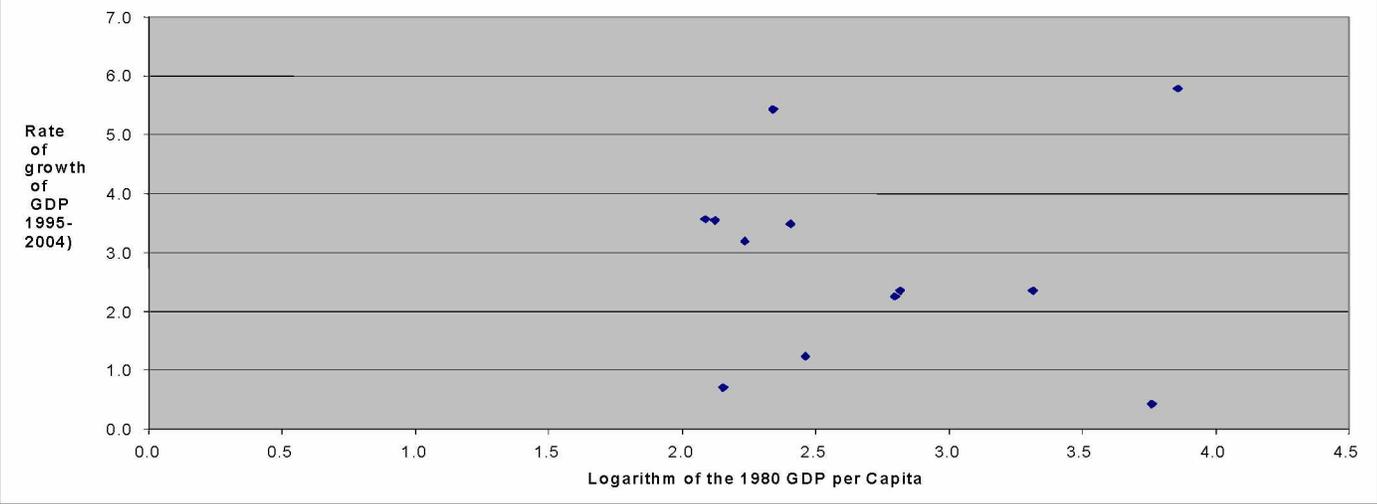


Figure 7
Absolute Convergence for CARICOM economies
1995-2004



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