Do Tourism Receipts Contribute to the Sustainability of Current Account Deficits: A Case Study of Barbados

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Abstract
Given Barbados' recent history of persistent current account deficits and reliance on tourism as a major source of foreign exchange and driver of the economy, this paper investigated the contribution of tourism receipts to the sustainability of Barbados' current account deficits. Utilizing an inter-temporal budget approach it was found that Barbados' current account deficits were weakly sustainable as a result of tourism's contribution, underscoring the island's dependence on the industry.

Keywords: inter-temporal budget approach, current account deficits, sustainability, tourism receipts, Barbados, SITES

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1. Introduction

An essential indicator of the performance of a country's economy is the sustainability of its current account balance. As the health of the current account is susceptible to changes in the economic fortunes of a country's trading partners, close attention must be paid to persistent deficits which characterize the current accounts of many countries, particularly developing countries.

Current account deficits are not on their own problematic, as expanding economies oftentimes record such deficits to stimulate demand to counter the effects of recession. However, sustainability of deficits is of great concern. The accumulation of external debt to finance deficits might pose an excessive burden in the future (Wu, 2000). Issues can arise concerning the repayment of these obligations which in turn may lead to reluctance of international institutions to lend to affected countries. There are also concerns about the ability of countries with long-standing fixed exchange rates to maintain their pegs given the imbalance on their current accounts (Griffith, 2002).

For Barbados, a small open island economy, the matter of current account sustainability is critical because of the country's weak fiscal profile. The issue holds especial resonance given recent downgrades by international rating agencies Standard and Poor's (S&P) in 2010 and Moody's in 2011, to the lowest investment grade level, and subsequent negative outlooks by both agencies. S&P's view was that persistent weakening of the government's fiscal position coupled with delays to reduce fiscal deficits and reach a balanced budget by 2014 might lead to

debt surpassing 100 percent in 2012. Similarly, Moody's perspective was that government's debt ratios were likely to deteriorate further in the near to medium term to levels not consistent with an investment-grade rating given the small size and limited diversification of Barbados' economy. Moody's also concluded that tourism, critical to the country's ability to forestall any further deterioration in its fiscal profile, is unlikely to change this negative outlook since the global recession reduced business and leisure travel. However, weak merchandise exports have increased Barbados' reliance on tourism to generate adequate levels of foreign exchange.

Against this background, the current study assesses the sustainability of Barbados' current account deficits and whether tourism is the source of sustainability. The issue is significant to small island economies dependent on tourism.

2. Theoretical Framework, Methods and Data

2.1 *Models*

The model utilized is by by Hakkio and Rush (1991) and Husted (1992) with later modification by Quintos (1995). The model begins with the assumption that an economy is characterized by an individual with a budget constraint without restrictions on borrowing and lending in international financial markets:

$$C_t = Y_t + B_t - I_t - (1 + r_t)B_{t-1} \tag{1}$$

where C_t represents present levels of consumption; Y_t represents current income levels; B_t is current levels of borrowing (lending); I_t is current investment; r_t represents the current global

rate of interest and $(1+r_t)B_{t-1}$ is debt accumulated in previous periods. Given that this identity must hold for all time periods, successive budget constraints can be combined to arrive at the economy's intertemporal budget constraint:

$$B_t = \sum_{t=1}^{\infty} \varphi_t TB_t + \lim_{n\to\infty}(\varphi_n B_n) \tag{2}$$

where $TB_t = X_t - M_t (= Y_t - C_t - I_t)$ represents the trade balance at time *t*; X_t is exports; M_t is imports; and φ_0 denotes the discount factor defined as the product of the first *t* values of φ.

Assuming that the second term on the right hand side of Equation 2 is equal to zero, this suggests that the level of borrowing at time *t* is equal to the present value of future trade deficits. Given this condition, we must now determine whether $\lim_{n\to\infty}(\varphi_n B_n) = 0$ holds. Equation 1 can be rewritten as:

$$Z_t + (1+r_t)B_{t-1} = X_t + B_t \tag{3}$$

where $Z_t = M_t + (r_t - r)B_{t-1}$ and *r* represents the unconditional mean of the world interest rate, assumed to be stationary. Hakkio and Rush (1991) and Husted (1992) show that we can further simplify this model to obtain the testable empirical model:

$$X_t = a + bM_t + \xi_t \tag{4}$$

Quintos (1995) argues a necessary and sufficient condition for sustainability is that $0 < b \leq 1$ while cointegration is only a sufficient condition. Thus, if X_t and M_t are cointegrated and $b = 1$, then the strong form of sustainability exists. If cointegration exists but $0 < b \leq 1$ or, there is no

cointegration but b = 1, then the weak form of sustainability holds. Finally, if there is no cointegration and $b = 0$, then the current account is unsustainable in the long run.

Like Ongan (2008), our focus is on the importance of tourism receipts to the sustainability of current account balances, given the high dependence of the Barbadian economy on this sector. Accordingly we include tourism receipts and expenditures into the model. As tourism receipts, TR_t are included in the credits of the current account, we include that variable on the left hand side of Equation 4. Additionally, expenditures on tourism, TE_t, is also a component of the debits in the current account and thus is added to the right hand side of Equation 4. This gives the second empirical model:

$$X_t + TR_t = a + b(M_t + TE_t) + \xi_t \tag{5}$$

where $X_t + TR_t$ represent current account receipts and $M_t + TE_t$ denote current account disbursements to Barbados' trading partners.

2.2 *Methods*

Three unit root tests are used to determine the stationarity properties of the variables: the KPSS test by Kwiatkowski, Phillips, Schmidt, and Shin (1992); the HEGY procedure by Hylleberg et al. (1990) as the data are quarterly; and finally, we utilize the test by Lanne et al. (2002), which takes structural breaks into account.

The maximum likelihood method developed by Johansen (1988, 1991) is utilized to test for the presence of a long-run relationship. To examine whether any short-run relationships exist, the Granger-causality test (Granger, 1969) is employed.

2.3 *Data*

Observations on imports, exports, tourism receipts and tourism expenditure are from 1990Q1-2006Q4 and were obtained from the Central Bank of Barbados. As there is no available data for tourism expenditure, we use the tourism component of GDP. All series are logged.

3. Results and Analysis

3.1 *Unit Root Tests*

Results from the unit root tests are presented in Table 1. The KPSS and Lanne et al. (2002) tests indicate all series are integrated of order 1. The HEGY procedure also supports these results; that is, it finds that each variable possesses a nonseasonal unit root only.

3.2 *Sustainability of Trade Deficits*

Both the trace and maximum eigenvalue test find no evidence of cointegration between exports and imports (see Table 2) implying that the trade balance is not strongly sustainable. Next, we test for the weak form of sustainability[1] ($b = 1$ against the alternative of $b < 1$) of the trade deficit by estimating Equation 4. Estimates are show below:[2]

[1] The hypothesis that $b = 0$ against the alternative of $b \neq 0$ is tested first.
[2] Standard errors are in parentheses. *** indicates statistical significance at the 1% level.

$$\log X_t = \underset{(0.198)}{1.678***} + \underset{(0.025)}{0.767} \log M_t *** \quad (6)$$

The hypothesis that $b = 1$ is strongly rejected and we infer that Barbados' trade balance is also weakly unsustainable as $0 < b < 1$. Short-run dynamics indicate that X_t Granger-causes M_t ($\chi^2 = 14.741$, $p = 0.012$).

3.3 *Sustainability of Current Account Deficits*

Tests of whether tourism flows are associated with current account sustainability (Equation 5) are presented in Table 3; results indicate the presence of cointegration. As structural changes could have significant impacts on the vector error correction model (VECM) and may produce biased results if not considered, we test for stability using the Chow forecast test (Chow, 1960). A search grid of 1991Q4-2006Q4 is used to carry out the test. The test statistic in the search range fails to reject the null of constant parameters for each period over the grid. We conclude that the deficits are sustainable in the long-run. Estimates from Equation 5 are shown below:

$$\log(X_t + TR_t) = \underset{(0.187)}{2.304***} + \underset{(0.024)}{0.699} \log(M_t + TE_t) *** \quad (7)$$

The hypothesis that $b = 1$ is strongly rejected. This suggests that current account deficits in Barbados are weakly sustainable; that is, as long as earnings from tourism grow faster than the deficit (or the real interest rate on external debt), all else constant, the deficit will be sustainable.

In the VECM, the error-correction term is negatively signed (-0.091) and significant at 5 percent in the $X_t + TR_t$ vector, suggesting that $X_t + TR_t$ adjusts to restore short-run deviations from long-run equilibrium. Finally, $M_t + TE_t$ Granger-causes $X_t + TR_t$ ($\chi^2 = 13.660$, $p = 0.034$). This

suggests that when authorities adjust tourism expenditures that receipts also adjust as a consequence.

4. Conclusion

First, our results suggest that without a high level of earnings from tourism, the country is unable to sustain the gap between inflows and outflows on its current account. Second, they underscore the high and growing dependence of the country on a sector that is highly vulnerable to external shocks.

Third, the condition $0 < b < 1$ indicates that growth in Barbados' debt was less than the growth in the average interest rates on that debt. However, countries that continue to spend more than they earn have a higher risk of default and have to offer increasingly higher interest rates interest to service their debt, reducing resources available for other necessities.

Finally, because current account sustainability is weak, any sufficiently strong external shock, such as a rapid increase in the price of oil, might sever the long-run relationship between current account inflows and outflows, perhaps resulting in the deficit becoming explosive. Such extreme deterioration in Barbados' external positions would undoubtedly place added pressure on its net international reserves and its commitment to the current fixed exchange rate regime.

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Table 1: Unit Root Tests

Series	KPSS	Lanne et al. (2002)	HEGY		
			π_1	π_2	$\pi_3 \cap \pi_4$
log(X)	(a) 0.977*** (b) 0.224	(a) 1.056 (b) -5.768***	-0.223	-4.584***	6.050*
log (M)	(a) 0.993*** (b) 0.174	(a) -0.179 (b) -3.578***	-0.284	-7.400***	57.115***
log (X+TR)	(a) 0.982*** (b) 0.268	(a) -0.108 (b) -2.283*	-0.250	-6.712***	46.246***
log (M+TS)	(a) 0.993*** (b) 0.180	(a) -0.153 (b) -3.514***	-0.288	-7.291***	55.809***

Notes: Results at the level are denoted by (a) and those at first difference are denoted by (b) for the KPSS and Lanne et al. tests. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level.

Table 2: Cointegration Test Results for Trade Deficits

Null hypothesis	Alternative hypothesis	Test statistic	P-value
Trace test			
r = 0	r $\leq$ 1	10.325	0.608
r = 1	r $\leq$ 2	2.555	0.667
Max. Eigenvalue test			
r = 0	r = 1	7.769	0.575
r = 1	r = 2	2.555	0.667

Table 3: Cointegration Test Results for Current Account Deficits

Null hypothesis	Alternative hypothesis	Test statistic	P-value
Trace test			
r = 0	r ≤ 1	20.331**	0.049
r = 1	r ≤ 2	3.139	0.555
Max. Eigenvalue test			
r = 0	r = 1	17.192**	0.031
r = 1	r = 2	3.139	0.555

Notes: Figures in parentheses are standard errors. ** indicates significance at the 5% level.