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## **Publisher's Note**

The Economic Review is published three times a year in June, September and December, by the Central Bank of Barbados. It is prepared by the Bank's Research Department and contains articles of research undertaken at the Bank. In addition, we welcome contributions of a non-technical and empirical nature on economic and policy issues in the Caribbean. Book reviews and surveys are also welcome. All submitted papers are reviewed by the Editorial Committee\* and external referees.

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## Economic Review

(To the end of September 2006)

## Section 1

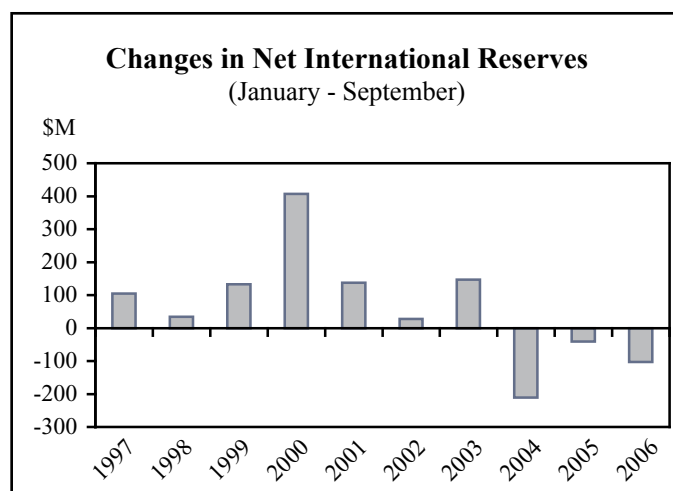
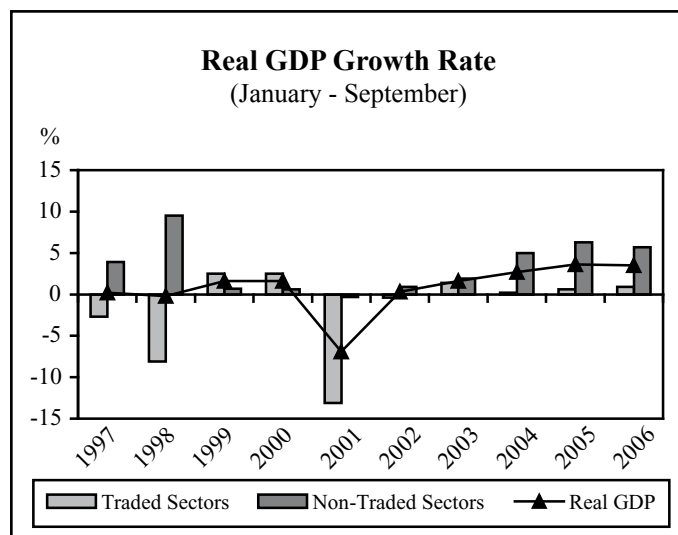
### Review of Economy

The Barbados economy grew by an estimated 3.5% during the first nine months of 2006, on par with the increase recorded in the corresponding period of 2005. The expansion in real economic activity was led by the non-traded sectors and marked the fifth consecutive nine-month period that the non-traded sectors outperformed the traded sectors. The performance of long-stay tourism was encouraging but cruise remained weak. With these developments, the external current account deficit improved moderately when compared to the similar period of the previous year, mainly reflecting a small decrease in retained imports and a modest expansion in exports of goods and services. Nevertheless, the deficit was still large enough to offset the surplus on the capital and financial account, leading to a decline in the net international reserves (NIR) during the January-to-September period of 2006. The fall-off in retained imports was accompanied by a reduction in the rate of increase in credit to the non-financial private sector, which still exceeded the rate of expansion in domestic deposits, and as a result, excess liquidity in the banking industry tightened. The overall fiscal deficit was smaller than the deficit incurred a year ago, on account of a rise in tax revenue.

For the first three quarters of 2006, real output in the traded sectors is estimated to have risen by just under

1%, as positive rates of growth in tourism, manufacturing and, to a lesser extent, non-sugar agriculture were partially offset by a downturn in the sugar industry. Value added in the non-traded sectors grew by an estimated 5.7%, after an increase of 6.3% reported in the same period of 2005 and above the average nine-month increase of 2.8% registered over the last five years. There was broad-based growth in all sectors, especially in transportation, storage and communications, construction and utilities. In tandem with the rise in economic activity, the average rate of unemployment remained relatively low at 9.1% during the first three quarters of 2006. However, the inflation rate climbed to 7.6% at the end of September, approximately 2.5% above the rate for the equivalent period one year ago, largely owing to higher fuel prices.

Following the implementation of the monetary and fiscal policy measures in 2005, retained imports for the January-to-September period of 2006 contracted marginally. The reduction in retained imports, coupled with an increase in travel credits and domestic exports, led to a modest improvement in the external current account deficit. Nonetheless, this deficit was greater than the surplus registered on the capital and financial account. Consequently, the NIR declined by \$102.8 million, more than twice the fall-off recorded in the comparable nine-month period of 2005, leaving the import reserve cover on goods at the end of September 2006 at 23.1 weeks (15.3 weeks on goods and services).



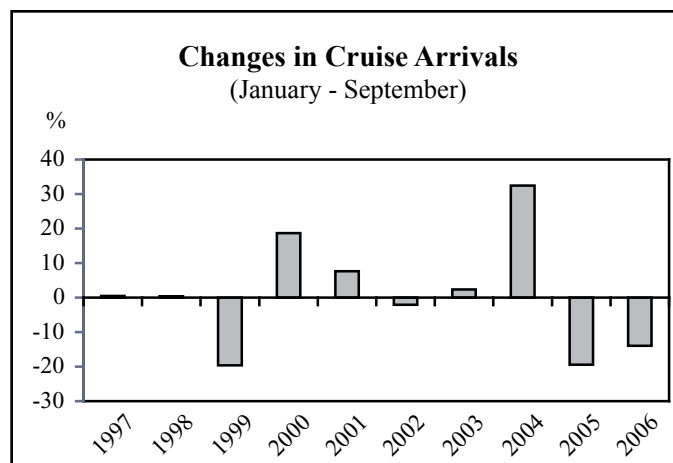
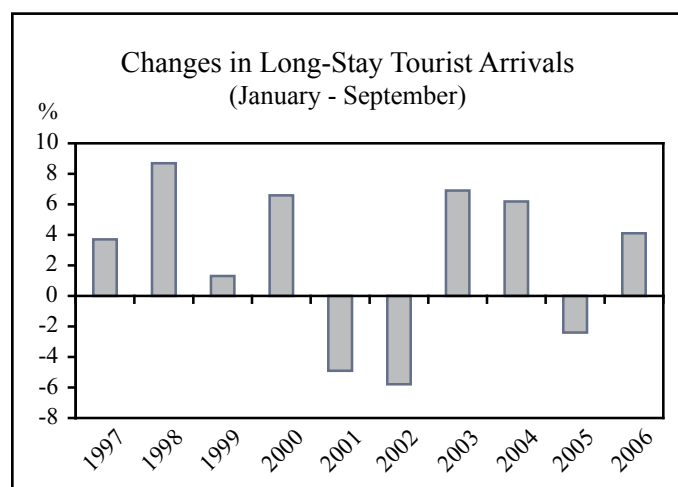
During the first three quarters of 2006, growth in credit to the non-financial private sector was lower when compared to the corresponding period one-year earlier, owing to successive increases in interest rates during 2005 and the implementation of the cess tax. Notwithstanding this, credit still grew at a faster pace than domestic deposits, and the excess liquidity ratio fell by 3.1 percentage points to 9.6% at the end of September 2006, while the liquid asset ratio was 9.3%, relatively unchanged from the figure recorded at the end of December 2005.

Government registered an estimated fiscal deficit of \$46.8 million on its operations during the January-to-September period of 2006, approximately \$94 million lower than the figure for the comparable period of the previous year. This outturn reflected higher collections from corporate and value-added taxes. The deficit was financed primarily by domestic entities as well as a portion of the remaining divestment proceeds from the sale of the Insurance Corporation of Barbados.

## Production, Prices and Employment

### Tourism

Real tourism activity increased by an estimated 1.9% in the January-to-September period of 2006, in contrast to a decline of 3.1% in the same nine-month period of 2005, as long-stay tourism outstripped the fall-off in



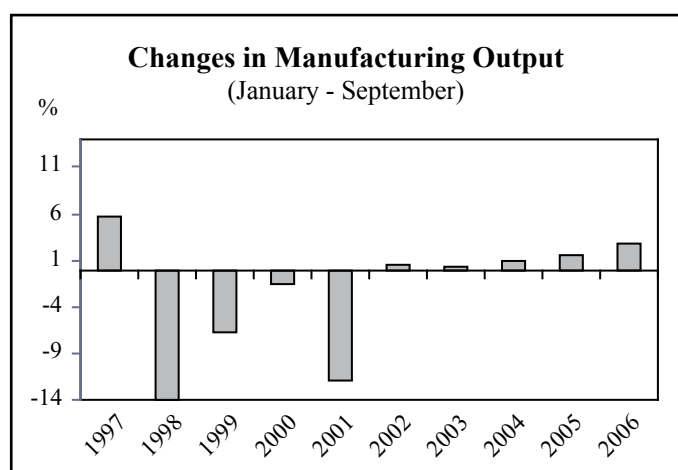
cruise visitor arrivals. Long-stay tourist arrivals grew by an estimated 4.1%, a turnaround from the contraction of 2.4% recorded over the similar period in 2005. For the first nine-months of 2006, visitors from the USA, UK and Canada were up by 3.0%, 4.7% and 6.8%, respectively, following reductions of 0.8%, 8.3% and 10.2% in the corresponding period of 2005. The boost in arrivals from these markets largely reflected improved airlift capacity. Arrivals from Trinidad and Tobago and other CARICOM countries rose by 15.3% and 1.3% respectively, while visitors from Germany went up by 12.4%.

After declining by 17% in the first half of the year, cruise passenger arrivals expanded by 25.1% in the third quarter. Thus, the contraction for the first three quarters of 2006 was only 11.5%, compared to the reduction of 19.4% in the similar period of 2005. Earlier weaknesses in the cruise industry resulted from the increase in fuel costs as international oil prices rose. This led to shorter itineraries and a lower number of ship calls to Barbados by some larger cruise vessels in the first half of the year. Since then, oil prices have moderated considerably and this has led to a resurgence in the industry.

### Manufacturing

Between January and September of 2006, real output in the manufacturing sector increased by 2.8%, compared to an expansion of 3.4% in the equivalent period of 2005. Chemical production rose by 6.3%, in line with

the rise that occurred in the similar period one year prior. Output of non-metallic mineral products, which benefited from the robust construction activity, also went up by 14.9%. Additionally, production of wooden furniture, other manufacturing industries and food processing grew by 9.4%, 4.5% and 1.6%, respectively. The other area of manufacturing activity that improved was electronic components, up marginally by 0.4%. Conversely, the production of beverages and tobacco fell by 11.3%, in contrast to growth of 1.7% in the same period of 2005, owing to reduced rum production of 29.9%.



### ***Non-Sugar Agriculture and Fishing***

Real value-added in the non-sugar agricultural industry remained sluggish during the first nine months of 2006. Chicken production fell by 7.7%, in contrast to an expansion of 9.0% in the corresponding period of 2005. Milk production and fish catches continued to trend downwards. Output of milk fell by an estimated 12.2%, after a reduction of 5.1% in the similar period of 2005, partly due to supply constraints. Fish catches contracted by 5.8%, compared to the 5.2% decrease recorded in the same period of 2005 and the average decline of 7.4% experienced over the last five years. The production of other meat products (pork, mutton, beef, veal and turkey) rose by 11.9%, relative to the 7.2% reported in the equivalent period of 2005.

### ***International Business and Financial Services***

During the January-to-June period of 2006, two hundred and twenty-five new international business companies and financial services were registered, compared to two hundred and eighteen in the corresponding period of 2005. Licences were issued to one hundred and eighty international business companies, nine lower than the comparable period of the previous year. Forty societies with restricted liability, four exempt insurance companies and one new offshore bank were approved for operation. No exempt insurance management companies were registered during the review period.

### ***Construction***

Construction value-added rose by an estimated 6.9%, following an increase of 15.7% in the similar period of 2005. Domestic cement consumption, one of the main indicators of construction activity, grew by 26.3%, more than double the usage in the corresponding period a year ago. The sector continues to be driven by building activity related to Cricket World Cup 2007, road infrastructure programmes, and residential and commercial developments.

### ***Other Non-traded Sectors***

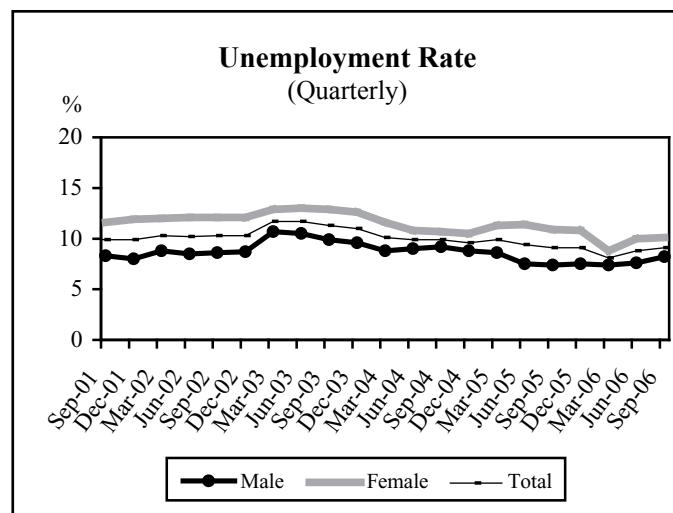
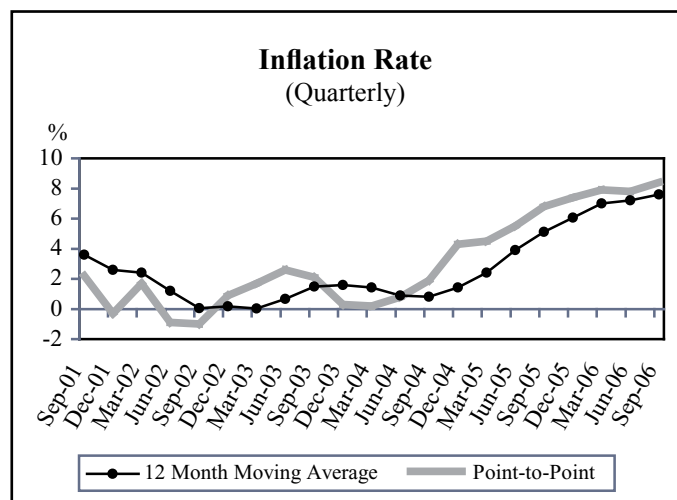
The improvement in activity within the tourism and construction industries led to noticeable output growth in all the non-traded industries. Real value added in wholesale and retail and transportation, storage and communication rose by 4.8% and 8.1%, respectively. In addition, the utilities and business and other services industries registered increases of 8% and 6.8%, respectively. After expanding by 11% in the first three quarters of 2005, output in the mining and quarrying sector grew by 5.2%. Domestic production of crude oil increased by 2.7% to 258,096 barrels at the end of September 2006, following a decline of 4.8% in the similar period of 2005. Production of natural gas grew by 2.8% between January and September 2006, to reach 17.9 thousand cubic metres, marking the second consecutive nine-month increase. Sales of crude oil expanded by 4.4%, in contrast to sales of natural gas which fell by 8.1%.

Total consumption of electricity rose by 1.6% in the first two quarters of the year, compared to an increase of 7% in the corresponding period of 2005. Commercial users registered the largest usage of 2.9%, while electricity usage by general services customers remained virtually unchanged over the six-month period ending June 2006, when compared to one year ago. In contrast, residential consumption of electricity fell by 0.5%

### Prices and Employment

At the end of September 2006, the twelve-month moving average rate of inflation was estimated at 7.6%, compared to 5.1% at the end of September 2005, while the point-to-point inflation rate was estimated at 8.4%, approximately 1.6 percentage points above the rate for the equivalent period of 2005. The higher rate of inflation was partly attributed to the pass-through effect of earlier increases in international oil prices and the introduction of the cess. With the exception of clothing and footwear, which declined by 8.7%, price increases were recorded for all categories of goods and services over the twelve-month period ending September, particularly, fuel and light (12.6%), housing (11.3%), transportation (9.6%), food (7.1%), education, recreation and miscellaneous categories (6.9%), medical and personal care (4.8%), and alcoholic beverages and tobacco (3.8%).

The average rate of unemployment as at September 2006 was 9.1%, virtually unchanged, from

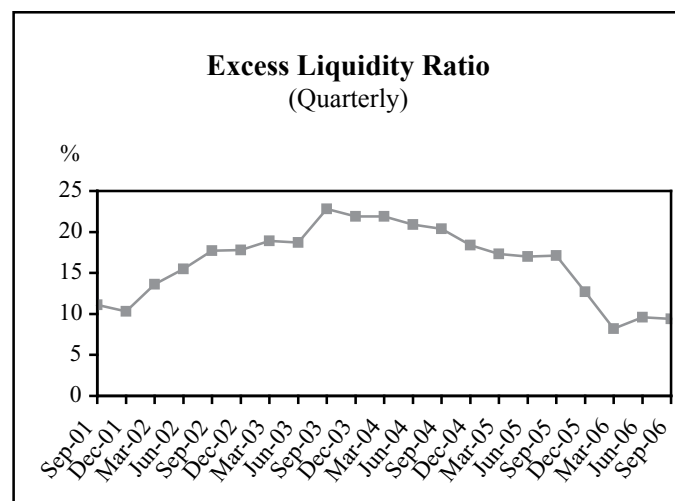
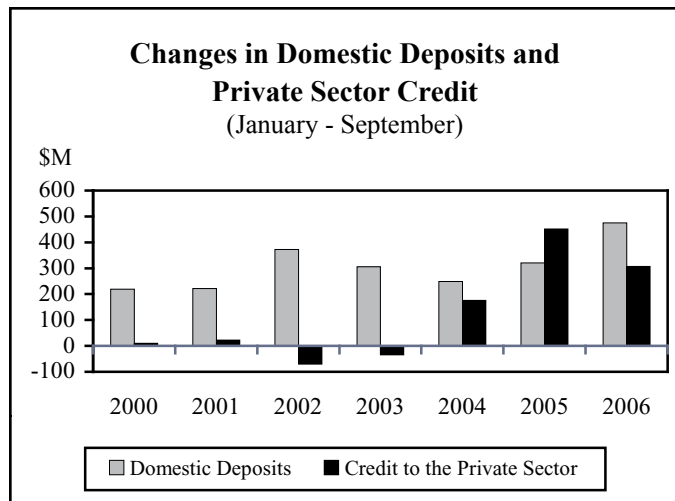


the figure reported in the corresponding period of 2005. The average female unemployment rate declined by just under one percentage point to 10.1%. While the average unemployment rate for males was 8.2%, relative to 7.4% one year ago. Most of the new jobs were generated in construction, tourism, electricity, gas and water, and general services, while jobs were lost in manufacturing, finance, insurance, business and government services.

### Financial Sector

#### Deposits

At the end of September 2006, total domestic deposits grew by 7.9% or \$475.0 million, compared to the 5.8% increase in the same period of 2005. During the review period deposits of private individuals rose by \$240.8 million, following the \$157 million expansion reported in the corresponding period a year ago. After growing by \$2.2 million in the first three quarters of 2005, deposits of financial institutions advanced by \$60.4 million, mainly due to the expansion in the deposits of a public financial institution. In addition, deposit holdings of business firms went up by \$31.3 million, after an increase of \$54.1 million in the similar period of the previous year. Conversely, deposits of central government and statutory bodies declined by \$15.2 million and \$12.7 million, respectively, in contrast to accumulations of \$2.7 million and \$142.3 million in the equivalent period of 2005.

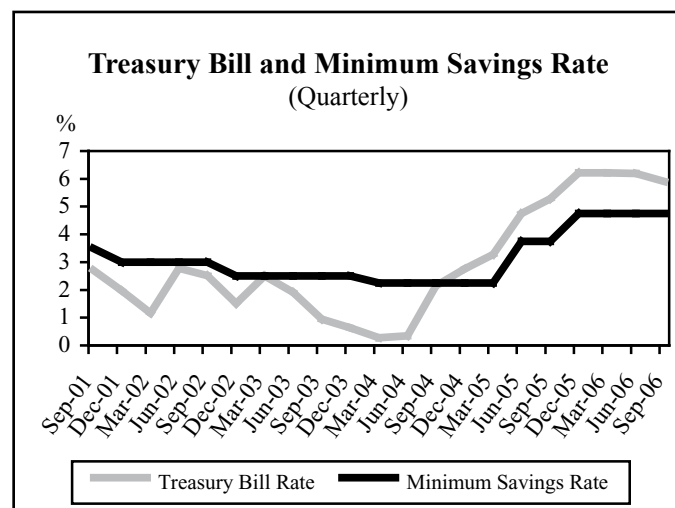


### Credit

Reflecting principally the monetary policy and fiscal measures implemented in 2005, the rate of growth in credit to the non-financial private sector slowed to 8.1% or \$306.9 million during the first three quarters of the year, significantly lower than the 14.7% or \$452 million increase recorded in the same period of 2005. Borrowings by the personal sector advanced by \$241 million, approximately \$0.6 million below the figure reported for the corresponding period of the earlier year. This mainly reflected the slowdown in the growth of new loans for housing, which fell from 17.9% in the first nine months of 2005 to 8.4% in the similar period of 2006. Lending to construction firms grew by \$47.1 million, while credit extended to the distributive sector rose by \$30.5 million, following an expansion of \$62.0 million in the comparable period one year ago, which was primarily related to the financing of a takeover. In contrast, borrowings by professional services and tourism-related establishments decreased by \$34.8 million and \$7.6 million, respectively.

Consequently, the excess liquidity ratio declined from 12.7% at the end of December 2005 to 9.6% at the end of September 2006. Commercial banks' excess reserves fell by \$154.6 million to \$588 million, primarily due to a reduction in holdings of securities of \$314.1 million.

Notwithstanding the liquidity conditions that persisted in the financial sector, the average discount rate on the three-month treasury bills contracted to 5.91% from 6.25% at the end of December 2005. The weighted average rate on total loans and the minimum deposit rate were 10.66% and 4.75%, respectively.



### Liquidity and Interest Rates

During the nine-month period under review, the level of liquidity within the banking system tightened as the expansion in credit to the non-financial private sector exceeded the build-up in domestic deposits.

**Summary Accounts of the Banking System**  
(\$Million)

|                                                        | 2004    |         |         |         | 2005    |         |         |         | 2006    |         |                |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------------|
|                                                        | Mar     | Jun     | Sep     | Dec     | Mar     | Jun     | Sep     | Dec     | Mar     | Jun     | Sept           |
| <b>Net International Reserves</b>                      | 2,169.1 | 2,244.4 | 1,880.8 | 1,746.7 | 1,780.8 | 1,659.2 | 1,442.4 | 1,611.0 | 1,730.2 | 1,610.6 | <b>1,613.2</b> |
| Monetary Authorities                                   | 1,539.3 | 1,478.2 | 1,292.4 | 1,190.5 | 1,227.9 | 1,214.1 | 1,149.5 | 1,239.1 | 1,282.5 | 1,167.4 | <b>1,136.5</b> |
| Commercial Banks                                       | 629.8   | 766.2   | 588.5   | 556.2   | 533.0   | 445.2   | 292.9   | 371.9   | 447.7   | 443.2   | <b>476.8</b>   |
| <b>Net Domestic Assets</b>                             | 2,231.4 | 2,386.2 | 2,781.5 | 3,137.6 | 3,121.5 | 3,370.3 | 3,656.2 | 3,583.9 | 3,527.0 | 3,801.2 | <b>3,984.0</b> |
| Credit to Public Sector                                | 294.1   | 367.4   | 759.3   | 642.3   | 508.4   | 528.8   | 625.3   | 380.4   | 159.6   | 326.2   | <b>383.7</b>   |
| Central Government (net)                               | 659.7   | 707.2   | 821.6   | 867.1   | 734.1   | 784.4   | 903.0   | 650.5   | 392.6   | 603.3   | <b>631.8</b>   |
| Rest of Public Sector                                  | (365.6) | (339.8) | (62.2)  | (224.8) | (225.7) | (255.7) | (277.7) | (270.0) | (233.0) | (277.1) | <b>(248.1)</b> |
| <b>Credit to Rest of Financial System</b>              | 161.2   | 160.9   | 221.0   | 234.9   | 260.5   | 298.4   | 301.8   | 312.8   | 344.1   | 261.9   | <b>339.7</b>   |
| <b>Liabilities to Other Financial Institutions</b>     | 403.2   | 416.0   | 489.2   | 394.4   | 453.3   | 475.4   | 417.3   | 514.5   | 551.3   | 558.7   | <b>565.4</b>   |
| <b>Credit to Non-Financial Private Sector</b>          | 2,702.0 | 2,766.4 | 2,798.6 | 3,061.8 | 3,185.8 | 3,395.3 | 3,513.8 | 3,791.8 | 3,890.4 | 4,015.2 | <b>4,098.7</b> |
| <b>Liabilities to the Non-Financial Private Sector</b> | 4,400.5 | 4,630.6 | 4,662.3 | 4,884.2 | 4,902.3 | 5,029.5 | 5,098.6 | 5,194.9 | 5,257.3 | 5,411.9 | <b>5,597.2</b> |
| Currency in Circulation                                | 342.3   | 345.9   | 368.0   | 398.7   | 392.0   | 403.0   | 419.0   | 448.6   | 436.8   | 431.8   | <b>433.1</b>   |
| Demand Deposits                                        | 1,273.1 | 1,432.1 | 1,399.2 | 1,537.0 | 1,548.0 | 1,576.5 | 1,604.3 | 1,563.2 | 1,530.9 | 1,515.6 | <b>1,672.2</b> |
| Time Deposits                                          | 374.6   | 362.7   | 396.3   | 381.8   | 343.8   | 352.4   | 405.1   | 491.1   | 556.0   | 625.3   | <b>584.6</b>   |
| Savings Deposits                                       | 2,410.5 | 2,490.0 | 2,498.8 | 2,566.7 | 2,618.5 | 2,697.6 | 2,670.2 | 2,692.0 | 2,733.5 | 2,839.2 | <b>2,907.2</b> |
| <b>MEMO:</b>                                           |         |         |         |         |         |         |         |         |         |         |                |
| Domestic Deposits                                      | 5,278.1 | 5,457.7 | 5,258.6 | 5,532.3 | 5,638.8 | 5,763.0 | 5,852.4 | 6,019.4 | 6,112.8 | 6,350.7 | <b>6,494.3</b> |
| Liquid Foreign Assets                                  | 1,533.0 | 1,480.4 | 1,298.1 | 1,193.4 | 1,233.5 | 1,218.9 | 1,157.1 | 1,254.1 | 1,293.0 | 1,286.5 | <b>1,279.7</b> |
| Loans & Advances                                       | 2,950.0 | 2,974.3 | 3,081.9 | 3,346.1 | 3,429.7 | 3,630.2 | 3,788.9 | 4,081.7 | 4,240.4 | 4,382.2 | <b>4,469.5</b> |

Source: Central Bank of Barbados

Note: Domestic deposits comprise total deposits in BDS\$ and foreign currency deposits of non-residents.

### **Government Securities**

Following a reduction in the holdings of treasury bills by commercial banks and a decline in the number of treasury bill auctions during the first three quarters of 2006, total treasury bills outstanding at the end of September 2006 amounted to \$539.2 million, \$83.5 million less than at the end of December 2005. The nominal value of

savings bonds at the end of the first nine months of the year was \$110. 2 million, while total holdings of debentures and treasury notes rose by \$61 million to reach \$2,356.8 million at the end of September 2006. The nominal value of sinking funds for government debt increased by \$42.7 million to \$471.9 million at the end of the review period.

## Public Sector

### Revenue

Total government revenue expanded by 13.3 % or \$201.8 million to reach \$1,722.5 million at the end of the first nine months of the year, compared to an increase of 8.9% in the corresponding period of 2005. Direct taxes were up by 30%, boosted by healthy receipts from corporate, property and personal taxes. The growth in corporate taxes (41.4%) stemmed from higher collections from the international business and financial services sector, while property taxes (40.5%) improved on account of property revaluation, greater tax compliance and an expansion in the tax base. The salary increases during the year were partly responsible for the 12.3% upturn in personal tax receipts, in contrast to an average decline of 17.5% recorded over the similar periods from 2003 to 2005 when revisions were made to the personal income tax rate and personal allowances.

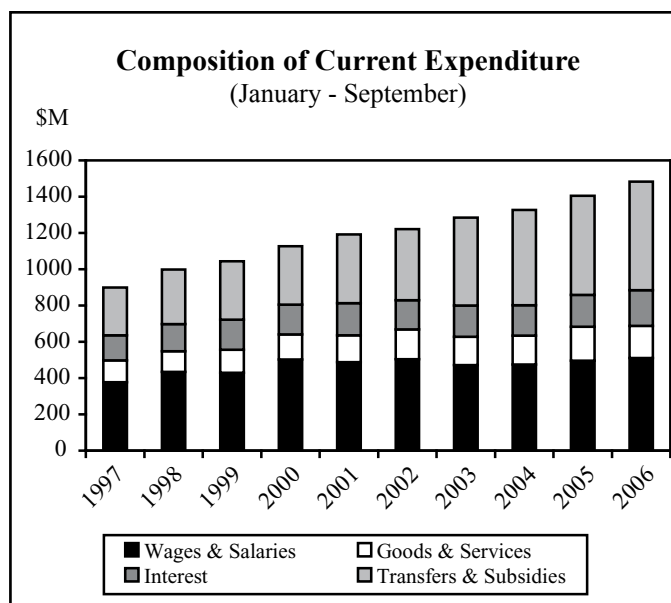
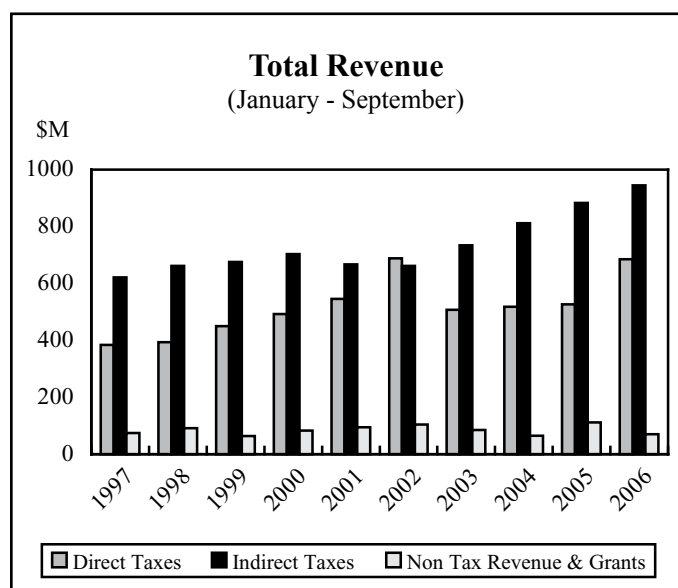
In the January-to-September period of 2006, growth of 12.3% in VAT receipts resulted in a 6.7% rise in indirect taxes, after an increase of 8.7% in the corresponding period of 2005. Improved collections of VAT receipts were occasioned by the increase in economic activity and the receipt of tax prepayments received at the end of 2005, but

registered in the first quarter of 2006. Intakes of excise taxes grew by 11.1%, compared to 16.4% in the similar period a year ago. In contrast, import duties fell by 2.2%, following an increase of 5.5% in the equivalent period of the previous year, as retained imports declined.

### Expenditure

Current expenditure grew by 5.5% to \$1,483.3 million during the first three quarters of the year, on top of the 5.9% expansion observed in the similar period of 2005, owing mainly to increases in transfers and subsidies, interest payments and wages and salaries. Transfers and subsidies advanced by 9.3% on account of supplemental payments to the Barbados Tourism Authority and the University of the West Indies, while the rise of 11.7% in interest payments was primarily attributed to an expansion in domestic interest payments. Additionally, wages and salaries were up by 3% during the first nine months of 2006, following an increase of 4.4% in the corresponding period of 2005.

On-budget capital expenditure expanded by 15.4% to reach \$214.3 million at the end of the period under review, after growing by 11.5% in the comparable period one year earlier, owing to the redevelopment of Kensington Oval and road rehabilitation programmes related to CWC 2007. Other government capital projects included the widening

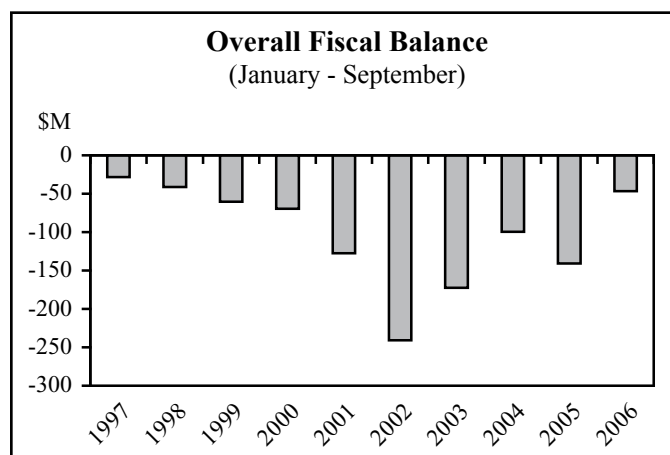


of a section of the ABC Highway and the redevelopment of the inner and outer careenage. Net lending by central government rose by an estimated 2.0% during the first three quarters of 2006 to \$71.7 million.

### Financing

The operations of the central government during the first nine months of 2006 resulted in an overall fiscal deficit of \$46.8 million, approximately \$94 million below the deficit recorded in the similar period of 2005. The majority of the funding for the deficit was obtained from domestic sources. Net lending to central government by the Central Bank amounted to \$216.8 million, while private non-bank institutions and the National Insurance scheme provided \$102.9 million and \$40 million, respectively. Lending by commercial banks fell by \$113.6 million due to the reduction in holdings of both treasury bills and debentures. Additionally, \$31.4 million in divestment

proceeds was received from the sale of the Insurance Corporation of Barbados. Net foreign outflows totalled \$54.2 million, as amortisation payments of \$88.4 million surpassed project fund inflows of \$34.1 million.



### Government Financing

(January - September)  
(\$Million)

|                                | 2000    | 2001   | 2002    | 2003   | 2004    | 2005    | 2006 <sup>P</sup> |
|--------------------------------|---------|--------|---------|--------|---------|---------|-------------------|
| <b>Domestic Financing</b>      | (157.0) | 117.4  | 262.5   | 7.6    | 116.0   | 203.1   | <b>101.0</b>      |
| Central Bank                   | (307.5) | (45.0) | 199.8   | 9.4    | 48.4    | 19.9    | <b>(216.8)</b>    |
| Commercial Banks               | 133.2   | 69.0   | 117.8   | (5.8)  | 105.4   | 90.6    | <b>(113.6)</b>    |
| National Insurance Scheme      | (10.1)  | 14.1   | 72.2    | 45.7   | (3.5)   | 157.6   | <b>40.0</b>       |
| Private Non-Bank               | 14.8    | 17.0   | 37.9    | 28.4   | 111.1   | 140.7   | <b>102.9</b>      |
| Divestment                     | 0.0     | 52.2   | 0.0     | 0.0    | 0.0     | 0.0     | <b>31.4</b>       |
| Other                          | 12.6    | 10.1   | (165.3) | (70.1) | (145.3) | (205.6) | <b>(176.5)</b>    |
| <b>Foreign Financing (net)</b> | 226.8   | 10.4   | (21.6)  | 165.6  | (16.3)  | (62.2)  | <b>(54.2)</b>     |
| Capital Markets                | 200.0   | 0.0    | 0.0     | 0.0    | 0.0     | 0.0     | <b>0.0</b>        |
| Project Funds                  | 55.6    | 41.8   | 38.9    | 43.9   | 56.2    | 9.7     | <b>34.1</b>       |
| Policy Loans                   | 0.0     | 0.0    | 0.0     | 0.0    | 0.0     | 0.0     | <b>0.0</b>        |
| Amortisation                   | (28.7)  | (31.5) | (60.4)  | (67.3) | (72.4)  | (71.9)  | <b>(88.4)</b>     |
| Divestment                     | 0.0     | 0.0    | 0.0     | 189.0  | 0.0     | 0.0     | <b>0.0</b>        |
| <b>Total Financing</b>         | 69.9    | 127.7  | 240.9   | 173.2  | 99.7    | 140.8   | <b>46.8</b>       |

Source: Central Bank of Barbados

P: Provisional

# Government Operations

(January - September)

(\$Million)

|                                            | 2000    | 2001    | 2002    | 2003    | 2004    | 2005    | 2006 <sup>P</sup> |
|--------------------------------------------|---------|---------|---------|---------|---------|---------|-------------------|
| <b>Total Current Revenue</b>               | 1,278.8 | 1,307.3 | 1,260.6 | 1,327.3 | 1,395.8 | 1,520.7 | <b>1,722.5</b>    |
| <i><b>Direct Taxes</b></i>                 | 492.5   | 546.0   | 494.6   | 507.7   | 518.4   | 526.6   | <b>684.7</b>      |
| Personal Income Tax                        | 216.7   | 246.8   | 259.0   | 242.2   | 240.1   | 206.5   | <b>231.8</b>      |
| Corporate Tax                              | 194.5   | 192.7   | 149.1   | 178.0   | 180.9   | 233.2   | <b>329.8</b>      |
| Levy Tax                                   | 11.1    | 13.9    | 14.9    | 4.7     | 0.0     | 0.0     | <b>0.0</b>        |
| Property Tax                               | 46.0    | 55.4    | 41.9    | 46.8    | 56.8    | 50.7    | <b>71.3</b>       |
| Other                                      | 24.2    | 37.2    | 29.7    | 36.0    | 40.6    | 36.3    | <b>51.8</b>       |
| <i><b>Indirect Taxes</b></i>               | 703.5   | 666.9   | 662.0   | 734.5   | 812.0   | 882.8   | <b>944.6</b>      |
| Consumption Tax                            | 0.5     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | <b>0.0</b>        |
| Stamp Duty                                 | 9.5     | 13.1    | 8.3     | 11.0    | 13.6    | 14.6    | <b>18.3</b>       |
| VAT                                        | 386.5   | 369.2   | 368.5   | 403.4   | 452.0   | 484.1   | <b>543.6</b>      |
| Import Duty                                | 90.4    | 92.7    | 115.9   | 123.9   | 143.9   | 151.8   | <b>148.5</b>      |
| Excise                                     | 130.7   | 115.2   | 83.6    | 97.3    | 112.9   | 131.4   | <b>145.9</b>      |
| Hotel & Restaurant                         | 0.5     | 0.4     | 1.2     | 0.2     | 0.0     | 0.0     | <b>0.0</b>        |
| Other                                      | 85.5    | 76.4    | 84.6    | 98.8    | 89.7    | 100.9   | <b>88.3</b>       |
| <b>Non Tax Revenue</b>                     | 82.7    | 94.4    | 104.1   | 85.1    | 65.4    | 111.3   | <b>93.2</b>       |
| <b>Current Expenditure</b>                 | 1,127.4 | 1,192.2 | 1,220.6 | 1,283.8 | 1,327.3 | 1,405.6 | <b>1,483.3</b>    |
| Wages and Salaries                         | 502.8   | 487.1   | 504.7   | 470.8   | 475.6   | 496.4   | <b>511.3</b>      |
| Goods and Services                         | 138.4   | 147.9   | 162.8   | 157.6   | 157.9   | 186.1   | <b>177.1</b>      |
| Interest Payments                          | 163.8   | 178.0   | 161.8   | 172.2   | 167.5   | 176.5   | <b>197.3</b>      |
| External                                   | 55.4    | 75.3    | 77.9    | 67.2    | 70.8    | 65.1    | <b>64.9</b>       |
| Domestic                                   | 108.4   | 102.7   | 84.0    | 105.0   | 96.7    | 111.5   | <b>132.3</b>      |
| Transfers & Subsidies                      | 322.4   | 379.4   | 391.2   | 483.2   | 526.3   | 546.6   | <b>597.6</b>      |
| <b>Current Account Balance</b>             | 151.4   | 115.0   | 40.1    | 43.5    | 68.5    | 115.1   | <b>239.2</b>      |
| <b>Capital Expenditure</b>                 | 219.2   | 223.2   | 280.5   | 216.1   | 166.5   | 185.7   | <b>214.3</b>      |
| <b>Net Lending</b>                         | 2.0     | 19.5    | 0.5     | 0.6     | 1.7     | 70.2    | <b>71.7</b>       |
| <b>Total Expenditure &amp; Net Lending</b> | 1,348.7 | 1,435.0 | 1,501.5 | 1,500.5 | 1,495.5 | 1,661.5 | <b>1,769.3</b>    |
| <b>Overall Balance</b>                     | (69.9)  | (127.7) | (240.9) | (173.2) | (99.7)  | (140.8) | <b>(46.8)</b>     |

Source: Accountant General and Central Bank of Barbados

P: Provisional

## Foreign Trade and Payments

### Current Account

During the January-to-September period of 2006, an external current account deficit of \$413.4 million was registered, approximately \$84.7 million lower than the deficit reported for the similar period of 2005. A reduction in retained imports, an expansion in domestic exports and moderately higher earnings from tourism were largely responsible for this outturn.

The monetary policy measures and the cess tax implemented in 2005 contributed to a fall-off in retained imports of 1.2% or \$24.9 million, a turnaround from the expansion of 14.1% recorded in the comparable period one year earlier, and marked the first decline since 2002. For the first nine months of the year, consumer goods fell by 11.9%, in contrast to a rise of 17% reported in the equivalent period of 2005 and an average growth rate of 6.7% experienced between 2001 and 2005. The decrease in imports of consumer goods resulted mainly from reduced motorcar imports, food and beverages and miscellaneous manufacturing goods, particularly jewellery and watches. Imports of intermediate goods rose by only 0.4%, after an increase of 18.4% observed in the corresponding period of 2005, owing largely to a contraction in imports of construction materials. Payments for capital goods imports were up by 16.8%, following a modest expansion recorded

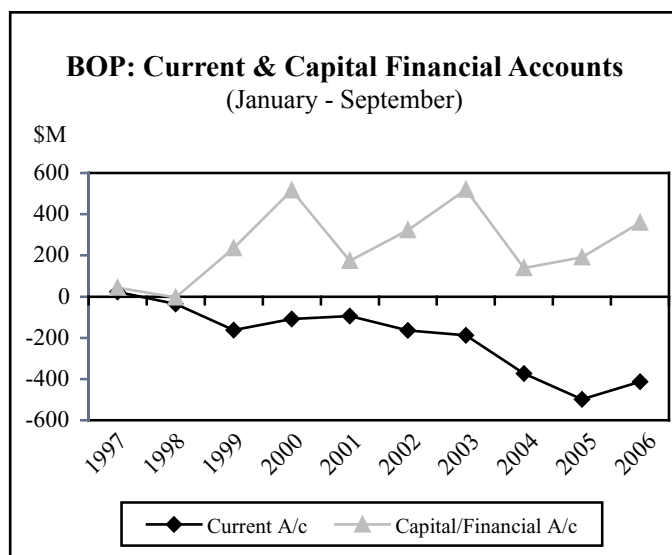
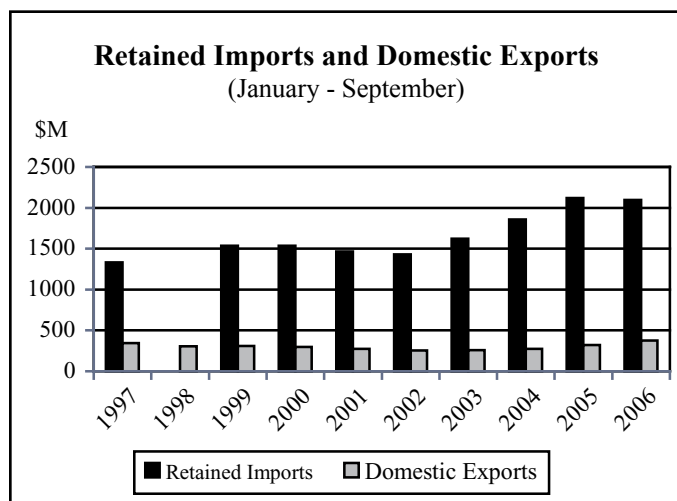
over the similar period of 2005. The surge in capital imports was due to an increase in imports of machinery and telecommunications equipment.

For the first three quarters of 2006, earnings from domestic exports picked-up by 16.9% or \$54.4 million, after expanding by 17.5% and 6.5% in the comparable nine-month periods of 2004 and 2005, respectively. Exports of electronic components rose by 45.7%, after a decrease of 2% in the same period one year earlier, reflecting higher demand for resistors by the US market. Receipts from the export of chemicals increased by 7.4%, while other manufactured exports climbed by 45.8% because of greater earnings from orthopaedic products and cement. In contrast, exports of food and beverages contracted by 14.3%, following an expansion of 21.9% in 2005, as sales of rum and miscellaneous beverages fell.

During the period under review, net earnings from services advanced by 5.1% as a result of an increase in travel credits. Travel credits were up by 9.4%, on account of a moderate rise in long-stay tourist arrivals and higher levels of inflation recorded in 2006.

### Capital and Financial Account

During the first three quarters of the year, the capital and financial account registered an estimated surplus



**Balance of Payments**  
(January-September)  
(\$Million)

|                                       | 2000           | 2001           | 2002           | 2003           | 2004           | 2005           | 2006 <sup>P</sup> |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|
| <b>Current Account Balance</b>        | (109.1)        | (94.6)         | (164.2)        | (188.2)        | (373.6)        | (498.1)        | <b>(413.4)</b>    |
| Merchandise Trade                     | (1,033.2)      | (997.9)        | (992.1)        | (1,156.7)      | (1,351.3)      | (1,570.2)      | <b>(1,467.2)</b>  |
| Total Exports (BOP basis)             | 419.6          | 404.4          | 361.8          | 382.7          | 425.7          | 523.4          | <b>474.2</b>      |
| <b>Domestic Exports</b>               | 299.7          | 274.8          | 254.9          | 256.8          | 273.5          | 321.3          | <b>375.7</b>      |
| Sugar                                 | 52.2           | 44.0           | 37.7           | 41.0           | 44.9           | 44.4           | <b>39.2</b>       |
| Electrical components                 | 31.7           | 30.3           | 21.7           | 20.3           | 22.0           | 21.5           | <b>31.4</b>       |
| Chemicals                             | 37.2           | 33.1           | 31.3           | 30.2           | 30.4           | 41.2           | <b>44.3</b>       |
| Food/Beverages                        | 63.9           | 68.7           | 68.8           | 62.0           | 70.3           | 85.7           | <b>73.4</b>       |
| All Other                             | 114.7          | 98.6           | 95.4           | 103.3          | 106.0          | 128.5          | <b>187.3</b>      |
| <b>Total Imports (BOP)</b>            | <b>1,474.6</b> | <b>1,419.2</b> | <b>1,371.1</b> | <b>1,559.9</b> | <b>1,793.0</b> | <b>2,071.9</b> | <b>1,952.3</b>    |
| <i>Retained Imports</i>               | 1,536.1        | 1,463.9        | 1,430.6        | 1,623.9        | 1,858.2        | 2,120.0        | <b>2,095.1</b>    |
| Consumer Goods                        | 624.7          | 613.9          | 590.1          | 639.8          | 727.3          | 851.1          | <b>749.7</b>      |
| Capital Goods                         | 339.8          | 303.7          | 308.9          | 355.8          | 418.4          | 426.6          | <b>498.2</b>      |
| Intermediate Goods                    | 566.6          | 541.3          | 526.5          | 622.9          | 705.2          | 834.7          | <b>838.4</b>      |
| Miscellaneous Goods                   | 5.0            | 5.0            | 5.1            | 5.4            | 7.3            | 7.6            | <b>8.8</b>        |
| <b>Services (Net)</b>                 | 925.2          | 893.2          | 849.7          | 995.4          | 1,019.0        | 1,174.6        | <b>1,234.7</b>    |
| Travel (Net)                          | 970.9          | 940.1          | 868.7          | 1,015.2        | 1,037.6        | 1,223.6        | <b>1,346.3</b>    |
| Of which travel credits               | 1,113.4        | 1,099.9        | 1,022.5        | 1,177.9        | 1,205.3        | 1,371.7        | <b>1,501.0</b>    |
| Other                                 | (45.7)         | (46.9)         | (19.0)         | (19.8)         | (18.6)         | (48.9)         | <b>(111.6)</b>    |
| <b>Income (net)</b>                   | (115.3)        | (134.0)        | (144.1)        | (158.7)        | (188.6)        | (252.2)        | <b>(350.7)</b>    |
| <b>Current Transfers (net)</b>        | 114.2          | 144.1          | 122.4          | 131.7          | 125.7          | 149.7          | <b>169.9</b>      |
| <b>Capital and Financial Account</b>  | 515.5          | 174.3          | 328.8          | 519.7          | 221.1          | 233.5          | <b>359.0</b>      |
| Long Term                             | 499.8          | 183.9          | 108.3          | 397.2          | (39.1)         | (10.1)         | <b>176.3</b>      |
| Public Sector                         | 225.3          | (7.2)          | (26.4)         | 176.7          | (72.4)         | (22.1)         | <b>(42.2)</b>     |
| Private Sector                        | 224.6          | 191.1          | 134.7          | 220.5          | 33.3           | 12.0           | <b>218.5</b>      |
| Other                                 | 31.9           | (13.0)         | 113.7          | (3.8)          | 5.2            | 34.7           | <b>27.4</b>       |
| Short Term                            | 33.8           | 3.5            | 106.8          | 126.3          | 255.1          | 208.9          | <b>155.3</b>      |
| Errors & Omissions                    | 3.9            | 54.3           | (127.9)        | 10.4           | (32.0)         | (39.6)         | <b>135.1</b>      |
| <b>Balance for Official Financing</b> | 410.2          | 133.8          | 36.8           | 341.9          | (206.1)        | (304.2)        | <b>80.7</b>       |
| Official Financing (Net)              | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | <b>0.0</b>        |
| IMF                                   | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | <b>0.0</b>        |
| Other Financial Institutions          | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | 0.0            | <b>0.0</b>        |
| Reserve Movements (CBB Basis)         |                |                |                |                |                |                |                   |
| (-Increase/+Decrease)                 | (410.2)        | (133.8)        | (36.8)         | (341.9)        | 206.1          | 304.2          | <b>(80.7)</b>     |
| Change in NIR (IMF Basis)             |                |                |                |                |                |                |                   |
| (-Increase/+Decrease)                 | (406.8)        | (137.8)        | (27.5)         | (146.7)        | 210.7          | 41.0           | <b>102.8</b>      |

Source: Central Bank of Barbados

P: Provisional

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of \$359 million, compared with a surplus of \$233.5 million in the corresponding period of 2005. Private net long-term capital inflows, which were mainly for real estate projects, were approximately \$218.5 million. Boosted by the pre-shipment financing for the sugar harvest during the first six months of the year and the receipt of a loan for the construction of the prison, short-term financial inflows amounted to an estimated \$155.3 million. In contrast, net-long term public sector outflows were \$42.2 million, approximately \$20.1 million higher than the value for the similar period one year ago.

## **Regional Economic Developments**

### ***Overview***

Economic activity in the regional economies strengthened during the first half of 2006, driven mainly by increased output in the construction and tourism sectors. In line with the expansion in real value added, credit growth to the private sector remained strong, as most countries recorded growth in borrowings by the personal sector. The rate of retail price inflation throughout the region was above the rate for the corresponding period in 2005, a result of the pass through effects of rising international oil prices. The higher oil prices impacted negatively on the external current account balances of the regional economies as most countries registered increased deficits when compared to the similar period of last year. During the period under review, most regional governments reported lower fiscal deficits primarily due to a substantial rise in revenue relative to expenditure.

### ***Tourism***

Most tourism sectors in the Caribbean benefited chiefly from expansions in long-stay passenger arrivals. In Jamaica, long-stay arrivals grew by 17.2% during the first six months of 2006, accompanied by the addition of new hotel rooms. For the same period, long-stay arrivals to the OECS were up by 2.3%, owing to greater airlift capacity and intensive marketing strategies. Similarly, in The Bahamas, there was an improvement in long stay arrivals (1.1%) along with expansion in room occupancy and an increase in average daily room rates.

There was a lacklustre performance in many of the region's cruise industries resulting from weaknesses in the demand for cruises as well as the increased fuel cost arising from higher international oil prices. Cruise activity in the OECS fell by 1%, as the industry faced increased competition. Cruise arrivals to The Bahamas declined by 5.7% during the January-to-August period of 2006, reflecting the weakness in the demand for cruises. For the same period, Belize and Antigua and Barbuda posted declines of 23.1% and 1.9%, respectively. In contrast, in the first half of 2006, cruise ship passenger arrivals to Jamaica rose by 10.5%, on account of an expansion in the number of ship calls.

### ***Mining and Quarrying***

Mining and quarrying activity in Jamaica fell marginally during the first six months of 2006. Alumina, the largest contributor to quarrying output, was affected by labour disputes and contracted by 2.1%, after an expansion of 1% in the January-June period of 2005. In contrast, bauxite production rose by 13.6% due to the purchase of new mining equipment. Robust activity in the energy sector in Trinidad and Tobago continued during the first half of 2006, as the sector benefited from increased production of crude oil and natural gas. Following the closure of Omai gold mine and the loss of markets in the bauxite industry in Guyana, output of the mining and quarrying sector decreased by 31.8%, with both bauxite and gold production down by 1.2% and 40.8%, respectively.

### ***Agriculture***

During the first half of 2006, agricultural production in Jamaica improved significantly after registering a decline in the corresponding period of 2005. This outturn was mainly attributed to a substantial expansion in banana production, which more than doubled the figure registered one-year prior. After contracting by 27.2% in the first half of 2005, sugar production in Jamaica went up by 11% in the similar period of 2006, owing to favourable weather conditions. In Trinidad and Tobago, bad weather conditions and lower sugar and citrus productions contributed to the sluggish performance of the agricultural sector. Output in the agricultural sector in the OECS was estimated to be

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higher than one year ago, a result of an increase in banana production and favourable weather conditions. In contrast, the agricultural sector in Guyana recorded growth of 2% during the first half of 2006, a consequence of higher sugar and rice productions.

### ***Construction***

The upward trend in construction activity registered in The Bahamas during the first quarter of 2006 continued into the second quarter. The performance in the sector was driven by ongoing investments in both residential and tourism-related projects. A cement shortage experienced in Jamaica led to a decline in output within the construction sector of approximately 4.6%, in contrast to growth of 10.4% reported in the corresponding period one year ago. In the OECS, construction activity benefited from both public and private sector projects related to the preparations for CWC 2007, road infrastructural programmes and the upgrading of some airports. In Guyana, public sector investments in infrastructure, especially for roads, bridges, drainage and irrigation drove an increase in activity within the construction sector.

### ***Prices and Interest Rates***

Most regional economies experienced higher rates of inflation, mainly on account of the rise in international oil prices. The average inflation rate in Trinidad and Tobago was 9.6% at the end of September 2006, approximately 2.7 percentage points above the rate for the similar period of 2005. Inflationary pressures were primarily driven by high prices for food and non-alcoholic beverages. At the end of August 2006, the twelve-month moving average rate of inflation in The Bahamas was 1.5%, compared to 2.0% in the corresponding period of 2005. Increased prices were recorded for other goods and services (4.9%), food and beverages (4.4%) and housing (2.6%). The expansion in the cost of food and drink, fuels and other household supplies as well as housing and other housing expenditures were the main contributors to the rise in the inflation rate (8.4%) in Jamaica. At the end of the first six months, member countries of the OECS registered an increase in consumer prices ranging from 0.1% in St. Lucia to 3.4% in Anguilla. At the end of June 2006, the twelve-month

moving average rate of inflation in Guyana was 8.4% or approximately 3.2 percentage points higher than the rate for the same period of 2005, as increased prices were recorded for food, housing, transportation, communication as well as medical and personal care.

The weighted average loan rate in The Bahamas fell by 35 basis points to 9.90%, owing to a more competitive lending environment, while the deposit rate remained relatively unchanged. In addition, the Central Bank's discount rate and the commercial banks' prime rate were 5.25% and 5.50%, respectively, while the average 90-day Treasury bill rate dipped by 33 basis points to 0.69%. In Jamaica, the interest rate offered on 3-month treasury bills fell by 0.6 of a percentage point to 12.68% at the end of August 2006. The average loan rate and the savings deposit rate were 22.5% and 5.39%, respectively. The average loan rate in Trinidad and Tobago was 9.35% at the end of June 2006 and the weighted average deposit rate as well as the 3-month treasury bill rate were 2.16% and 6.8%, respectively. In Guyana, the weighted average lending rate decreased from 13.5% at the end of December 2005 to 12.84% at the end of June 2006, while the savings rate declined from 3.38% at the end of December 2005 to 3.29% at the end of June 2006.

### ***Financial Sector***

During the first three quarters of 2006 credit to the private sector in The Bahamas advanced by B\$524.4 million, approximately 58% higher than the figure observed for the corresponding period of 2005. The robust growth in credit was mainly attributed to greater demand for mortgages and consumer credit. Domestic credit in Jamaica grew by 6.2% or J\$8.2 billion, primarily on account of increased borrowings by the personal, manufacturing and tourism sectors. Loans and advances in Trinidad and Tobago were up by 8.7% or TT\$2315.6 million. In the January to June period of 2006, domestic credit in the OECS grew by 4.5%, due to increased borrowings of 6.8% by the private sector. In Guyana, private sector credit rose by 8.7% or G\$4545 million, compared to an expansion of 4.4% or G\$2,140 million recorded in the similar period of the previous year. Bahamian dollar deposits accelerated by \$257.6 million, as broad based gains were registered for

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all categories of deposits. The deposits of commercial banks in Jamaica rose by 6.2% or J\$15,333.1 million, compared to an expansion of 2.8% observed in the corresponding period of 2005. Domestic deposits in Trinidad and Tobago slowed from 12.4% or TT\$4,274.9 million during the first eight months of 2005 to 8.5% or TT\$3,396.3 million in the similar period of 2006. In the OECS, total deposits went up by 4.1% or EC\$512.6 million, in line with the rate of growth experienced in the equivalent period of 2005.

### ***Government Operations***

For the first five months of 2006 The Bahamas fiscal deficit was estimated at \$7.2 million, approximately B\$46.3 million lower than the figure reported for the same period of 2005. The improvement in the deficit was attributed to a 21.8% or B\$97.1 million increase in revenue relative to a modest upturn in expenditure of 7.1% or B\$31.3 million. During the first half of 2006, central government operations in Jamaica resulted in a deficit of J\$7,608.2 million or J\$4,534.2 million less than the deficit registered in the corresponding period of 2005. The smaller deficit was attributed to a higher revenue intake and reduced expenditure. In contrast, fueled by increased revenues from the petroleum sector, Trinidad and Tobago recorded an estimated fiscal surplus of TT\$3.91 billion during the first seven months of 2006, compared to a surplus of TT\$388.8 million one year ago. The fiscal deficit in the OECS was estimated at EC\$70.5 million during the first half of 2006, approximately EC\$10.4 million below the figure for the comparable period of 2005. The lower deficit was due to increased collections of revenue relative to the growth in expenditure. In Guyana, the operations of central government during the first six months of 2006 resulted in an overall fiscal surplus of G\$2,318 million, compared to a surplus of G\$770 million at the end of June 2005. The strengthening of revenue collection methods and the funds remitted under the Multilateral Debt Relief Initiative were responsible for this outturn.

### ***Foreign Sector Developments***

During the first six months of 2006, the Bahamian external current account deficit was estimated at B\$703.2 million, compared to B\$82.5 million observed over the

similar period of 2005. The substantial increase in the deficit primarily resulted from an upsurge in the value of oil imports following the rise in international oil prices. Boosted by private sector inflows for tourism related projects, the capital and financial account registered a surplus of B\$435.6 million, approximately B\$186.2 million more than that reported for the comparable period of 2005. Greater earnings from goods exports and tourism in Jamaica contributed to an improved external current account deficit of US\$242.9 million in the January to May period of 2006, about US\$110.5 million below the figure of one year ago. For the first two quarters of 2006, Trinidad and Tobago's external current account surplus was estimated at US\$3,340.1 million, approximately US\$1,436.9 million higher than the corresponding period of 2005. This performance was mainly due to increased level of exports, primarily minerals, fuels, lubricants and chemicals. In contrast the capital and financial account registered a deficit of US\$2,069.6 million. In Guyana, the external current account deficit grew by US\$5.9 million to an estimated US\$96.4 million, largely reflecting an expansion in the merchandise trade account, occasioned by the increased oil prices and a rise in imports of capital equipment. However, the capital account registered a surplus of US\$106 million for the first six months of 2006, 23.7% above the figure recorded for the corresponding period of 2005.

## **International Economic Developments**

### ***Overview***

The global economy expanded strongly during the first three quarters of 2006, fuelled by improvements in industrial production, services and international trade. Growth continued to become more balanced with the United States slowing somewhat and the Euro Area picking up, while Japan's growth moderated. China remained the economic leader in the emerging economies, as it once again recorded strong growth. In spite of a noticeable decline over the third quarter, oil prices rose sharply over the first nine months, prompted by rising geopolitical tensions in the Middle East and risks to production in some other large producers such as Nigeria, especially during the January-to-June period.

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### ***Industrial Economies***

In the United States, real GDP expanded by an estimated 2.9% over the first nine months of 2006, slightly lower than the 3.4% recorded over the corresponding period of 2005. Exports, consumer expenditure and government spending fueled this outturn. The Federal Open Market Committee raised the federal fund rates three times during the period under review from 4.5% to 5.25%, to maintain sustainable economic growth and price stability. Consequently, inflation remained relatively subdued in spite of the surge in oil prices, as a rate of 2.1% was recorded at the end of September. The unemployment rate fell to 4.4% at the end of the review period, compared to 4.9% at the end of the equivalent period of 2005.

Canada's real economic activity improved in the first three quarters of 2006, as domestic demand continued to be the main contributor, while net exports decreased over the period. Consumer spending grew faster than expected as a result of substantial increases in employment, real disposable income and household net worth. The inflation rate was 0.8% at the end of September 2006, compared to 3.2% one year prior. This outcome largely reflected the impact on consumer prices of the reduction in tax on goods and services in July 2006. In line with the strong economic outturn, the unemployment rate fell by 0.5 percentage points from the end of September 2005 to 6.1% at the end of September of 2006.

The Euro-area reported strong growth over the January-to-September period of 2006, in contrast to the lacklustre increase reported in the comparable period one year ago. Consequently, the unemployment rate contracted by 0.6 percentage points to 7.8% from September 2005 to September 2006. The inflation rate was an estimated 1.7% at the end of September, 0.9 percentage points lower than the equivalent period in 2005. This outcome was primarily due to the easing of oil prices, which started in early August.

The United Kingdom grew an estimated 2.8% over the first nine months of 2006, following a growth rate of 1.9% one year earlier. Strong business investment and exports fuelled this commendable growth rate. Nevertheless the unemployment rate increased by 0.6 percentage points to 5.5% at the end of September, relative to September

2005, while the inflation rate rose slightly by 0.1 of a percentage point to 2.4%. In light of the countervailing upside and downside risks to the economy, the Bank of England decided to maintain its key policy rate at 4.5%.

In Japan, economic activity continued to recover steadily during the first three quarters of 2006, reflecting an improvement in private sector demand and increased exports. In tandem with the economic recovery, inflation rose into positive territory to record 0.6% at the end of September, after a lengthy period of deflation, while the unemployment rate declined by 0.1 percentage points to 4.1%. The Bank of Japan maintained its accommodative policy in order to support the pick-up in the economy.

### ***Emerging Markets***

In emerging Asia, economic growth moderated somewhat in the third quarter, following its robust performance in the first half of the year. Domestic demand slowed in most major economies in the region during the third quarter, while intra-regional trade maintained the strong momentum seen in the first half of the year. In China, the growth rate of real value-added surged by 10.4% during the January-to-September period of 2006, as a result of higher investment flows. The trade surplus narrowed and the rate of inflation remained modest, registering 1.5%.

In Latin America, economic activity was quite vigorous, buoyed by significant domestic demand across the region. Real value-added in Mexico expanded robustly, fuelled by a 5.8% growth rate in industrial production, while inflation was relatively moderate. The Brazilian economy continued to recover, as retail sales and industrial production remained buoyant. Economic activity was strong in Argentina and as spare capacity in the economy diminished, inflationary pressures increased. Indeed, the inflation rate was an estimated 10% at the end of September.

### ***Commodity Prices***

The overall commodity price index rose by 12.8% during January to September 2006, supported mainly by high metal prices. In line with vigorous demand by industrial countries and newly industrialising countries for copper, zinc, and nickel, the metal price index expanded

### Commodity Prices

| Commodities                       | Sep-05  | Dec-05  | Sep-06         | %<br>Change on<br>on Sep-05 | %<br>Change<br>Dec-05 |
|-----------------------------------|---------|---------|----------------|-----------------------------|-----------------------|
| Total (Index of Market Prices)    | 216.73  | 208.11  | <b>234.69</b>  | 8.3                         | 12.8                  |
| Non-Fuel (Index of Market Prices) | 107.60  | 114.03  | <b>141.71</b>  | 31.7                        | 24.3                  |
| Food (Index of Market Prices)     | 97.93   | 98.75   | <b>105.75</b>  | 8.0                         | 7.1                   |
| Sugar (US cents / lb)             | 29.99   | 28.95   | <b>31.28</b>   | 4.3                         | 8.1                   |
| Bananas (US \$ / 40lb)            | 596.43  | 568.18  | <b>544.92</b>  | (8.6)                       | (4.1)                 |
| Rice (US \$ / metric ton)         | 287.41  | 277.27  | <b>312.90</b>  | 8.9                         | 12.9                  |
| Wheat (US \$ / bushel)            | 159.71  | 164.44  | <b>195.98</b>  | 22.7                        | 19.2                  |
| Soybeans (US \$ / metric ton)     | 212.02  | 216.54  | <b>199.31</b>  | (6.0)                       | (8.0)                 |
| Metals (Index of Market Prices)   | 139.45  | 159.79  | <b>234.69</b>  | 68.3                        | 46.9                  |
| Aluminum                          | 1837.69 | 2250.90 | <b>2484.38</b> | 35.2                        | 10.4                  |
| Iron Ore (US \$ / metric ton)     | 65.00   | 65.00   | <b>77.35</b>   | 19.0                        | 19.0                  |
| Copper (US ¢ / lb)                | 3529.73 | 4577.03 | <b>7222.77</b> | 104.6                       | 57.8                  |
| Silver (US ¢ / oz.)               | 719.30  | 868.70  | <b>1225.39</b> | 70.4                        | 41.1                  |
| Gold (US \$ / oz.)                | 456.00  | 510.10  | <b>632.59</b>  | 38.7                        | 24.0                  |
| Petroleum (US \$ / barrel)        | 61.65   | 56.47   | <b>61.97</b>   | 0.5                         | 9.7                   |

Source: IMF Commodity Prices

by 46.9% over the first nine months of 2006. The price of food commodities grew by 7.1%, as strong increases in the prices of wheat, rice and sugar were partially offset by declines in bananas and soybeans. Oil prices retreated sharply in the third quarter, on account of a noticeable decrease in geopolitical tensions and the receding threat from hurricanes in the Gulf of Mexico. Consequently, oil

prices increased at a lower rate of 9.7% between January and September 2006, following a double-digit growth rate observed during the first six months of 2006. According to data up to August 2006, the US dollar price of silver and gold expanded by 70.4% and 38.7% respectively, supported by favourable investment and consumer consumption.



## Caribbean Stock Markets

### Barbados Stock Exchange (BSE)

For the third quarter of 2006 the BSE continued to experience a decline in trading activity, with both the local and cross-listed indices ending the quarter at approximately 2% lower. The poor performance of these indices contributed to the 1% decrease in the Composite Index, making this the third consecutive quarter that this index has fallen for the year. The contraction in trading activity on the BSE was also reflected in the total volume of shares traded for the review period, which declined by 1.1 million compared to the third quarter of 2005 when an additional 22.8 million shares were issued, (primarily due to the Fortress Caribbean Property Funds rights issue). For the June to September period, Sagicor Financial Corporation continued to be the most liquid security, accounting for 44% of trades on the BSE, which resulted in this company being the leading performer by volume and value.

During the third quarter, the Composite Index registered a 2.33% reduction in market capitalisation, as 9 companies advanced, 6 decreased, 4 traded firm. In addition, there were 6 securities that did not trade over the quarter, while the shares of 2 companies remained suspended from trading. Cable and Wireless Barbados recorded the greatest appreciation in share price (57%) for the period, representing a major turnaround compared to the decline reported earlier in the year. This leading performer was followed by the Insurance

Corporation of Barbados and Barbados Farms Limited, which registered lesser increases of 10% and 7%, respectively.

For the quarter ending September 30, 2006, the Odd-Lot Market had 58,821 shares traded, at a total value of \$66,239.27. Sagicor Financial Corporation was also the chief performer by volume and value in this market, accounting for 53% of the volume traded and 49% of the value traded for the period. With the continued suspension of Sunbeach Communications Inc. - the only company listed on the Junior Market - no activity was recorded for this market during the period under review.

### Jamaica Stock Exchange (JSE)

During the third quarter of 2006, the JSE Index advanced, moving from 85,108.21 at the beginning of the period to end at 86,195.99 (up 1.26%). Nevertheless, there was a significant decrease in trading volume on the JSE where market volume amounted to 226,237,052, valued at over J\$3.2 billion. Over the period 21 companies advanced, 16 declined and 4 remained unchanged. The major companies on the share price were Pegasus Hotel registering a 56.25% increase in share price, Caribbean Cement (55.90%) and Mayberry Investments Ltd. (44.00%). The worst performing company was CCMB, which contracted by 20.69%.

### Trinidad & Tobago Stock Exchange (TTSE)

During the third quarter of 2006, the TTSE Index decreased by 5.60% to close at 920.33 points. Overall for the period, 9 companies advanced, 19 fell and 6 remained unchanged. The major advancers were National Commercial Bank Jamaica Limited (17.02%), Dehring, Bunting & Golding Limited (10.00%) and National Flour Mills Limited (6.00%).

## Interest Rates

### United States of America

At the end of June, US markets had braced for a long summer of soaring energy prices and rising interest rates, but by the end of the third quarter, there was some respite.

**Barbados Stock Exchange Statistics**  
(End of Month)

| Index                       | Jun. 2006 | Sep. 2006        |
|-----------------------------|-----------|------------------|
| Local                       | 3,872.31  | <b>3,800.89</b>  |
| Cross-Listed                | 2,019.96  | <b>1,980.41</b>  |
| Composite                   | 971.06    | <b>962.49</b>    |
| <b>Market Cap. BDS(\$m)</b> |           |                  |
| Local                       | 10,486.08 | <b>10,241.61</b> |
| Cross-Listed                | 10,445.73 | <b>10,242.80</b> |
| Composite                   | 20,931.81 | <b>20,484.41</b> |

Source: Barbados Stock Exchange

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Boosted largely by falling energy prices, and the Federal Reserve's (Fed.'s) first pause in interest rate hikes in two years, broad U.S. equity and bond returns rebounded from second-quarter losses to post some of the biggest quarterly gains in their respective asset classes, since the turn of the century. This was evidenced by the S&P 500 Index and the Lehman Brothers U.S. Aggregate (Bond) Index climbing by 5.67% and 3.81%, respectively.

The markets' gains accelerated in August and September after the Fed. stopped its interest rate hikes, choosing instead to assess the impact of the 5.25% overnight rate target - the highest in five years. The pause stems largely from the growing evidence of a slumping U.S. housing market, where according to the National Association of Realtors, year-on-year sales of previously-owned homes fell 12.6% in August and the average sales prices declined by 1.7% - the first 12-month price decrease since 1995.

This uncertain outlook has been welcomed by bond investors, in particular, who speculated that it would lead to reduced, albeit still worrisome inflation, and lower interest rates. On the back of these developments there was heightened bond demand, pulling the 10-year Treasury yield down to 4.63% at the end of September. Much of the market is convinced that the Federal Reserve Board has engineered a "soft landing" for the US economy and is anticipating no further increases in interest rates, but instead a cut in interest rates by the middle of next year.

### ***Canada***

During the third quarter, the Bank of Canada (BoC) kept its key overnight lending rate at 4.25%, where it has been since May, leading to market speculation that the BoC will be cutting interest rates before the end of the first half of 2007. The current pause in rate adjustments comes amid mixed economic signals. The central bank notes that global growth remains strong, commodity prices are high and domestic employment growth has persisted. However, core inflation of 2.35% is higher than expected and gross domestic product (GDP) numbers are lower than projected. The BoC cut its economic growth forecast for 2006 to 2.8%, from 3.2% because of weaker exports. The

main downside risk stems from the condition of the U.S. economy – Canada's largest export market – which could slow more sharply than anticipated, thus resulting in lower Canadian exports.

At the end of September, bond yields fell dramatically compared to end-June rates. The 2-year fell by forty-nine basis points to 3.91%, while the 10-year dropped by fifty-eight basis points to 4.0%. There was only minor tightening between the long and the short bond. However, between the 2-year and the 5-year the yields tightened by 6 basis points – the largest movement across the yield curve.

### ***United Kingdom***

There was no adjustment in interest rates by the Bank of England (BoE) during the third quarter. However, following the August inflation report, analysts expected that the BoE will raise interest rates by a quarter of a point, to 5% before yearend. The report implied that an increase in interest rates is required to bring inflation back in line with the 2% target. The Monetary Policy Committee noted that due to limited spare capacity in the economy, inflation was likely to rise further than targeted in the near-term, before falling back as energy cost pressures abated.

In the year to the third quarter, UK output growth at 2.8% was slightly above trend, and recent economic indicators point to a steady pace of expansion. Likewise, housing market activity staged a clear recovery over the past year, with house price inflation strengthening towards 10%, and mortgage approvals for house purchase running at their highest level since early 2004. Financial markets have heavily priced in an increase in interest rates by November 2006, followed by further expansions in 2007.

### ***European Central Bank***

Against a backdrop of above-target inflation, as well as brighter economic prospects, in August the European Central Bank (ECB) pushed up interest rates by 25 bps to 3.0%. The increase marked a departure from a pattern started in December last year of raising rates by a quarter-point in the last month of each quarter. Not unexpectedly therefore, the market has predicted that at the October meeting, the key

financing rate will be expanded by another 25 basis points (bps.); a decision that would likely mark an acceleration in the pace of rate hikes over the short-term. The market is pricing a further 50 bps. increase before the end of the year, which would take the interest rate to 3.5%.

The rise in rates is now more feasible than ever, since the Eurozone has witnessed a resurgence in economic fortunes. In July, economic confidence in the 12 euro-zone countries reached its highest level in more than five years, while manufacturing expanded close to its fastest pace in six years, and unemployment fell to a record low of 7.8% in June. Moreover, figures from the bloc's leading economy, Germany, showed that contrary to trend, unemployment had fallen in July. Still, according to the European Central Bank's President, the cycle is not all positive, since there has been the constant threat of inflation to price stability. With key ECB interest rates at still low levels in both nominal and real terms, the Eurozone's monetary policy continues to be accommodative – a situation that will be monitored as inflation concerns continue in the short-term.

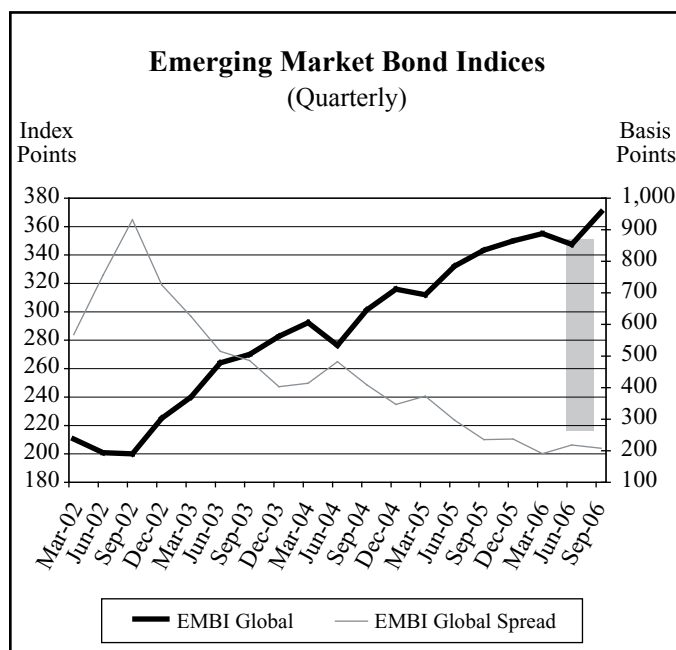
## Emerging Markets

### Bond Markets

Lower interest rate expectations in the third quarter of the year served to boost gross bond issuance, as indicated by the sharp rise in the JPMorgan's Global Index for the period. Latin American bond markets were primarily responsible for the increase, as these markets benefited from greater stabilisation following two highly volatile months of elections in Mexico, Venezuela and Ecuador. Despite a rally in US Treasury debt securities for the third quarter of 2006, there was little negative effect on Latin American government bonds, with Brazil's Real denominated bonds dominating trading due to a reduction in inflation rate expectations. Argentine government securities, which were considered worthless by investors two years ago, tripled in value (now worth about US\$7.75 billion) and were also amongst the best performing emerging market securities for the quarter.

The exports of many Asian countries were affected by the performance of the Japanese economy. With this

economy growing by only 0.8%, below the initial estimate of 2% for the first nine months of 2006, South Korea and other Asian bond markets subsequently declined. Lower economic growth in Japan was the result of a reduction in consumer spending, which accounts for more than half of Japan's real output. Nevertheless, the investor base for Japanese bonds widened as interest rates stabilised, notably with Japan's monetary authorities refusing to hint at any further tightening of monetary policy in order to maintain economic growth.



### Equity Markets

Asian equity markets outperformed those in Latin America during the third quarter of 2006, as Indian, Indonesian and the Philippines markets all recorded doubled-digit growth rates, spurred by higher projections for economic growth regionally. The outcome of the Asian equity markets benefited from good performances by Toyota Motor Corp, and, Hynix, the second largest maker of computer memory chips in Asia. China Merchants Bank Co. led activity on the Shanghai Index, which rose by 7.1% for the third quarter, on speculation that interest rates would

no longer be increased and as the government sought to further encourage investment by foreign institutional investors.

Equity indices in Latin America performed credibly during the third quarter of 2006, led primarily by the indices in Mexico and Venezuela, which expanded by 12.7% and 13.1%, respectively. The Argentine Merval dipped (by 1.0 %), as did the Brazilian Bovespa (by 0.5 %), in spite of the favourable performance of shares in Companhia Vale do Rio Doce, the world's largest iron-ore producer and forestry conglomerate.

#### Emerging Equity Market Indices (Quarterly)

| Country/Region       | Name of Index | Jun-06          | Sep-06           | % Ch       |
|----------------------|---------------|-----------------|------------------|------------|
| Argentina            | Merval        | 1,233.58        | <b>1,221.76</b>  | -1.0       |
| Brazil               | Bovespa       | 36,630.66       | <b>36,449.40</b> | -0.5       |
| Chile                | IPSA          | 2,126.02        | <b>2,280.48</b>  | 6.8        |
| Mexico               | IPC           | 19,147.17       | <b>21,937.11</b> | 12.7       |
| Venezuela            | Caracas       | 30,747.27       | <b>35,392.58</b> | 13.1       |
| <b>Latin America</b> |               | <b>2,368.20</b> | <b>2,473.06</b>  | <b>4.2</b> |
| China                | Shanghai      | 1,627.21        | <b>1,752.42</b>  | 7.1        |
| Hong Kong            | Hang Seng     | 16,267.62       | <b>17,543.05</b> | 7.3        |
| India                | Mumbai        | 10,609.25       | <b>12,454.42</b> | 14.8       |
| Indonesia            | Jakarta       | 1,310           | <b>1,534.61</b>  | 14.5       |
| Malaysia             | Kuala Lumpur  | 914.69          | <b>967.55</b>    | 5.5        |
| Philippines          | PSE           | 2,178.79        | <b>2,556.71</b>  | 14.8       |
| Singapore            | Straits Times | 2,435.39        | <b>2,568.86</b>  | 5.2        |
| South Korea          | Seoul         | 1,295.15        | <b>1,371.41</b>  | 5.6        |
| Thailand             | SET           | 678.13          | <b>686.10</b>    | 1.2        |
| Taiwan               | Weighted      | 6,704.41        | <b>6,883.05</b>  | 2.6        |
| Asia                 |               | 303.67          | <b>322.90</b>    | 6.0        |

Source: Bloomberg Service

#### Currency Markets

Most emerging Asian market currencies depreciated against the US dollar and the Euro in the June to September period, which resulted in gains for technology, automobile and export-oriented stocks. Several floating rate regimes in

#### Emerging Market Currencies (per US\$) (Quarterly)

| Country/Region | Currency | Jun-06   | Sep-06          | % Ch |
|----------------|----------|----------|-----------------|------|
| Argentina      | Peso     | 3.09     | <b>3.10</b>     | 0.3  |
| Brazil         | Real     | 2.17     | <b>2.17</b>     | 0.0  |
| Chile          | Peso     | 538.85   | <b>535.10</b>   | -0.7 |
| Mexico         | Peso     | 11.34    | <b>10.98</b>    | -3.3 |
| Venezuela      | Bolivar  | 2,147.30 | <b>2,147.30</b> | 0.0  |
| China          | Yuan     | 7.99     | <b>7.90</b>     | -1.1 |
| Hong Kong      | Dollar   | 7.77     | <b>7.79</b>     | 0.2  |
| India          | Rupee    | 46.04    | <b>45.92</b>    | -0.3 |
| Indonesia      | Rupiah   | 9,263.00 | <b>9,223.00</b> | -0.4 |
| Malaysia       | Ringitt  | 3.67     | <b>3.69</b>     | 0.5  |
| Philippines    | Peso     | 53.14    | <b>50.25</b>    | -5.7 |
| Singapore      | Dollar   | 1.58     | <b>1.59</b>     | 0.6  |
| South Korea    | Won      | 948.70   | <b>946.50</b>   | -0.2 |
| Thailand       | Baht     | 38.12    | <b>37.57</b>    | -1.5 |
| Taiwan         | Dollar   | 32.38    | <b>33.10</b>    | 2.2  |

Source: Bloomberg Service

Asia capitalised on buying dollar-dominated assets, which allowed exchange rates to be maintained at levels that would encourage exports. In South Korea, in particular, the decline of the Won for the third quarter contributed to the Korean export market being the main driver of economic growth activity. Converse to other territories, the Singapore Monetary Authority sought a gradual and modest appreciation in the Singapore dollar, evidenced by the 0.6% rise in its value for the third quarter. This served to further realign the Singapore dollar with an undisclosed band comprised of a basket of currencies of the territory's major trading partners.

Latin American currencies were less volatile during the third quarter of 2006 than in previous periods of the year, on account of successful election transitions and lower inflation expectations. The Brazilian Real remained on par for the period, while the Mexico's Peso fell by 3.3%. The strong currency rally in Argentina resulted in its Peso increasing by 0.3% by the end of the quarter.



## The Doha Development Agenda

### *Introduction*

The World Trade Organisation (WTO) was conceived to help improve the trading system amongst the developed and developing countries of the globalised economy. It acts as the sole multilateral and supranational body to settle trade disputes among its members, which include Europe, Asia, Africa, the Americas, and the Caribbean. WTO negotiation rounds usually have a five-year span that is supplemented with annual Ministerial meetings. The Uruguay Round, which lasted from September 1986 to April 1994, was expected to bring about the liberalisation of agriculture in the multilateral trading system, noting that agriculture is a key element of trade discussions and an important contributor to the economies of most of the WTO member states. After eight years, however, the rounds only succeeded in reaching a minimal agreement on the liberalisation of agricultural trade. At the fourth WTO Ministerial Conference in November 2001 in Doha, Qatar, the Doha Development Agenda (DDA) was initiated, and was seen as the way forward to further liberalise agricultural trade. As a result, the DDA generated considerable interest, and, in addition to agriculture, there have been deliberations on market access, intellectual rights and properties, and tariff cuts.

During a mid-round WTO Ministerial Meeting in September 2003 in Cancun, Mexico, similar views held by developing countries (mostly the G20<sup>1</sup> and G90<sup>2</sup> countries), emerged on how they could benefit from the Doha Round. However, the meeting collapsed without consensus and a way forward, because of the inability for the United

States (U.S.), the European Union (EU) and the developing countries to find common ground on the issues of agricultural subsidies paid to farmers of the developed countries. Following persistent promptings by the EU, talks re-started in July 2004 but there were dissenting views on how the negotiations should proceed. Some of the representatives for developing countries, including the Caribbean Community (CARICOM) leaders, argued that the large and developed countries must make the main concessions on trade issues, and not the poor and less developed countries. Trade officials in the Caribbean, further expressed the view, that while it is important to have agreements that open access to markets, it is even more essential for any negotiated trade agreement to contain provisions that would assist developing countries to implement policies aimed at transforming their economies.

The deadline for the completion of the trade agreements amongst these countries, scheduled for the end of 2005 at the Hong Kong Ministerial Meeting, was postponed and a revised deadline was set for 2006. In July 2006, trade negotiation talks were once again suspended, as negotiators from major economies could not come to an agreement on the cuts in tariffs. Thus the question whether or not the DDA would continue or breakdown in totality was posed. This issue is examined in the subsequent sections of this document, beginning with the reasons for the current impasse, and followed by an examination of the views held by top officials, which provides some indication of whether or not the talks would be revived. Finally, some concluding remarks on important aspects of the Doha Round are presented.

### *Reasons for the Current Impasse*

At the Ministerial Meeting in Hong Kong in December 2005, unable to come to an agreement about the agricultural and non-agricultural market access (NAMA), the ministers were forced to set a new date (30 April 2006) for negotiations and settlement of trade issues.

Before the Hong Kong Ministerial Meeting, negotiations on the issue of agricultural trade were advancing at a very slow pace, even though it increased after the Uruguay Rounds. Talks mostly centered on what each country hoped to achieve from the Doha Rounds,

<sup>1</sup> The G20 countries consist of the developing middle-income countries, such as Argentina, Brazil, India, China, Mexico, South Africa, inter alia. This group was established on 20 August 2003.

<sup>2</sup> The G90 countries are made up of the poorer developing countries, which comprise of the African Union, the African, Caribbean and Pacific (ACP) Group, and the Least- Developed Countries (LDCs). Some of these countries are Kenya, Senegal, Egypt, Barbados, Guyana, Cuba, Afghanistan, Haiti, and Tuvalu, among others. Note that this list of countries incorporates some of the countries of the G20 countries such as South Africa.

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with each country having diverging views on the different trade tariffs and agreements. Notably, the focus was on advances in market access for industrial goods and services worldwide, which would introduce extensive and real market opportunities for businesses. It was expected that with the alleviation of high tariffs, trading opportunities would expand significantly. As previously mentioned, agriculture was deemed highly important to most countries. Europe, being the largest importer of agricultural goods from developing countries was ordered to eliminate all future export subsidies and lower the tariff on agricultural products imports by 2013.

The leaders of the G20 countries believed that industrial and agricultural tariff cuts should start from bound levels and should be reduced by matching percentage points. Since full modalities on several trade issues seemed unattainable in the near future, some countries wanted to settle with partial modalities. However, the Caribbean stood firm against these partial settlements and pushed for the adoption of other issues such as the continuation of long standing preferences, flexibilities for small economies in NAMA, and special safeguard mechanisms for special products.

The EU argued, that the more advanced countries should take steeper cuts in their industrial tariff, due to the difference in bound and applied duties across countries. Thus, in a concurrent response, the EU's Trade Commissioner, Peter Mandelson, mentioned "*the Doha Rounds cannot be concluded on the basis of real cuts by Europe, and paper cuts by others*".<sup>3</sup> Eventually, the EU made a proposal that consisted of agricultural tariff cuts of about 35 to 60 percent and a 100 percent maximum tariff for developed countries (that is, 24 to 40 percent cuts and 150 percent caps for developed countries). These low levels of tariff cuts were closely scrutinised by the other

member states when the EU proposed its offer in October 2005. Some G20 countries, especially Brazil and India, in collaboration with the U.S., saw the proposal put forward by the EU as insufficient and recommended deeper cuts, without making a reciprocal offer to open their markets in industrial products and services, or to discipline their own trade distorting programmes in agriculture, in return. As a result, the EU refused to revise its offer and, consequently, there were no definite agreements made at the Hong Kong Ministerial Meeting. Indeed, the EU Commissioner noted, that the issue of the Round lies with those countries who failed to make an offer on industrial tariffs and services in response to the serious offers made by the EU.

The other negotiating partners viewed the unwillingness of the U.S. to further decrease domestic subsidies unfavourably. In addition, the G10<sup>4</sup> countries were criticised for seeking more than enough flexibility in the reduction of tariffs and expansion of quotas on sensitive products.

Although the progress made at the Ministerial Meeting in Hong Kong was not that substantial, some advancements still occurred. These included:

- Total elimination of all kinds of export subsidies for agricultural products by 2013;
- Three bands of domestic markets which supported the reduction in agriculture subsidies. The EU was in the highest band, the U.S. and Japan was in the second and the other countries, including the developing countries, in the third;
- Four bands of tariff reduction, which were introduced on agricultural products, with the band with the highest tariffs suffering the largest cuts.

With regard to the Least-Developed Countries (LDCs), one of the key developments that arose from the Ministerial Meeting in Hong Kong was that these countries were not expected to adopt new commitments.

In spite of the end of July proposed deadline for a WTO negotiations deal on agricultural goods, services and manufactures to be implemented in 2007, the WTO's chief, Pascal Lamy, noted, in a speech leading up to the

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<sup>3</sup> International Center for Trade and Sustainable Development: Bridges Weekly Trade News Digest. [www.ictsd.org](http://www.ictsd.org)

<sup>4</sup> The countries comprising the G10 countries are Switzerland, Japan, South Korea, Taiwan, Liechtenstein, Israel, Bulgaria, Norway, Iceland, and Mauritius.

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2006 Ministerial Meeting in Geneva, that the member countries of the WTO were not close to converging on the establishment of modalities in NAMA.

In 2006, Brussels blamed Washington for offering insufficient tariff cuts on their farm subsidies. The U.S. contested by stating that if the EU had agreed to deeper cuts on their agricultural tariffs, then negotiations would have been in full bloom. Furthermore, several WTO members, including Brazil and India, singled out the U.S. for failing to offer any new subsidy reductions in July, even though the other G8<sup>5</sup> countries were flexible to the changes. The EU placed further flexibility on their previous negotiations, by proposing:

- Further reduction in trade distortion of about 5% (increasing the fall in agricultural subsidies to 75%);
- To implement a 50% average tariff cut.

The U.S. was unwilling to accept or even acknowledge the flexibility shown by the other members of the meeting. Mariann Fischer Boel, EU Agricultural Commissioner for Agriculture and Rural Development, further emphasised that the EU was willing 'to walk the extra mile' if a final deal was reached. Thus, given the inflexibility in their position, the U.S. agreed to discontinue all negotiations at that point, resulting in the Doha Round being suspended in July 2006.

The suspension of the talks was attributed to the self-centered desires of the major influential member states, mostly the G6 countries (which are the G5 countries excluding Russia and Canada), who were unable to come to an understanding, especially on the key focus of agriculture. As a result negotiations were paused and the deadlines are being revised. Ambassador Dr. Richard Bernal of the Caribbean Regional Negotiating Machinery (CRNM),

put it plainly when he remarked: "*The inability of the just concluded G6 meeting in Geneva to arrive at consensus is a major setback which has put World Trade Organisation (WTO) negotiations in jeopardy. The Caribbean is disappointed that G6 talks broke down, because the G6 failed in its responsibility to be a constructive influence at this crucial juncture in global trade talks*".<sup>6</sup>

While this failure was in some way expected by many observers, with some arguing that the market access demands being made were excessive, especially for Small Vulnerable Economies (SVEs) and ran the risk of frustrating the talks if they were not modified, it was nevertheless viewed as unfortunate. CARICOM trade officials argued that while all WTO members were losers in this failure, it would no doubt be a greater setback for SVEs such as those in the Caribbean region, as they lack the ability to promote alternative outcomes and did not benefit from the previous round. Indeed, a shared sentiment amongst all CARICOM Heads at the last Ministerial meeting was that the success of the Doha Rounds be measured by how well development issues are incorporated into the final agreement.

### ***Future Prospects of the Doha Rounds***

In November 2005, EU Trade Commissioner Peter Mandelson said, "*The Doha Round is too big to fail. It is not just about trade. It is about maintaining the credibility of multilateral cooperation; showing that multilateral institutions can find global answers to global issues; proving that trade can be put at the service of development*".<sup>7</sup> Expectedly, Mandelson, along with other EU ministers and Lamy, were all disappointed at the suspension of negotiations in late July, and felt that the opportunity to observe the benefits through the works of multilateralism was missed.

Indeed the suspension of the Doha Rounds was viewed as a weakening of a union, with some considering it to be a breakdown, especially in the U.S. and EU views on multilateralism. Mariann Fischer Boel, referred to the fact that it is possible for talks to re-start in the future, but believes that this will not happen very quickly, as no new deadline has been set.

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<sup>5</sup> The G8 countries comprise of Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States of America.

<sup>6</sup> RNM UPDATE 0613, Caribbean Regional Negotiating Machinery, July 25, 2006. [www.crnmm.org](http://www.crnmm.org)

<sup>7</sup> European Nations @ United Nations, November 2005. [www.europa-un.org/articles](http://www.europa-un.org/articles)

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In a bid to restart global trade talks, Pascal Lamy told members that *“this is no time for inaction but rather for discreet and quiet activity”*,<sup>8</sup> adding that he would work in collaboration with members to make possible movements while encouraging the negotiating group chairs to do the same.

At the global financial institutions’ annual meeting held in September, the World Bank and the International Monetary Fund (IMF) also urged the revival of the Doha round talks. The IMF chief, Rodrigo de Rato, warned the countries involved that *“growth rates risked going into decline if a global trade deal failed to be struck”*. He further stated that *“the world will either go forward to greater growth and broader opportunities, or backward, to narrow nationalism”*.<sup>9</sup> Furthermore, the finance ministers of the IMF-World Bank Development Committee encouraged all WTO members to avoid reneging on trade agreements and provide their trade ministers with the adequate and necessary flexibility to continue the negotiations by year-end.

During a summit in Australia in September 2006, the Ministers and senior officials of the Cairns group of farm exporters, called upon the WTO members to restart negotiations no later than November. At this meeting, Australian Trade Minister, Mark Vaile, suggested the “five for five” compromise to close the gap between the U.S. and EU, but neither party agreed to this suggestion. If this “five for five” theory was implemented the EU would slash its tariffs on farm subsidies by 5% more than what they had initially offered, while the U.S. would have fixed farm subsidies at a level of US\$ 5 billion below their current

offer. U.S. Trade Representative, Susan Schwab, responded that Washington’s proposal was *‘negotiable’*, and that the U.S. was prepared to cut domestic support below what was offered, if significantly more market access in agriculture was offered in return. The meeting ended without any new compromises and without the breaking of the impasse in spite of the presence of the top representatives.

In October 2006, at a recent meeting in Norway, six top trade officials from Kenya, Canada, Indonesia, Chile, New Zealand and Norway, known as the non-G6, sought to mediate some of the trading issues, and exemplified the necessity for most WTO member states to put an end to the current impasse of the Doha round. However, this grouping does not include the key players that failed to agree on farm subsidies and tariff cuts in Geneva. At the same time, countries like Brazil expressed interest in creating alternative trade negotiation rounds, outside of the traditional WTO rounds, by targeting other emerging markets such as Argentina, Egypt and South Africa.

Consensus has emerged on the importance of continuing negotiations but not on the way forward. Presently, committee meetings are continuing within the WTO, but with widespread delays in member states notifications of their farm subsidies and tariffs, there has been little progress. Due to large subsidisers of agriculture such as EU, and the US not submitting their domestic support notices since 2001, there has been a rise in the information barrier between the countries. In addition, the World Bank at the committee meeting warned that excessive flexibility through sensitive products and special products<sup>10</sup> could undermine the liberalisation progress. Many developing country delegates, especially from the Philippines and Cuba, all shared dissenter views to the comments made by the World Bank. These countries believe that the World Bank’s intervention into trade negotiations, which were still in progress, would not help but only complicate matters more. Consequently, with no further meetings scheduled for the Agriculture committee until March 2007, governments of WTO countries still have various disparities to settle, before they can decide to revive the Doha round in the near future.

Various committee meetings under the WTO are

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<sup>8</sup> International Center for Trade and Sustainable Development: Bridges Weekly Trade News Digest, October 11, 2006. [www.ictsd.org](http://www.ictsd.org)

<sup>9</sup> International Center for Trade and Sustainable Development: Bridges Weekly Trade News Digest, September 20, 2006. [www.ictsd.org](http://www.ictsd.org)

<sup>10</sup> The sensitive products refer to products both developed and developing countries would be able to designate for relatively lower rates of tariff reduction. While the special products refer to products which are set for lenient tariff treatment on the basis of food security, livelihood security, and rural development concerns in developing countries.

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scheduled to occur during the remainder of 2007. With reference to the Doha Rounds, negotiating groups planned to meet informally over the December period, but no specific date has been made available as yet.

### ***Conclusion***

In concluding, the Doha round of negotiations of the WTO remains imperative to the success of multilateralism. Thus, the desire to return to the negotiating table and make concrete deals is felt widespread among the countries, especially the LDCs. These economies, especially the Caribbean, are considered to be small and vulnerable, and they are caught in the middle of a trade dispute between emerging developing countries and economic giants.

Caribbean delegations have expressed concern that the negotiations continue to focus on the interests and views of the larger and more powerful WTO Members, while ignoring the vital negotiating interests of the Caribbean region.

Indeed, Lamy, mentioned the fact that developing countries would be the ones hurt the most if failure to adjourn the round was to arise. He further mentioned, that these countries have been the loudest in ‘clamouring’ for the resumption of the trade negotiating talks. It is expected that a successful conclusion to the Doha rounds would aid the poorest countries in seeking additional benefits from economic globalisation.



## Fiscal Sustainability and Public Debt: The Case of Barbados<sup>1</sup>

by Xiomara Archibald, Kevin Greenidge and Carlos Holder\*

**Abstract.** The question of debt and fiscal sustainability is very important for adequate macroeconomic management. The paper looks at the sustainability of the Government of Barbados' policies with respect to the financing of public expenditure and debt management in the post-independence era. Using recent econometric techniques, the paper examines the sustainability of the historical fiscal process implied by the government's present value budget constraint. The findings suggest that this process has, in fact, been sustainable and point to prudent public sector policies by the fiscal authorities.

### 1 Introduction

The development literature stresses the need for governments of small, open, developing economies like Barbados to run fiscal deficits in order to stimulate economic growth. For instance, the government of a country can build up enough capital stock in one period to place the economy on its steady state growth path by running a fiscal deficit and issuing debt to cover it. This debt can then be repaid in the next period, since the economy has already achieved a high-growth equilibrium. Mankiw (2000) lists three other reasons why budgetary flexibility may be preferable to a balanced-budget rule: stabilisation of the economy through the action of the automatic fiscal stabilisers; reduction in the distortion caused by the incentives in the tax system via tax smoothing; and shifting of the tax burden from current to future generations, who will arguably share in the benefits of the current generation's expenditures.

Nevertheless, in light of the experiences of some developing countries - particularly in Latin America and Sub-Saharan Africa - where widening deficits have been accompanied by spiralling debt and inflation, one might

be tempted to surmise that governments of developing countries would be better off balancing their budgets. However, these problems are seen as largely attributable to a lack of fiscal discipline, whereby populist fiscal policies have prevailed and debt and seignorage have been allowed to reach unsustainable levels. The recent example of Argentina illustrates this point, with most economists agreeing that fiscal mismanagement was largely responsible for the current crisis. Hence, debt crises and hyperinflation do not make a case for balanced budgets but serve instead to underscore the need for governments to pursue sustainable fiscal policies.

The effects on debt and inflation aside, fiscal policy also has important implications for the balance of payments, especially under a fixed exchange rate regime. Indeed, many economists consider that Argentina's fixed exchange rate made it impossible to sustain the country's excessively large deficits. This suggests that in a much smaller and far more open economy with a fixed exchange rate, such as Barbados, fiscal policy becomes even more crucial. Any increase in Government spending will indirectly and adversely affect the level of foreign currency reserves.

The Government of Barbados has recently issued international bonds to build up the reserves, which have acted as a buffer against the current unfavourable economic climate and ongoing trade liberalisation. Nevertheless, with the Argentine crisis still fresh in people's memories and with recent increases in the size of the deficit and the level of public sector indebtedness, fiscal policy is increasingly coming under the microscope in Barbados, sending policy makers in search of the most appropriate, sustainable measures with which to re-stimulate economic growth.

In this regard policy makers are constrained, not only by the Government budget, but also by the ongoing process of Caribbean regional integration: there is a pressing need for convergence of Barbados' tax rates with those of other CARICOM members in order to encourage Barbadian businesses and human capital to remain at home. In fact, the Barbados Government has already made significant progress in realigning

<sup>1</sup> This paper is a modified version of Archibald, Greenidge and Holder (2006) given the space limitation of the Economic Review.

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(that is, adjusting downwards) the domestic tax rates on both personal and corporate income. In addition the fixed exchange rate acts as yet another constraint on fiscal policy. More specifically, economic theory holds that under a fixed exchange rate regime there is limited scope for raising revenue through seignorage if balance of payments problems are to be avoided<sup>2</sup>.

In the context of a developing economy, expenditure cuts would be considered only as a last resort. Of course, there are a number of expenditure adjustments that could be made, tariffs that could be increased and existing welfare schemes that could be better targeted. However, in the current economic environment it may be necessary to move beyond these efficiency measures, which may result in a widening of the deficit as well as in debt levels. Therefore, debt is an appropriate variable to target in devising a fiscal policy that is sustainable.

It is within this context that this paper seeks to evaluate the sustainability of the Government of Barbados' fiscal policies in the post-independence era. It is important to note that the key concept in this study is that of the *sustainability* of fiscal policy, which refers to the ability of the Government to maintain a given policy stance in the future in spite of any shocks to the system which may arise. This notion is not synonymous with that of *optimality*, with an optimal policy being, that which gives the most desirable outcome possible.

## 2 Evolution of Fiscal Policy

The Government of Barbados has consistently recorded a fiscal deficit since independence, as greater emphasis has been placed on income redistribution, that is, increasing levels of public goods provision in the areas of health, education, housing and social security. The greater relative importance attached to capital expenditure in the Government budget can be seen in the fact that, despite recording overall deficits, the Government has continued to run recurrent surpluses.

The evolution of the fiscal deficit between 1966 and 2001 can be divided into several phases: 1966-1973, 1973-1980, 1981-1990 and 1991-2000, with the year 2001 in a sub-period by itself. As previously mentioned, in the years immediately after independence, the government was slow to shake off the influence of colonial budgetary policy. For this reason, deficit financing did not become an important aspect of fiscal policy until the late seventies, when the government took advantage of high levels of liquidity to obtain funds at low interest rates, thus embarking on an expansionary fiscal policy programme geared towards reducing unemployment. Nevertheless, up until 1980 the deficit was large but relatively well managed (see Haynes and Holder (1987) and Howard (1989)).

The year 1981, however, saw a huge deficit of 9.5% of GDP, which Howard (1989) attributes to that year being an election year, during which a massive capital works programme was initiated at the same time that the world economy was in recession. Haynes and Holder (1987) cite other factors such as a 1980 income tax reform, which led to a slowdown in revenues, as well as declines in the tourism and sugar sectors. This ushered in a period characterised by consistently high deficit to GDP ratios, due to the continued application of expansionary fiscal policy as a result of heavy spending on several developmental projects.

In 1990 another record deficit was registered, to the tune of \$236.7 million (nearly 7% of GDP), as the Barbadian economy slipped into recession. The severity of this recession persuaded Government of the need for fiscal restraint. Government reduced the fiscal deficit in 1991 by introducing a number of revenue-raising measures and slashing capital expenditure. Projects were put on hold, with work on a number of school premises, health facilities and roads grinding to a halt. Towards the end of 1991, difficulty in securing foreign financing forced the Government to further reduce expenditure through lay-offs and the implementation of an 8% cut in public sector wages. As a result, the deficit averaged just over \$60 million (less than 2% of GDP) between 1991 and 2000. The year 2001 brought another recession in the Barbadian economy and a concomitant increase in the fiscal deficit, which rose to 3.5%.

<sup>2</sup> See, for example, discussions in Fischer (1993).

<sup>3</sup> See, for example, Buitier (1993) and Mankiw (2000).

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### 3 Evaluating Fiscal Sustainability

#### 3.1 Defining Fiscal Sustainability

The literature argues that fiscal policies are sustainable if they lead to a situation in which the country can satisfy its budget constraint<sup>4</sup>. Of course, a government can always choose to satisfy its budget constraint by simply defaulting or by inflating away its debt. Thus, there must be some form of value judgment in any analysis of fiscal sustainability as to the cost and benefits of different adjustment mechanisms. In this regard, it is usually assumed that a government would prefer adjustments through the level and composition of its primary fiscal position as opposed to adjustments via default or inflation.

A recent study by the IMF posits that a set of policies is unsustainable if it leads to insolvency (solveny is defined as a situation in which the future paths of spending and revenue satisfy the inter-temporal budget constraint)<sup>4</sup>. However, the study suggests that solveny is only a necessary condition for sustainability because solveny could be achieved with very large and costly future adjustments. Sustainability, however, requires achieving solveny with unchanged policies. In the Fund view, a policy stance is sustainable if “*a borrower is expected to be able to continue servicing its debt without an unrealistically large future correction to the balance of income and expenditure*” (IMF, 2002, p. 4).

With these considerations in mind, we define as sustainable a situation that satisfies two conditions: (i) a country can satisfy its current period budget constraint without resorting to default or excessive debt monetisation; and (ii) a country does not keep accumulating debt while knowing that a major future adjustment will be needed in order to be able to service its debt.

#### 3.2 Assessing Fiscal Sustainability

The two most common approaches to evaluating fiscal policy sustainability in the literature are the accounting

approach which, focuses on how far fiscal policy departs from sustainability, and the present value budget constraint (PVBC) approach which, investigates past fiscal data to see if there is a long-term equilibrium relation between government revenues and expenditures or if government debt follows a stationary process.

##### 3.2.1 The Accounting Approach

The accounting approach attempts to determine the sustainability of the fiscal deficit assuming that liabilities can continue to increase at the growth rate of the economy’s GDP, so that debt/GDP ratios remain constant. It uses rule-of-thumb indicators aimed at checking whether current policies can stabilise or reduce a given debt ratio. In other words, the question being asked here is what level of primary surpluses must the government run, now and in the future, to maintain the current debt/GDP ratio or even reduce it.

In this regard, there are two such indicators that can be examined. The first is the Primary Gap indicator, proposed by Blanchard (1990) and further developed by Buiter, Corsetty and Roubini (1993). It focuses on stabilising the ratio of public sector debt to output. For projected paths of the real interest rate and output growth, the one-period primary gap specifies a benchmark primary balance consistent with an unchanged debt ratio, (it is also possible to calculate the gap for a specified reduction in the debt ratio), whereby fiscal policy is sustainable if the primary balance is greater than the benchmark. This indicator is desirable for its simplicity of application, as it requires only the current values of the real interest rate, debt, the primary balance and economic growth. However, it may give a distorted picture of the amount of adjustment required as a result of cyclical variations in public sector revenues and/or expenditures or current real interest rates or growth rates which are not representative of their respective average values in the long-run.

The second indicator, the permanent primary gap, gets around this by using the long-run real interest rate and the long-run growth rate. Hence, it is capturing the magnitude of the permanent adjustment in the actual and planned primary balance to output ratios that would

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<sup>4</sup> Government’s inter-temporal budget constraint suggests that the initial outstanding debt of the Government must be equal to the sum of the Government future budget balances.

ensure fiscal solvency, that is, the excess of the required permanent primary balance to GDP ratio over the actual permanent primary balance to GDP ratio.

#### *Results of the Accounting Approach*

The one-period primary gap calculated for Barbados (Table 1) suggests that the necessary fiscal adjustment is equivalent to 3.2% of GDP. However, this is a short-run requirement, which reflects the large increase in the fiscal deficit in 2001 and does not speak to long-run sustainability of fiscal policy. The long-run primary gap, on the other hand, has a negative value of -0.8% of GDP, which suggests that fiscal policy is in fact sustainable in the long run, as the actual permanent primary balance is greater than required.

**Table 1**

#### **Results of Primary Gap Analysis (One-period and Myopic Permanent)**

| <b>BDS\$ Million / %</b>                   |              |
|--------------------------------------------|--------------|
| <b>One-Period Primary Gap</b>              | <b>3.2%</b>  |
| Real Interest Rate                         | 4.4%         |
| Required Primary Balance to GDP (1-period) | 5.0%         |
| Actual Primary Balance to GDP              | 1.8%         |
| <b>Permanent Primary Gap (long-run)</b>    | <b>-0.8%</b> |
| Long-run Interest Rate on Debentures       | 7.0%         |
| Long-run Inflation Rate                    | 2.5%         |
| Long-run Real interest Rate                | 4.5%         |
| Long-run Growth Rate                       | 3.0%         |
| Required Primary Balance to GDP (long-run) | 1.0%         |

#### **3.2.2 The PVBC Approach**

In defining sustainability above, we conclude that fiscal policies are sustainable when the PVBC is satisfied without a major and abrupt correction having to be made in the balance of income and expenditure to avoid solvency and liquidity problems. In this regard, the PVBC, can be derived by, starting with the one-period budget constraint

for the consolidated Public Sector and solving it N periods forward.

$$B_{t-1} \equiv \sum_{j=0}^{\infty} \frac{R_{t+j} - E_{t+j}}{(1+i_t)^{j+1}} + \lim_{N \rightarrow \infty} \frac{B_{N+1}}{(1+i_t)^{N+1}}$$

Equation 1

where  $B_t$ ,  $E_t$ ,  $R_t$ , and  $i_t$  are government debt, government expenditure and government revenue, all in nominal terms, at time t. It states that the existing stock of public debt must be equal to the present value of future primary balances (first term on right) plus the present value of the stock of debt (second term on right). It implies that the value of the public debt today must be matched by an excess of future primary surpluses over primary deficits in present value terms.

The PVBC has a number of implications for fiscal sustainability: firstly, the expected present value of the resources available to the public sector for the servicing of its debt (including seignorage) must be at least equal to the initial stock of debt; secondly, public sector debt cannot be continuously rolled over, that is, repayment of the principal must take place at some point (referred to in the literature as the ‘no Ponzi game’ (NPG)<sup>5</sup> condition, in other words, a sustainable fiscal policy should ensure that the Present Value of the stock of public debt goes to zero in infinity, constraining the debt to grow no faster than the real interest rate); and thirdly, while the PVBC does not rule out large fiscal deficits or debt ratios, government is required to run some primary surpluses in the future. The Government may bring about these surpluses through a combination of some or all of the following policy options: reducing expenditure; increasing revenue through taxes, grants or privatisation proceeds; monetising the debt, that is, printing money to cover the debt (which is really an inflation tax); defaulting on some or all of the public debt, effectively taxing holders of Government debt; or, finally, shifting between debt sources to take advantage of lower interest rates.

<sup>5</sup> A government is said to be playing a Ponzi game when it just keeps on paying old debt by issuing new ones.

The PVBC therefore presents two complementary definitions of sustainability that can be used for empirical testing:

- i) The value of public current debt must be equal to the sum of future primary surpluses.
- ii) The present value of public debt must approach zero in infinity (the NPG condition).

On the first, assume that the real interest rate is stationary with mean  $r$ , plus two additional definitions of  $GG_t = G_t + i_t B_{t-1}$  and  $E_t = G + (i_t - i) B_{t-1}$ , then re-express equation 1 as (see Archibald, Greenidge and Holder (2004) for details):

$$GG_t - R_t \equiv \sum_{j=0}^{\infty} \frac{1}{(1+r_t)^{j-1}} (\Delta R_{t+j} - \Delta E_{t+j}) + \lim_{N \rightarrow \infty} \frac{B_{N+1}}{(1+i_t)^{N+1}}$$

Equation 2

Now fiscal policy sustainability can be assessed using cointegration analysis (investigating whether or not there exist over time an equilibrium relationship between  $R$  and  $E$ , which even if they deviate from each other in the short-run, they must eventually return together in the long run). Suppose  $R$  and  $E$  are non-stationary in levels (meaning that they are growing over time) so that their first difference is stationary (not growing over time), implying that the first term on the right-hand side is stationary; then, the left-hand side must also be stationary. Therefore, both  $GG$  and  $R$  must be integrated of order one, and should be cointegrated (moving together in the long-run). The intuition behind this is that although government revenue and expenditure may grow over time, a stable equilibrium (cointegrating) relationship should exist between them. If, for example, government expenditure is non-stationary,  $I(1)$ , while government revenue is stationary,  $I(0)$ , then there is no long-term or equilibrium relation between them. This implies that government is violating its intertemporal budget constraint because expenditure tends to increase with time, while revenue does not.

The regression for the cointegration test in this case is  $R_t = a + \beta GG_t + \mu_t$  where the null hypothesis of cointegration (long-run stationary relationship) between the two non-stationary variables is tested with  $\beta = 1$  and  $\mu_t$

being stationary. If there is no cointegration the PVBC does not hold and the fiscal deficit is not sustainable. However, the condition  $\beta = 1$  is not, strictly speaking, a necessary condition for the government's budget constraint to hold. Hakkio and Rush (1991) showed that when  $GG_t$  and  $R_t$  are in levels, as opposed to a percentage of GDP or in per capita terms, the condition  $0 < \beta < 1$  is a sufficient condition for the budget constraint to be obeyed.

In order to check for the absence of Ponzi games (which is simply the complementary definition) the stationarity of the first difference (changes) of the stock of public debt can be tested, using unit root statistics. If stationary, the debt is sustainable, otherwise the PVBC is not fulfilled (specifically, the second term on the right-hand side does not converge to zero over time).

#### Results of the PVBC Approach

Using data on real revenue,  $RR$ , and real expenditure,  $RG$ , (the latter includes interest payments, which is consistent with the form of Equation 2) spanning the period 1974:2 to 2001:4, we investigated fiscal

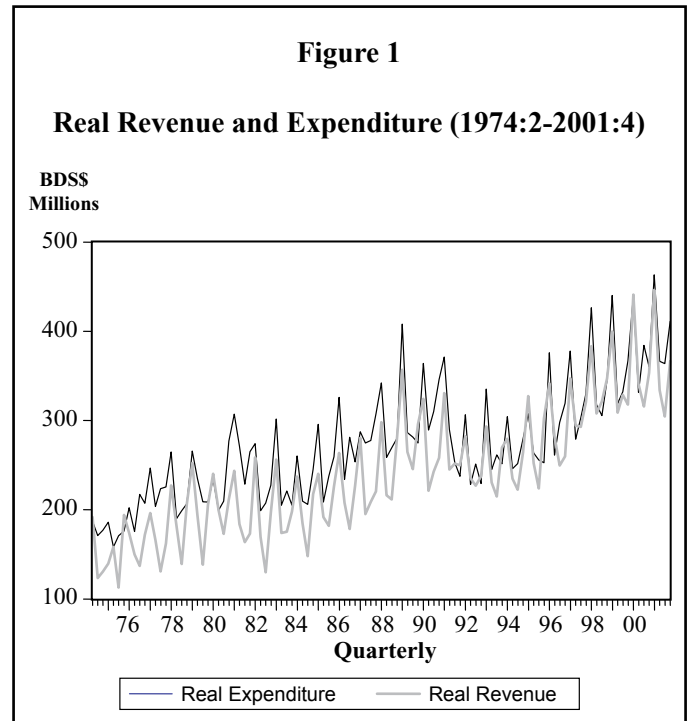


**Table 2**  
**Results of Tests for Stationarity**

|    |          | Full Sample     | 1974:2 – 1979:4 | 1980:1 – 1990:4 | 1991:1 – 2001:4 |
|----|----------|-----------------|-----------------|-----------------|-----------------|
| RR | Level    | ADF             | -0.106          | -1.548          | 0.198           |
|    |          | PP              | -3.796**        | -2.795*         | -4.279***       |
|    |          | KPSS            | 1.112***        | 0.510**         | 0.699**         |
|    |          | ERS             | 110.079         | 24.724          | 87.655          |
|    |          | MZ $\alpha$     | 1.423           | -2.835          | -0.869          |
|    |          | MZt             | 1.225           | -1.183          | -0.609          |
|    |          | MSB             | 0.862           | 0.417           | -0.701          |
|    |          | MP <sub>T</sub> | 57.981          | 8.618           | 25.047          |
|    | $\Delta$ | ADF             | -27.383***      | -7.018***       | -3.360***       |
|    |          | PP              | -25.757***      | -11.638***      | -13.298***      |
|    |          | KPSS            | 0.075           | 0.189           | 0.141           |
|    |          | ERS             | 0.289***        | 2.955**         | 1.335***        |
|    |          | MZ $\alpha$     | -17.021***      | -8.387**        | -71.602***      |
|    |          | MZt             | -2.822***       | -2.047**        | -5.983***       |
|    |          | MSB             | 0.166***        | 0.2441*         | 0.084***        |
|    |          | MP <sub>T</sub> | 1.792**         | 2.923**         | 0.342***        |
| RG | Level    | ADF             | -0.067          | -0.456          | -0.283          |
|    |          | PP              | -5.454***       | -3.862***       | -4.336***       |
|    |          | KPSS            | 1.021***        | 0.514**         | 0.774***        |
|    |          | ERS             | 45.988          | 76.972          | 39.529          |
|    |          | MZ $\alpha$     | 1.559           | -0.172          | 0.719           |
|    |          | MZt             | 1.041           | -0.174          | 0.492           |
|    |          | MSB             | 0.668           | 1.009           | 0.684           |
|    |          | MP <sub>T</sub> | 38.417          | 54.226          | 34.362          |
|    | $\Delta$ | ADF             | -2.651*         | 9.015***        | 11.372***       |
|    |          | PP              | -37.678***      | -10.468***      | 22.802***       |
|    |          | KPSS            | 0.076           | 0.248           | 0.224           |
|    |          | ERS             | 2.963**         | 0.692***        | 1.459***        |
|    |          | MZ $\alpha$     | -94.620***      | -45.11***       | -27.71***       |
|    |          | MZt             | -6.861***       | -4.674***       | -3.717***       |
|    |          | MSB             | 0.073***        | 0.104***        | 0.134***        |
|    |          | MP <sub>T</sub> | 0.293***        | 0.736***        | 0.901***        |

\*, \*\* and \*\*\* are the critical values for rejection of the null hypothesis at the 10%, 5%, and 1% levels, respectively.  $\Delta$  denotes the first difference of the original series. ADF is the Augmented Dickey-Fuller. PP is the Phillips-Perron, which, instead of adding differenced terms as explanatory variables to correct for higher order serial correlation as with the ADF, makes the correction on the t-statistic of the AR coefficient. Note that both the ADF and PP tests suffer from severe size distortions when there are negative-moving average errors. In lieu of this, we used the Elliot, Rothenberg, and Stock (ERS) Point Optimal test, which has improved power characteristics over the ADF test, and the Ng and Perron testing procedure (NP), which exhibits less size distortions compared to the PP test. The NP procedure involves four test statistics: MPT, which calculates the ERS statistic for the GLS detrended data; the MZ $\alpha$  and MZt, which modifies the Phillips and Perron statistics; and the MSB which modifies the Bhargava statistic. Since all the above tests take a unit root as the null hypothesis they have a high probability of falsely rejecting the null of non-stationarity when the data generation process is close to a stationary process, thus we also utilised the KPSS test where the null hypothesis is specified a stationary process.

sustainability for Barbados. Figure 1 plots real revenue and real spending. Although a clear upward trend can be identified in both series (suggesting that they are non-stationary), there appears to be a definite stable relation between them. Consequently, it is expected that these variables will be non-stationary and cointegrated.

The first step is to determine the order of integration of the two series (that is, are they stationary or not?). In this regard, a number of stationarity tests are applied to the levels and first differences of the variables. The results are presented in Table 2.

All the above tests are applied over the period 1974:2 to 2001:4 and for the sub-periods: 1974:2-1979:4, 1980:1-1990:4 and 1991:1-200:4, where the analysis in Section 2 suggested that there may have been a shift in fiscal policy behaviour. The results indicated that both series are non-stationary in levels and stationary in their first differences at the 1% level, for the entire sample and also for the sub-periods chosen.

Having established that the series are non-stationary, implying that they have been growing overtime (which is not surprising from Figure 1), it makes sense to search for cointegration<sup>6</sup>. The results of such analysis are presented in Table 3 along with some standard diagnostic test statistics for the error correction model. They suggest that a stable relationship exists between the two series with a coefficient of approximately 0.9. Also note that this relationship is defined with *RR* on the right-hand side implying that it is one in which *RG* responds to disequilibrium (in statistical terms, *RR* is weakly exogenous in the cointegrating system). In other words, short-run deviations from the equilibrium relationship result in public expenditures adjusting to restore equilibrium, which is consistent with the stylised facts (for example, the dramatic expenditure cutting policies of 1991).

A plot<sup>7</sup> of the equilibrium relationship shows that it is quite stable and well defined, as the time profile of system-wide shocks indicates a rapid convergence

to equilibrium. Hence, in summary, the variables under examination are cointegrated and the estimated coefficient for expenditure is highly significant and relatively close to one. Based on these two criteria - the existence of a

**Table 3**  
**Results of Cointegrating VAR Regression**

| Estimated Cointegrating Relationship  |         |
|---------------------------------------|---------|
| $RG = -609.201 + 0.891RR$<br>[12.384] |         |
| ECT -0.557 (0.001)                    |         |
| R <sup>2</sup>                        | 0.823   |
| DW                                    | 1.939   |
| SC                                    | 5.421   |
|                                       | (0.247) |
| RESET                                 | 2.671   |
|                                       | (0.102) |
| Norm                                  | 0.573   |
|                                       | (0.751) |
| HET                                   | 0.013   |
|                                       | (0.911) |

Note that the cointegration rank test is more efficient if carried on a data congruent VAR and thus we begin by estimating an unrestricted VAR with a maximum lag length of 12. The three selection criteria employed (the Akaike information, Schwarz Bayesian and Hannan-Quinn) all suggested a lag length of 5. Further tests confirmed that the residuals of the VAR(5) model do not suffer from non-normality, serial correlation or heteroskedasticity. A misspecification test was also carried out. Having verified a data consistent VAR specification, we proceeded to check for a cointegrating relation among the variables. The results point to one cointegrating vector. To derive the long-run estimates, an exact identification in sequential order is imposed. Since there is only one cointegrating vector, this entails first normalising on *RR*, then checking the significance of the error correction-term in the two resulting dynamic equations, then repeating the process by normalising *RG*. This procedure indicates that the normalisation on *RG* produces an error-correction model in which the error-correcting term is significant only in the *RG* equation, while with the normalisation on *RR* the error-correcting term is insignificant in all equations. Hence, we proceeded by normalising on *RG* to derive the results above. The F-statistic for the respective test are shown (unless indicated otherwise) and the associated P-value in parentheses. T-statistics are in square brackets. DW is the Durbin-Watson statistic. SC is the Lagrange multiplier test of residual serial correlation (Chi-square of degree 1). FF is the Ramsey's RESET test for incorrect functional form using the square of the fitted values (Chi-square of degree 1). Norm is the test for normality of the residuals based on the Jarque-Bera test statistic (Chi-square of degree 1). HET is the Heteroskedasticity test based on the regression of squared residuals on squared fitted values.

<sup>6</sup> See Archibald, Greenidge and Holder (2006) for a complete discussion of the procedure.

<sup>7</sup> Available for the authors upon request.

**Table 4**  
**Stationarity Tests on Real Public Debt (1960-2003)**

|             | Total     | Domestic   | External  |
|-------------|-----------|------------|-----------|
| ADF         | -5.606*** | -6.621***  | -4.033*** |
| PP          | -5.593*** | -6.621***  | -3.992*** |
| KPSS        | 0.238     | 0.460*     | 0.077     |
| ERS         | 1.412***  | 1.391***   | 1.558     |
| MZ $\alpha$ | 19.986*** | -20.855*** | 17.106*** |
| MZ $t$      | -3.156*** | -3.229***  | -2.907*** |
| MSB         | 0.156***  | 0.155***   | 0.170***  |
| MPT         | 1.249***  | 1.176***   | 1.499***  |

cointegrating relationship and sufficiently close to one - it can be concluded that fiscal policy has been sustainable over the period.

Examining the complementary definition, that is, the NPG condition, the stationarity tests, when applied to the first difference of the real stock of public debt in Barbados (total, domestic and external) over the period 1960-2003 (this is annual data since a consistent quarterly series was not available), all suggested that the changes in real public debt follow a stationary process (Table 4). In other words, the solvency condition of Equation 2 is satisfied. This is an expected result given that the test is really the mirror of the cointegration test of the Government accounts. In fact, Trehan and Walsh (1991) observed that the stationarity of the variation of the stock of public debt is a sufficient condition for the sustainability of the fiscal position.

#### 4 Related Issues

There are a number of other issues related to fiscal sustainability that are of paramount importance for policymakers and which are briefly explored in this section. In the first sub-section, the regression equation for the cointegration test under the PVBC approach is reformulated as a time varying coefficient (TVC) model, thus enhancing the explanatory power of the results and rendering them more useful for policy development. The second, sub-section takes a brief look at the topical question of deficit-targeting, setting out a simple guide to assist policymakers in their decisions.

#### 4.1 The Time Varying Coefficient (TVC) Model

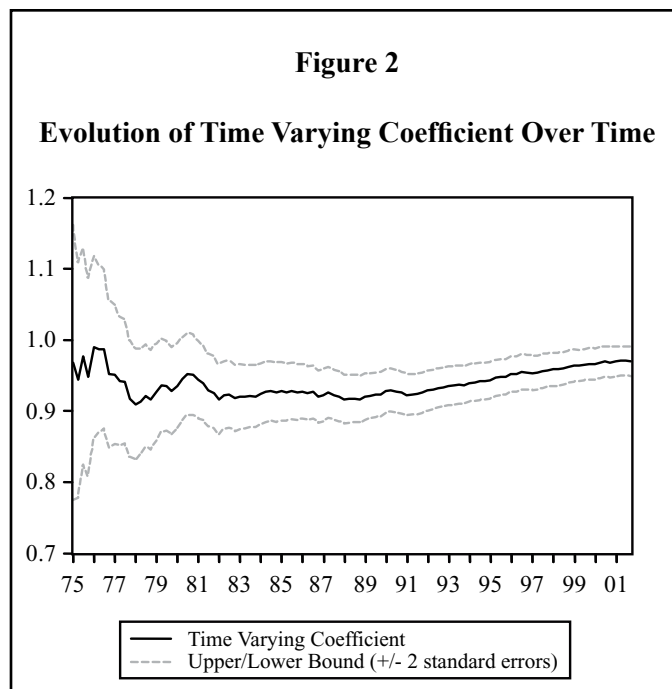
The foregoing analysis of the intertemporal budget constraint under the PVBC approach assumed that the parameters were fixed over time. This has been cited as a drawback by some authors, including Abdunnasser (2002), who argued that parameters cannot be used for policy recommendation if the so-called Lucas critique is not taken into consideration. The Lucas (1976) critique of econometric policy evaluation is that macroeconomic parameter estimates are not invariant under changes in policy regime and therefore such estimates are useless for forecasting the impact of the policy changes.

Allowing the parameters of the cointegrating equation to change over time yields:

$$R_t = -23.27 + 0.97 GG_t$$

(0.1382)      (0.000)

Here the numbers in parentheses are the associated p-values. The results are similar to the fixed coefficient model, with the estimated coefficient for expenditure very close to one and highly significant. The residuals were tested for unit roots by conducting an ADF test and the results (a test value of -5.7773 versus a critical value of -3.4919 indicated that they were stationary at the 1% level of significance.



This confirms that the two variables form a cointegrating relation.

One of the advantages of the TVC model is that it gives information about the  $\beta$  coefficient within the sample period. Figure 2 shows a time plot of the point value of  $\beta$ , as well as a band of two standard errors of the residuals. The graph shows that the estimated  $\beta$  remains relatively close to one; this provides further evidence that government has fulfilled its budget constraint during the sample period. There were some periods of volatility in the late 1970s and early 1980s and again around 1991 and 1992, but these were not persistent. Furthermore, since 1992  $\beta$  has moved closer and closer to one. This implies that changes in the government deficit are followed by adjustments to future spending, which when discounted is equal to the original change in the present value of the government deficit.

#### 4.2 The Optimal Size of the Fiscal Deficit

An in-depth investigation into the optimal size of the deficit is beyond the scope of this study and was not attempted here. Instead, the focus was solely on the sustainability of the fiscal position, irrespective of what it was or should have been. Nevertheless, it seems appropriate at this point to reflect briefly on this issue.

Although the literature is somewhat mute on the size of the fiscal deficit to GDP ratio, some simple accounting shows that the debt-GDP ratio evolves according to the formula:

$$d_t - d_{t-1} = - \left[ \frac{\psi_t}{1 + \psi_t} \right] d_t + def_t$$

where  $d_t$  is the debt-GDP ratio at the end of period  $t$ ;  $\psi_t$  is the growth rate of nominal GDP in period  $t$  (real growth plus inflation); and  $def$  is the deficit-GDP ratio in period  $t$ . Thus, nominal GDP growth reduces the debt-GDP ratio, but a larger deficit (relative to GDP) increases the debt-GDP ratio. If the debt-GDP ratio is constant we get:  $d_t = [(1 + \psi_t) / \psi_t] def_t$ .

This equation can be used as a guide for determining the limit on the fiscal deficit. Its main implication is that in the long run a deficit guideline  $def^*$  and a debt guideline  $d^*$  can

be mutually consistent only for one particular growth rate of nominal GDP.

Using long-run real GDP growth of 3% per annum plus a long-run inflation rate of 2.5% would imply 5.5% annual growth of nominal GDP. Taking the 2000 and 2001 debt-GDP ratios of 69.5% and 70.1% as sustainable (this has already been confirmed by the foregoing analysis), the equation gives a deficit-GDP ratio between 3% and 3.6% as compatible and hence sustainable. Therefore, this range would be suggested as optimum.

## 5 Conclusion

In synthesis, the findings of sustainability tests, under both the “accounting” and the “PVBC” approaches, indicate that fiscal policy since independence has in fact been sustainable. Even when the latter approach was evaluated within a time varying coefficient model, results showed that the TVC remained close to one for the whole of the review period, providing further empirical support for the finding that Government has consistently adhered to its budget constraint.

The onus is therefore on policymakers to extend this favourable track record into the future, resisting the urge to rest on their laurels and working to ensure that future policy decisions continue in the tradition of prudent fiscal management that has been established. This will be all the more difficult to achieve in the face of the new challenges posed by the twin phenomena of globalisation and liberalisation. It will be necessary to balance the need for policies which can increase competitiveness and stimulate growth against the need to maintain fiscal discipline in order to preserve Barbados’ good standing in the international financial community. In this regard, policymakers are urged to observe the guidelines set out above for the management of the fiscal deficit.

Finally, notwithstanding the somewhat narrow focus of this study, fiscal sustainability should not be contemplated in a vacuum, but rather it must be seen within the wider context of overall macroeconomic sustainability. To this end, policymakers must coordinate fiscal policy with other policy areas, so as to maintain an environment of low inflation and unemployment, exchange rate stability and external account equilibrium, as well as fiscal sustainability.

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## REFERENCES

- Archibald and Greenidge and Holder 2006, "Debt and Fiscal Sustainability in Barbados", *In Finance and Real Development in the Caribbean*, edited by Anthony Birchwood and Dave Seerattan, Caribbean Centre for Monetary Studies, University of the West Indies, St. Augustine Trinidad, pp. 531-545.
- Abdulnasser H, 2002, "Is the Government's Intertemporal Budget Constraint Fulfilled in Sweden? An Application of the Kalman Filter", *Applied Economics Letters*, Vol. 9, No. 7, pp.433-439.
- Blanchard OJ, 1990, "Suggestions for a New Set of Fiscal Indicators", OECD Working Paper No. 79.
- Buiter W, Corsetti G and Roubini N, 1993, "Excessive Deficits: Sense and Nonsense in the Treaty of Maastricht", *Economic Policy: A European Forum*, No. 16, pp. 57-100.
- Fischer S., 1993 "Seigniorage and Fixed Exchange Rates: An Optimal Inflation Tax Analysis" *Financial Policies and the World Capital Market: The Problem of Latin American Countries*, edited by R. Dorobusch and M. Obstfeld - Chicago: University of Chicago Press, pp. 41-58.
- Hakkio CS & Rush M, 1991, "Is the Budget Deficit 'Too Large'?" *Economic Inquiry*, Vol. 29, No. 3, pp. 429-445.
- Haynes C and Holder C, 1987, "Monetary and Fiscal Policy in Barbados 1970-85", Central Bank of Barbados Working Papers, pp. 43-45.
- Howard M, 1989, "Public Sector Finance" Chapter 11, *Dependence and Development in Barbados, 1945-1985*, Carib Research and Publications Inc., Bridgetown, pp. 115-128.
- International Monetary Fund, 2002, "Assessing Sustainability", available at <http://www.imf.org/external/np/pdr/sus/2002/eng/052802.htm>
- Lucas RE, 1976, "Econometric Policy Evaluation: A Critique", *Carnegie-Rochester Series on Public Policy*, No. 1, pp. 19-46 .
- Mankiw NG, 2000, *Macroeconomics*, Worth Publishers, New York, pp. 400-401.



## Examining the Impact of Taxation on Income Distribution in Barbados

By Daniel Boamah, Sharri Byron and Chanelle Maxwell\*

**Abstract.** The emphasis on equitable income distribution stems largely from its significant role in the overall economic development of a country. As such, Governments of developing countries have been faced with the challenging task of achieving 'fair' and 'equitable' distribution of income while simultaneously performing their other governmental functions. Within this context, given the potential redistributive effects of income tax policy, it is imperative that policy-makers understand the actual impact of taxation on income distribution in their country. This paper examines the effect of personal income tax on the distribution of income in Barbados over the period 1987 to 2004. The study primarily employs the Lorenz curve and the Gini coefficient in the analysis of data derived from income tax returns. The results suggest that the redistributive impact of the income tax system has decreased over the study period.

### 1. Introduction

The pattern of direct tax reforms that took place in many developing countries in the mid-1980s to 1990s mirrored the reforms of earlier years in industrialised countries. It usually involved a movement away from highly progressive income tax schedules and towards broader tax bases. The marginal tax rates faced by the top rate income earners dropped from a range of about 50% - 70% to around 40% - to 50%. These reforms have sought to address a growing perception that the highly progressive tax system was beginning to have an adverse effect on individuals motivation to work (see Blundell, 1996). Their aims have therefore largely been to reduce the perceived strong disincentives to work and therefore enhance economic efficiency. The reduction in tax progressivity could, however, have a negative influence on equity to the extent that the redistributive impact of income taxation is diminished.

Here in Barbados, successive tax reforms have brought down the marginal tax rate from a high of 70% in the early 1980s to 40% in the 1990s and early 2000s. At

the same time, the income tax bands have been adjusted so that incomes that used to attract the top tax rates in the early 1980s are now taxed at much lower rates in the 1990s and early 2000s.

The issue that this paper seeks to address is to examine the extent to which changes in income taxation policy have reduced tax progressivity and what impact these reductions would have had on the burden of taxation and hence on income distribution in Barbados for the period 1987-2004. An understanding of how tax policy changes impact on income distribution could serve as a useful guide to any policy stance that seeks to craft programmes to achieve specific social goals.

This work draws on earlier studies by Mascoll (1991) and Holder and Prescod (1989), which have, in one form or another, also examined the issue of tax burden and equitable income distribution in Barbados.

The remainder of the paper is structured as follows: section two provides an overview of taxation policy in Barbados from 1960 to the present, while section three takes a brief look at the relevant literature on tax burden assessment and income distribution; section four outlines the methodology utilised in the study and section five discusses the data and data-related issues; the impact of personal income tax on income distribution is examined in section six and the final section concludes the paper.

### 2. Overview of Taxation Policy in Barbados

An income tax was introduced into the Barbadian economy in the early 1920s, with the main objective, at that time, being the collection of sufficient tax revenue to finance Government expenditure. An important amendment to the income tax administration came in 1957 with the implementation of the "Pay-As-You-Earn (P.A.Y.E.)" system, mainly to facilitate the smoothing out of income tax revenue (Mascoll, 1991).

In the early post independence period, the government's taxation policy was intended not only to contribute to economic growth, but also to aid in redistributing tax income. Nevertheless, the income redistribution strategy of the 1960s placed more emphasis on resource allocation policies than major tax reform.

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After 1977, however, trends in budgetary policy shifted in favour of direct redistribution of income through the budget (Howard, 1989). In keeping with this, a tax credit system was implemented in 1977 to decrease or eliminate the tax burden for the lower income groups. In addition, between 1977 and 1985, the top income tax rate was altered slightly and the income tax brackets were widened.

By 1986, significant income tax reform became necessary because of the steep progressivity of the tax structure coupled with the effects of inflation. In April 1986, the tax credit system was abandoned, the top rate of income tax was lowered to 50% and some income tax concessions and moderate income tax cuts were implemented. These reforms were intended to spur private sector activity, while balancing the fiscal goals of stabilisation, allocation and income distribution. The July 1986 budget instituted even more pronounced tax cuts, ranging from the introduction of a basic allowance of \$15,000 to increases in other allowances. These measures, which were devised primarily to benefit the middle and upper-income groups, covered, for instance, higher family and medical expense allowances, allowances for employing housekeepers, gardeners and other such services, as well as deductions for full mortgage interest and the cost of house repairs.

Over time, the tax system in Barbados gradually became highly complex and somewhat discriminatory, as the number of levies increased and an elaborate network of allowances and deductions developed, many of which favoured high-income individuals. In 1992, legislation was passed detailing reforms that largely focused on eliminating the ambiguities and complexities of the existing system. However, given revenue considerations, a phased approach spanning approximately two years was adopted. Such reforms were designed to assist in reducing the cost of administration, broadening the tax base and

making the system more equitable and efficient, so as to provide a more stable source of finances for government. The changes involved, among other things, reducing the maximum tax rate to 40 per cent, introducing a two-tier income tax system and lowering the standard deduction from \$15,000 to \$13,000. Furthermore, many of the allowances, itemised deductions, payroll levies and the stabilisation tax were either reduced or eliminated<sup>1</sup>.

In the years following 1995, the Government of Barbados introduced a series of measures aimed at providing further direct tax relief to Barbadians. Among the most significant of these were the raising of the threshold for income tax liability to \$15,000 in 1998 and the provision of a reverse tax credit to those persons falling below the threshold. Additionally, the personal allowance for pensioners was increased from \$23,000 to \$30,000. The period 1996 to 2000 also ushered in a range of concessions for saving and investment, as well as those geared towards reducing the cost of home ownership. These included the re-establishment of home allowance provisions, greater allowances for savings in a credit union, granting of allowances for investing in venture capital funds and mutual funds and increased deductions for expenditure on mortgage interest or repairs, to name a few. Income years 2003 and 2004 brought further downward adjustments to the basic rate of personal tax, along with expansions in the personal tax-free allowance and the home allowance.

### **3. Review of Relevant Literature**

Within the last two decades, few studies have investigated the impact of taxation on income distribution in Barbados - see Mascoll (1991), Holder and Prescod (1989) and Downes (1987).

Mascoll (1991) examined the trends in the effective tax rate for three representative income individuals over the period 1980-1990. He analysed the nature of the tax structure to ascertain whether the system was progressive as opposed to regressive, by looking at the trends in the effective tax rate of representative low, middle and upper class individuals. Mascoll found that the middle-income representative individual carried a disproportionate tax burden during the 1980s, while the high-income earner

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<sup>1</sup> Initially there were four levies: the training, health, employment and transportation levies. In addition to these, a stabilisation tax was introduced in 1991. By the 1992 reforms, the four levies had been completely removed as payroll levies and the stabilisation tax was eliminated in 1993. The only levy that exists to date is the environmental levy, legislated in 1995 and levied not as a payroll tax but as a surtax on consumer imports.

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suffered the least for this period. He concluded that post-tax income distribution was skewed in favour of the higher income individuals.

Prior to Mascoll's work, Holder and Prescod (1989) examined the personal income distribution for the Barbados economy over the sample period 1951-1981. Their paper linked changes in income distribution to changes in per capita income, unemployment, taxes and wealth distribution. The analytical component utilised Lorenz curve and Gini Coefficient Theory. In addition, the authors made use of a number of descriptive statistics (for instance, the minor concentration ratio (MCR)<sup>2</sup> and the equalisation coefficient (EC)<sup>3</sup>) to examine income distribution. The main finding was that inequality in pre-tax income declined over the 1950s and 1970s and was further reduced by the introduction of a progressive tax system, and increases in exemptions and allowances. The National Insurance Scheme, introduced in the 1970s, did not have the desired positive effect on inequality because the relatively low threshold of insurable earnings, above which no further deductions for the scheme were made, appeared to favour the higher income groups. As a result, the lower income groups did not share proportionately in the income redistribution.

A positive conclusion from their paper was that over time, changes in wage and tax policies had a direct positive effect on the re-distribution of income to the lower income groups. This finding was corroborated by Downes (1987) study, which utilised household expenditure data. The main conclusion was that Government's taxation and expenditure policies reduced, to some extent, the level of income inequality in Barbados during the period 1978-79. Within the Caribbean, Wayslenko (1986) conducted a study on tax burden distribution for the Jamaican economy before their 1985 reforms. Wayslenko examined the distribution

of the tax burden, which included direct and indirect taxes for urban as well as rural households. The analysis employed two methodologies. The first allocated tax revenues among households based on their income and consumption patterns. The second used a selection of 50 representative households (of varying sizes and characteristics) and simulated the burden of the major taxes they face at their given expenditure and income level. The data was obtained from the Jamaican Household Expenditure Survey 1975, a random sample of 5000 individual income tax return forms for 1983 and from the Revenue Board Survey of Allowances. One of the conclusions of the study was that there was no difference in the tax burden between the rural and urban households.

Internationally, the results of studies on the incidence and on the redistributive impact of taxation on income distribution appear somewhat mixed. For instance, Huang (1976) investigated the distribution of the tax burden in Tanzania, using household income and expenditure data for 1971. He concluded that if one takes explicit account of in-kind income and consumption, the Tanzanian tax system decreased income inequality somewhat. He found both direct and indirect taxation to be highly progressive, with the urban sector bearing the brunt of the tax burden. On the other hand, in a critical review of studies on taxation and income distribution in Latin America, Bird and others (1973) determined that taxation in Latin American countries appeared to have done little to contract income inequality mainly because of the regressive and proportional nature of its incidence. Similarly, Karageorgas (1973) found that the Greek tax structure increased income inequality among income groups.

Engel, Galetovic, and Raddatz (1998) measured the distributional impact of the tax system in Chile and estimated the sensitivity of income distribution to modifications in the structure and rates of taxes. The study revealed little difference between pre and post-tax income distribution and showed that drastic adjustments to the tax structure had only marginal effects on the after-tax distribution. The authors highlighted the restricted scope for direct income redistribution through progressive taxes and they argued that the targeting of expenditures and the average tax rate had a more significant impact on income distribution.

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<sup>2</sup> This ratio measures the position of a percentile of the poor (or rich) relative to its theoretically best position, given some overall income distribution (see Holder and Prescod (1989)).

<sup>3</sup> The EC is defined as the difference between the measure of inequality (the Gini coefficient) before tax and the measure after tax, expressed as a percentage of the index before tax. The larger the EC, the more powerful the redistributive effect of taxation.

In more recent work, Bird and Zolt (2005) looked at the limited role of personal income tax in redistributing income and wealth in developing countries. The authors posited that in several developing countries, the contribution of the personal income tax to the reduction of inequality has been minimal, partly linked to a lack of progressivity or comprehensiveness in the tax system. The paper suggested the need for countries to consider alternative ways in which the fiscal system could be employed to lower inequality in light of the failure of the personal income tax to achieve this goal. The proposed approaches included making more effective use of benefit taxation, consumption taxes, expenditure targeting, and increased fiscal decentralisation.

#### 4. Methodology

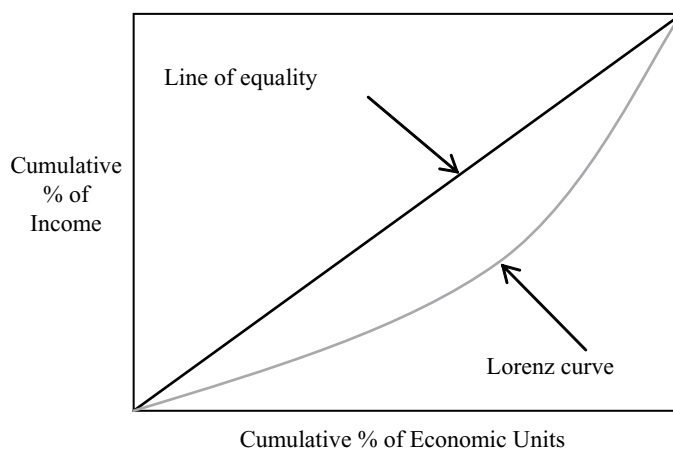
This paper utilises two methods for assessing the impact of income taxation on income distribution in Barbados. As in the work of Holder and Prescod (1989), this study also relies on the concept of the Lorenz curve and Gini coefficient in its analysis of income distribution. However, in addition to the use of the Equalisation Coefficient (EC) Statistics, the concept of the progressivity of the tax system is also utilised as an additional lever to gauge the distributional impact of income taxation in Barbados, drawing on the work of Kakwani (1977). By definition a progressive tax is levied at a rate that increases as the tax base expands. Thus a tax is progressive when the marginal tax rate exceeds the average tax rate while it is regressive when the average tax rate exceeds the marginal tax rate.

Kakwani's work emphasises the impact of the average tax rate on the progressivity of the tax system. According to him, given the tax elasticity or progressivity, the larger the average tax rate, the more equal will be the post-tax income distribution. Like the EC, an estimate of tax progressivity could also be derived from the Lorenz curve and Gini ratios.

The Lorenz curve is a plot of cumulative percentages of income on the vertical axis against the cumulative percentages of economic units on the horizontal axis. The 45-degree line, referred to as the line of equality,

represents equal distribution of income, since at that point, each incremental individual has a proportionate amount of income. Geometrically, the Lorenz curve lies below this line of equality and the greater the curvature of the Lorenz curve, the greater the inequality of income. The Gini concentration ratio, also called the Gini coefficient, is the most frequently used statistic to express the overall degree of inequality in an income distribution. The Gini coefficient refers to the ratio of the area between the Lorenz curve and the line of equality to the area of the lower triangular region. It follows that the closer the Lorenz curve to the line of equality, the smaller the Gini coefficient, and the more equitably distributed the income. This is illustrated in Figure 1 below:

**Figure 1: Example of a Lorenz Curve**



The Gini coefficients for the years 1987-2004 are constructed and the results are employed to estimate the equalisation coefficients as well as the progressivity of the Barbadian income tax system over the reference period. The proxies for income used are taxable income (or pre-tax income), post-tax income and total income as obtained from the Inland Revenue tax worksheets.

The trends in the ECs and progressivity indicators are used to gauge the impact of taxation on income distribution over the years under consideration. Additionally, a cross-sectional comparison between pre- and post-tax income for

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the different years is made to further assess the impact of taxation, specifically, the marginal tax rate.

An important part of the analysis is the investigation of the distribution of income over three main population groups: low, middle and high-income individuals. The following criteria were applied to relate these representative incomes to the raw data. Low-income individuals corresponded to annual incomes less than \$20,000, middle-income earners were within the range \$20,001 to \$55,000, and high-income individuals earned in excess of \$55,001. For 1995 and 1996, when the income groups were changed, low income corresponded to income less than \$24,200, middle to the range \$24,201 to an upper limit of \$80,000 and high-income earners were in excess of \$80,001 per annum.

The second method examines the trends in the effective tax rate of representative income groups and follows the work of Mascoll (1991), which also addresses the impact of taxes on income distribution among the three broad groups.

## 5. Data

Annual personal income data was procured from income tax returns collected from the Inland Revenue Department. The sample period spanned 1987-2004<sup>4</sup> for each income class. Specifically, the number of income units, taxable income, and taxes paid were obtained from the 'Analysis by Taxable Income Tax Worksheets' compiled by Inland Revenue.

The following series were required for the computation of the effective tax rate: gross annual income, allowances and levies and the marginal tax rate. Gross

annual income was obtained by inflating the 1990 gross annual figure by the change in the consumer price index. Total allowances and levies were derived by employing the income tax forms and the assumptions made in Mascoll (1991). The marginal tax rates were derived from the annual budgetary proposals.

In this study, the effective income tax rate, defined as the ratio of taxes payable to total (gross) income, is calculated over the period 1990-2004. The initial representative (gross annual) income figure was as computed in Mascoll (1991) - inflated from the previous year's estimate by the change in the consumer price index<sup>5</sup>. To derive a reasonable level of taxable income, some assumptions had to be made about the level of allowances for the period 1990-2004. These are specified in Appendix 1.

Taxable income is computed as assessable income less allowances and deductions. Assessable income includes income from government employment and self-employment, as well as other net income. An inherent disadvantage in the use of taxable income series for income distribution analysis is the adjustment in assessable income for deductions and allowances, as these net deductions tend to re-rank the level of pre-tax income of individuals. The result is that certain individuals pay taxes, which alter the level of post tax income and hence distort the level of income distribution.

There are some disadvantages to using data collected by the Inland Revenue Department for income distribution analysis. Holder and Prescod (1989) outline some shortcomings to the use of data from tax returns. First, the series collected exclude individuals who do not submit income tax forms<sup>6</sup>. Secondly, there may be under-reporting of individual earnings. Thirdly, the income bands are wide, which will have the effect of under-estimating the Gini coefficient. As noted in Yotopoulos and Nugent (1976), in using the straight-line approximation for the computation of the Gini ratio, eight or more income groups, as are present in the data collected, would be sufficient to produce an accurate index of inequality.

Bird and Miller (1986) are among authors who argue that expenditure data<sup>7</sup> is a more accurate and representative measure of household income than income

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<sup>4</sup> Due to missing data for the years 1988, 1991 and 1994, these years were omitted from the analysis.

<sup>5</sup> As reported in the Central Bank of Barbados Annual Statistical Digest 2001.

<sup>6</sup> The exclusion of lower-income individuals from the analysis may bias the Gini Coefficient.

<sup>7</sup> This is usually obtained from Household Budget Surveys.

data from the Inland Revenue. The general argument is that in drawing samples, and for reasons stated above, income data on income tax forms may not necessarily include all types of individual income earnings, hence it is not as accurate as Household Budget Survey (HBS) expenditure data. This is because total household expenditure must be compensated for by at least total income earned. The counter argument, in favour of income data, is that households are not necessarily obligated to report all annual expenditures on the household survey forms. In spite of this, a clear advantage of Inland Revenue data is that the sample data is available in annual series while HBS data is part of a population survey, which is conducted almost every five years. The last completed HBS was in 1998.

## 6. Results

Table 1 presents the Gini coefficients based on before-tax and after-tax personal income. An analysis of the trends reveals that the coefficients for both classifications of

personal income exhibit marginally fluctuating patterns, but generally trend upward during the period (see Figure 2).

**Figure 2: Gini Coefficients**

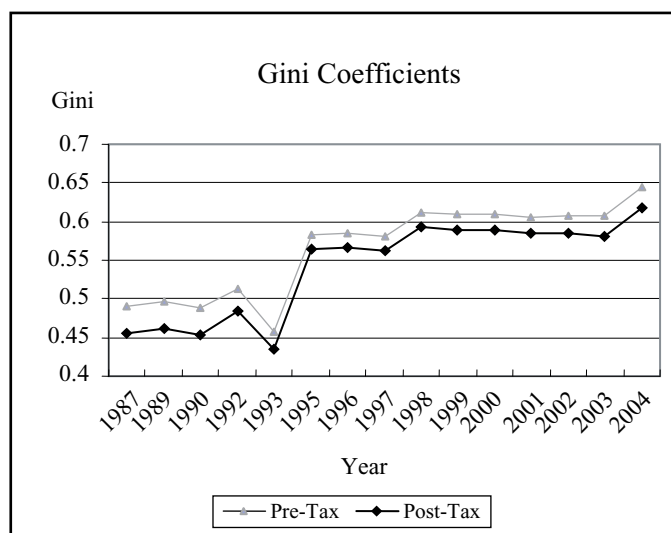


**Table 1: Equalization Coefficients and Income Tax Progressivities**

| Year | Pre-tax<br>Gini (G) | Post-tax<br>Gini (G*) <sup>+</sup> | Equalization<br>Coefficient (%) | Average*<br>Tax Rate (%) | Progressivity <sup>++</sup><br>(%) |
|------|---------------------|------------------------------------|---------------------------------|--------------------------|------------------------------------|
| 1987 | 0.4897              | 0.4565                             | 6.78                            | 20.4                     | 26.5                               |
| 1989 | 0.4961              | 0.4613                             | 7.01                            | 26.9                     | 19.3                               |
| 1990 | 0.4881              | 0.4531                             | 7.17                            | 25.4                     | 21.1                               |
| 1992 | 0.5139              | 0.4836                             | 5.90                            | 28.8                     | 14.6                               |
| 1993 | 0.4567              | 0.4351                             | 4.73                            | 28.3                     | 12.0                               |
| 1995 | 0.5827              | 0.5637                             | 3.26                            | 28.2                     | 8.3                                |
| 1996 | 0.5843              | 0.5655                             | 3.22                            | 27.2                     | 8.6                                |
| 1997 | 0.5803              | 0.5619                             | 3.17                            | 30.5                     | 7.2                                |
| 1998 | 0.6116              | 0.5922                             | 3.17                            | 30.1                     | 7.4                                |
| 1999 | 0.6093              | 0.5894                             | 3.27                            | 29.7                     | 7.7                                |
| 2000 | 0.6103              | 0.5900                             | 3.33                            | 31.1                     | 7.5                                |
| 2001 | 0.6061              | 0.5854                             | 3.42                            | 32.0                     | 7.3                                |
| 2002 | 0.6074              | 0.5858                             | 3.56                            | 32.0                     | 7.5                                |
| 2003 | 0.6066              | 0.5817                             | 4.10                            | 32.3                     | 8.6                                |
| 2004 | 0.6448              | 0.6177                             | 4.20                            | 32.2                     | 8.8                                |

Source: Authors' calculations

<sup>+</sup> The post-tax Gini is computed after taxes payable are deducted.

<sup>++</sup> Progressivity (P) is estimated from the relation  $P = \left( \frac{1-t}{t} \right) (G - G^*)$  where t is the average tax rate and G and G\* represent the pre and post tax gini coefficients, respectively.

\*The average tax rate is defined as tax revenue as a proportion of GDP at market prices

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Overall, the pre-tax and post-tax Gini ratios average approximately 0.566 and 0.542, respectively, implying a noteworthy level of inequality in the distribution of income. Despite some fluctuations over the years, the pre-tax Gini coefficient shows an overall increase, moving from 0.490 in 1987 through its minimum (0.457) in 1993 to its maximum value of 0.645 in 2004. The post-tax Gini coefficient behaves similarly, proceeding from 0.457 in 1987 through a low of 0.435 in 1993 to a high of 0.618 in 2004. Given the general rise in the level of both classifications of the Gini coefficient - between 1987 and 2004 - it can be inferred that income distribution became more unequal over the sample period.

With respect to the effect of income taxation, it is important to note that in any given year, the post-tax Gini ratio is less than the pre-tax Gini ratio. This suggests that, to some extent, income tax has served to reduce the inequality in income distribution within each of the years under consideration.

Nevertheless, allowing for fluctuations within periods, table 1 suggests that the EC, which essentially measures the absolute percentage difference between the pre and post-tax Gini ratios, was lower at the end of the period of analysis, than at the start. This suggests that the redistributive impact of the income tax system appeared to have diminished, especially over the period 1990 to 1998, but showed some improvement between 1999 and 2004.

This finding is further reinforced by the trends in the index of progressivity of the income tax system. The degree of tax progressivity dropped by a factor of more than three between 1987 and 2004. The decline was even more pronounced in the period after 1992 when the top marginal tax rate was further reduced from 50% to 40% as part of the direct tax reform. Therefore, one may infer that while the income tax elasticity is greater than unity for the period of the analysis, the degree of elasticity has trended more towards proportionality in the latter period of the analysis. This implies that the power of the income tax system as a tool for income distribution has weakened significantly over time. This is not surprising given the significant changes that had taken place in the income tax

system over the period of the analysis. Between 1986 and 1999, increasing personal allowances removed a significant number of lower income individuals from the burden of income tax, yet the marginal tax rate for the lowest income tax paying individual rose from 20% to 25% while that for the highest paying individual dropped from 50% to 40%. Moreover, the number of marginal tax rates fell from five to only two. The subsequent reduction of the basic rate from 25% to 20% as well as the increase of tax free allowance appear to have raised the tax progressivity somewhat between 2001 and 2004.

Based on the trends in the estimated values of the ECs, Holder and Prescod (p.99) intimated that the income tax system had a lower redistributive effect in the 1970s than in the 1950s. Our analysis also suggests reduced redistributive impact in the latter period of the 1990s and early in the 2000s relative to the beginning of the 1990s. Because exemption levels have changed over time, the proportion of income earners not filing tax returns has tended to change from time to time. Nevertheless, it is instructive to compare the ECs of the Holder and Prescod study with this one.

The ECs as estimated by Holder and Prescod averaged 12.8% in the period 1971 to 1979 and 11.23% in 1980 and 1981. These are much higher than any of our estimates from 1987 to 2004, suggesting an even lower redistributive power of the tax system in the 1980s, 1990s and early 2000s when compared with the period of the 1970s. Again changes in the income tax system could provide credible evidence of this. The number of marginal tax rates fell from 11% to 2% between 1974 and 1993, while the top marginal tax rate declined from 70% to 40%.

Table 2 (Appendix 2) shows the pre and post-tax distribution of income among three representative groups over time, along with their respective population proportions. While it may be difficult to draw firm conclusions from this table, the information in its present form provides a general indication of how income was divided in the economy and the extent to which the distribution was altered by the imposition of income taxes.

During the period 1987 to 2004, the low, middle

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and high-income individuals represented on average approximately 84.4%, 13.8% and 1.8%, respectively of the total population. That the income tax structure in Barbados helped to reduce the degree of income inequality is reflected in the fact that in each year, the percentage of post-tax income for the low-income earners is greater than the percentage of pre-tax income, but the opposite is true for the middle and high-income classes. On average, the lower income group held 44.5% of pre-tax income and 47.4% of post-tax income. Middle-income earners accounted for an average of 39.1% of income before taxation and 38.5% after taxes, while high-income individuals averaged 16.4% of pre-tax income and 14.2% of post-tax income. This implies some degree of redistribution from the upper to the lower income groups through the income tax system.

As previously stated, the Gini coefficients indicate that the lowest level of inequality occurred in 1993, while the highest levels of inequality occurred first in 1998 and then in 2004. These years were associated with periods of noteworthy adjustments to the income tax system, and an assessment of the distribution of income in these years, relative to any significant changes in taxation policies, is warranted.

The full impact of the 1992 income tax reform occurred in 1993 and the abolition of stabilisation taxes and various levies, as well as the elimination of several itemised deductions and allowances that had hitherto benefited the higher income group the most, appeared to have shifted income distribution in favour of the lower income group.

On the other hand, as shown in Table 2, between 1997 and 1998, the low income earners saw their share of post-tax income decline by 4.6 percentage points whereas the middle and high income had their post-tax income increase by 1.9 and 2.7 percentage points, respectively, suggesting a deterioration in the position of low-income earners relative to the other two groups. As one would expect,

the adjustments to the income tax system that occurred in the late 1990s, which included substantial increases in allowances to encourage saving and investment, were more in favour of the middle and high income groups. The year 2004 saw a further decrease in the basic tax rate to 20% and a rise in the tax-free allowance. In that year, high-income earners experienced an expansion in their share of post tax income while the low and middle-income earners recorded contractions in their respective shares of post tax income.

An examination of the effective tax rates (ETRs) for the three representative individuals broadly supports the findings that have emerged from the analysis based on the post-tax changes of the Gini coefficient indicators. The ETR represents the percentage of gross income that is absorbed by income taxes<sup>8</sup>.

The ETR for three representative individuals are presented in Appendix 3. In general, the ETRs (levies included) of all three classes of individuals were lower at the end of the study period than at the start of the 1990s, supporting the general finding above that the income tax structure became less progressive, especially as levies such as transport and development levies were removed from 1995 to 1997.

Notwithstanding the above, an examination of the after-tax income (levies included) is necessary to provide a more complete picture. It is evident in table 3 that in 2004, the high-income individual had 3.7 times the income of the low-income individual, compared to 3.6 times in 1990. Additionally, the middle-income earner had 2.1 times the income of the low-bracket representative in 2004, up from 1.9 at the start of the period. This substantiates the earlier findings, which suggest that over the period, the position of the lower-income earner deteriorated somewhat relative to the middle and upper-income representatives. That is, the distribution of income at the end of the period favoured the middle and upper-income individuals. This finding differs somewhat from that of Mascoll's 1991 study, which suggested that the middle-income representative carried a disproportionate burden of income taxation during the 1980s.

During the period 1992 to 1994, when significant reforms were undertaken to simplify the tax structure in

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<sup>8</sup> The ETR is defined as income taxes paid after taking account of possible allowances applicable to the low, middle and high-income groups, as a ratio of gross income.

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Barbados, the ETRs (inclusive of levies) for the high-income individuals rose marginally, while those of the middle and low-income earners decreased. It may, therefore, be inferred that the simplified tax structure shifted some of the tax burden away from the lower and middle-income brackets to the upper income earners by removing avenues for a reduction of their tax liability through allowances and deductions. This is corroborated by an analysis of the after-tax income (levies included) for the sub-period, which falls marginally for the high-income group but increases for the other two categories.

## **7. Summary and Conclusions**

All the indicators utilised in the study (trends in the equalisation coefficients, progressivity coefficients, the effective tax rates and the real after tax incomes) appear to lend credence to the hypothesis that the redistributive impact of the income tax system has diminished systematically over the period of the analysis. That the personal income tax system has become less progressive is attributed largely to the series of income tax revisions that have seen the reduction of both the number and magnitude of the top marginal tax rates as well as itemised deductions that appear to favour the higher income groups relative to those in the lower income echelons. While the systematic increases in personal exemptions have tended to remove the lowest income groups from the burden of income taxation, the results suggest that overall, there was a higher degree of inequality in the income distribution at the end of the period than at the start. This implies that during most of the 1990s, income taxation policy was not as successful in reducing income inequality as it was in prior years.

The worsening trends in income distribution becomes even more stark when one takes into consideration the fact that the general stance in taxation policy is being gradually shifted towards indirect taxation relative to direct taxation. Indeed, over the period of the analysis, personal

income taxes averaged only 27% of indirect taxes. Since indirect taxes tend to be relatively more regressive than the direct mode of taxation, one may infer that the traditional stance of aiming to redistribute incomes through the fiscal tax system may no longer be effective and may need to be supported through other direct policy actions. An example of such a policy is to allocate a gradually rising share of the proceeds of the tax system to finance social expenditures that tend to benefit the poor disproportionately. However, ultimately the key to tackling the income distribution problem in Barbados lies in policies to increase the means through which the poor could work their way out of poverty. Innovative mechanisms need to be found to create assets for the poor. In this regard, the present policy aimed at providing an enabling environment for the emergence and survival of small business in Barbados is a step in the right direction.

To the extent that not all members of the labour force file income tax returns, it should be stressed that this study has not sought to give a quantitative account of income distribution in Barbados. What it has endeavoured to do is to demonstrate how the direct taxation system in Barbados has impacted on the direction of movement of income inequality among the proportion of the population that file tax returns over the period considered. There is much scope for further research in this area. For example, in the Caribbean, no studies exist that help to determine the level of tolerable income inequality. It is important that such issues be explored in order to facilitate more conclusive statements about income distribution in the Caribbean. Secondly, this work may be extended by examining trends in income distribution and the effective tax rate relative to the indirect tax system. This would enhance the knowledge and understanding of the linkages between taxation, income distribution and the wider economy, thereby further strengthening the information base for sound policy decisions.

## REFERENCES

- Aronson, J. R., P. Johnson and P. J. Lambert, 1994, "Re-distributive Effect and Unequal Income Tax Treatment", *The Economic Journal*, Vol. 104, No. 423, pp. 262-270.
- Bird, R. M. and B. D. Miller, 1986, "The Incidence of Indirect Taxes on Low-Income Households in Jamaica", Jamaica Tax Structure Examination Project, Board of Revenue, Government of Jamaica Staff Paper No. 26.
- Bird, R. M. and L. H. De Wulf, 1973, "Taxation and Income Distribution in Latin America: a Critical Review of Empirical Studies", International Monetary Fund Staff Papers 20, pp. 639-682.
- Bird, R. M. and E. M. Zolt, 2005, "Redistribution via Taxation: The Limited Role of Personal Income Tax in Developing Countries", ITP paper 0508, forthcoming in UCLA Law Review. <http://ideas.repec.org/p/itp/itpwps/0508.html>
- Blundell, R., 1996, "Labour Supply and Taxation". In M. Devereux (ed.), the *Economics of Tax Policy*, Oxford University Press.
- Downes, A., 1987, "The Distribution of Household Income in Barbados", *Social and Economic Studies*, Vol. 36, No. 6, pp. 127-155.
- Engel, E., A. Galetovic and C. E. Raddatz, 1998, "Taxes and Income Distribution in Chile: Some Unpleasant Redistributive Arithmetic", National Bureau of Economic Research Working Paper No. 6828.
- Holder, C. and R. Prescod, 1989, "The Distribution of Personal Income in Barbados", *Social and Economic Studies*, Vol. 38, No. 1, pp. 87-113.
- Howard, M., 1987, "Barbados: Income Tax Reform: An Analysis of Two Budgets in 1986", *Bulletin of International Fiscal Documentation*, Vol. 41, No. 4, pp. 151-160.
- Howard, M., 1989, "Public Sector Finance", Chapter 11, *Dependence and Development in Barbados, 1945-1985*, Carib Research and Publications Inc., Bridgetown.
- Howard, M. and C. Mascoll, 1994, "Barbados: Tax Reform of 1992 Compared with 1986", *Bulletin of Eastern Caribbean Affairs*, Vol. 19, No. 3, pp. 69-75.
- Huang, Y., 1976, "Distribution of the Tax Burden in Tanzania", *The Economic Journal*, Vol. 86, No. 341, pp. 73-86.
- James, S. and C. Nobes, 1978, *The Economics of Taxation*, 3rd ed., Philip Allan Publishers, Oxford.
- Kakwani, Nanak C., 1977, "Measurement of Tax Progressivity: An International Comparison", *Economic Journal*, Vol. 87, No. 345, pp. 71-80.
- Karageorgas, D., 1973, "The Distribution of Tax Burden by Income groups in Greece", *The Economic Journal*, Vol. 83, No. 330, pp. 436-448.
- Mascoll, C., 1991, "Trends in Effective Tax Rates of Representative Individuals in Barbados During the 1980s", *Central Bank of Barbados Economic Review*, Vol. XVIII, No. 3.
- Miller, B. D. and C. Stone, 1985, "The Low-Income Household Expenditure Survey: Description and Analysis", Jamaica Tax Structure Examination Project, Board of Revenue, Government of Jamaica Staff Paper No. 25.
- Roed, K. and S. Strom, 2002, "Progressive Taxes and the Labour Market: Is the Trade-Off Between Equality and Efficiency Inevitable?" *Journal of Economic Surveys*, Vol. 16, No. 1, pp. 77-110.

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Sabelhaus, J., 1993, "What is the Distributional Burden of Taxing Consumption?", *National Tax Journal*, Vol. 46, No. 3, pp. 331-344.

Shantayanan, D., D. Fullerton and R. Musgrave, 1980, "Estimating the distribution of tax burdens: A comparison of different approaches", *Journal of Public Economics*, Vol. 3, No.2, pp. 155-182.

Wallace, S. and M. Wasylenko, 1991, "The Distributional Implications of the 1986 Tax Reform", *National Tax Journal*, Vol. 44, Issue 2, pp. 181-199.

Wasylenko, M., 1986, "The Distribution of Tax Burden in Jamaica: Pre-1985 Reform", *Jamaica Tax Structure Examination Project*, Board of Revenue, Government of Jamaica Staff Paper No. 30.

Worrell, D., 1989, "The Tax System of Barbados", *Bulletin for International Bureau of Fiscal Documentation*, Vol. 43, No. 10, pp. 457-462.

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## APPENDIX 1

### Notes for calculation of allowances and levies for the effective tax rate

1. Total allowance allowed for individual who is married and spouse has income.
2. The assumption of the number of children for the different representative individuals is as noted in the text.
3. NIS deductions were computed as 6.375% gross annual assessable income. This allowance was eliminated in 1994.
4. Medical expenses were calculated as from the income tax forms for the respective years. This allowance was removed for the tax year 1993.
5. Mortgage interest was calculated as a 20-year mortgage with a 10% (1980) interest rate. This deduction was eliminated for the tax year 1993.
6. Home insurance adjusted by the consumer price index.
7. The following were the maximum amounts deductible for the respective years, as given on the income tax forms: life insurance, maid, gardener, dependent, credit union, trade union, mutual funds and retirement.

## APPENDIX 2

**Table 2: Distribution of Income for Low, Middle and High Income Individuals**

|      |        | Economic<br>Units (%) | Pre-tax<br>(%) | Post-tax<br>(%) | Change<br>(percentage<br>points) |      |        | Economic<br>Units (%) | Pre-tax<br>(%) | Post-tax<br>(%) | Change<br>(percentage<br>points) |
|------|--------|-----------------------|----------------|-----------------|----------------------------------|------|--------|-----------------------|----------------|-----------------|----------------------------------|
| 1987 | Low    | 84.77                 | 50.37          | 53.98           | 3.61                             | 1998 | Low    | 87.28                 | 44.99          | 47.56           | 2.57                             |
|      | Middle | 13.34                 | 35.65          | 34.73           | -0.92                            |      | Middle | 11.48                 | 39.60          | 38.83           | -0.77                            |
|      | High   | 1.89                  | 13.98          | 11.29           | -2.69                            |      | High   | 1.24                  | 15.41          | 13.61           | -1.80                            |
| 1989 | Low    | 83.08                 | 47.96          | 51.67           | 3.71                             | 1999 | Low    | 86.43                 | 43.68          | 46.26           | 2.58                             |
|      | Middle | 14.71                 | 36.43          | 35.70           | -0.73                            |      | Middle | 12.22                 | 40.34          | 39.60           | -0.74                            |
|      | High   | 2.21                  | 15.61          | 12.62           | -2.99                            |      | High   | 1.36                  | 15.98          | 14.14           | -1.84                            |
| 1990 | Low    | 80.59                 | 45.56          | 49.14           | 3.58                             | 2000 | Low    | 85.56                 | 42.37          | 44.95           | 2.58                             |
|      | Middle | 17.10                 | 39.31          | 38.60           | -0.71                            |      | Middle | 13.01                 | 41.07          | 40.39           | -0.68                            |
|      | High   | 2.32                  | 15.13          | 12.27           | -2.86                            |      | High   | 1.43                  | 16.56          | 14.66           | -1.90                            |
| 1992 | Low    | 80.40                 | 42.81          | 45.97           | 3.16                             | 2001 | Low    | 85.24                 | 42.40          | 45.00           | 2.60                             |
|      | Middle | 16.63                 | 38.23          | 37.50           | -0.73                            |      | Middle | 13.15                 | 39.99          | 39.38           | -0.61                            |
|      | High   | 2.96                  | 18.96          | 16.54           | -2.42                            |      | High   | 1.61                  | 17.61          | 15.62           | -1.99                            |
| 1993 | Low    | 76.64                 | 42.91          | 44.87           | 1.96                             | 2002 | Low    | 83.71                 | 39.87          | 42.49           | 2.62                             |
|      | Middle | 20.09                 | 38.93          | 38.87           | -0.06                            |      | Middle | 14.54                 | 41.52          | 40.97           | -0.55                            |
|      | High   | 3.28                  | 18.16          | 16.26           | -1.90                            |      | High   | 1.75                  | 18.61          | 16.54           | -2.07                            |
| 1995 | Low    | 87.91                 | 48.83          | 51.36           | 2.53                             | 2003 | Low    | 82.92                 | 38.88          | 41.84           | 2.95                             |
|      | Middle | 10.97                 | 37.99          | 37.04           | -0.95                            |      | Middle | 15.20                 | 41.93          | 41.38           | -0.55                            |
|      | High   | 1.12                  | 13.18          | 11.60           | -1.58                            |      | High   | 1.89                  | 19.19          | 16.78           | -2.40                            |
| 1996 | Low    | 88.25                 | 49.45          | 51.97           | 2.52                             | 2004 | Low    | 84.58                 | 37.71          | 41.14           | 3.43                             |
|      | Middle | 10.70                 | 37.74          | 36.78           | -0.96                            |      | Middle | 13.48                 | 40.41          | 39.96           | -0.45                            |
|      | High   | 1.05                  | 12.80          | 11.26           | -1.54                            |      | High   | 1.94                  | 21.88          | 18.90           | -2.98                            |
| 1997 | Low    | 88.20                 | 49.70          | 52.14           | 2.44                             |      |        |                       |                |                 |                                  |
|      | Middle | 10.81                 | 37.87          | 36.95           | -0.92                            |      |        |                       |                |                 |                                  |
|      | High   | 0.99                  | 12.43          | 10.91           | -1.52                            |      |        |                       |                |                 |                                  |

Source: Inland Revenue Department

# APPENDIX 3

Table 3: Average Effective Tax Rates

|                                 | 1990         | 1991         | 1992         | 1993         | 1994         | 1995         | 1996         | 1997         | 1998         | 1999         | 2000         | 2001         | 2002         | 2003         | 2004         |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| <b>Low Income Individual</b>    |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 1. Gross Annual Income          | 18864        | 20052        | 21276        | 21510        | 21660        | 22072        | 22601        | 24342        | 24025        | 24410        | 24996        | 25696        | 25739        | 26145        | 26518        |
| 2. Less Allowances              | 15000        | 15000        | 15000        | 16346        | 16140        | 16140        | 16740        | 16740        | 18740        | 18740        | 18740        | 18740        | 18740        | 18740        | 21240        |
| 3. Taxable Income               | 3864         | 5052         | 6276         | 5164         | 5520         | 5932         | 5861         | 7602         | 5285         | 5670         | 6256         | 6956         | 6999         | 7405         | 5278         |
| 4. Income Taxes Paid            | 773          | 1010         | 1255         | 1291         | 1380         | 1483         | 1465         | 1900         | 1321         | 1417         | 1564         | 1739         | 1750         | 1666         | 1056         |
| 5. Levies                       | 707          | 757          | 795          | 473          | 96           | 97           | 100          | 107          | 107          | 107          | 107          | 107          | 107          | 107          | 107          |
| 6. (4) + Levies                 | 1480         | 1768         | 2051         | 1764         | 1476         | 1580         | 1565         | 2008         | 1429         | 1525         | 1671         | 1846         | 1857         | 1774         | 1163         |
| 7. Effective tax rate (4)       | 4.10         | 5.04         | 5.90         | 6.00         | 6.37         | 6.72         | 6.48         | 7.81         | 5.50         | 5.81         | 6.26         | 6.77         | 6.80         | 6.37         | 3.98         |
| 8. Effective tax rate (6)       | <b>7.85</b>  | <b>8.81</b>  | <b>9.64</b>  | <b>8.20</b>  | <b>6.81</b>  | <b>7.16</b>  | <b>6.92</b>  | <b>8.25</b>  | <b>5.95</b>  | <b>6.25</b>  | <b>6.69</b>  | <b>7.19</b>  | <b>7.22</b>  | <b>6.78</b>  | <b>4.39</b>  |
| 9. After-tax income (4)         | 18091        | 19042        | 20021        | 20219        | 20280        | 20589        | 21136        | 22441        | 22704        | 22992        | 23432        | 23957        | 23989        | 24479        | 25463        |
| 10. After-tax income (6)        | <b>17384</b> | <b>18285</b> | <b>19225</b> | <b>19746</b> | <b>20185</b> | <b>20491</b> | <b>21036</b> | <b>22334</b> | <b>22597</b> | <b>22885</b> | <b>23324</b> | <b>23849</b> | <b>23882</b> | <b>24371</b> | <b>25355</b> |
| 11. % diff in (9)               | 5.26         | 5.14         | 5.14         | 0.99         | 0.30         | 1.52         | 2.66         | 6.18         | 1.17         | 1.27         | 1.91         | 2.24         | 0.14         | 2.04         | 4.02         |
| 12. % diff in (10)              | 5.18         | 5.14         | 5.14         | 2.71         | 2.22         | 1.52         | 2.66         | 6.17         | 1.18         | 1.28         | 1.92         | 2.25         | 0.14         | 2.05         | 4.04         |
| <b>Middle Income Individual</b> |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 1. Gross Annual Income          | 40704        | 43268        | 45908        | 46413        | 46738        | 47626        | 48769        | 52524        | 51841        | 52670        | 53935        | 55445        | 55539        | 56415        | 57220        |
| 2. Less Allowances              | 17287        | 17312        | 17332        | 17756        | 17040        | 17040        | 26740        | 26740        | 30740        | 30740        | 30740        | 30740        | 33240        | 33240        | 35740        |
| 3. Taxable Income               | 23417        | 25956        | 28576        | 28657        | 29698        | 30586        | 22029        | 25784        | 21101        | 21930        | 23195        | 24705        | 22299        | 23175        | 21480        |
| 4. Income Taxes Paid            | 5525         | 6383         | 7430         | 7833         | 8249         | 8604         | 5507         | 6446         | 5275         | 5483         | 5799         | 6176         | 5575         | 5214         | 4296         |
| 5. Levies                       | 1326         | 1597         | 1581         | 930          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          |
| 6. (4) + Levies                 | 6851         | 7979         | 9011         | 8763         | 8435         | 8790         | 5693         | 6632         | 5461         | 5669         | 5985         | 6362         | 5761         | 5400         | 4482         |
| 7. Effective tax rate (4)       | 13.57        | 14.75        | 16.19        | 16.88        | 17.65        | 18.07        | 11.29        | 12.27        | 10.18        | 10.41        | 10.75        | 11.14        | 10.04        | 9.24         | 7.51         |
| 8. Effective tax rate (6)       | <b>16.83</b> | <b>18.44</b> | <b>19.63</b> | <b>18.88</b> | <b>18.05</b> | <b>18.46</b> | <b>11.67</b> | <b>12.63</b> | <b>10.53</b> | <b>10.76</b> | <b>11.10</b> | <b>11.47</b> | <b>10.37</b> | <b>9.57</b>  | <b>7.83</b>  |
| 9. After-tax income (4)         | 35179        | 36886        | 38477        | 38580        | 38489        | 39021        | 43261        | 46078        | 46566        | 47188        | 48136        | 49269        | 49964        | 51200        | 52924        |
| 10. After-tax income (6)        | <b>33853</b> | <b>35289</b> | <b>36896</b> | <b>37650</b> | <b>38303</b> | <b>38835</b> | <b>43075</b> | <b>45892</b> | <b>46380</b> | <b>47002</b> | <b>47950</b> | <b>49083</b> | <b>49778</b> | <b>51014</b> | <b>52738</b> |
| 11. % diff in (9)               | 4.85         | 4.31         | 4.31         | 0.27         | -0.24        | 1.38         | 10.87        | 6.51         | 1.06         | 1.34         | 2.01         | 2.35         | 1.41         | 2.47         | 3.37         |
| 12. % diff in (10)              | 4.24         | 4.55         | 4.55         | 2.04         | 1.73         | 1.39         | 10.92        | 6.54         | 1.06         | 1.34         | 2.02         | 2.36         | 1.42         | 2.48         | 3.38         |
| <b>High Income Individual</b>   |              |              |              |              |              |              |              |              |              |              |              |              |              |              |              |
| 1. Gross Annual Income          | 85198        | 90565        | 96090        | 97147        | 97827        | 99686        | 102078       | 109938       | 108509       | 110245       | 112891       | 116053       | 116249       | 118082       | 119768       |
| 2. Less Allowances              | 25813        | 22859        | 22234        | 17516        | 16800        | 16800        | 31500        | 31500        | 37500        | 37500        | 37500        | 37500        | 40000        | 40000        | 42500        |
| 3. Taxable Income               | 59385        | 67706        | 73856        | 79631        | 81027        | 82886        | 70578        | 78438        | 71009        | 72745        | 75391        | 78553        | 76249        | 78082        | 77268        |
| 4. Income Taxes Paid            | 21193        | 25353        | 25542        | 28222        | 28781        | 29524        | 24601        | 27745        | 24774        | 25468        | 26526        | 27791        | 26870        | 26998        | 26067        |
| 5. Levies                       | 1326         | 1597         | 1581         | 930          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          | 186          |
| 6. (4) + Levies                 | 22519        | 26950        | 27123        | 29152        | 28967        | 29710        | 24787        | 27931        | 24960        | 25654        | 26712        | 27977        | 27056        | 27184        | 26253        |
| 7. Effective tax rate (4)       | 24.87        | 27.99        | 26.58        | 29.05        | 29.42        | 29.62        | 24.10        | 25.24        | 22.83        | 23.10        | 23.50        | 23.95        | 23.11        | 22.86        | 21.76        |
| 8. Effective tax rate (6)       | <b>26.43</b> | <b>29.76</b> | <b>28.23</b> | <b>30.01</b> | <b>29.61</b> | <b>29.80</b> | <b>24.28</b> | <b>25.41</b> | <b>23.00</b> | <b>23.27</b> | <b>23.66</b> | <b>24.11</b> | <b>23.27</b> | <b>23.02</b> | <b>21.92</b> |
| 9. After-tax income (4)         | 64006        | 65212        | 70548        | 68925        | 69046        | 70161        | 77477        | 82193        | 83735        | 84777        | 86365        | 88262        | 89379        | 91084        | 93701        |
| 10. After-tax income (6)        | <b>62680</b> | <b>63616</b> | <b>68967</b> | <b>67995</b> | <b>68860</b> | <b>69975</b> | <b>77291</b> | <b>82007</b> | <b>83549</b> | <b>84591</b> | <b>86179</b> | <b>88076</b> | <b>89193</b> | <b>90898</b> | <b>93515</b> |
| 11. % diff in (9)               | 1.89         | 1.89         | 8.18         | -2.30        | 0.18         | 1.62         | 10.43        | 6.09         | 1.88         | 1.24         | 1.87         | 2.20         | 1.27         | 1.91         | 2.87         |
| 12. % diff in (10)              | 1.49         | 1.49         | 8.41         | -1.41        | 1.27         | 1.62         | 10.45        | 6.10         | 1.88         | 1.25         | 1.88         | 2.20         | 1.27         | 1.91         | 2.88         |

Source: Mascoll (1991) and Inland Revenue Department.

# APPENDIX 4

Table 4: Allowances

|                                             | 1990  | 1991   | 1992   | 1993  | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003  | 2004  |
|---------------------------------------------|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Low Income Individual</b>                |       |        |        |       |       |       |       |       |       |       |       |       |       |       |       |
| 1. Self                                     | 4500  | 4500   | 4500   | 13000 | 13000 | 13000 | 13000 | 13000 | 15000 | 15000 | 15000 | 15000 | 15000 | 15000 | 17500 |
| 2. 2 children at primary school             | 1500  | 1500   | 1500   | 1000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  |
| 3. 1 child at secondary school              | 1200  | 900    | 900    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 4. N.I.S. deductions                        | 888   | 1125   | 1193   | 1206  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 5. Credit unions                            | 900   | 900    | 900    | 900   | 900   | 900   | 1500  | 1500  | 1500  | 1500  | 1500  | 1500  | 1500  | 1500  | 1500  |
| 6. Trade union                              | 240   | 240    | 240    | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   |
| 7. Medical allowance                        | 300   | 585    | 585    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 8. Total allowances                         | 9528  | 9750   | 9818   | 16346 | 16140 | 16140 | 16740 | 16740 | 18740 | 18740 | 18740 | 18740 | 18740 | 18740 | 21240 |
| <b>Middle income individual</b>             |       |        |        |       |       |       |       |       |       |       |       |       |       |       |       |
| 1. Self                                     | 4500  | 4500   | 4500   | 13000 | 13000 | 13000 | 13000 | 13000 | 15000 | 15000 | 15000 | 15000 | 15000 | 15000 | 17500 |
| 2. 2 children at primary school             | 1500  | 1500   | 1500   | 1000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  |
| 3. N.I.S. deductions                        | 1716  | 1716   | 1716   | 1716  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 4. Life insurance                           | 1800  | 1800   | 1800   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 5. Credit unions                            | 1800  | 1800   | 1800   | 1800  | 1800  | 1800  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  |
| 6. Trade unions                             | 240   | 240    | 240    | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   | 240   |
| 5. Medical allowance                        | 450   | 465    | 465    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 6. Mortgage                                 | 4956  | 4956   | 4956   | 0     | 0     | 0     | 3500  | 3500  | 3500  | 3500  | 3500  | 3500  | 6000  | 6000  | 6000  |
| 7. Home insurance                           | 325   | 335    | 355    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 8. Investments (Shares, Mutual Funds, etc)  | 0     | 0      | 0      | 0     | 0     | 0     | 5000  | 5000  | 7000  | 7000  | 7000  | 7000  | 7000  | 7000  | 7000  |
| 9. Total allowances                         | 17287 | 17312  | 17332  | 17756 | 17040 | 17040 | 26740 | 26740 | 30740 | 30740 | 30740 | 30740 | 33240 | 33240 | 35740 |
| <b>High income individual</b>               |       |        |        |       |       |       |       |       |       |       |       |       |       |       |       |
| 1. Self                                     | 4500  | 4500   | 4500   | 13000 | 13000 | 13000 | 13000 | 13000 | 15000 | 15000 | 15000 | 15000 | 15000 | 15000 | 17500 |
| 2. 2 children at primary school             | 1500  | 1500   | 1500   | 1000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  | 2000  |
| 3. N.I.S. deductions                        | 1716  | 1716   | 1716   | 1716  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 4. Life insurance                           | 1800  | 1800   | 1800   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 5. Credit unions                            | 1800  | 1800   | 1800   | 1800  | 1800  | 1800  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  | 3000  |
| 6. Medical allowance                        | 450   | 465    | 465    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 7. Mortgage                                 | 8497  | 7928.4 | 7303.2 | 0     | 0     | 0     | 3500  | 3500  | 3500  | 3500  | 3500  | 3500  | 6000  | 6000  | 6000  |
| 8. Maid                                     | 1200  | 1200   | 1200   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 9. Gardener                                 | 1200  | 1200   | 1200   | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 10. Dependent                               | 3150  | 750    | 750    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| 11. Investments (Shares, Mutual Funds, etc) | 0     | 0      | 0      | 0     | 0     | 0     | 10000 | 10000 | 14000 | 14000 | 14000 | 14000 | 14000 | 14000 | 14000 |
| 12. Total allowances                        | 25813 | 22859  | 22234  | 17516 | 16800 | 16800 | 31500 | 31500 | 37500 | 37500 | 37500 | 37500 | 40000 | 40000 | 42500 |

Source: Inland Revenue Department



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1. ALLEYNE, KERRY-ANN. *How Countries Manage Reserve Assets*. Economic Review. June 2004, Vol. XXXI No.1 pp. 34 - 38.
2. ANYADIKE-DANES, MICHAEL K. *What Cannot Be Learnt About Unemployment From The Barbados Labour Force Survey*. Economic Review. June 1994, Vol. XXI No. 1 pp. 12 - 16.
3. ANYADIKE-DANES, MICHAEL K. *Response To The Statistical Service*. Economic Review. June 1994, Vol. XXI No. 1 p. 17.
4. BABB, JANNETTE. *Income Tax Comparisons Among CARICOM Countries In 1988*. Economic Review. December 1990, Vol. XVII No. 3 pp. 18-26.
5. BARBADOS STATISTICAL SERVICE. *Comment On What Can Be Learnt About Unemployment From The Barbados Labour Force Survey*. Economic Review. June 1994, Vol. XXI No. 1 p. 17.
6. BELGRAVE, ANTON. *Macro-Economic Policy Modelling For Developing Countries : A Review Of Victor Murinde, "Macro-Economic Policy Modelling For Developing Countries" Avebury, 1993*. Economic Review. December 1995, Vol. XXII No. 3 pp. 15 - 16.
7. BLACKMAN, COURTNEY N., and COX, WINSTON A. *Factors In The Development Of A Migration Policy For The Caribbean*. Economic Review. December 1986, Vol. XIII No. 3 pp. 12-23.
8. BLACKMAN, COURTNEY N., *Information, Management And Economic Development Address To The Library Association Of Barbados At The University Of The West Indies, Cave Hill, May 9, 1983*. Economic Review. June 1983, Vol. X No. 1 pp. 9-11.
9. -----, *Coming To Terms With The Computer*. Economic Review. December 1983, Vol. X No. 3 pp. 14-16.
10. -----, *Some Critical Issues In Caribbean Economic Development Paper Delivered At The University Of The Netherlands Antilles, Curacao*. Economic Review. December 1982, Vol. IX No. 3 pp. 9-14.
11. -----, *Address To The Barbados Employers' Confederation*. Economic Review. June 1982, Vol. IX No. 1 pp. 9-12.
12. -----, *"Prospects For 1981" Speech Delivered To The Life Underwriters Association Of Barbados At Norman Centre, Bridgetown, January 16, 1981*. Quarterly Report (Now Entitled Economic Review). March 1981, Vol. VIII No. 1 pp. 22-29.
13. -----, *Role Of The Central Bank In The Formulation And Implementation Of Economic Policy In Small Developing Countries*. Quarterly Report (Now Entitled Economic Review). June 1980, Vol. VII No. 2 pp. 35-60.
14. -----, *Remarks Delivered, At The Formal Opening Of The Barbados National Bank On Monday, April 3, 1978 At The Fairchild Street Of The Commercial Division*. Quarterly Report (Now Entitled Economic Review). June 1978, Vol. V No. 2 pp. 34-42.
15. -----, *Remarks, To The Symposium On Finance Sponsored By The Barbados Manufacturers Association On March 15, 1978 At The Barbados Hilton Hotel*. Quarterly Report (Now Entitled Economic Review). March 1978, Vol. V No. 1 pp. 22-32.
16. -----, *Address At The Official Opening Of The Export Promotion Training Programme At The*

- 
- AMCEM Room, Plantations Building, Bridgetown Thursday August 25, 1977. Quarterly Report (Now Entitled Economic Review). September 1977, Vol. IV No. 3 pp. 28-36.
17. ----- . *Remarks On The Occasion Of The Launching Of SYSTEMS On Wednesday, October 19, 1977.* Quarterly Report (Now Entitled Economic Review). December 1977, Vol. IV No. 4 pp. 58-63.
  18. ----- . *Price Control Within The Context Of A Developing Country Address Delivered At The Official Opening Of The Price Control Officers/ Inspectors' Course, Ministry Of Trade, Industry And Commerce On Monday, August 9, 1976.* Quarterly Report (Now Entitled Economic Review). September 1976, Vol. III No. 3 pp. 27-35.
  19. ----- . *Remarks On The Occasion Of The Opening Of The Bank Of Nova Scotia Office At Wildey By Dr. Courtney N. Blackman, Governor, Central Bank Of Barbados On Saturday, August 2, 1975.* Quarterly Report (Now Entitled Economic Review). September 1975, Vol. II No. 3 pp. 27-32.
  20. BOAMAH, DANIEL O, BYRON, SHARI and MAXWELL, CHANELLE. *Examining the Impact Of Taxation On Income Distribution In Barbados.* Economic Review. December 2006, Vol. XXXIII No 2. pp. 36-50.
  21. BOAMAH, DANIEL O. *Savings And Investment In The Barbados Economy (1965 - 1990).* Economic Review. June 1996, Vol. XXIII No. 1 pp. 46-52.
  22. ----- *External Debt Management Strategies : Some Issues And Evidence For The Caribbean.* Economic Review. June 1989, Vol. XVI No. 1 pp. 12-19.
  23. ----- *Stock Of Fixed Capital In Barbados 1958-1981 : Some Exploratory Estimates.* Economic Review. December 1984, Vol. XI No. 3 pp. 8-20.
  24. BRATHWAITHE, CARLOS. *Construction Industry On The Economy Of Barbados.* Economic Review. September 1982, Vol. IX No. 3 pp. 10-29.
  25. BRATHWAITHE, ERIC. *Offshore Banking Centres.* Quarterly Report (Now Entitled Economic Review). September. 1978, Vol. V No. 3, pp. 52-77.
  26. BYNOE-MAYERS, NOLA. *Measuring The Real Exchange Rate Using GDP Deflators.* Economic Review. June 1997, Vol. XXXIV No. 1 pp. 57-67.
  27. CAMPBELL, TREVOR and SEALY, NATASHA. *A Study Of Motor Car Imports In Barbados.* Economic Review. June 2000, Vol. XXVII No. 1 pp. 31 - 38.
  28. CAMPBELL, TREVOR. *Macroeconomics For Developing Countries : A Review Of Cork, Paul And Kirk Patrick, Colin, "Macroeconomics For Developing Countries", St. Martin's Press, New York, 1990.* Economic Review. June 1992, Vol. XIX No. 1 pp. 9-11.
  29. CARTER, ADRIAN and WHITEHALL, PETER H. *Estimating Real Value Added In The Construction Sector Of Barbados.* Economic Review. December 1999, Vol. XXVI No. 3 pp. 29-43.
  30. CARTER, ADRIAN. *Economic Size, Openness And Export Diversification : A Statistical Analysis.* Economic Review. December 1997, Vol. XXIV No.3 pp. 15 - 21.

- 
- 
31. CENTRAL BANK OF BARBADOS. *Financial Liberalisation And The Likely Impact On Businesses In Barbados*. Economic Review. June 2004, Vol. XXXI No.1 pp. 27-33.
32. CENTRAL BANK OF BARBADOS. *Update On The Caribbean Single Market And Economy (CSME)*. Economic Review. September 2003, Vol. XXX No. 2 pp. 27-29
33. CENTRAL BANK OF BARBADOS. *The WTO Ruling And Implications For Some Caribbean Economies : [A Note]*. Economic Review. June 1998, Vol. XXV No. 1 p. 14.
34. CENTRAL BANK OF BARBADOS. *Barbados : Structure Of The Financial System*. Economic Review. September 1994, Vol. XXI No. 2 pp. 21-25.
35. CENTRAL BANK OF BARBADOS. *Barbados Stand-By Arrangement With The International Monetary Fund*. Economic Review. December 1982, Vol. IX No. 3 pp. 17-18.
36. CENTRAL BANK OF BARBADOS. *Bank Debits And Deposits Turnover*. Quarterly Report (Now Entitled Economic Review). March 1975, Vol. II No. 1 pp. 23-29.
37. CHANDLER, GWENOCIA. *Forecasting For Business Decision Making*. Economic Review. June 1998, Vol. XXV No. 1 pp. 57-63.
38. CLARKE, CARL, WOOD, CELESTE and WORRELL, DELISLE. *Prices, Incomes And The Growth Of Tourism In Barbados, 1956-83*. Economic Review. June 1986, Vol. XIII No. 1 pp. 10-45.
39. CLARKE, HEATHER. *Insight Into The Calculation Of The Wages Index*. Economic Review. December 1991, Vol. XVIII No. 3 pp. 23-27.
40. CODRINGTON, HAROLD. *Review Of Sylvia Charles, "The Services Sector In Caribbean Economies : Some Development And Management Issues", Institute Of Social & Economic Research, UWI, Cave Hill, 1994*. Economic Review. June 1995, Vol. XXII No. 1 pp. 24-25.
41. -----. *Common Currency Decisions : Some Implications For Barbados*. Economic Review. December 1995, Vol. XXII No. 3 pp. 17-21.
42. -----. *Measurement Of Foreign Reserves In Barbados*. Economic Review. September 1994, Vol. XXI No. 2 pp. 13-16.
43. -----. *Foreign Investment In The Private Sector Of Barbados 1956-1985*. Economic Review. June 1987, Vol. XIV No. 1 pp. 19-29.
44. CODRINGTON, HAROLD and HOLDER, CARLOS. *Terms Of Trade Experience Of Barbados And Trinidad & Tobago 1955-1980*. Economic Review. June 1984, Vol. XI No. 1 pp. 15-23.
45. *Compendium of Working Papers Contents 1984-1992*. Economic Review. June 1993, Vol. XIX No. 1 pp. 18-28.
46. COPPIN, ADDINGTON. *Analysis Of Earnings In Barbados By Age And Sex*. Economic Review. December 1996, Vol. XXIII No. 3 pp. 14-21.
47. -----. *Female Participation In The Barbados Labour Market : A Post-Independence Perspective*. Economic Review. June 1995, Vol. XXII No. 1 pp. 15-23.

- 
48. COPPIN, KIM. *Caribbean Survival And The Global Challenge As Edited By Ramesh Ramseran : A Review*. Economic Review. September 2002, Vol. XXIX No.2 pp. 23-26.
49. COX, WINSTON A. *Address To The Rotary Club Of Barbados November 27, 1997 "Value Of The Dollar"*. Economic Review. June 1998, Vol. XXV No. 1 pp. 64-65.
50. -----. *Address On "Globalisation And International Banking And Finance" Delivered On Behalf Of The Prime Minister, The Rt Hon. Owen Arthur A The Congress Of Political Economist (COPE) At The Sherbourne Conference Centre, July 17, 1998*. Economic Review. September 1998, Vol. XXV No. 2 pp. 29-30.
51. -----. *Address To The 2nd Annual Conference And Exhibition Of The Human Resources Management Association*. Economic Review. December 1998, Vol. XXV No. 3 pp. 41-43.
52. -----. *Address To The Rotary Club Of Barbados "Making The Social Partnership Work"*. Economic Review. December 1997, Vol. XXIV No.3 pp. 22-24.
53. -----. *Address To The US Business Association Of Barbados, November 12, 1997, "The Importance Of Foreign Exchange For Small Open Economies"*. Economic Review. December 1997, Vol. XXIV No. 3 pp. 25-26.
54. -----. *Address To The National Awards Ceremony Of The Barbados Investment And Development Corporation - October 9, 1997, "Meeting The Challenges Of A Rapidly Changing International Environment For Industrial Development"*. Economic Review. December 1997, Vol. XXIV No. 3 pp. 27-29.
55. -----. *Address To The Barbados Association Of Professional Engineers- July 16, 1980*. Quarterly Report (Now Entitled Economic Review). September 1980, Vol. VII No. 3 pp. 26-36.
56. -----. *Energy Consumption And Economic Growth : A Study Of The Barbados Experience, 1960-1977*. Quarterly Report (Now Entitled Economic Review). Sept 1978, Vol. V No. 3 pp. 23-51.
57. -----. *Agricultural Credit In Barbados*. Quarterly Report (Now Entitled Economic Review). June 1977, Vol. IV No. 2 pp. 32-41.
58. -----. *Volume Index Of Agricultural Production – Correction*. Quarterly Report (Now Entitled Economic Review). March 1977, Vol. IV No. 1 pp. 23-26.
59. -----. *Volume Index Of Agricultural Production*. Quarterly Report (Now Entitled Economic Review). June 1976, Vol. III No. 2 pp. 28-35.
60. -----. *The Manufacturing Sector In The Economy Of Barbados*. Quarterly Report (Now Entitled Economic Review). March 1976, Vol. III No. 1 pp. 26-45.
61. CRAIGWELL, ROLAND and MAXWELL, CHANELLE. N. *Non-Interest Income at Commercial Banks in Barbados : an Empirical Note*. Economic Review. June 2006, Vol. XXXIII No. 1 pp. 26-36.
62. CRAIGWELL, ROLAND. *A Review of Marcus Haacker's (editor) The Macroeconomics Of HIV/AIDS (International Monetary Fund, 2004)*. Economic Review. June 2005. Vol. XXXII No.1 pp. 31-34.

- 
- 
63. CRAIGWELL, ROLAND C, GREENIDGE, KEVIN, GAINES, NIGEL and WARNER, ANN-MARIE. *Forecasting Aggregate Employment In Barbados*. Economic Review. September 2000, Vol. XXVII No. 2 pp. 18-27.
64. CRAIGWELL, ROLAND C and DOWNES, DARRIN. *On The Manufacturing Sector In Less Developed Countries*. Economic Review. September 2000, Vol. XXVII No. 2 pp. 38-42.
65. CRAIGWELL, ROLAND C and DOWNES, DARRIN. *A Review Of A.H.J. Helmsing "Competitive Response, Innovation And Creating An Innovative Milieu :The Case Of The Manufacturing Industry In Bulawayo, Zimbabwe" And J.Tybout "Manufacturing Firms In Developing : How Well They Do And Why*. Economic Review. September 2000, Vol. XXVII No. 2 pp. 38-42.
66. CRAIGWELL, ROLAND C, DOWNES, ANDREW S, ODLE, CYRILENE, PETER, SHERYL A and WORRELL, DELISLE. *Business Forecasting In The Caribbean : An Empirical Assessment*. Economic Review. June 1998, Vol. XXV No. 1 pp. 15-48.
67. CRAIGWELL, ROLAND C. *Poverty And Inequality A Review Of Samuel A. Morely, Poverty And Inequality In Latin America : The Impact Of Adjustment And Poverty In The 1980's, John Hopkins, 1995*. Economic Review. December 1996, Vol. XXIII No. 3 pp. 45-46.
68. -----, *Conceptual And Empirical Issues In The Specification Of A Poverty Line*. Economic Review. September 1991, Vol. XVIII No. 2 pp. 11-13.
69. -----, *Summary Of The United Nations Development Programme's Human Development Report 1990, Oxford University Press, 1990*. Economic Review. June 1991, Vol. XVIII No. 1 pp. 16-17.
70. -----, *Review Of Hawthorn, G., (Ed)" Standard Of Living", Cambridge University Press, 1987*. Economic Review. September 1990, Vol. XVII No. 2 p. 24.
71. -----, *Review Of Whiting, Edwin. "A Guide To Unemployment Reduction Measures", Macmillan Press, 1987*. Economic Review. September 1990, Vol. XVII No. 2 pp. 24-26.
72. CROWE, CHRISTOPHER. *Male Under-Performance In The Barbados Educational System : An Empirical Note*. Economic Review. June 2002, Vol. XXIX No.1 pp. 19-29.
73. CUMBERBATCH, CHERYL-ANN. *Social Security In Latin America : The Way Forward : A Review Of Carmelo Mesa-Lago "Changing Social Costs Of Economic Reform" (Lynne Reinner - Boulder & London, 1994)*. Economic Review. December 1994, Vol. XXI No. 3 pp. 10-12.
74. DALRYMPLE, KELVIN. *Managing Public Finances In A Small Developing Economy : A Review Of Marion Williams' "Managing Public Finances In A Small Developing Economy" , Praeger 2001*. Economic Review. June 2001, Vol. XXVIII No. 1 pp. 21-25.
75. -----, *Public Finance In The Caribbean A Review Of Michael Howard's "Public Finance In Small Open Economies: The Caribbean Experience", Praeger, 1992*. Economic Review. September 1993, Vol. XX No. 2 pp. 10-11.
76. -----, *Economic Crisis And Policy Choice: A Review of Nelson, Joan M. (Ed) Economics Crisis And Policy Choice - The Politics Of Adjustment In The Third World, Princeton*

- 
- 
- University Press, 1990. Economic Review. September 1991, Vol. XVII No. 2 pp. 14-16.*
77. DEANE, JUANITA. *Foreign Trade And Development A Review Of Jean-Marc Fontaine (Ed) "Foreign Trade Reforms And Development Strategy"* Routledge, London 1992. Economic Review. June 1993, Vol. XIX No. 1 pp. 15-17.
78. DOWNES, ANDREW and ALLEYNE, VALDA. *Evaluation Of Gainsharing Schemes In Barbados.* Economic Review. December 1998, Vol. XXV No. 3 pp. 18-40.
79. DOWNES, DARRIN. *Incentives And Investment A Review Of The United Nations Publication, Incentives And Foreign Direct Investment, UNCTAD, 1999.* Economic Review. December 1996, Vol. XXIII No. 3 pp. 47-50.
80. DOYLE, MICHELLE. *Growth Promoting Policies A Review Of Andre' Lana Resende, "Polices For Growth : The Latin American Experience", International Monetary Fund – 1995.* Economic Review. September 1996, Vol. XXIII No. 2 pp. 23-25.
81. FRANCIS, GLORIA. *Price Trends In Barbados, 1968-73.* Quarterly Report (Now Entitled Economic Review). December 1975, Vol. II No. 4 pp. 25-44.
82. GIBBS, ARLENE. *A Review of Improving Tax Administration In Developing Countries By Richard M. Bird And Milka Casengra De Jantscher.* Economic Review. September 1994, Vol. XXI No. 2 pp. 17-18.
83. GILL, KEISHA. *A Review of Nicholls and Seerattans' 'The Regulation of Non-Bank Institutions in the Eastern Caribbean Currency Union' (Caribbean Centre for Monetary Studies).* Economic Review. June 2005. Vol. XXXII No.1 pp. 39-43.
84. GOODING, GRAHAM. *Feeding Barbados.* Quarterly Report (Now Entitled Economic Review). June 1979, Vol. VI No. 1 pp. 25-28.
85. GREENIDGE, KEVIN, ARCHIBALD, XIOMARA and HOLDER, CARLOS. *Non-Technical Summary of paper on Debt and Fiscal Sustainability in Barbados.* Economic Review. December 2006, Vol. XXXIII No 3 pp. 26-36.
86. GREENIDGE, KEVIN, MOORE, WINSTON and SKEETE, RYAN. *Estimates Of The Long Run Equilibrium Exchange Rate In Three Caribbean Countries.* Economic Review. December 2004, Vol. XXXI No. 3 pp. 28-38.
87. GREENIDGE, KEVIN C. *Forecasting Domestic Credit : A Note.* Economic Review. June 1996, Vol. XXII No. 1 pp. 33 - 45.
88. -----. *Island Tourism A Review Of "Island Tourism : Management Principles And Practice". Edited By Michael Corbin And Tom Baum, John Wiley & Sons, 1995.* Economic Review. June 1996, Vol. XXIII No. 1 pp. 57-59.
89. GRIFFITH, E. H. C. *Financial Growth And The Small Business : Speech Delivered To The Graduating Small Business Class Of BIMAP On Thursday August 31, 1981.* Quarterly Report (Now Entitled Economic Review). December 1981, Vol. VIII No. 4 pp. 41-52.
90. -----. *Remarks Delivered At The Bridgetown Kiwanis Club's Annual Installation On Saturday October 6, 1979 At Paradise Beach Hotel.* Quarterly Report (Now Entitled Economic Review). March 1980, Vol. VII No. 1 pp. 50-66.

- 
- 
91. GRIFFITH, JENNIFER S. *Report On The Human Development Index*. Economic Review. December 1999, Vol. XXVI No. 3 pp. 44-48.
92. -----, *Investment In The Tradeable Sectors Of The Caribbean : Derivation And Trends*. Economic Review. September 1998, Vol. XXV No. 2 pp. 16-28.
93. -----, *Road To Economic Reform A Review Of "Rocky Road To Reform ; Adjustment, Income Distribution And Growth In The Developing World" Edited By Lance Taylor; The MIT Press, Cambridge, Massachusetts*. Economic Review. December 1997, Vol. XXIV No. 3 pp. 34-37.
94. HAGELBERG, GERRY B. *Some Current Questions On Sugar Policy And Implementation In Barbados*. Economic Review. June 1985, Vol. XII No. 1 pp. 23-30.
95. HINDS, DENISE. *Trade Policy Reform A Review Of Vinod Thomas, John Nash And Associates, "Best Practices In Trade Policy Reform, 1991"*. Oxford University Press. Economic Review. December 1993, Vol. XX No. 3 pp. 10-12.
96. HOLDER, CARLOS and GREENIDGE, KEVIN. *Savings, Investment, Growth And The Impact Of International Financial Liberalisation In The Caribbean*. Economic Review. September 2004, Vol. XXXI No. 2 pp. 25-34.
97. HOLDER, CARLOS. *An Analysis Of The Housing Market In Barbados*. Economic Review. June 1985, Vol. XII No. 1 pp. 13-18.
98. HOWARD, MICHAEL. *Tax Reform In Jamaica : A Review Of Bahl, Roy. (Ed) "Jamaican Tax Reform", Cambridge Massachusetts ; Lincoln Institute Of Land Policy, 1991*. Economic Review. September 1992, Vol. XIX No. 2 pp. 10-11.
99. -----, *Interest Rate Behaviour In An Open Developing Economy : The Barbados Experience, 1965-1976*. Quarterly Report (Now Entitled Economic Review). December 1976, Vol. III No. 4 pp. 24-50.
100. HOWARD, MICHAEL and WAPENSKY, BASIL A. *Behaviour Of Liquid Assets*. Quarterly Report (Now Entitled Economic Review). December 1974, Vol. I No. 3 pp. 31-38.
101. HOWARD, STACIA. A Review Of Jerry Z. Muller's "The Mind And The Market, Capitalism In Modern European Thought. (Alfred A. Knopf, 2002) *A Review of Jerry Z. Muller's "The Mind and the Market, Capitalism in Modern European Thought. (Alfred A. Knopf, 2002)*. Economic Review. June 2005. Vol. XXXII No.1 pp. 35-38.
102. HUDSON, COLIN. *Diversification Story*. Economic Review. June 1988, Vol. XV No. 1 pp. 13-22.
103. JOHNSON, CLYDE and SPRINGER, DESIREE. *Commercial Bank Supervision In Barbados*. Quarterly Report (Now Entitled Economic Review). December 1978, Vol. V No. 4 pp. 68-88.
104. JORDAN, ALWYN. *Impact of Changing Demographics On The Economy : A Review of Jose Alvarado And John Creedy Population, Ageing, Migration And Social Expenditure, Edward Elgar Publishing Ltd., 1998*. Economic Review. December 1998, Vol. XXV No. 3 pp. 44-49.
105. KING, DAVID. *Foreign Sales Corporation And Its Relevance To Barbados*. Economic Review. June 1985, Vol. XII No. 1 pp. 20-22.
106. LEON, HYGINUS. *Economic Theory, Empirical Estimation And Inference : Some Caveats*. Economic Review. June 1989, Vol. XVI No. 1 pp. 20-24.

- 
107. LEWIS, DENNY, GRIFFITH, JENNIFER S, MOORE, WINSTON and RAWLINS, GREGG C. E. *Impact Of Trade Liberalisation On Specific Sectors Of The Barbados Economy And Consumers*. Economic Review. June 2000, Vol. XXVII No. 1 pp. 21-30.
108. LEWIS, DENNY. *Note On The Measurement Of Construction Activity In Barbados*. Economic Review. December 1999, Vol. XXVI No. 3 pp. 21-28.
109. -----, *Quarterly Real GDP Series For Barbados, 1974-1995 : A Sectoral Approach*. Economic Review. June 1997, Vol. XXIV No. 1 pp. 17-56.
110. -----, *Sustainable Tourism Development A Review Of Hiroshi Kakazu "Sustainable Development Of Small Island Economies"*, Western Press, 1994. Economic Review. September 1996, Vol. XXIII No. 2 pp. 19-22.
111. -----, *Sustainable Tourism Development A Review Of Harry Coccossis And Peter Nijkamp, Editors, "Sustainable Tourism Development"*, Avery, 1995. Economic Review. December 1996, Vol. XXIII No. 3 pp. 56-60.
112. -----, *A Review Of Michael M. Papageorgiou D. And Choski, M. A. (Eds) "Liberalising Foreign Trade: Lessons Of Experience In The Developing World"*. Economic Review. December 1991, Vol. XVIII No. 3 pp. 28-33.
113. LYNCH, DOUGLAS. *Speech Delivered At A Farewell Dinner Given By Central Bank Of Barbados In Honour Of Messrs. Douglas Lynch And Robert Morris, July 2, 1984*. Economic Review. July 1984, Vol. XI No. 2 pp. 28-29.
114. MARSHALL, IONE. *Provisional Estimates Of Gross Domestic Product, Barbados, 1974-1976*. Quarterly Report (Now Entitled Economic Review). June 1977, Vol. IV No. 2 pp. 42-49.
115. MASCOLL, CLYDE A. *Trends In Effective Tax Rates Of Representative Individuals In Barbados During The 1980s*. Economic Review. December 1991, Vol. XVIII No. 3 pp. 16-22.
116. -----, *Wages, Productivity And Employment In Barbados 1949-82*. Economic Review. December 1985, Vol. XII No. 3 pp. 10-23.
117. MAXWELL, CHANELLE. *Emigration In Developing Countries : A Review Of 'Emigration Dynamics In Developing Countries', Edited By Reginald Appleyard, Ashgate Publishing Ltd., 1999*. Economic Review. September 2001, Vol. XXVIII No. 2 pp. 16-19.
118. MAYNARD, TRACY. *A Review Of The Sunanda Sen's Global Finance At Risk: On Real Stagnation And Instability*. Economic Review. December 2004, Vol. XXXI No. 3 pp. 39-43
119. MCINTYRE, ARNOLD M. *Trade Strategy, Structural Adjustment And The Balance Of Payments: A Survey*. Economic Review. December 1990, Vol. XVII No. 3 pp. 11-17.
120. MOORE, WINSTON. *Trends in the Barbadian Credit Card Market*. Economic Review. September 2006. Vol. XXXIII No. 2 pp. 25-32
121. MOORE, WINSTON and MAYNARD, TRACY. *Extrapolating the Discontinued Wages Index Using Data on Collective Wage Bargaining Agreements*. Economic Review. December 2005, Vol. XXXII No 3 pp. 29-38
122. MOORE, WINSTON, CRAIGWELL, ROLAND and COPPIN, KIM. *ATM Usage And Productivity In The Barbadian Banking Industry*. Economic Review. June 2003, Vol. XXX No.1 pp. 17-21

- 
123. MOORE, WINSTON and WHITEHALL, PETER. *Financing The Small And Micro Business Sector In Barbados*. Economic Review. December 2000, Vol. XVII No. 3 pp. 21-33.
124. MOORE, WINSTON. *Implementing Technical And Vocational Programmes In Developing Countries : A Review Of Marcus Powell*. Economic Review. December 1999, Vol. XXVI No. 3 pp. 49-53.
125. PARRIS, YVONNE. *State Of Electronic Banking In Barbados*. Economic Review. December 2002, Vol. XXVII No. 3 pp. 17-23.
126. PETER, SHERYL A. *Human Development : As It Relates To The Caribbean*. Economic Review. December 1996, Vol. XXIII No. 3 pp. 22-44.
127. PHILLIPS, EDSIL. *Financial Aspects Of The Barbados Sugar Industry*. Quarterly Report (Now Entitled Economic Review). December 1977, Vol. IV No. 4 pp. 27-57.
128. RODRIGUEZ, FLAVIA. *Comments On 'Taxation And Investment Incentives'*. Economic Review. December 1989, Vol. XVI No. 3 pp. 19-21.
129. SAUNDERS, MURIEL and WORRELL, DELISLE. *Government Expenditure In Barbados, 1946-1979*. Quarterly Report (Now Entitled Economic Review). June 1981, Vol. VIII No. 2 pp. 30-79.
130. SAUNDERS, MURIEL. *Chronicle Of Central Bank [Of Barbados] Policies 1973-1979*. Quarterly Report (Now Entitled Economic Review). March 1980, Vol. 8 No. 1 pp. 27-49.
131. SAUNDERS, MURIEL and WORRELL, DELISLE. *Commercial Bank Credit In Barbados 1946-77*. Quarterly Report (Now Entitled Economic Review). December 1978, Vol. V No. 4 pp. 27-68.
132. SKEETE, RYAN. *Macroeconomic Management Programmes And Policies*, Editors Mohsin S. Khan, Salch M. Nsouli And Chorng-Huey Wong : *A Book Review*. Economic Review. September 2002, Vol. XXIX No.2 pp. 19-21.
133. SPRINGER, BASIL G. *Important Issues Of Agricultural Diversification And Its Implementation In Barbados*. Economic Review. December 1985, Vol. XII No. 3 pp. 24-30.
134. STANFORD, SUNIELLE *Helping Countries Develop: The Role of Fiscal Policy*. Edited by Sanjeev Gupta et al. (International Monetary Fund) - *A review*. Economic Review. September 2005, Vol. XXXII No.2 pp. 43 - 48.
135. STEPHEN, JEREMY. *Towards a New Agenda for Growth Organisation of Eastern Caribbean States* Economic Review. December 2005 Vol XXXII No. 3 pp. 39-43.
136. STIGLITZ, JOSEPH. *Building Robust Financial System*. Economic Review. June 1998, Vol. XXV No. 1 pp 49-56.
137. STRAUGHN, RYAN. *A Review Of "Africa : Adjusting To The Challenges Of Globalisation"*, International Monetary Fund, Ministry Of Finance, Japan. Economic Review. December 2000, Vol. XXVII No. 3 pp. 34-39.
138. STUMP, SUZANNE and CRAIGWELL, ROLAND C. *Overview Of Current Labour Market Programmes In Barbados*. Economic Review. June 1999, Vol. XXVI No. 1 pp. 17-34.
139. WALKER, AUDRA. *Structural Adjustment In South East Asia : A Review Of Aziz, Ungku, (Ed), "Strategies For Structural Adjustment: The Experience Of South East Asia"*, Washington

- 
- DC, IMF Publication Services, 1990 . Economic Review. December 1992, Vol. XIX No. 3 pp. 10-12.
140. WARD, WARRICK. *E-Commerce - Possibilities And Challenges*. Economic Review. September 2000, Vol. XXVII No. 2 pp. 28-37.
141. -----, *Water - Is It Really All Around Us? : A Review Of James Winpenny. "Managing Water As An Economic Resource"*, Routledge, 1994. Economic Review. December 1997, Vol. XXIV No. 3 pp. 30-33
142. -----, *Role Of The Small Firm A Review Of A. Acs., B. Carlsson And R. Thurik, "Small Business In The Modern Economy: De Vries Lectures In Economics, Basil Blackwell, 1996*. Economic Review. December 1996, Vol. XXIII No. 3 pp. 51-55.
143. WARNER, ANN-MARIE. *Caribbean Banking System : A Review Of Marion V. Williams, "Liberalising A Regulated Banking System: The Caribbean Case*. Economic Review. June 1998, Vol. XXV No. 1 pp. 66-69.
144. WHITEHALL, PETER H. and R. Craigwell. *Tourism Maturity and a Ranking of Relative Tourism Potential in the Caribbean*. Economic Review. September 2005. Vol. XXXII No.2 pp. 28 - 41
145. -----, *Protectionism In The Manufacturing Sector Of Barbados 1960-80*. Economic Review. September 1984, Vol. XI No. 2 pp. 9-27.
146. WILLIAMS, MARION. *Pension Reform In The English-Speaking Caribbean*. Economic Review. September 2003, Vol. XXX No. 2 pp. 35-39.
147. -----, *Financial Services And The CSME : Opportunities, Threats And Challenges*. Economic Review. September 2003, Vol. XXX No. 2 pp. 29-32.
148. -----, *Address on Challenges Facing The Caribbean Relating To Global Financial Developments*. Economic Review. June 2001, Vol. XXVIII No. 1 pp. 17-20.
149. -----, *Address At The E-Commerce Seminar [Held At] Sherbourne Conference Centre, November 23, 2000*. Economic Review. December 2000, Vol. XVII No. 3 pp. 40-46.
150. -----, *Financial Regulation In The Barbados Economy*. Economic Review. December 1988, Vol. XV No. 3 pp. 11-16.
151. -----, *Financial Aspects Of Development Strategies In The Caribbean*. Economic Review. June 1987, Vol. XIV No. 1 pp. 14-18.
152. WORRELL, DELISLE. *Avoiding Financial Instability : A Review Of Andrew Crockett The Theory And Practice Of Financial Instability: Essays In International Finance*. Economic Review. June 1998, Vol. XXV No. 1 p. 70.
153. -----, *Economics For Developing Countries A Review Of Pierre-Richard Agenor And Peter Monties, Development Macro-Economics, Princetown University Press, 1996*. Economic Review. June 1997, Vol. XXIV No. 1 pp. 68-72.
154. -----, BOAMAH, DANIEL O and CAMPBELL, TREVOR. *Price Competitiveness Of Barbados Exports*. Economic Review. June 1996, Vol. XXIII No. 1 pp. 12-32.
155. -----, *Monetary Policy In Small Open Economies*. Economic Review. Sept. 1996, Vol. XXIII No. 2 pp. 13-18.

- 
- 
156. -----, *En Route To Modern Growth : Latin America In The 1990 A Review Of Gustav Rannis Ed. Essays In Honour Of Carlos Diaz-Alejandro, Inter-American Development Bank, 1994. Economic Review. June 1996, Vol. XXIII No. 1 pp. 53-54.*
157. -----, *Exports And Growth A Review Of Arnold McIntyre's Trade And Economic Development In Small Open Economies: The Case Of The Caribbean Countries, Praeger Publishers, 1995. Economic Review. June 1996, Vol. XIII No. 1 pp. 55-56.*
158. -----, *Heterodox Economies A Review Of Warren Samuels "New Horizons In Economic Thought: Appraisals Of Lending Economists", Edward Elgar, 1992. Economic Review. June 1995, Vol. XXII No. 1 pp. 26-29.*
159. -----, *Caribbean In The Era Of Free Trade. Economic Review. September 1995, Vol. XXII No. 2 pp. 12-13.*
160. -----, *Human Development Report 1995 : A Review Of The Human Development Report, 1995, New York , Oxford University Press, 1995. Economic Review. September 1995, Vol. XXII No. 2 p. 14.*
161. -----, *Down-To-Earth Look At Competitiveness A Review Of Donald Dollar And Edward N. Wilff, Competitiveness, Convergence And International Specialisation, MIT Press, 1993. Economic Review. December 1995, Vol. XXII No. 3 pp. 13-14.*
162. -----, *Does Regional Integration Promote Global Trade : A Review Of Regional Integration And The Global Trading System. Economic Review. September 1994, Vol. XXI No. 2 pp. 19-20.*
163. -----, *Monetary Integration In Europe And The Caribbean A Review Of Paul Degrauwe. "The Economics Of Monetary Integration", Oxford University Press, 1992 Economic Review. June 1994, Vol. XXI No. 1 pp. 10-11.*
164. -----, *Establishing A Regional Central Bank A Review Of Matthew Canzoneri, Vittori Grilli And Paul Masson. Establishing A Central Bank: Issues In Europe And Lessons From The US, Cambridge University Press, 1992. Economic Review. June 1993, Vol. XIX No. 2 pp. 12-14.*
165. -----, *Privatisation In The Developing World : A Review Of Adam, Christopher Et Al (Eds), Adjusting Privatisation : Case Studies From Developing Countries, Kingston, Jamaica, Ian Randle Publisher, 1992. Economic Review. December 1992, Vol. XIX No. 3 pp. 13-14.*
166. -----, *Government Financial Management : A Review Of Premchand A., (Ed.) "Government Financial Management : Issues And Country Studies", IMF, 1990. Economic Review. June 1991, Vol. XVIII No. 1 pp. 13-15.*
167. -----, *Finance And Investment In Barbados ". Economic Review. September 1990, Vol. XVIII No. 2 pp. 13-23.*
168. -----, *More On Exchange Rate Policies For Small Countries : A Review Of Argy, Victor And Degrauwe, Paul(Eds). Choosing An Exchange Rate Regime : The Challenge For Smaller Industrial Countries, IMF, 1990. Economic Review. December 1991, Vol. XVIII No. 3 pp. 32-33.*
169. -----, *Unauthorodox Perspective On Economic Stabilization : A Review Of Taylor, L.*

- 
- “*Varieties Of Stabilization Experience Toward Sensible Macroeconomics In The Third World*.” Economic Review. June 1990, Vol. XVII No. 1 pp. 10-11.
170. ----- . *Taxation And Investment Incentives “*. Economic Review. December 1989, Vol. XVI No. 3 pp. 13-19.
171. ----- . *Using Information For Economics Analysis : Address To The Conference On Economics And Information, Sponsored By The Library Association Of Barbados And The Barbados Economics Society, April 22, 1985*. Economic Review. June 1985, Vol. XII No. 1 pp. 31-33.
172. ----- and PRESCOD, RONALD. *Development Of The Financial Sector In Barbados 1946-1980 “* Economic Review. September 1983, Vol. X No. 2 pp. 9-26.
173. ----- . *Is There A Bright Future For Small Island Economies? : A Review Of Bimal Jalan (Ed), “Problems And Policies In Small Economies”, St Martin Press, 1982*. Economic Review. June 1983, Vol. X No. 1 pp. 12-14.
174. ----- . *Inflation, Growth And The Balance Of Payments A Review Of Cline, William R. And Weintraub, Sydney (Editors): “Economic Stabilization In Developing Countries”, Brookings Institute 1981*. Economic Review. December 1982, Vol. IX No. 3 pp. 15-16.
175. ----- . *The Determinants Of Changes In Commercial Bank Deposits*. Quarterly Report (Now Entitled Economic Review). September 1974, Vol. I No. 2 pp. 38-65.
176. ----- . *Quality and Professionalism In The Development Of The Tourism Sector*. Economic Review. June 1984, Vol. XI No. 1 pp. 24-26.
177. ZEPHIRIN, MARY G. *A Review of WILLIAMSON, JOHN (Ed), IMF Conditionality, Institute For International Economics, Washington, D C, 1983*. Economic Review. December 1983, Vol. X No. 3 pp. 17-18.
178. ----- . *External Debt Of Barbados*. Quarterly Report (Now Entitled Economic Review). December 1980, Vol. VII No. 4 pp. 24-67.



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