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Barbados: 2010 Article IV Consultation—Selected Issues

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BARBADOS

Selected Issues

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Approved by Western Hemisphere Department

November 11, 2010

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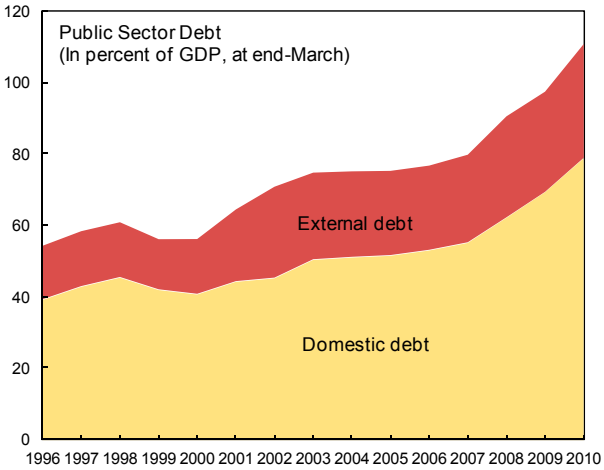
I. BARBADOS: GROWTH DYNAMICS[1]

A. Introduction and Background

1. **Lack of information about Barbados' growth potential and its determinants has hampered the analysis of inflationary pressures and debt dynamics in the country.** Accelerating inflation before the current recession broke out suggests that aggregate demand was running ahead of supply. However, sticky inflation figures so far in 2010 raise the issue of the relative importance of economic slack and commodity price shocks in determining the cost of living in Barbados. To shed light on the issue, measures of Barbados' potential to produce goods and services are needed, so that cyclical pressures on production resources can be separated from exogenous shocks. Moreover, the public debt as a ratio of GDP has experienced a marked spike in the past five years. Looking ahead, sustainable debt accumulation will depend on trend growth rates in the country, which creates an urgent need for forward-looking estimates of Barbados' growth potential. This note attempts to close this information gap by using a growth accounting exercise to estimate potential growth and its main drivers.



Sources: Barbados authorities and IMF staff estimates.

B. Estimating Potential GDP Growth

2. **Potential GDP in Barbados can be decomposed into three key determinants, using a production-function approach:**[2] (i) the capital stock; (ii) trend labor services; and (iii) trend total factor productivity (TFP). The notion of potential output calculated here is the maximum amount that can be produced without exerting excessive pressure on resource utilization. In order to estimate potential GDP, we first calculated TFP using the following equation, which assumes a simple Cobb-Douglas production function for the country:

$$tfp = rgdp - \alpha\, ks - (1-\alpha)\, \ell \qquad (1)$$

[1] This chapter was prepared by Gamal El-Masry and Lulu Shui.

[2] The methodology used in this chapter follows Estevão and Tsounta (2010).

All variables are in logarithm. The variable rgdp is Barbados' real GDP, ks is the capital stock and ℓ is the employed population. Note that variables like the utilization of available labor (e.g. average hours of work) or available capital (e.g. number of production shifts) are not included in equation (1), as these data are not available for Barbados. The coefficient (1-α) refers to the share of labor income in total value added. Since Barbados does not publish the income side of the national accounts, after a robustness check using a band of 55 to 70 percent (the usual range of values for different countries), we chose 65 percent for our final calculation.

3. **Once observed TFP is obtained, potential GDP can be calculated as**:

$$y^* = \alpha\, ks + (1-\alpha)(1-u^*) + (1-\alpha)\, lfp^* + (1-\alpha)\, wap + tfp^* \qquad (2)$$

To add important policy nuances to the analysis, labor services used in the production process is decomposed into its main components in equation (2): u, the unemployment rate; lfp, the labor force participation rate; and wap, total working-age population. Variables with * are trend values obtained using the HP filter, with the usual smoothness parameter applied to annual series of λ=100. We use the actual capital and working-age population in the calculation for potential output,[3] as these variables cannot deviate from notional "equilibrium" values in the short term (unlike the unemployment rate and labor force participation), i.e., they are "sunk" variables. Results are not sensitive to using smoother versions of capital and working age population growth, though. Trend TFP is used in (2) to smooth out the known residual cyclicality in measured TFP and to capture the underlying rate of technological progress and managerial innovation in the country. This residual cyclicality is exacerbated in the case of Barbados by the lack of information on labor and capital use.[4] The result of this decomposition is shown in Figures 1 and 2. In the following sections, we discuss Barbados' cyclical developments of the last 25 years, including developments in the key determinants of potential output.

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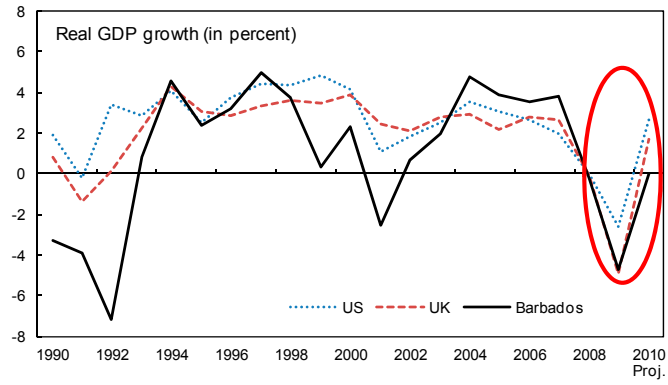
[3] There is no statistical release with information on the stock of capital in Barbados. For that, we used investment data from the national accounts and calculated the capital stock according to the perpetual inventory model, assuming a depreciation rate of 5 percent per year. The calculations began with data for 1980 and assumed an initial stock of capital that was about four times the annual investment at that time.

[4] In other country cases, information on the number of hours worked or number of work shifts would improve the measurement of actual hours of work and the intensity of capital utilization, respectively. In addition, for Barbados, there is some evidence from discussions with union representatives and employers, that in the context of the Social Partnership arrangements, firms are encouraged to hang on as long as possible to their work force, even as they reduce working hours. Likewise, it is not uncommon for companies to "take advantage" of lower tourist demand to close whole wings of hotel facilities for renovation, thus reducing the utilization of the capital stock in times of weaker demand.

C. Some Stylized Facts on Barbados' Business Cycles

4. **Over the past 25 years, Barbados experienced three distinct business cycles.** The deepest economic recession in recent memory occurred in the early 1990s, when the economy contracted by a cumulative 14 percent over three years. Following strong and concerted adjustment efforts during 1992-93, the economy rebounded vigorously, but it took four years to reach the output level that prevailed before the onset to the recession. The next recession, about 10 years later, was far less pronounced (with a drop from peak to trough of less than 3 percent), and the economy recovered much quicker. The current recession (started in late-2007) will likely lie between the two previous episodes in terms of depth and length.

5. **Barbados' economic fortunes are closely linked to those of its key tourism markets.** Past performance shows that, in general, a slowdown in U.K. and U.S economic growth is quickly transmitted to the Barbados economy and amplified many times over.[5] This was particularly valid for the 1991-92 and 2001 episodes, when growth barely dipped below zero in the two advanced economies, but triggered economic recessions in Barbados. However, the most recent global recession is somewhat different, particularly as output contracted more sharply in the United States and in the United Kingdom, while so far the timing and depth of the slump has been more synchronized across the three economies. This may bode ill for Barbados, since the U.S. and U.K. recoveries are likely to be weaker than in previous slowdowns, and unemployment in these economies may persist at elevated levels for many years to come, suggesting that the economic rebound in Barbados may be more anemic and prolonged than in previous episodes.



Sources: Central Bank of Barbados, WEO and IMF staff estimates and projections.

D. The Evolution of Capital, Labor, and Total Factor Productivity

6. **Over the past 20 years, Barbados has seen its capital accumulate at a vigorous rate.** Our estimates suggest that the capital stock has grown at the rate of about 6.5 percent over the past ten years. During that period, capital accumulation grew above its trend during

[5] In this respect, the general phrase that "if the United States sneezes, then the Barbados economy catches a cold" appears to hold true for the past generation.

periods of economic upswings, and less forcefully during recessions. In that respect, the current recession is no exception. The observed lower investment during the current economic downturn is explained to a large degree by the sharp decline in FDI and a constrained public sector budget. As the demand for Barbados' real estate has stagnated and inventories have built up, the profitability of new real estate projects has deteriorated. Similarly, weak demand for tourism services has forced facilities to operate below their capacity, providing a disincentive to investments in new tourism developments. Also, as the central government budget came under increasing pressure during the economic downturn, spending on capital projects was cut significantly. [6]

7. **Labor usage posted significant growth in the last two decades, as unemployment rates declined and labor force participation increased, despite some deceleration in working-age population (Figure 1).** While the *working-age population* grew at an annual average rate of 0.4 percent over the past 20 years, the *labor force* in Barbados grew by twice that rate (0.8 percent), as *labor force participation* increased considerably, particularly through the mid-2000s. However, from its peak of 70 percent in 2005, the labor force participation rate dropped to 66.9 percent at end-2009, reinforced by the onset of the recession, when potential workers withdrew from the labor force, discouraged by waning work opportunities and the reality of rising unemployment and longer job-search spells.[7] The number of *employed persons* grew since 1990 by an even higher average rate of 1.1 percent per year, resulting in a significant decline in the unemployment rate, from over 24 percent at the height of the 1993 recession to less than 7½ percent in 2007. The current recession has partly reversed that trend, pushing unemployment to 10.7 percent in the first quarter of 2010.

8. **While growth in the last two decades had benefitted from increased use of production factors, total factor productivity has actually declined.** Over the course of the past 20 years, TFP has declined, on average, by about 1-2 percent a year. During that period, TFP saw only brief, albeit small, positive growth, which coincided with peaks in real output growth, suggesting that those observations could have been caused by increased utilization of production factors, which are not controlled for in our calculations but only smoothed out by a statistical filter.

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[6] It is also possible that Barbados' high debt is starting to adversely impact investment. In studying the impact of high public debt on long-run economic growth, Kumar and Woo (2010) estimated that a 10 percentage point increase in debt was associated with a decline in investment of 0.4 percentage points of GDP.

[7] This drop was particularly severe among female wage earners, who saw their participation rate fall by 3.4 percentage points (from 64.5 percent in 2005 to 61.1 percent at end-2009), compared to a 1.8 percentage reduction for their male counterparts (from 75.2 percent in 2005 to 73.4 percent at end-2009).

Annual Growth of Potential Output Components				
	1988-1997	1998-2007	2008	2009
Potential Growth, % change	0.45	2.26	1.87	0.64
Capital Stock, % change	3.95	7.11	6.83	3.65
Labor Services				
NAIRU, % change	-1.83	-5.51	-3.27	-3.14
NAIRU, percentage points	17.67	10.72	8.23	7.97
TFP, % change	-2.10	-1.00	-0.67	-0.70

Source: IMF staff calculations.

Contribution to Potential Output Growth (in percent)				
	1988-1997	1998-2007	2008	2009
Potential Growth, % change	0.45	2.26	1.87	0.64
Capital Stock	1.38	2.49	2.39	1.28
Labor Services	1.16	0.78	0.15	0.07
NAIRU	0.24	0.48	0.20	0.18
Labor force participation rate	0.66	0.02	-0.23	-0.24
Working age population	0.26	0.28	0.18	0.12
TFP	-2.10	-1.00	-0.67	-0.70

Source: IMF staff calculations.

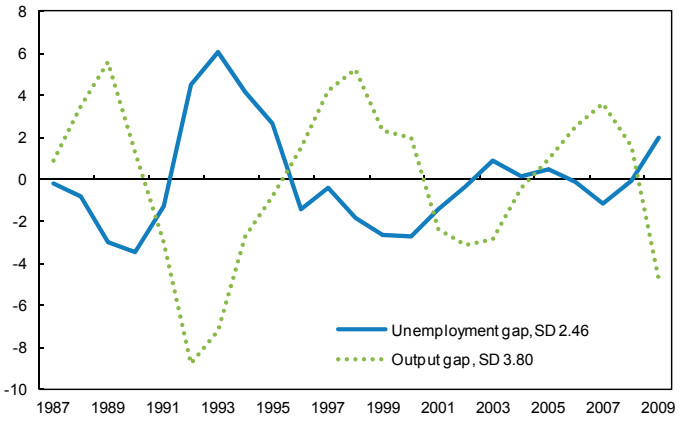
9. **Potential GDP is estimated to have grown at an annual rate of just over 2 percent over the past 10 years.** Actual GDP grew above its long-term potential during 2005-07, when there were clear signs of overheating in the economy. The GDP boom was in great part powered by large public investment projects (e.g., a cricket stadium and roads) in the run-up to the Cricket World Cup in 2007, and other off-budget projects financed through public-private partnership arrangements (PPPs), such as a new prison. The unemployment rate dropped to 7.1 percent in Q4 of 2007, its lowest level in twenty years. High inflationary pressures during 2005-7 were masked by price controls on petroleum products, which were lifted in early 2008, leading to a burst in CPI inflation in that year. Absent these controls, average inflation would have been higher during 2005-07 and lower during 2008–09.

Growth and Contraction (Average percentage change, unless otherwise indicated)		
	2005-07	2008-09
GDP	3.8	-2.5
Unemployment rate	8.6	9.1
CPI inflation 1/	5.8	5.9
Broad money	10.4	2.8
Investment (in % of GDP)	16.0	13.2
Of which: central government	9.7	5.6
Imports	8.9	-9.3
1/ In 2008, inflation was boosted by a step adjustment in domestic petroleum prices.		

Sources: Barbados authorities and IMF staff estimates.

10. **Employment is less volatile than output.** Over the past 20 years, employment levels have not varied as much as output has, partly in line with international evidence but also possibly reflecting social policies and priorities forged through the tripartite Social Partnership arrangement. One of the main objectives of the Social Partnership consultations has been to safeguard employment as a national priority through agreement on appropriate incomes policies. Thus, over the period 1987-2009, the standard deviation of the *output gap* (defined as the difference between actual and potential output as a share of potential output) was 3.80, compared with the standard deviation for the *unemployment gap* (defined as the difference between the unemployment rate and the non-accelerating inflation rate of unemployment, NAIRU, used in the calculation of potential output) of 2.46. That said, there are some signs that, as the current recession persists into a third year, financial pressures are mounting on employers and increasing the chance of more firings in the coming.[8]

Barbados: Output and Unemployment Gaps, 1987-2009



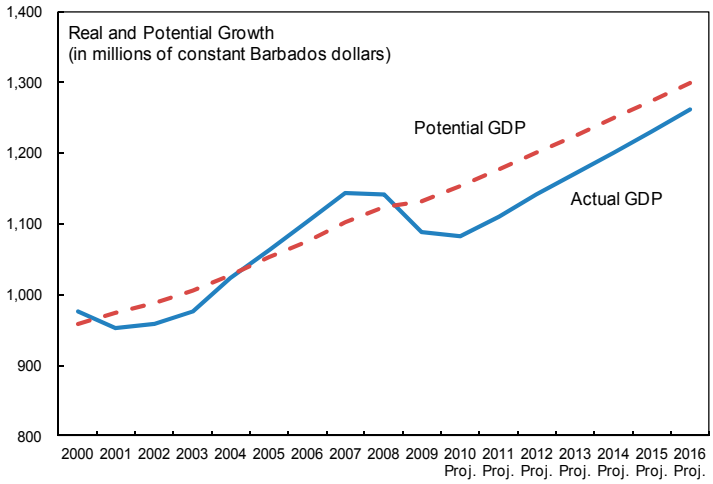
Source: IMF staff calculations.

[8] As a case in point, the Central Bank of Barbados reported in its economic review for the third quarter of 2010 that continued low demand in the construction sector has forced the only cement company on the island to lay off half of its workforce, albeit temporarily.

11. **Capital controls do not appear to have affected potential output growth in a significant way.** The Central Bank of Barbados (CBB) maintains capital controls that are aimed at protecting the country from volatile and destabilizing short-term movements. These include the requirement to register at the CBB large capital inflows, including FDIs, to facilitate the repatriation of profits and capital on liquidation or sale. While removing the capital controls on *outflows* could, in theory, increase the attractiveness of Barbados for FDI *inflows* (Ostry, 2010), in reality these controls, especially on outward flows, have been applied in a very liberal way in Barbados. There is, therefore, little evidence that they have hampered investment in viable projects. Another argument is that fewer controls on *inflows* could reduce the cost of capital for investment by allowing competition for the funding of projects, including for domestic investors (Edwards, 2002). While this may be true, it comes, however, at a high cost of exposing the country to more volatile debt financing flows and circumventing domestic monetary policies.

E. Conclusion and Policy Implications

12. **The short-term recovery of the Barbados economy will critically depend on the rebound of demand for its services in its traditional markets.** Given that unemployment in the United States and the United Kingdom—Barbados' most important tourist source markets—are likely to remain at elevated levels for the foreseeable future, it is expected that the recovery in Barbados will also be weak and protracted. Accordingly, under staff's baseline projections, the output gap, which opened during 2008-10, is not expected to close completely over the medium term. We assume that the average potential growth rate for the next 5 years will be 2 percent, as investment rates will take a while to return to pre-crisis levels. We expect potential growth to go back to its long term rate of 2¼ percent after 2015.



Source: IMF staff estimates and projections.

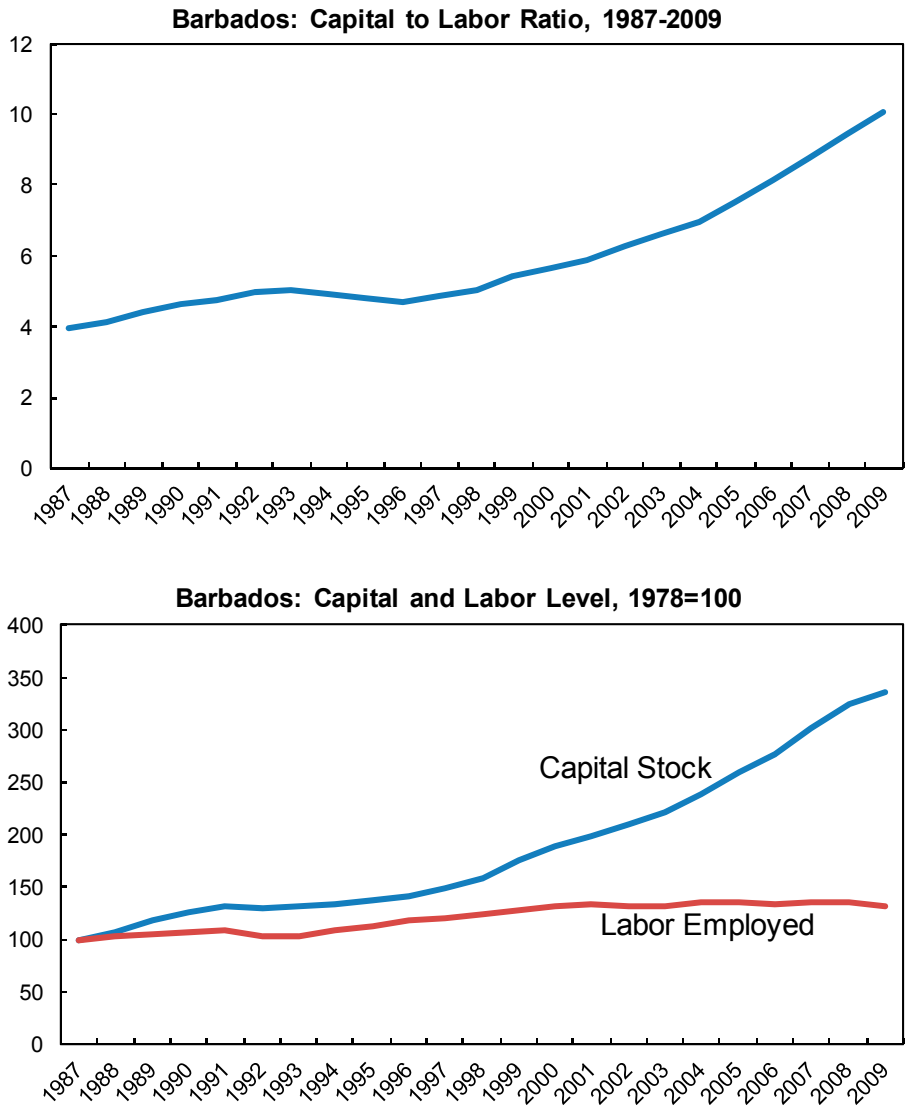
13. **However, over the medium-to-long term, potential output could be raised by policies that would diversify the economy and boost TFP growth**:

- **Barbados remains an attractive tourist destination.** While demand from its traditional markets that are facing cyclical downturns has weakened, other emerging markets—hitherto untapped—offer new growth prospects. To this end, the authorities have identified Brazil and East Asia as growth opportunities. They have already introduced a weekly flight to São Paulo and are studying creative programs to attract tourists from the Far East for combined "Caribbean" experiences with neighboring islands.

- **Efforts to boost TFP growth could include streamlining and increasing efficiency in government services**. This would reduce the bureaucratic burden of doing business in Barbados and promote investment. The authorities could also review the country's immigration policies to ensure that foreign investors are not discouraged from employing expatriate professional staff who would help introduce new know-how and international best practices to the country. Finally, strategic investments, such as the privately funded underwater pipeline to pump natural gas from Trinidad and Tobago to Barbados, are steps in the right direction. This project has the promise of lowering the cost of electricity in Barbados, while reducing the carbon footprint of electricity generation.

Chapter I Figure 1. Barbados: Potential Output Growth

Chapter I Figure 2. Barbados: Capital and Labor Growth



Sources: Barbados authorities; and IMF staff calculations.

References

Central Bank of Barbados, 2010a, Economic Review, March.

———, 2010b, Economic Review, June.

———, 2010c, Economic Review, September.

———, 2010d, Economic and Financial Statistics, June.

Edwards, Sebastian, 2002, "Capital Mobility, capital Controls, and Globalization in the Twenty-First Century," *The Annals of the American Academy of Political and Social Science*, No. 597, Pages 261–270

Estevão, Marcello and Evridiki Tsounta, 2010, "Canada's Potential Growth: Another Victim of the Crisis?", *IMF Working Paper*, No. 10/13, International Monetary Fund.

International Monetary Fund, WEO Data Base.

Kumar, Manmohan S. and Jaejoon Woo, 2010, "Public Debt and Growth," *IMF Working Paper*, No. 10/174, International Monetary Fund.

II. BARBADOS: EXTERNAL STABILITY[1]

This analysis of Barbados external stability assesses the appropriateness of the real effective exchange rate relative to economic fundamentals and the adequacy of foreign reserves. Subject to considerable uncertainty, Barbados external position is not likely to give rise to disruptive exchange rate adjustments. The real effective exchange rate, while somewhat overvalued, is close to its equilibrium level and reserves could be considered adequate, though barely. Nonetheless, as a small tourist-dependent economy with a fixed exchange rate and volatile capital inflows, Barbados could shore up its external sector through fiscal consolidation and structural reforms to raise sustainable growth rates.

A. Barbados: Stylized Facts

1. **Barbados has a small, open, tourism-dependent economy with a fixed exchange rate.** The tourism sector, which is geared toward a higher-end clientele, accounts for about 50 percent of foreign exchange earnings and 40 percent of GDP. A track-record of more than thirty years and broad-based social consensus enhance the credibility of the currency peg to the U.S. dollar. Capital controls, particularly on residents, allow for some smoothing in capital flows but do not seem to insulate the economy enough to guarantee a significant role to monetary policy in determining real activity. Interest rate differentials with core economies may also play a role in smoothing capital movements. The economy is particularly vulnerable to economic downturns in its primary tourism markets (the United Kingdom, the United States, and Canada) and volatility in oil prices.

2. **Barbados also relies on external borrowing to maintain an international reserve cushion to support the pegged exchange rate.**[2] To date, an investment-grade credit rating has enabled Barbados to access international capital markets on reasonable terms. However, Barbados' credit rating has deteriorated along with the public sector debt dynamics. Public-sector debt has risen to about 110 percent of GDP, while Barbados' credit rating has dropped two notches to one level above junk status.[3] Nonetheless, projected public-sector external debt is about 35 percent of GDP and has a smooth amortization profile.

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[1] Prepared by John Ralyea.

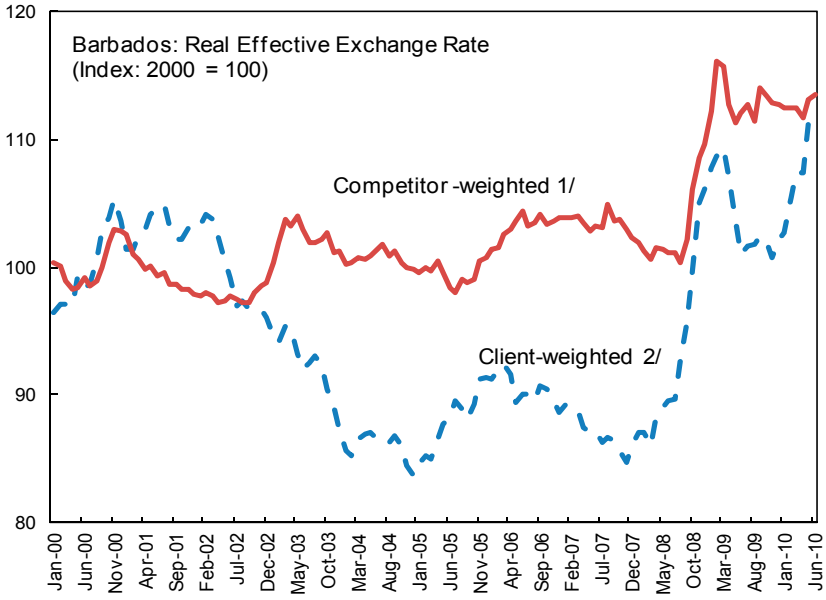
[2] The authorities have issued US$320 million (8.8 percent of GDP) in external bonds within the last 15 months to keep reserves above four months of imports.

[3] On October 22, 2010, Standard & Poor's lowered Barbados credit rating to BBB- from BBB on rising government debt. This follows an earlier downgrade in June 2009 for the same reason.

3. **Prior to the current downturn, the economy had under gone three relatively short periods of recession (1974-75, 1981-82, and 1990-92) interspersed with long periods of positive growth.** A common trait of these downturns was that they were either preceded or accompanied by periods of relatively large fiscal deficits. These deficits triggered current account disequilibria (Boamah et al, 2009), made worse by developments in the external economy (oil shocks in the 1970s, aftermath of 9/11, and the 2007 global economic crisis).

The Barbadian Dollar

4. **Barbados' CPI-based real effective exchange rate has appreciated recently relative to its main tourism-competitor and client countries.** The real effective exchange rate weighted is now about 15 percent above its 30-year historical average. The appreciation since 2007 is largely driven by disparities in inflation rates. While inflation in Barbados has come down considerably since a spike in late 2008, it remains somewhat elevated relative to many Caribbean countries and its primary tourism markets. The inflation level largely reflects public spending that pushed domestic absorption well above the economy's output potential before the recent global economic crisis.



Source: INS
1/ Weighted by primary tourism competitor countries: Belize, The Bahamas, Dominica, Greneda, Guyana, Jamaica, Mexico, St. Lucia, St. Vincent, Trinidad and Tobago.
2 / Weighted by primary tourism client countries: Canada, Euro area, the U.K. and the U.S.

Barbados's External Sector

5. **Barbados' net capital inflows are volatile though they have been positive in each of the last six years.** During this period, net flows have ranged from 6.3 percent of GDP to 11.3. The peak in 2005 was fueled by public and private sector borrowing.

Barbados: Capital Flows, 2002-10
(In percent of GDP)

	2005	2006	2007	2008	2009	2010E
Net capital inflows	11.3	6.3	8.9	7.2	7.1	6.9
Public	3.4	1.2	-1.8	-0.5	4.3	4.6
Private	7.3	4.4	9.7	8.1	1.3	2.5
SDR allocation	0.0	0.0	0.0	0.0	2.2	0.0
Errors and Omissions	0.7	0.7	1.0	-0.3	-0.7	-0.1

Sources: Central Bank of Barbados; Fund staff estimates

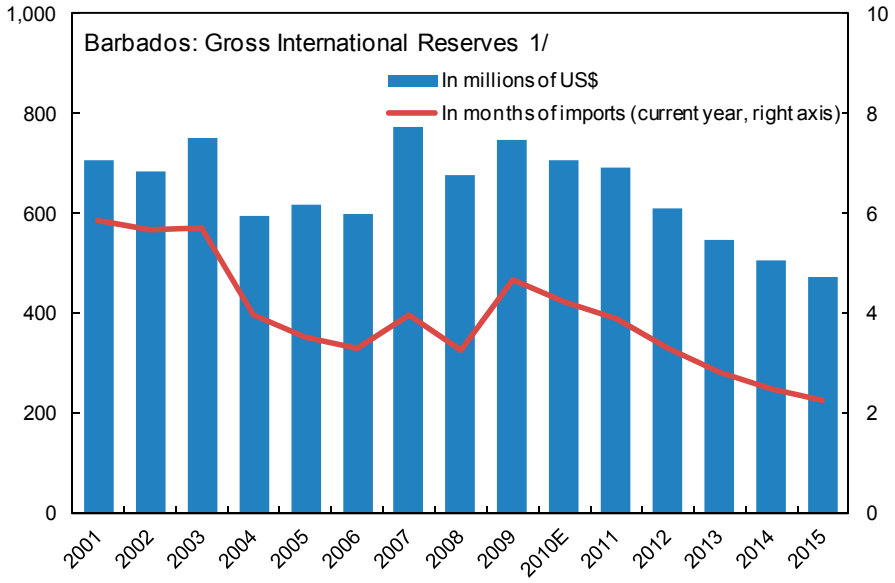
6. **Capital inflows have helped finance significant current account deficits and reserves have remained above three-months of imports over the last ten years.** On net, inflows have supported an increase in international reserves since 2005. However, reflecting the volatility in capital inflows, reserves have been spent to help finance current account deficits in three of the last six years. After dipping in 2008 from the recent year-end peak of US$774 million in 2007, foreign reserves increased in 2009 thanks to the SDR allocations and bond placements (US$120 million).[4] This increase is projected to be reversed in 2010, despite net new external bond debt issuance of US$100 million.

Barbados: Capital Flows and Foreign Reserves, 2005-10
(In percent of GDP)

	2005	2006	2007	2008	2009	2010E
Net capital inflows	11.3	6.3	8.9	7.2	7.2	6.9
= FX reserves (- = accumulation)	-0.6	0.5	-4.4	2.4	-1.7	1.0
+ Current account balance	-10.7	-6.9	-4.5	-9.6	-5.5	-7.9

Sources: Central Bank of Barbados; Fund staff estimates.

[4] At end-December 2009, 30 percent of reserves were classified by the Central Bank of Barbados as government assets held in a sinking fund. The analysis of reserve adequacy that follows assumes that these reserves are liquid and readily available for balance of payments needs.



Source: Central Bank of Barbados; IMF staff calculations.
1/ Data after 2010 are staff projections.

7. **Under the baseline scenario in the accompanying staff report, Barbados' reserves are projected to fall continuously in nominal terms**, absent significant new external public sector borrowing. The baseline assumes a gradual closing of the existing output gap**.** At the same time, the current account balance is projected to decline to around 6.0 percent of GDP, between its 10-year and 15-year historical averages, and other components of the balance of payments gradually return toward their 10-year averages in terms of GDP. The projected fall in reserves at a time when current account ratios are stabilizing at long-run averages suggests a possible misalignment of the exchange rate or an unsustainable policy mix.

B. Assessment of Exchange Rate

Three approaches have been applied to assess the level of the Barbadian dollar relative to its medium-term equilibrium level. According to these approaches—and subject to significant statistical uncertainty—the real effective exchange rate for the Barbadian dollar is estimated to be only about 4 - 10 percent above its equilibrium level.

Macroeconomic balance approach

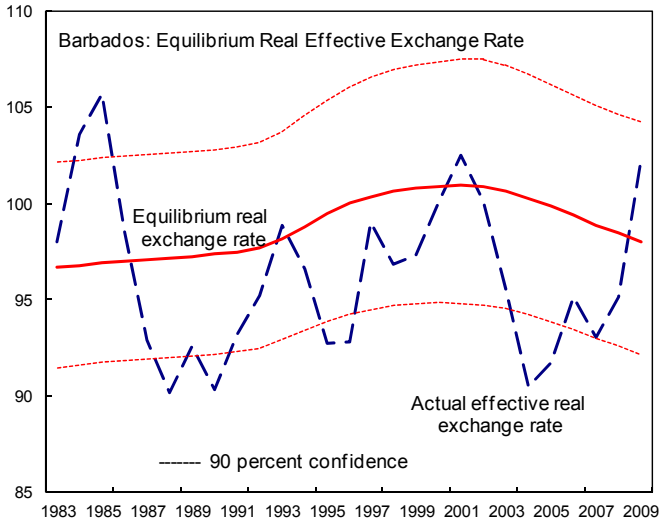
8. **The macroeconomic balance approach indicates that Barbados' real effective exchange rate is somewhat consistent with external and internal balance.** The projected current account deficit in 2015 of 6.0 percent of GDP—considered to be the underlying current account balance—exceeds the equilibrium current account balance calculated under the macroeconomic balance approach by about two percentage points of GDP (Box 1). Using an elasticity of the current account to the real exchange rate of 0.3, this implies that the real effective exchange rate is about seven percent overvalued.

External Sustainability Approach

9. **The external sustainability approach points to an overvaluation.** This approach focuses on the link between the external stock position and the flow current account position (Box 2). Under this approach, the assessment of the sustainable level of the current account deficit ultimately depends on the choice of the "sustainable" net foreign asset (NFA) position. However, data for Barbados NFA are not available. Instead, the NFA was calculated for 2009 as the sum of Barbados's current account balances since 1978. The analysis suggests that stabilizing Barbados's NFA at its end-2009 position (-70 percent of GDP) would require keeping the current account deficit at about 3.0 percent of GDP. Using the same elasticity of the current account to the real exchange as in macroeconomic balance approach, suggests that a real effective exchange rate depreciation of about ten percent would be necessary to improve Barbados's underlying current account balance to its NFA-stabilizing level.

Equilibrium Real Exchange Rate Approach

10. **A third approach to assessing external stability risks is to estimate the equilibrium real exchange rate (ERER).** The analysis of Barbados' ERER is based on the CPI-based real effective exchange rate. It is assumed that the ERER is a function of a set of fundamentals and that a reduced form of this relationship could be estimated in a panel setting (Box 3). After a large depreciation following the 2001 recession, the real exchange rate has generally appreciated since 2004 and appears to have overshot the ERER in 2009 by about four percentage points.



Source: INS; and Fund staff calculations.

Chapter II Box 1. Macroeconomic Balance Approach[1]

The macroeconomic balance (MB) approach to exchange rate assessments involves three steps. First, an equilibrium relationship between Barbados's current account balances and a set of fundamentals is estimated via pooled least squares on panel data from 55 advanced and emerging market economies. Second, an equilibrium current account (CA norm) for Barbados is computed from this relationship as a function of the levels of fundamentals projected to prevail in the medium term. Third, the real exchange rate adjustment that would close the gap between the estimated CA norm and the underlying current account balance (i.e. stripped of any temporary factors or shocks such as output gaps) is computed.

The CA norm for Barbados was estimated based on panel data estimates from Lee et al (2008). The main fundamentals that determine the CA norm are the fiscal and oil balances relative to GDP, demographic variables, and relative output and income variables.

Barbados: Current account norm determination

	CGER Coefficients	2015
Constant	-0.0029	-0.3
Fiscal balance/GDP	0.1893	-0.3
Old-age dependency relative to trading partners	-0.1234	0.1
Population growth relative to trading partners	-1.0285	0.4
Oil balance/GDP	0.1688	-1.0
Per capita income relative to trading partners	0.0196	-1.2
Output growth relative to U.S.	-0.1570	-0.1
Lagged current account/GDP	0.3656	-1.6
CA Norm (% of GDP)		-4.1

Assuming that the trade balance is the only source of current account adjustment, the magnitude of the exchange rate adjustment needed to close the gap between the CA norm and the underlying current account is derived by applying the elasticity of the current account balance to the real exchange rate. The latter is computed as a difference of export and import elasticities weighted by Barbados' export and import ratios to GDP. Using the export and import volume elasticities of (-0.71) and (0.92), respectively, derived in Lee et al (2008), the elasticity of the current account to the real exchange rate for Barbados was calculated to be -0.30.

[1] Based on Lee et al (2008).

Chapter II Box 2. External Sustainability Approach[1]

The external sustainability (ES) approach calculates the difference between the actual current account balance and the balance that would stabilize the NFA position of the country at some benchmark level. The approach relies on an intertemporal budget constraint which requires that the present value of future trade surpluses is sufficient to pay for the country's outstanding external liabilities. One way to do this is to ensure that the size of net foreign assets is stabilized relative to the size of the economy.

To this end, changes in net foreign assets (NFA_t) are assumed to be due either to net financial flows or to changes in the valuation of outstanding assets and liabilities. Assuming that capital account transfers, errors and omissions, and net capital gains are zero:

$$NFA_t - NFA_{t-1} = CA_t$$

Expressing all variables as ratios to GDP, the current account that stabilizes the NFA/GDP ratio at nfa^s is:

$$ca^s \approx \frac{g+\pi}{1+g+\pi} nfa^s$$

where g is the growth rate of real GDP and π is the inflation rate.

The NFA-stabilizing current account deficit for Barbados is 3.0 percent, based on following assumptions for the parameters in equation (2):

- nfa^s = -70%, the benchmark net foreign assets relative to GDP was estimated as the accumulated current account balances from 1978 through 2009 over estimated GDP for 2009.
- g = 2.5%, the projected average medium-term growth rate for Barbados.
- π = 1.9%, the projected medium-term consumer price inflation for the United States.

Using the same elasticities as in the MB approach, any difference between NFA-stabilizing current account balance and the underlying current account balance is translated into the real exchange rate adjustment that—over the medium term—would bring the current account balance in line with its NFA-stabilizing level.

[1] Based on Lee et al (2008).

Chapter II Box 3. Equilibrium Real Exchange Rate (ERER) Estimation[1]

The ERER estimation assumes that the long-run CPI-based real effective exchange rate is determined by a set of fundamentals. The model is estimated using autoregressive distributed lag and OLS-based panel corrected standard errors. For comparability purposes, the analysis is limited to a set of CARICOM and tourism-dependent countries.[2] The equilibrium real exchange rate is assumed to be driven by the following fundamentals:

- **Productivity differential**. Per capita tourist arrivals as a share of per capita tourist arrivals in The Bahamas- the country in the region with the highest per capita tourist arrivals –is used as a measure of relative sector productivity. A positive coefficient on this variable reflects faster productivity growth in the tourism sector. The resulting higher wages in the tourism sector will put upward pressure on wages in the non-tradeables sector, leading to a real appreciation of the exchange rate according to the Balassa-Samuelson effect.

- **Terms of trade**. A positive coefficient on this variable suggests that higher terms of trade appreciate the real exchange rate, possibly through real income or wealth effects. The proxy used in the model is the movement in terms of trade of goods and services (TT) not explained by movements in the terms of trade in goods (TTG) only.

- **Government consumption**. A positive coefficient on this variable indicates that higher government consumption (scaled by GDP) is associated with appreciation of the ERER, perhaps reflecting that such consumption primarily falls on non-tradeables, thereby raising their price relative to tradeables.

- **Net foreign assets**. Theory predicts that debtor countries need a more depreciated real exchange rate to generate the trade surpluses necessary to service their external liabilities. A positive coefficient on this variable is consistent with theory.

Barbados: Equilibrium Real Exchange Rate determination

Estimation:	SUR GLS Caricom	SUR PCSE Caricom
Government Consumption	0.53**	0.53**
	(2.02)	(2.15)
TOTT	0.1	0.1*
	(1.57)	(1.75)
Productivity	0.06	0.06
	(0.68)	(1.15)
Net foreign assets	0.03	0.03
	(1.39)	(1.28)
Constant	4.56***	4.56***
	(83.20)	(116.62)
Estimates of the ECM coeeficients	-0.29***	-0.29***
	(-7.63)	(-5.42)
Wald test	60.30	45.03
Prob>X2	0.00	0.00
N (Number of groups)	10	10

Note: A *, **, *** indicate signficance at the 10, 5, 1 percent, respectively

[1] This box is based on Pineda et al (2009).

[2] Tourism-dependent countries are defined as those where tourism exports exceed a threshold of 20 percent of total exports. Data limitations restricted the list to: Antigua and Barbuda, The Bahamas, Barbados, Belize, Cyprus, Dominica, Dominican Republic, Egypt, Fiji, Greece, Grenada, Jamaica, Jordan, St. Kitts and Nevis, Malta, St. Lucia, St. Vincent and the Grenadines, Mauritius, Samoa, Seychelles, and Vanuatu.

C. Reserve Adequacy Assessment

Barbados reserves provide a critical backstop for the currency peg and a buffer in the event of capital or current account shocks. Barbados reserves have averaged roughly 20 percent of GDP since 2000 and varied within a range of 19 percent to 23 percent of GDP. At face value, traditional and composite indicators suggest the current level of reserves may not be adequate. However, these indicators fail to account for liquid foreign bank assets that could cover non-resident deposit outflows at the time of a shock and the existence of capital controls. Conversely, reserves appear adequate when assessed against specific shocks and an insurance model. On balance, Barbados reserves appear adequate, but just barely - further reserve accumulation is desirable.

Reserve Adequacy Indicators

11. **Traditional reserve adequacy indicators for Barbados have improved recently, but reserves remain short of covering short-term external debt.** As a ratio to broad money, reserves are around 20 percent, the upper value of a conventional range for this measure. The reserve coverage of short-term debt has increased almost 20 percentage points in the last two years, helped by external bond issuance and the 2009 SDR allocation, to 69 percent. While short of the 100 percent Greenspan-Guidotti threshold, non-resident deposits comprise 61 percent of short-term debt. In the event of a deposit run, commercial banks' foreign assets, which exceeded their foreign liabilities by about US$300 million at end-April 2010, could serve as a first line of defense. In addition, capital controls would likely slow deposit flight. This suggests that less than full reserve coverage of external short-term debt may be justified.

Barbados: International Reserve Coverage 1/

	2004-07 Average	2008	2009	2010
GIR in percent of				
Broad money (conventional threshold > 20 percent)	24	21	23	20
Short-term external debt by remaining maturity (> 100 percent)	80	49	70	69
Minimum composite reserve thresholds (US$ million)				
Wijnholds and Kapteyn (2001) 2/	…	1,337	1,127	1,127
Lipschitz, Messmacher, and Mourmouras (2006) 3/	…	2,204	1,914	1,922
Memorandum item				
GIR (US$ million)	…	678	745	707

Sources: Central Bank of Barbados; Fund staff calculations.

1/ Does not include external non-bank private-sector short-term debt due to lack of data. Also, 2010 projections are estimated based on commercial bank data as of April 2010.

2/ Full coverage of external short-term debt on a remaining maturity basis (net of non-resident deposits) plus 20 percent of broad money.

3/ Full coverage of foreign debt service, plus 10 percent of broad money, plus 20 percent of annual imports.

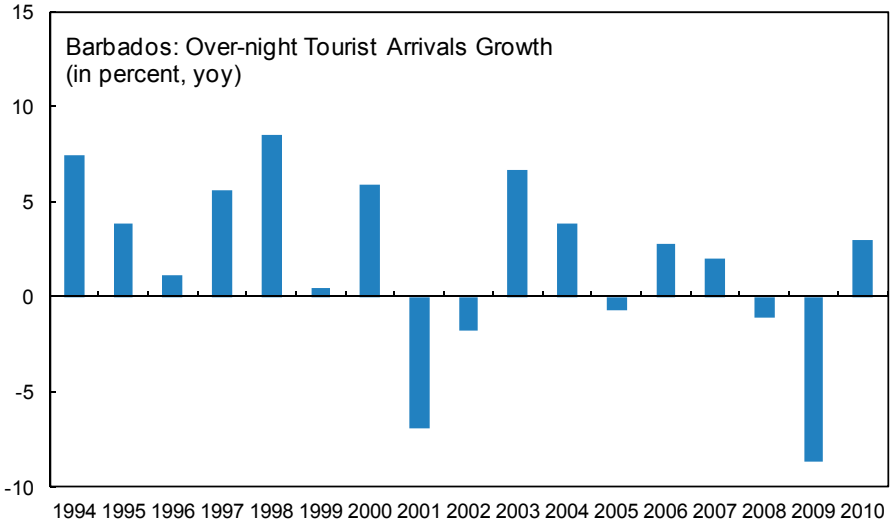
12. **Barbados reserves fall short of minimum composite reserve adequacy thresholds** proposed by Wijnholds and Kapteyn (2001) and Lipschitz, Messmacher, and Mourmouras

(2006). Based on the first approach, thresholds are calculated as full coverage of short-term external debt on a remaining maturity basis (net of non-resident deposits) plus 20 percent of broad money. For Barbados, this yields a threshold of US$1,127 million for 2010, which exceeds projected reserves by almost US$420 million, equivalent to 10.6 percent of GDP. Based on the second approach, thresholds are calculated as full coverage of one-year forward foreign debt service, plus 10 percent of broad money, plus 20 percent of the following year's imports. Barbados projected reserves in 2010 fall short of this composite threshold by almost US$1.2 billion (30.7 percent of GDP). Arguably, these composite thresholds are rather conservative measures of reserve adequacy, but, like the Greenspan-Guidotti rule, they point to the desirability of further reserve accumulation.

Barbados-Specific Shocks

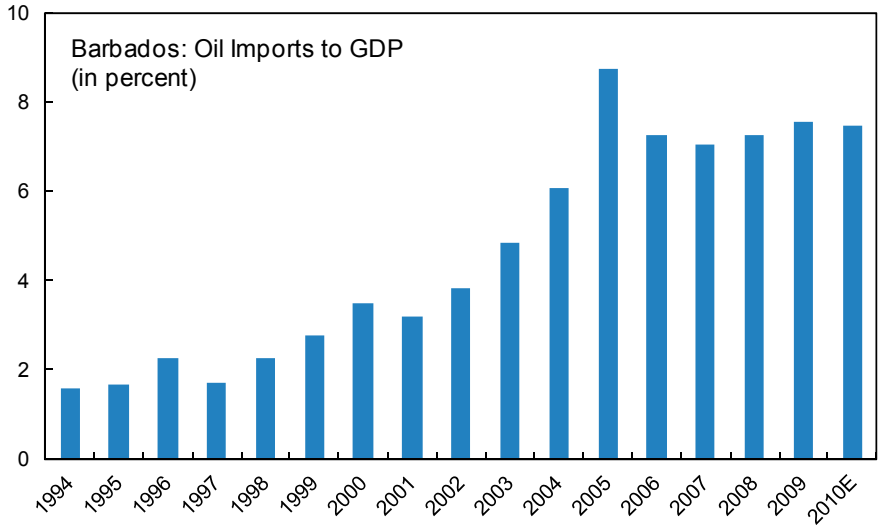
13. **Traditional measures and composite thresholds provide good rule-of-thumb metrics for reserve coverage, but they do not factor in Barbados-specific characteristics.** As a small, open economy, Barbados is vulnerable to both current and capital account shocks. Aside from a sudden stop in capital flows, a combination of a shock to tourism and an oil price spike would generate the most serious drain on Barbados' reserves.

- The shock to tourism could result from a recession in Barbados' primary tourist markets (United Kingdom, United States, and Canada), whose nationals account for 90 percent of tourist arrivals into Barbados, or a major political/security event in those markets. Tourism arrivals and revenue fell significantly following the recent economic slowdowns in the United Kingdom and the United States and the 9/11 terrorist attacks in 2001.



Source: Central Bank of Barbados; and Fund staff calculations.

- As for oil shocks, the oil price hikes in the mid-2000s added considerably to Barbados oil import bill.



Source: WEO; and Fund staff estimates.

14. **Barbados' reserves are sufficient to weather a significant combination tourism-oil price shock, though they would have to be replenished quickly to maintain confidence in the peg.** Assuming reserves offset dollar-for-dollar the shocks to maintain the pre-shock value of non-oil imports, a one-time increase in the average annual international oil price by 25 percent to its peak reached in 2008 combined with a ten percent drop in tourist revenue, as occurred in 2009, would cut end-2010 reserves by about 50 percent, leaving US$347 million in reserves (equivalent to 1.8 months of imports) to support the peg.

Optimal Reserves under an Insurance Model

15. **Barbados' holdings of reserves provide significant benefits, but also entail costs.** The reserves provide a buffer against external shocks and are critical to maintaining the currency peg. However, holding reserves means foregoing more profitable alternative investment opportunities. These benefits and costs are incorporated into a model developed by Jeanne (2007) (Box 4) to determine the optimal level of reserves for Barbados:

- *Size of capital account shock*. In the case of Barbados, the size of the sudden stop can be viewed as the sum of a) one-year forward public and private foreign debt service on long-term external debt; b) short-term external debt of the public and non-bank private sector; and c) short-term foreign currency debt of commercial banks. However, data limitations preclude the inclusion of the short-term external debt of the non-bank private sector. Using 2009 data, these assumptions yield a sudden stop size of 31 percent of GDP. This is slightly outside the range [0, 30] for this parameter used by Jeanne (2007) and conservative. Commercial banks' liquid foreign assets

could partly cover the flight of commercial bank foreign currency deposits and capital controls limit the ability of residents to take capital abroad without prior approval.

- *Cumulative output loss*. The standard parameterization for such a loss is 10 percent of GDP. However, the analysis underlying the parameter stops short of considering the potential for a sudden stop to put pressure on the peg and induce a simultaneous exchange rate and/or banking sector crisis. An alternative scenario assumes a higher potential loss of 15 percent in the event of a triple crisis.

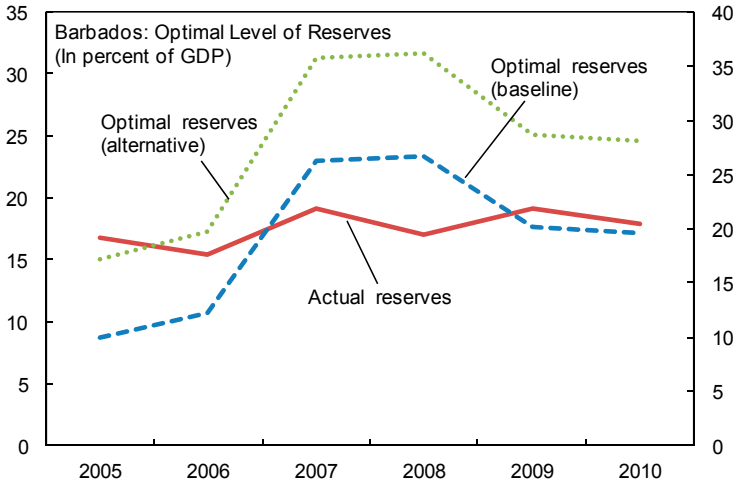
- *Probability of a crisis*. This parameter is set at 10 percent following the benchmark value used by Jeanne (2007).

- *Cost of holding reserves*. The opportunity cost of holding reserves is measured as the spread between the average interest rate Barbados pays on its external debt and the average interest rate Barbados earns on its reserves. Barbados reserves are primary held in deposit or money market accounts. The current interest rate on U.S. money market accounts for short-term deposits up to six months ranges from 0.25 – 0.50 percent per annum; the average annual interest rate on Barbados' external debt has ranged from 7 to 7.5 percent the last several years.[5] Thus, a spread of about 7 percent is used as the proxy for the opportunity cost of holding reserves.

- *Risk aversion*. Following standard literature, the risk aversion parameter is set at 2.

16. **The results suggest that Barbados's projected reserves at the end of 2010 are optimal for plausible parameterizations of the model.** While the optimal level of reserves is subject to considerable uncertainty because it is sensitive to certain parameters that are difficult to measure, the model's results are consistent with the shock-specific analysis. The insurance model indicates that actual reserves were well below optimal levels in 2007 and 2008 after being above optimal levels in the preceding two years. The situation reversed when commercial banks repaid amounts owed to foreign banks using their own foreign assets in 2009, and now actual reserves exceed optimal reserves by a slight margin. However, the alternative scenario suggests that Barbados's reserves may be insufficient to allow for smooth domestic absorption in the event of a triple crisis (sudden stop, banking, and foreign exchange).

[5] The margin interest rate on long-term external debt is also in line with the average interest rate. In July, Barbados issued a US$200 million 12-year bond at a rate of 7.2 percent.



Source: IMF staff calculations

D. Policy Implications

17. **Barbados reserves are adequate to cushion external shocks and maintain the peg, although pressures are building.** Even though the real effective exchange rate can be considered close to its equilibrium value, it remains somewhat overvalued. At the same time, although reserves are adequate at present, they are projected to decline gradually over the medium term under the baseline scenario.

18. **Fiscal tightening, beyond the cyclical improvement anticipated in the baseline scenario, would improve the medium-term reserve dynamics.** Fiscal measures to reduce the countries debt burden relative to GDP would have two benefits in terms of reserve accumulation. Lower fiscal deficits would ease aggregate demand pressures on the current account through the import channel reducing the foreign exchange outflows. In addition, improved public-sector debt dynamics would support Barbados' investment-grade rating, allowing for additional borrowing, as needed, at reasonable interest rates to facilitate reserve accumulation. Finally, it could also be argued that better debt dynamics could improve potential investors' perception of the long-run health of the economy inducing greater private-sector capital inflows.

Chapter II Box 4. An Insurance Model of the Optimal Reserves[1]

The optimal level of reserves should weigh benefits of holding reserves against their costs. Jeanne (2007) adopts this approach and develops a model that features a small, open economy that is vulnerable to crisis, defined as a loss of access to external credit associated with a fall in output. The model shows a tradeoff between the crisis mitigation impact of holding reserves and their costs. In the model, the optimal level of reserves is derived by minimizing a loss function that equals the opportunity costs of reserves plus the expected welfare cost of a crisis,

$$Loss = \delta R + \pi f(R)$$

where δ is the opportunity cost of holding reserves; *R* is the reserve holdings; π is the probability of a crisis or sudden stop; and *f(.)* is the welfare cost of a crisis, which is increasing in the size of the sudden stop and the output loss (*L and ΔY*). Assuming constant risk aversion (σ) and an exogenous probability of crisis, the optimal level of reserves is given by,

$$R = L + \Delta Y - \left[1 - \left(1 + \frac{\delta}{\pi}\right)^{-1/\sigma}\right].$$

That is, the optimal level of reserves rises with the size of the sudden stop, the output costs of a crisis, the probability of a sudden stop, and the degree of risk aversion and decreases with the cost of holding reserves.

Based on an analysis of currency and capital account crisis in emerging markets dating back to 1980, and the standard values and range for risk aversion in the growth and real business cycle literature, Jeanne (2007) developed the following benchmark parameters:

Benchmark Parameters for Insurance Model

	Baseline	Range
Size of sudden stop	L = 0.1	[0, 0.3]
Probability of sudden stop	π = 0.1	[0, 0.25]
Output loss	ΔY = 0.1	[0, 0.2]
Opportunity cost	δ = 0.03	[0.01, 0.06]
Risk aversion	σ = 2	[1, 10]

[1]Based on Jeanne (2007).

References

Boamah, D., K. Greenidge, and S. Mapp, 2009, "The Macroeconomic Impact of IMF-Supported Programmes in Small Open Economies: The Case of Barbados," (Barbados: Central Bank of Barbados).

Dehesa, M., E. Pineda, and W. Samuel, 2009, "Optimal Reserves in the Eastern Caribbean Currency Union," IMF Working Paper 09/77 (Washington: International Monetary Fund).

International Monetary Fund, 2008, CGER team: 'How to apply CGER methodologies to non-CGER countries: a guide for desk economists', unpublished (Washington: International Monetary Fund).

———, 2009, "Barbados—Staff report for the 2009 Article IV Consultation," (Washington: International Monetary Fund).

Jeanne, O., and R. Ranciere, 2006, "The Optimal Level of International Reserves for Emerging Market Countries: Formulas and Applications", IMF Working paper 06/229.

Jeanne, O., 2007, "International Reserves in Emerging Market Countries: Too Much of a Good Thing?" Brooking Papers on Economic Activity, 1:2007.

Lee J., G.M. Milesi-Ferretti, J. Ostry, A. Prati and L. Ricci, 2008, 'Exchange Rate Assessments: CGER methodologies' *IMF Occasional Paper No. 261*, (Washington: International Monetary Fund).

Lipschitz, L., M. Messmacher, and A. Mourmouras, 2006, "Reserve Adequacy: Much higher than you thought?" Unpublished.

Pineda, E., P. Cashin, and Y. Sun, 2009, "Assessing Exchange Rate Competitiveness in the Eastern Caribbean Currency Union', IMF Working Paper 09/78 (Washington: International Monetary Fund).

Standard & Poor's, 2010, "Barbados," (Ratings Direct on the Global Credit Portal: The McGraw-Hill Companies).

Wijnholds, O.B., and A. Kapteyn, 2001, "Reserve Adequacy in Emerging Market Economies," IMF Working Paper 01/143 (Washington: International Monetary Fund).

III. BARBADOS' FINANCIAL SYSTEM IN THE AFTERMATH OF THE GLOBAL CRISIS[1]

This chapter assesses Barbados' financial system in the wake of the global crisis.[2] While the financial system appears to have been broadly resilient up to now, preserving its soundness in an environment weakened by the recession requires strengthening the regulatory and supervisory framework. Commercial banks' credit risk exposure to weak economic activity, particularly in the tourism sector, is the financial sector's main vulnerability. The collapse of CLICO-Barbados is also discussed.

A. Introduction

1. ***The Barbadian financial system, which is dominated by Canadian banks, but also has numerous smaller onshore and offshore institutions, has been broadly resilient to the economic crisis.*** The onshore banking system is composed of 6 foreign banks (5 locally incorporated subsidiaries and one branch), with a key role for Canadian banks (76 percent of banks' assets) and 2 Caribbean banks. The rest of the domestic financial system includes 35 credit unions and 23 insurance companies. There are 50 offshore banks and a large number of offshore insurance companies, mainly concentrated on captive insurance. The structure of the financial system remains largely the same as at the time of the 2008 FSAP-Update. While asset growth has slowed down, the financial system has remained mostly sound because the practices that contributed to financial collapses in other regions, such as securitization and derivatives, did not take place in Barbados.[3]

2. ***The collapse of CLICO-Barbados, however, is a significant event that weakens the financial system.*** The insurance sector faced a major crisis with the collapse of CLICO-Barbados and BAICO, two local subsidiaries of the failed regional conglomerate CL Financial (Box 1). While the other main insurance companies appear to be operating well and are regularly reporting audited statements to the supervisory agency, CLICO and BAICO represent significant contingent liabilities for the fiscal accounts and raise questions about the supervision of the insurance sector, which could put at risk Barbados' reputation as a desirable destination for financial services.

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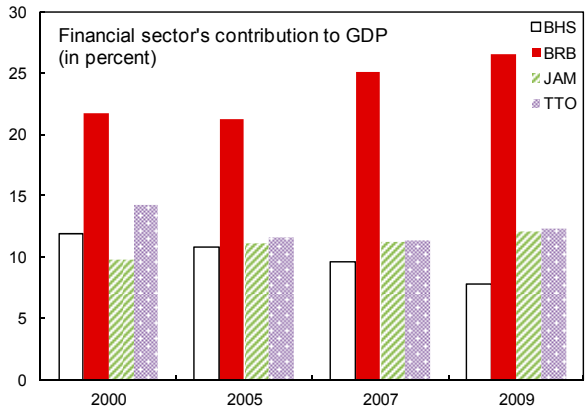
[1] Prepared by Carla Macario. The information provided by the Central Bank of Barbados is gratefully acknowledged.

[2] The FSAP-Update did a thorough assessment of Barbados' financial system in early 2008.

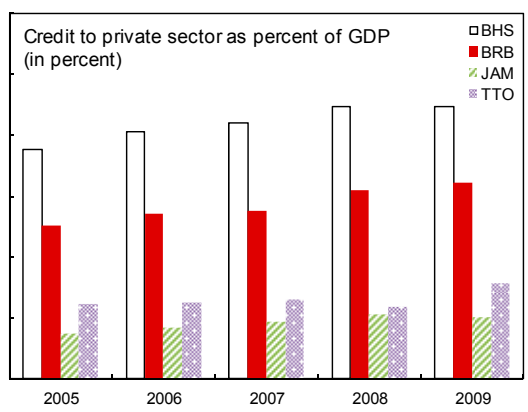
[3] Worrell (2010).

Chapter III Figure 1. The Financial Sector in Barbados and in the Region

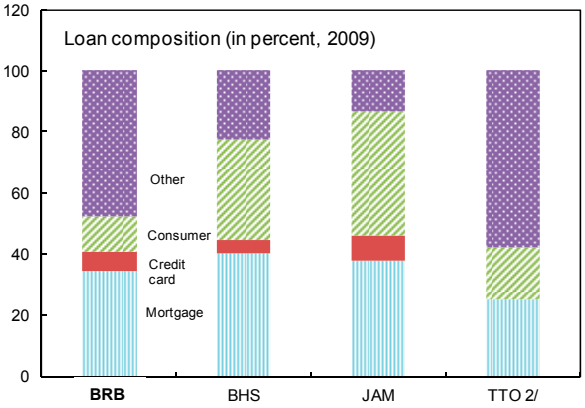
Barbados' financial sector makes the largest contribution to output among its peers...



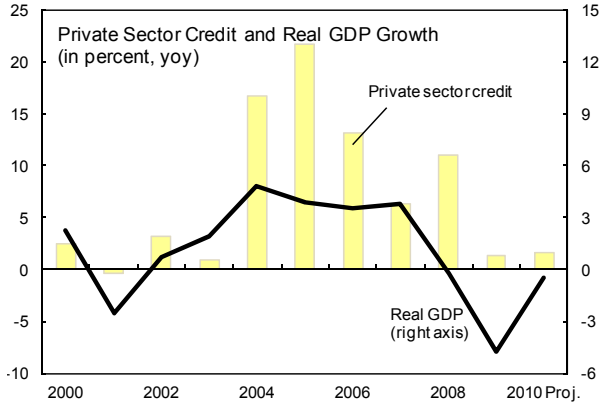
...and it has a robust private sector credit.



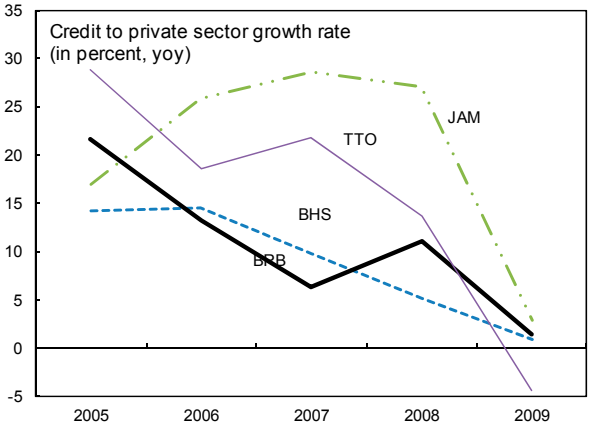
Mortgages are a key component of credit to the private sector



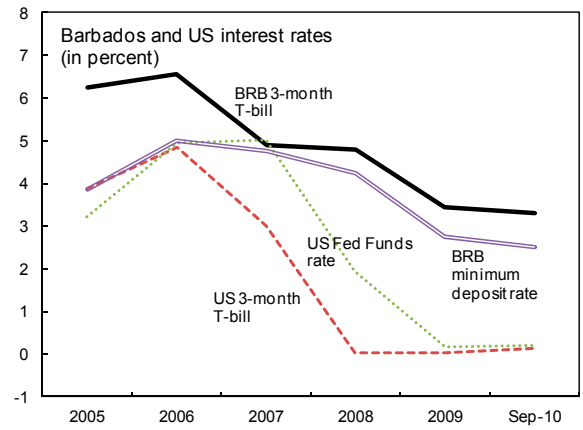
Credit growth has stalled due to the recession...



as in the rest of the region.



Interest rates in Barbados have broadly moved with US interest rates



Sources: International Financial Statistics; National authorities; and Fund staff estimates.
1/ Regional comparators include The Bahamas, Jamaica, and Trinidad and Tobago.
2// Information on credit card loans is not available.

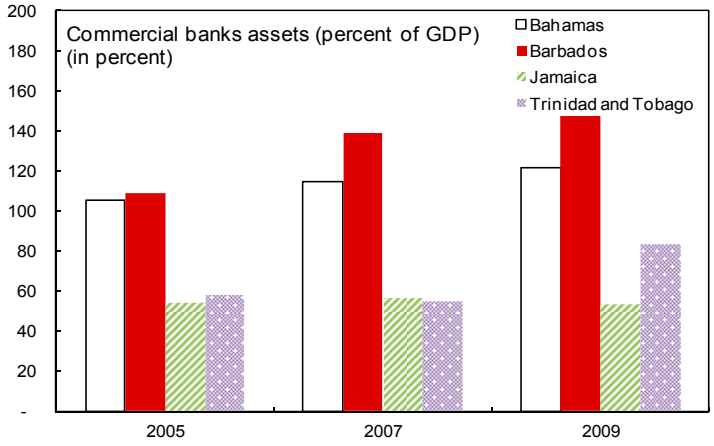
3. ***The financial system continues to play a critical role in the economy, but credit growth has stalled following the global crisis' considerable impact on domestic activity.*** The financial sector's contribution to GDP has continued to grow from about 20 percent in the early 2000s, and is high for the region. Since the onset of the global crisis, however, credit growth has slowed down considerably, as in other Caribbean countries (Figure 1).

4. ***Looking forward, the main risk to the financial sector is a prolonged slowdown in the United States and in the United Kingdom.*** Weak economic activity and high unemployment in these countries, which are the main source of high-end tourism and real estate investment in Barbados, are the key downside risks to the financial sector. More sustained weakness in these economies would curtail domestic growth and further increase credit risk, both directly from tourism projects and indirectly through a more widespread weak economic activity.

B. The Impact of the Global Crisis on the Soundness of Financial Institutions

5. ***Banks remain sound, but are increasingly showing signs of strains from the weak domestic activity and the tourism slowdown***.

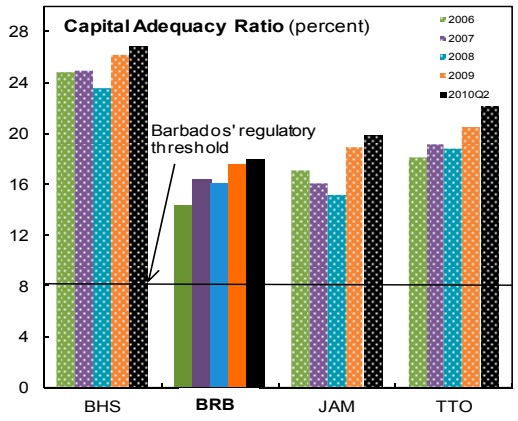
- ***Assets are stable and capital adequacy ratios are considerably above the prudential threshold.*** Despite a slight increase in 2008, bank assets remained broadly stable between 2007 and 2009, at about US$ 5¾ billion (145 percent of GDP, which is high for the region), with the 3 largest banks holding about 70 percent of the sector's assets. Banks have been broadly resilient to the economic downturn, with capital adequacy ratios well above the regulatory threshold (8 percent of risk-weighted assets).



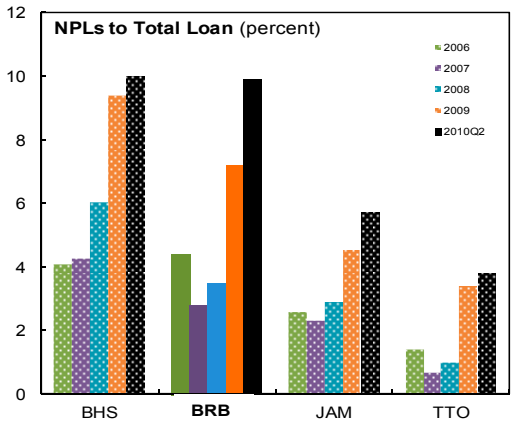
- However, other prudential indicators have deteriorated in recent months, highlighting the exposure to weak economic activity, particularly in the tourism sector. Non-performing loans increased to almost 10 percent of total loans in June 2010, including from some large commercial loans, mainly from the tourism sector.

Chapter III Figure 2.Barbados: Financial Sector Indicators compared to Peers in the Region [1/]

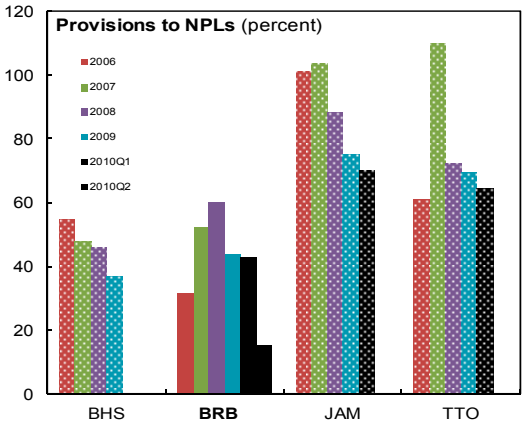
Barbados' CARs are above the regulatory threshold, as is the case in the rest of the region...



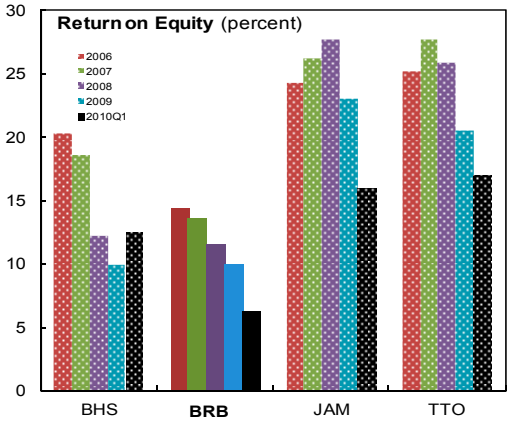
...but non-performing loans have surged in recent months.



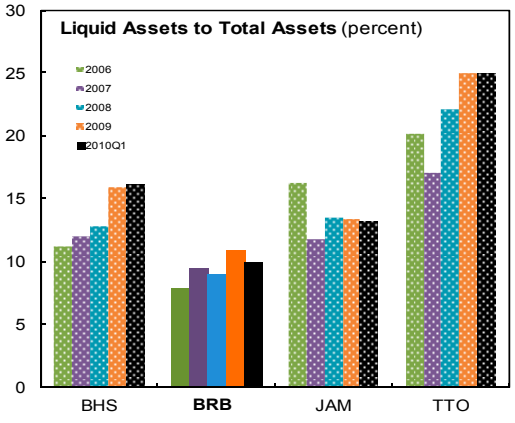
Provisions to NPLs are low...



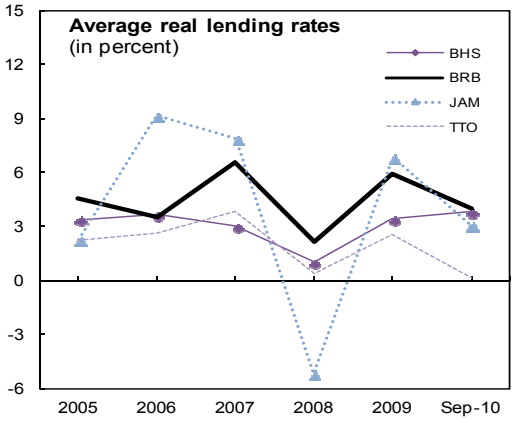
...and profitability has deteriorated.



Liquidity is stable,



while real lending rates remain relatively high.



Source: International Financial Statistics; National authorities; and Fund staff estimates.
1/ Regional comparators include The Bahamas, Jamaica, and Trinidad and Tobago.

In addition, loss provisions remain low, as domestic requirements are lower than international standards.[4] Liquidity remains stable, but profitability levels have declined since the onset of the crisis. Despite these developments, recent preliminary stress tests suggest that the banking system remains sound and that most banks could withstand further shocks while still remaining above the capital-adequacy threshold.[5] These stress tests, however, do not allow a full risk assessment of the banking system since the data on commercial banks' loan portfolio do not have enough detail about loan classification and provisioning.[6]

Barbados: Financial Soundness Indicators, 2006-10 1/
(In percent)

	2006	2007	2008	2009	Jun-10
Capital adequacy ratio 2/	14.4	16.4	16.1	17.5	18.0
NPLs to total loans	4.4	2.8	3.5	7.2	9.9
Provision for loan loss to total loans	1.5	1.5	2.2	3.3	1.5
Return on equity	14.3	13.5	11.5	9.9	7.9
Credit to the private sector, growth yoy	13.2	6.4	11.1	1.4	1.7
Liquid assets to total assets 3/	7.9	9.5	9.0	10.8	10.4

Sources: Central Bank of Barbados; and Fund staff estimates.
1/ Onshore banking system; data for December unless otherwise indicated.
2/ Does not include local branches of foreign banks;
3/ Includes all six banks.

6. ***Credit unions have been resilient, but also show strains from the crisis, with high non-performing loans.*** Membership declined, by about 13 percent from 2007 to 2010, following the reductions in employment in the specific industries associated to the credit unions. Profits also weakened, with the return on equity declining from 19 percent to 13 percent in the same period. Nevertheless, assets continued growing, although at a slower pace (from 14 percent in 2007 to 8 percent in 2010), to about US$ 674 million (17 percent of GDP) in 2010. The industry is highly concentrated, with the three largest credit unions holding almost 80 percent of assets. While the non-performing loan ratio is lower than in 2007 (16.1 percent of total loans in 2010, 19.3 percent in 2007), it remains very high and provisions have deteriorated further (provisions for non-performing loans declined from 2.2 percent of total loans in 2007 to 1.8 percent in 2010).

7. ***The lack of information on the insurance sector hinders the assessment of the impact of the crisis.*** The information available (up to 2008) indicates that investment assets

[4] The 2008 FSAP-Update recommended increasing provisioning requirements to align them to international standards.

[5] The preliminary stress test done so far was based on migrating up to 100 percent of loans in a given classification category to the next lower one. Under this shock scenario, the capital adequacy ratio of individual banks fell by as much as 4 percentage points, but remained well above the regulatory 8-percent threshold. This test was carried out by an MCM technical assistance mission in September 2010—the first of two missions to support the central bank effort to revamp its stress-testing capabilities.

[6] Monetary and Capital Markets Department, "Application of Stress-Testing Module Developed by the 2008 FSAP Mission", IMF, September 2010, Washington.

for domestic life insurance contracted by about 30 percent from 2007 to 2008, while domestic general insurance remained stable. In contrast, the offshore sector grew considerably in 2008 with net premiums and assets growing by about 60 percent and 80 percent respectively. Remarkably, there are no available data for 2009.

Box 1. The Demise of CLICO-Barbados

The collapse of the regional conglomerate CL Financial had a significant impact on CLICO, the company's subsidiary in Barbados. In 2008, the value of CL Financial's assets plummeted, due in part to losses in real estate investments in Florida and in methanol production. In February 2009, following the onset of the CL Financial crisis in Trinidad and Tobago, the government of Barbados acknowledged difficulties in the domestic subsidiaries. CLICO-Barbados, which had branches in several ECCU countries, had three key business lines: life insurance, general insurance, and mortgages. The mortgage line of business has been sold, while negotiations to sell the general insurance business are in train. In contrast, the life-insurance arm has sizeable net liabilities, as promises of high returns from the deposit-like annuities sold by the company far exceeded returns on assets. To provide liquidity, the central bank deposited US$5 million into CLICO's mortgage subsidiary and provided access to a special credit window, while an oversight committee was set up to conduct the resolution process. BAICO, another troubled insurance company linked to CL Financial, stopped operating although there is no publicly available information on potential statutory gaps.

In October 2010, the government requested the appointment of a judicial manager for BAICO and will soon do the same for CLICO. At this time, the unaudited figures for CLICO indicate that the shortfall of the life insurance company is about BD$ 262 million (about 3.3 percent of GDP).

The crisis highlights the weakness of insurance supervision. The collapse of both companies, together with regulatory forbearance, the lack of disclosure of the statutory fund shortfalls, and the lack of information to the public since the oversight committee was created, bring to the forefront the weakness of the insurance supervisory system, also responsible for supervising offshore companies. Barbados has a large offshore sector, and will need to bring insurance regulations in line with international best practices, to prevent reputational risks and a retrenchment of foreign companies from the country.

8. ***The global crisis contracted offshore financial institutions and their contribution to GDP and to fiscal revenues, and paralyzed the stock exchange.*** Offshore assets declined from 12 times GDP in 2007 to 10 times GDP in 2009, (from US$47 billion to US$39 billion), and the sector's contribution to fiscal revenues declined. Concentration indicators, however, remained broadly stable, as the 4 largest offshore banks account for almost 70 percent of the sector's assets and the 10 largest for almost 90 percent of assets. The sector employs about 1 percent of the country's labor force. At the same time, activity in the stock exchange has been at a standstill, as trading declined from 7 percent of GDP in 2007 to less than ½ percent of GDP in 2009, and has declined further so far in 2010.

9. ***The exposure of Barbados' financial sector to cross-border risks is likely significant, but difficult to assess with the information available.*** The domestic banking sector has important cross-border linkages, albeit mostly with Canadian banks, which have remained sound despite the global financial crisis. In contrast, the collapse of Trinidad and Tobago's CL Financial and of its subsidiaries in Barbados (e.g., CLICO-Barbados) and elsewhere, which had serious repercussions both domestically as well as in the ECCU countries, provides a clear example of the consequences of exposure to cross-sector and cross-border risks, and of the vulnerability arising from weak supervision. This crisis underscores the need for strengthening information on cross-border exposures and on conglomerate linkages.

C. Financial Supervision and Crisis Management

10. ***The supervision and regulation of the financial system continues to be mainly the responsibility of the ministry of finance and, through delegation, of the central bank and other entities.*** The Ministry of Finance (MoF) supervises most of the financial system, including the insurance sector. Through the delegation of the MoF, the central bank supervises commercial banks, Part III companies,[7] and offshore banks, while the Securities Commission supervises securities companies, mutual funds, and the stock exchange. Credit unions are supervised by the Registrar of Cooperatives and Friendly Societies in the Ministry of Commerce. The central bank is the lender of last resort and responsible for intervening and resolving financial institutions. In 2007, a deposit insurance scheme was established covering deposits up to BDS$ 25,000 (US$ 12,500).

11. ***The regulatory and supervisory framework for the banking system is being strengthened.*** Reporting requirements have been intensified, as have on-site inspections. The central bank has set up a financial stability unit that will carry out quarterly stress tests, and an MOU with Canadian supervisors will facilitate cross-border coordination among regulators. Coordination across the Caribbean is also being enhanced through a regional college of regulators that will coordinate the consolidated supervision of a commercial bank

[7] Trust and mortgage companies, finance companies, and merchant banks.

based in Barbados. In addition, the authorities are moving forward with changes in regulation and legislation to introduce some of the recommendations of the 2008 FSAP-Update (Box 2).

12. ***The Financial Services Commission (FSC) is expected to begin operating in early 2011.*** This commission—which would bring under one umbrella the supervision of insurance, credit unions, securities and international business and enhance staff capability—would facilitate consolidated supervision, particularly if it coordinates closely with the central bank.

Box 2. Status of Implementation of the 2008 FSAP-Update Recommendations

The 2008 FSAP-Update noted that several of the shortcomings identified during the 2002 FSAP had been addressed. However, it noted that regulatory reforms were still needed to increase the flexibility and stability of the financial system, including the following key reforms:

- Establishing a clear legal framework for the consolidated supervision of banking groups and enhancing home/host cooperation;
- Updating the regulations on capital adequacy, asset classification, and loan-loss provisioning;
- Ensuring that the mandate and structure of the upcoming Financial Services Commission were adequate for the effective supervision of the nonbanking financial sector.

At the time of the 2010 Article IV Consultation with Barbados, the authorities reported progress in the following areas:

- ✓ Amendments are being drafted to strengthen the legal framework for consolidated supervision, and a MOU was finalized with the Canadian authorities (a critical step given the importance of Canadian banks in Barbados);
- ✓ Amendments are being considered to upgrade asset classification and provisioning, and capital adequacy regulations will be updated in the future;
- ✓ Amendments are also being considered to regulate related-party lending and large exposures limits, including for aggregate large exposure;
- ✓ Legislation to establish the Financial Services Commission (FSC) has been approved by the Attorney General, in preparation for its submission to Parliament.

D. Conclusions and Policy Recommendations

13. ***Barbados' regulatory and supervisory framework needs to be strengthened to ensure that the financial system remains sound and contributes to the economic recovery.*** The financial system is still sound, despite the impact of the global crisis, but the deterioration of prudential indicators suggests rising vulnerabilities. Moreover, the deterioration is likely to intensify going forward. A stronger supervisory system, including more complete, detailed, and timely information requirements, is needed to monitor the system carefully and within an adequate timeframe. At this time, the information system does not appear to allow prompt supervisory action. The data on commercial banks' loans, for example, is inadequate for a comprehensive assessment of the loan portfolio. To be effective, the recently established financial stability unit at the central bank needs more detailed information. Likewise, regulations that allow provisioning levels below international standards in commercial banks and credit unions need to be upgraded to best practices. Implementation of the main recommendations of the 2008 FSAP-Update would further strengthen the soundness and stability of the financial system.

14. ***An early creation of the Financial Services Commission is critical for allowing stronger supervision of nonbank financial institutions.*** The planned commission, which would consolidate the supervision of onshore and offshore nonbank financial institutions, with upgraded staff capability, would allow a closer supervision, particularly of credit unions and insurance. The lack of updated information on the insurance sector is clearly a source of concern, particularly against the background of the collapse of CLICO and BAICO. Stronger supervision of the offshore sector would reduce vulnerabilities and enhance Barbados' reputation as a desirable location for financial services, which in turn would contribute to a recovery of growth. Close coordination between the commission and the central bank would allow expanding the perimeter of financial sector surveillance to ensure that the systemic risks posed by the financial system are addressed.

15. ***A prompt and transparent resolution of CLICO-Barbados is critical for fostering confidence in financial sector supervision.*** The scarcity of information on the specific causes of the collapse and on the strategy to resolve these failed companies fosters uncertainty about financial sector supervision and about contingent fiscal liabilities.

16. ***An assessment of cross-border risks requires building up regular information sources.*** While exposure to cross-border and conglomerate linkages is likely to be significant, it cannot be assessed at this time. The collapse of CL Financial highlights the importance of regional coordination for systematically gathering data on these linkages.[8]

[8] Worrell (*op cit).*

Chapter III Table 1. Barbados: Financial Soundness Indicators of the Onshore Banking System

	2006	2007	2008	2009	Prel. Jun-10
	(in percent, unless otherwise indicated)				
Solvency indicators					
Capital adequacy ratio 1/	14.4	16.4	16.1	17.5	18.0
Core capital adequacy ratio 1/ 2/	…	…	13.9	16.3	17.1
Nonperforming loans net of provisions to capital	18.0	5.0	5.0	21.0	18.6
Off-balance sheet obligations, percent of liabilities	3.0	2.0	3.0	4.0	…
Liquidity indicators					
Loan to deposit ratio	63.0	56.0	64.0	66.0	64.0
Demand deposits, percent of total deposits	36.4	36.6	34.9	36.6	36.2
Liquid assets, percent of total assets 3/	7.9	9.5	9.0	10.8	10.4
Credit risk indicators					
Total assets, annual growth rate	9.3	25.2	3.9	-5.4	5.3
Loans and advances, annual growth rate	15.5	8.1	11.9	2.7	0.9
Total mortgage loans, percent of loans and advances	26.9	28.6	27.7	29.2	30.7
Nonperforming loans, percent of total loans	4.4	2.8	3.5	7.2	9.9
Provisions to nonperforming loans, percent of NPL	31.7	52.4	60.1	43.6	15.2
Sectoral distribution of loans to total loans					
Agricultural	1	1	1	1	1
Commercial	17	17	18	17	20
Construction	8	7	8	8	4
Consumer	46	48	46	46	47
Industrial	3	2	2	2	2
Tourism	11	9	9	8	9
Others	14	16	16	18	18
Foreign exchange risk indicators					
Share of foreign currency deposits in total deposits 4/	5.1	4.7	3.6	4.9	5.2
Deposits in Foreign Exchange, percent of total deposits 5/	14.2	18.9	14.9	13.4	14.4
Net foreign assets, percent of total assets	5.5	6.2	3.3	3.1	5.3
Profitability indicators					
ROA	2.0	1.7	1.4	1.6	1.6
ROE	14.3	13.5	11.5	9.9	7.9
Annualized financial revenues to revenue-generating assets	7.0	6.4	6.0	6.0	…
Profit before tax, percent of total assets	2.4	1.9	1.8	2.0	2.1
Total noninterest expense, percent of total assets	2.9	2.5	2.7	2.6	2.7
Spread between lending rate and deposit rate	5.8	5.8	6.2	7.0	7.0
Operational efficiency					
Nonfinancial expenditure to total revenues	53.3	55.6	57.1	54.3	60.6
Nonfinancial expenditure to total revenue-generating assets	3.7	3.5	4.1	3.6	1.9
Memorandum Items:					
Banks' credit card loans to total loans	5.0	5.2	5.1	5.3	5.2
Banks' consumer loans to total loans	13.0	11.0	11.0	10.0	10.0
Banks' mortgage loans to total loans	23.0	27.0	28.0	29.0	30.9
Banks' mortgage loans (BDS$ millions)	1,089	1,401	1,601	1,726	1,875
Trust & mortgage companies ' mortgage loans (BDS$ millions)	416	444	475	476	471
Banks' mortgage loans, growth rate	27.0	29.0	14.0	7.8	9.1
Banks' credit cards loans, growth rate	47.6	16.0	14.0	6.0	4.8
Banks' consumer installment credit, growth rate 6/	20.0	-2.0	4.0	-6.0	-0.3

Source: Central Bank of Barbados

1/ Does not include branches of foreign banks.

2/ Tier-I capital.

3/ Sum of cash balances, due from Central Bank, due from other banks in Barbados and treasury bills.

4/ Foreign currency deposits of residents to total domestic deposits.

5/ Total foreign currency deposits to total deposits (Includes both resident and non-resident deposits in foreign currency).

6/ Includes car loans, durable goods loans, home improvement loans and debt consolidation loans.

Chapter III Table 2. Barbados: Financial Sector Structure

	2006	2007	2008	2009	Prel. 2010
Number of Institutions					
Banks					
Domestic private banks	0	0	0	0	0
Public banks	0	0	0	0	0
Foreign banks	6	6	6	6	6
Branches	2	2	2	1	1
Subsidiaries	4	4	4	5	5
Non-bank Financial Institutions					
Credit unions	37	37	35	35	35
Offshore banks	46	50	50	50	50
	(In percent of GDP, unless otherwise indicated)				
Assets					
Banks	114	139	144	147	…
Share of the 3 largest banks, percent	70	72	73	70	…
Branches	42	51	53	29	…
Subsidiaries	71	88	91	119	…
Nonbank financial institutions					
Credit unions	13	14	15	17	…
Offshore banks 1/	1,093	1,152	1,081	1,067	…

Source: Central Bank of Barbados

1/ 2009 data refers to September 2009.

Chapter III Table 3. Barbados: Onshore Banks and their Parent Institutions

Commercial Banks incorporated in Barbados	Affiliated Financial Conglomerate	Headquarters
First Caribbean International Bank (Barbados) Ltd (FCIBB) 1/	CIBC	Canada
Barbados National Bank Inc. (BNB)	Republic Bank of Trinidad and Tobago	Trinidad and Tobago
RBC Royal Bank of Canada (RBC)	RBC Royal Bank of Canada	Canada
Bank of Nova Scotia (BNS)	Scotiabank	Canada
Royal Bank of Trinidad and Tobago Bank (Barbados) Ltd. (RBTT)	RBTT Financial Holdings Ltd.	RBC Canada
Butterfield Bank (Barbados) Ltd. (BBL)	The Bank of N.T. Butterfield & Son Ltd.	Bermuda

Source: Central Bank of Barbados

1/ FCIBB is owned by First Caribbean International Bank, a holding company that consolidates regional operations in Barbados.

Chapter III Table 4 . Barbados: Offshore Financial Institutions

	2006	2007	2008	2009
I. Structure of the Offshore Sector				
Number of Institutions	46	50	50	50
Assets (In BDS$ million) 1/	84,932	93,035	86,190	77,636
Share of the 4 largest offshore banks, percent	65	67	64	67
Share of the 10 largest offshore banks, percent	91	90	88	88
Liabilities (In BDS$ million) 1/	59,135	75,250	68,782	69,725
II. Selected Indicators				
Government revenue from sector				
In BDS$ million	115.8	94.8	59.6	…
in percent of total revenue	5	4	2	…
Employment in the sector 1/	1,114	1,178	1,216	1,069
in percent of total labor force	1	1	1	1
Contribution of sector to GDP (in BDS$ million)	196.4	350.0	375.9	222.3
Number of TIEAs signed	1	1	1	1
N.B. Double Tax Treaties with Information Exchange clauses	23	25	26	27

Source: Central Bank of Barbados

1/ 2009 data refers to September 2009.

Chapter III Table 5. Barbados: Credit Union Indicators

	2006	2007	2008	2009	2010 1/
I. Structure of the Credit Union Sector					
Number of Institutions	37	37	35	35	35
Number of Members	144,539	154,218	148,604	129,476	134,100
Share of the 3 largest credit unions, percent	85	85	84	83	84
Assets (In percent of GDP)	12.7	13.9	15.1	16.8	17.0
Assets (3 largest credit unions, in percent)	70	71	71	73	78
Loans (In percent of GDP)	10.1	10.8	12.1	13.4	13.3
Loans (3 largest credit unions, in percent)	81	81	81	82	82
II. Selected Financial Soundness Indicators	(In percent, unless otherwise indicated)				
Solvency indicators					
Reserves to total Liabilities	10	9	9	9	8
Liquidity indicators					
Loan to deposit ratio	96	93	96	103	112
On-call deposits, percent of total deposits	100	100	100	100	100
Liquid Assets to short-term liabilities	11	14	9	11	9
Profitability indicator					
ROE	18	19	12	13	13
Credit risk indicators					
Total assets, annual growth rate	12	14	7	9	8
Loans, annual growth rate	14	11	10	8	8
Total mortgage loans, percent of loans	38	40	34	39	43
Nonperforming loans, percent of total loans	16.4	19.3	17.3	17.3	16.1
Provisions for Nonperforming loans, percent of total loans	2.3	2.2	1.8	1.9	1.8

Source: Central Bank of Barbados

1/ Data to March 2010.

Chapter III Table 6. Mutual Funds—Total Assets under Management 1/

	2006	2007	2008	2009	2010 2/
Number of mutual funds	12	12	12	14	17
Net Assets (in BDS$ millions)	608	673	750	782	702
Number of mutual fund administrators	5	5	5	5	9

Source: Central Bank of Barbados

1/ Data are for December unless otherwise indicated.

2/ As of end July.

Chapter III Table 7. BSE Main Indicators

	2006	2007	2008	2009	2010 1/
Number of listed companies—Total	27	27	25	25	27
Number of listed companies—Regular market	26	26	24	24	24
Number of listed companies—Junior market	1	1	1	1	3
Number of cross listed companies	7	6	5	5	4
Number of new issues	1	0	0	0	2
Value of new issues (in BDS$ millions)	405.7	…	…	…	7.5
Number of brokers	…	7	8	9	9
Market Capitalization (in BDS$ millions)	20,516	18,858	13,649	11,702	10,672
Market Capitalization (in percent of GDP)	264.1	233.5	171.1	150.2	134.7
Total annual trading volume (millions of shares)	12.9	155.3	71.9	7.5	3.0
Total annual trading value (in BDS$ millions)	60.7	570.6	508.5	30.3	9.3
Annual turnover (in percent) 2/	0.3	3.0	3.7	0.3	0.1

Source: BSE and Securities Commission

1/ /Data to June 2010.

2/ Total Trading Value/ Composite Market Capitalization.

References

IMF, "Barbados: Financial System Stability Assessment-Update", *IMF Country Report No. 09/64*, February 2009, Washington.

Monetary and Capital Markets Department, "Application of Stress-Testing Module Developed by the 2008 FSAP Mission", IMF, September 2010, Washington.

Worrell, DeLisle, "Changes in the International Financial Architecture- Implications for the Caribbean", IMF Annual Meetings, October 2010, Washington.