The Equilibrium Exchange Rate of Mauritius: Evidence from Two Structural Models*

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Abstract. In this paper, we assess the equilibrium value of the Mauritian rupee in 2006–07 and over the medium run using two structural models. First, we derive a current account-based measure of the exchange rate equilibrium using the macroeconomic balance approach. Second, we estimate a reduced-form fundamental equilibrium exchange rate measure. Our results, which are robust to an alternative non-econometric approach, suggest that the Mauritian rupee was aligned with its equilibrium value in 2006–07 and little adjustment appeared necessary over the medium run.

JEL Classification Numbers: F31, F41, E65

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I. INTRODUCTION

In this paper, we analyze the competitiveness of the Mauritian economy in 2006–07 and over the medium run through the lens of its equilibrium real exchange rate (ERER). To this end, we employ two structural models. First, we estimate a current account-based measure of exchange rate equilibrium based on the macroeconomic balance (MB) approach. Second, we estimate the fundamental equilibrium exchange rate (FEER) based on a reduced-form equation. We find that the real exchange rate of Mauritius in 2006–07 was aligned with its equilibrium value as determined using structural approaches, and little adjustment appeared necessary over the medium run. Our results hold up to using the external sustainability (ES) approach as an alternative, non-econometric model for assessing the robustness of our findings.

To the best of our knowledge, this is the first study which examines the ERER for Mauritius using multiple structural models.[1] Our focus is on the equilibrium exchange rate in 2006–07. In the forward-looking MB approach we first estimate the long-run relationship between the current account balance and its determinants using a dataset for 140 countries over 1980–2005. Based on that relationship, we project the behavior of the current account for Mauritius in 2006–07 and over the medium run (until 2012), and compare it with that implied by existing policies. Discrepancies between the two paths provide an estimate of the extent of misalignment and the adjustment needed to bring the exchange rate in line with its equilibrium value. In contrast, in the backward-looking FEER approach we estimate the determinants of the ERER for Mauritius over the period 1960–2007. Then we inspect the *point estimate* of the ERER relative to the *actual* real effective exchange rate in 2006–07 to determine whether the observed macroeconomic fundamentals of the Mauritian economy are well reflected in the observed exchange rate.

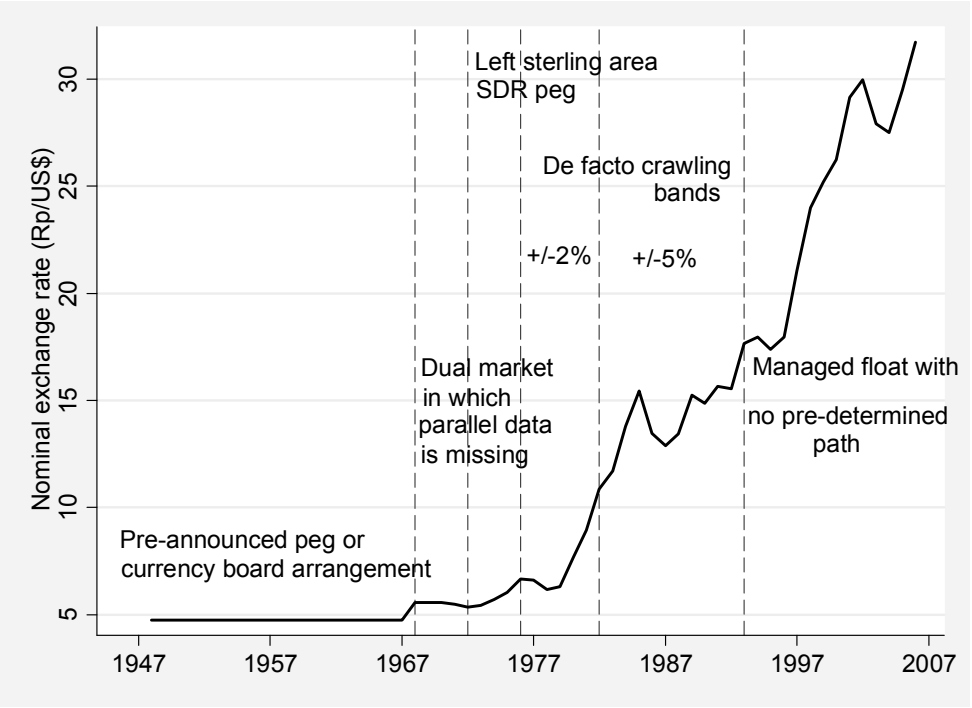
Assessing competitiveness through the prism of alignment between the real exchange rate and its equilibrium value is important because persistent misalignment can be symptomatic of and reinforce macroeconomic imbalances (Dornbusch, 1983). A large body of literature has examined the link between real exchange rate misalignment and economic performance and concluded that high exchange rate overvaluations slow down growth, whereas moderate degrees of undervaluation spur growth (Cottani et al., 1990, Dollar, 1992; Razin and Collins, 1997; Easterly, 2001; Frankel, 2004; and Rodrik, 2008). Real exchange rate misalignment also raises the probability of currency crises, as documented in cross-country settings (Kemme and Roy, 2006; Esquivel and Larrain, 1999) and case studies for Poland, Russia, and Thailand (Kruger et al., 2002; Rajan et al., 2004).

The remainder of the paper is structured as follows: in Section II we give some historical background by describing the exchange rate regimes in Mauritius since independence. In Section III we outline the results of two structural models employed to estimate the ERER. The robustness of our results to an alternative approach is discussed in Section IV and conclusions are presented in Section V.

II. The Evolution of the Exchange Rate in Mauritius

Over time Mauritius has adopted a variety of exchange rate regimes (Figure 1). Prior to independence, the country had a currency board arrangement that lasted until 1967, when the Mauritian rupee was pegged to the pound sterling. Mauritius left the sterling area in 1972 due to trade diversifying away from Britain and a weakening British pound, and established a central exchange rate with special drawing rights (SDR) while maintaining a second exchange rate for capital transfers. In 1976 Mauritius pegged the rupee to the SDR, with a 2 percent band, but in practice the exchange rate was a crawling band around the US dollar. The rupee was devalued in 1979 and 1981 following a period of overvaluation (Frankel, 2010). In 1982 it was officially delinked from the SDR and pegged to a trade-weighted basket of the currencies of its major trading partners. The exchange rate remained pegged *de facto* to the US dollar, with a 5 percent band.

Figure 1. Exchange rate regimes and the nominal exchange rate, 1948−2007

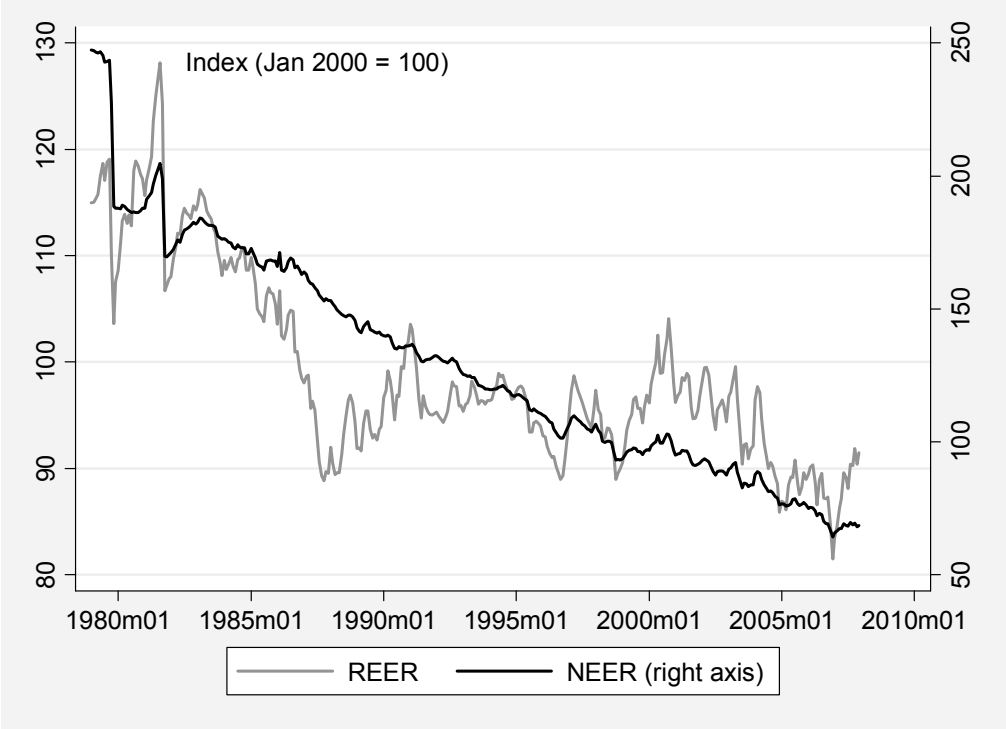


Source: Reinhard and Rogoff (2004), IMF Annual Reports on Exchange Arrangements and Exchange Restrictions (AREAER), and IMF Staff Reports from the late 1960s onwards.

Until the early 1990s, Mauritius maintained a multiple currency practice with some capital account transactions being performed at alternate rates. Exchange rate restrictions were lifted in 1992, when the *de facto* crawling band around the US dollar was narrowed to 2 percent, and transactions involving foreign currencies were fully liberalized in mid-1994. Until 2009, Mauritius has maintained a managed float, and the monetary authorities have intervened in the foreign exchange market to smooth exchange rate fluctuations rather than to alter the trend. At the time of writing, the exchange rate regime is classified as a free float by the IMF Annual Reports on Exchange Arrangements and Exchange Restrictions (Tsangarides, 2010).

The long-term trend in the nominal exchange rate reveals a continuous depreciation against the US dollar (Figure 2). Coupled with a positive inflation differential relative to trading partners, this led to a roughly stationary real exchange rate since the mid-1980s.

Figure 2. Nominal and real effective exchange rates, 1980−2007



Source: INS.
Notes: The REER is CPI-based.

III. EMPIRICAL ANALYSIS

Overview

Although many structural models have been proposed for estimating the ERER, there is little consensus on the appropriate model for a given country or time horizon (Driver and Westaway, 2005).[2] For this reason, it is useful to employ multiple models and assess robustness to alternative approaches. Here we employ two structural models. The first is the macroeconomic balance approach (henceforth 'MB'), which determines by how much the current account balance is projected to deviate from the *sustainable* level implied by the fundamental determinants of saving and investment. The second is the reduced-form fundamental equilibrium exchange rate approach (henceforth 'FEER'), which assesses the equilibrium exchange rate directly as a function of macroeconomic fundamentals.

Both the MB and FEER approaches focus on flow equilibrium concepts, and employ economic fundamentals in reduced-form equations (of the current account balance and real effective exchange rate, respectively) to arrive at estimates of the equilibrium exchange rate. An attractive feature of the MB approach is that the equilibrium exchange rates across countries can be made internally consistent on a multilateral basis through a normalization.[3] However, a notable limitation is that the approach hinges on the *estimation* of a sustainable current account

balance. This is typically derived based on the historical relationship between the current account balance and a set of macroeconomic fundamentals. The key assumption is that the econometric estimates reflect the *equilibrium* relationship between the dependent variable and the fundamentals. Like Chinn and Prasad (2003, p. 48), we take the view that, while this assumption may be challenged, the analysis "does provide an indication of the levels of current accounts that may be considered 'normal' for a country, based on a number of its macroeconomic attributes, including stage of development, demographic profile, and government budget balance, etc."

Some caution will be required in interpreting the results because the estimated equilibrium exchange rate values are often sensitive to underlying assumptions about the set of relevant covariates, or what constitutes a *sustainable* current account balance (Lee et al., 2008). Moreover, trade elasticities—the basis for calculating real exchange rate adjustments that close the gap between the underlying and sustainable current account balances—can be sensitive to the specification of trade equations.[4] To this we may add data quality issues and uncertainty over the appropriate estimation method. For instance, we estimate the FEER for the Mauritian rupee over 1960–2007—the longest period over which consistent annual time series are available—but also a period that covers different exchange rate regimes. Due to the limited degrees of freedom we specify a parsimonious model but cannot exclude the possibility that important macroeconomic factors have been omitted.

Macroeconomic Balance (MB) approach

In the MB approach we find the ERER implied by the *equilibrium* or *sustainable* current account balance (referred to as the current account "norm"), which is determined by external and domestic macroeconomic fundamentals (Wren-Lewis, 1992; Williamson, 1994; Faruqee et al., 1999). The current account position is deemed to be sustainable if current policies can maintain external and internal balance with no need for a major policy shift (Milesi-Ferretti and Razin, 1996).

We implement the MB approach as follows. First, we estimate a model of the determinants of the current account balance using panel data for 140 countries over 1980–2005. The approach has the strength that a large cross-section of countries at different points on their development trajectory represents a rich source of information about the equilibrium, long-run relationship between the current account balance and its determinants. Second, we project the current account norm for Mauritius over the medium term[5] using coefficient estimates from the model and the IMF World Economic Outlook (WEO) forecast for economic fundamentals (IMF, 2008, p. 18).[6]

Following Lee et al. (2008), we specify the following model:

$$\left(\frac{CA}{GDP}\right)_{it} = \alpha_i + \gamma_t + \beta_1\left(\frac{FISC}{GDP}\right)_{it} + \beta_2\left(\frac{NFA}{GDP}\right)_{it} + \beta_3 RELGDP_{it} + \beta_4 GROWTH_{it} + \beta_5 POP_{it} + \varepsilon_{it} \quad (1)$$

where the time-varying fundamentals—a mix of factors affecting external and internal balance—are the overall fiscal balance (% of GDP); the net foreign asset (NFA) position (% of

GDP), relative per capita GDP (expressed as deviation from US income), per capita GDP growth; and population growth—a demographic control capturing fiscal pressures. Cross-sectional heterogeneity is modeled by adding indicator variables (not shown in Equation 1) for major fuel exporters, financial and offshore centers, Eurozone members (post-membership years), and countries afflicted by the 1997–98 Asian crisis (post-crisis years). Country- and year-specific fixed effects (α_i and γ_t) are included to control for unobserved heterogeneity and global shocks. Equation 1 is a parsimonious version of standard empirical models of the current account balance. The explanatory variables were chosen in line with the literature,[7] while keeping in mind that reliable medium-forecasts are needed for the covariates to compute the current account norm.

In the last step, we determine the exchange rate adjustment needed to close the gap, if any, between the current account norm and the underlying current account, based on estimated trade elasticities. The underlying current account is that which would prevail given existing policies.[8] Our estimate for it is the medium-term WEO projection (IMF, 2008, p. 18) which is based on the financial programming model for Mauritius and is stripped of the impact of temporary factors.[9] A key feature of the underlying current account balance is that it embeds a projected real appreciation of 2 percent per year to capture the traditional Balassa-Samuelson effect for a growing economy, and expectations of a steady stream of capital inflows. Furthermore, it assumes that the monetary authorities will continue intervention in the foreign exchange market solely to manage short-term volatility rather than affecting the trend.

To obtain the current account norm we use coefficient estimates for the specification in Equation 1, based on three estimators: pooled OLS, random effects, and fixed effects. The results show relatively stable coefficients across estimation methods (Table 1).[10] Notwithstanding differences in terms of dataset and empirical model, our estimated coefficients are also similar to those obtained by Lee et al. (2008) in a sample of 54 economies for 1973−2004, and Chinn and Prasad (2003) in a sample of 88 countries over 1971–1995.[11] Our estimated coefficients accord with economic theory and intuition in terms of signs and magnitude. An increase in the overall fiscal balance-to-GDP ratio by 1 percentage point predicts a current account balance higher by around 0.3 percentage points of GDP; the estimate is also statistically significant in both the full sample and the middle-income country sub-sample. The range of marginal effects identified in the literature for this variable is 0.2 to 0.4. The interpretation of this non-zero coefficient on the government budget balance is that private saving provides an incomplete Ricardian offset to changes in public saving (Chinn, 2005).

The estimation results indicate that a higher NFA-to-GDP position is associated with a higher current account balance, as predicted by standard open economy macroeconomic models (Lane and Milesi-Ferretti, 2002, 2004). Contrary to the implications of the ‘stages of development hypothesis’—which predicts a U-shaped relationship between relative income and the current account balance—higher per capita income improves the current account in the full sample. However, in the middle-income country sub-sample, the sign on relative income is negative, suggesting that as countries develop and require capital imports to sustain economic growth, they incur a worse current account balance. Once the impact of relative income is accounted for, higher growth leads to a deterioration of the current account. Finally, countries that export fuel, have been affected by the 1997–98 Asian crisis, or are global financial centers, have

substantially higher current account surpluses; the reverse is true of offshore financial centers, whose current account balances are on average 5–6 percentage points lower than in onshore centers.

Table 1. Correlates of the current account balance—Panel estimates (1980–2005)

	Full sample: 140 countries			Sub-sample: 69 middle-income countries
	Pooled OLS	Random Effects	Fixed Effects	Fixed Effects
	[1]	[2]	[3]	[4]
Overall budget balance/GDP	0.372***	0.388***	0.377***	0.335***
	(0.030)	(0.035)	(0.037)	(0.051)
Net foreign assets/GDP	0.039***	0.027***	0.024***	0.006
	(0.006)	(0.008)	(0.008)	(0.011)
Relative income	0.048***	0.035***	-0.054*	-0.124**
	(0.004)	(0.010)	(0.030)	(0.057)
Per capita GDP growth	-0.073**	-0.101***	-0.093***	-0.019
	(0.035)	(0.034)	(0.035)	(0.042)
Population growth	-0.028	-0.350**	-0.403**	-0.601**
	(0.099)	(0.144)	(0.180)	(0.265)
1=Fuel exporter	2.528***	3.337***		
	(0.315)	(0.982)		
1=Financial center	4.248***	4.316**		
	(0.660)	(1.943)		
1=Offshore center	-5.954***	-6.240***		
	(0.680)	(1.707)		
1= Asian crisis	5.611***	5.651***	6.231***	8.320***
	(0.811)	(0.781)	(0.773)	(0.898)
1=Euro zone	-0.858	-1.825***	-1.764***	
	(0.550)	(0.537)	(0.522)	
Constant	-5.465***	-4.704***	-0.929	-0.418
	(0.652)	(0.742)	(1.181)	(1.537)
Fisher's panel unit root tests for residuals Chi-squared	731.684 (0.0000)	710.368 (0.0000)	696.260 (0.0000)	399.767 (0.0000)
Observations	2474	2474	2474	1173
No. of countries	140	140	140	69
Time fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	No	No	Yes	Yes

Source: Authors' estimates.

Note: The dependent variable is the current account balance (% of GDP). All continuous variables have been smoothed using three-year moving averages to reduce measurement error. Middle-income country classification is based on the World Bank Atlas method (i.e., countries with a per capita gross national income in 2007 between $936 and $11,455). We report Fisher's panel unit root test results (chi-squared statistic and p-value in parentheses) for the null hypothesis that all series in the residuals contain a unit root against the alternative hypothesis that at least one series is stationary (Maddala and Wu, 1999). Robust standard errors are shown in parentheses. * significance at 10%; ** significance at 5%; *** significance at 1%.

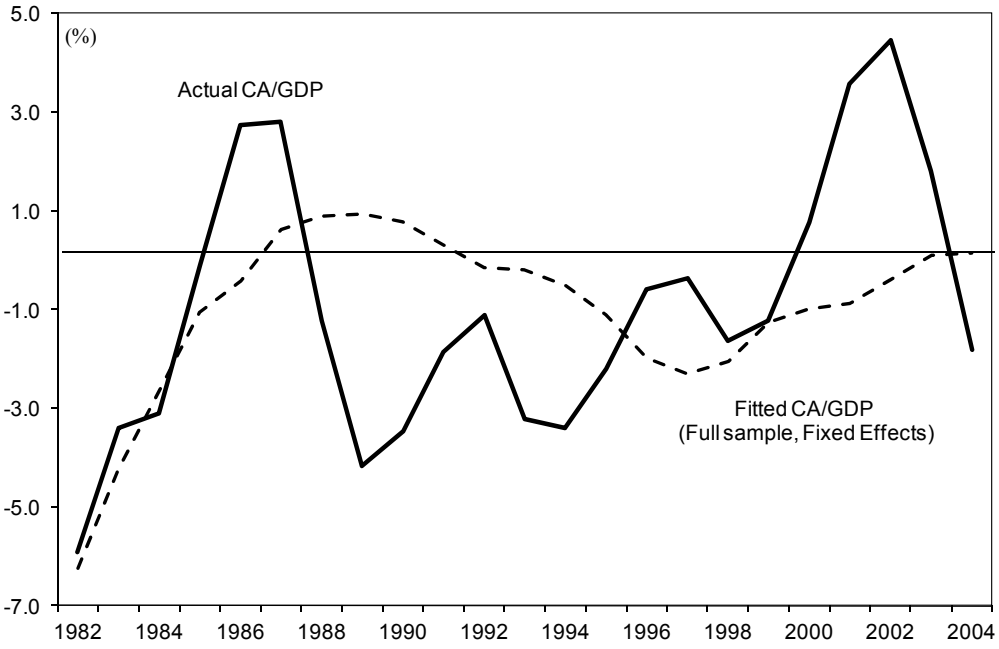
To illustrate the workings of the MB approach, we report the model estimated with fixed effects (coefficients from Table 1, column 3) which we employ to estimate the current account norm for Mauritius:

$$\left(\widehat{\frac{CA}{GDP}}\right)_t^{Mauritius} = -1.2 + 0.38\left(\frac{FISC}{GDP}\right)_t + 0.02\left(\frac{NFA}{GDP}\right)_t - 0.05RELGDP_t - 0.09GROWTH_t - 0.40POP_t \quad (2)$$

where the intercept is the estimated fixed effect for Mauritius and *t* indexes the years in our sample (1980–2005).

Figure 3 shows the fitted current account balance for Mauritius relative to the actual balance over the period of estimation, showing that the REER has often been close to its equilibrium value. However, the chart also depicts of a period of overvaluation from the late-1980s to the mid-1990s and one of undervaluation in the early 2000s. The first period, when the Mauritian rupee was pegged to the US dollar, witnessed a positive inflation differential relative to trading partners that was reflected in an appreciating real exchange rate. In contrast, during the early 2000s, anticipations related to the ending of the Multi-Fiber Agreement which had given preferential access to Mauritian textiles on developed country markets, led to reduced foreign investment in export processing zones (Frankel, 2010). In turn, this eroded real wages while unemployment reached double digits, hence the undervalued real exchange rate.

Figure 3. MB approach: Actual vs. fitted current account balance



Source: Authors' estimates.
Note: The actual current account balance (% of GDP) has been smoothed with a three-year moving average.

We can now compute the current account norm over the subsequent five years (until 2012) using coefficients from our estimated models and WEO projections for the macroeconomic determinants. We obtain an average current account deficit over the period of 4.7 percent of GDP based on the fixed effects model and 4.2 percent using the random effects model estimated on the full sample. The underlying current account (i.e., the WEO projection based on announced policies) averages a deficit of 4.4 percent. The difference between the two balances, a potential indication of exchange rate misalignment, is no more than ½ a percentage point. Our baseline results for the MB approach thus suggest that the real exchange rate would be close to its equilibrium value over the medium run.

To check the robustness of this result, we also estimate current account norms using alternative coefficients that describe the equilibrium relationship with economic fundamentals. One set of coefficients is obtained by estimating the model with fixed effects on the sub-sample of middle-income countries (including Mauritius). Another comes from the pooled OLS model of Lee et al. (2008) estimated on a panel of 54 high- and middle-income economies over 1973–2004. Finally, we consider the average of our various current account norm estimates. Table 2 summarizes the results by showing all estimates of the current account norm derived using different estimators and samples. All the estimates are within 1 percentage point of the country's underlying current account, suggesting little to no misalignment.

Table 2. MB approach: Current account norm vs. underlying current account

Source for current account norm estimate	Current account norm estimate	Difference between current account norm and underlying current account
Full sample (Pooled OLS)	–3.8	0.6
Full sample (Random effects)	–4.3	0.1
Full sample (Fixed effects)	–4.7	–0.3
Middle-income subsample (Fixed effects)	–3.7	0.7
Lee et al. (2008) Pooled OLS	–4.0	0.4
Average (of estimates above)	–4.1	0.3

Source: Authors' calculations.
Note: Each current account norm estimate is the average of the projected current account balance over 2007–12 using WEO projections of the macroeconomic fundamentals. The underlying current account (at –4.4 percent of GDP) is the WEO projection for the current account based on the IMF financial programming model for Mauritius, and is striped of one-time purchases of aircraft and ships. It also embeds a predicated exchange rate appreciation of 2 percent per year which captures the Balassa-Samuelson effect. (See text for more details.)

Overall, the MB method predicts that little or no additional real exchange rate adjustment—over and above the real appreciation incorporated in the underlying current account on the basis of existing policies—would be necessary over the medium term. Interestingly, the two years following our estimation sample, 2006 and 2007, brought minimal change to the real effective exchange rate, which depreciated by 0.7 percent in 2006 and appreciated by 1.2 percent in 2007.[12]

Fundamental Equilibrium Exchange Rate (FEER) approach

The second structural model we consider requires estimating a reduced-form relationship between the real effective exchange rate (REER) and a vector of macroeconomic fundamentals. We undertake our analysis for Mauritius using time series over 1960–2007 to maximize the length of the estimation period, while cautioning that the period witnessed different exchange

rate regimes. We use the bound-testing approach to detect long-run level relationships between the variables considered, and the autoregressive distributed lag (ARDL) approach to cointegration for estimation purposes (Pesaran and Shin, 1999; Pesaran et al., 2001).[13]

We consider the following macroeconomic variables as determinants of the REER: government consumption, trade openness, and productivity (all in deviation from trading partners), terms of trade of goods, NFA position, and a capital controls dummy for post-1994 liberalization. Then, we eliminate those variables that do not appear to have a cointegrating relationship with the real exchange rate according to the bound test at the 1 percent level of significance (i.e., relative productivity, NFA-to-GDP ratio, the capital account liberalization dummy). Finally, we identify long-run cointegrating relationships between the REER (which is measured based on the GDP deflator) and three variables: terms of trade of goods (TOT), trade openness (OPEN), and government consumption (GCONS),[14] and obtain the following long-run elasticity estimates:

$$\ln(\widehat{REER})_t = 0.35\ln(TOT)_t - 1.73\ln(OPEN)_t + 1.37\ln(GCONS)_t \quad (3)$$

[t-stat] [1.46] [-6.25]*** [4.29]***

All our results conform to economic intuition and previous findings (Lee et al., 2008). The terms of trade of goods have a positive coefficient, since a positive shock improves the trade balance and the resulting higher domestic demand pushes up the prices of non-tradables, so the real exchange rate appreciates. An increase in openness, which can be seen as a proxy for the easing of trade restrictions, is associated with lower domestic prices, hence a real depreciation. A rise in government consumption is associated with a real appreciation, since government spending falls relatively more on the non-tradable sector.

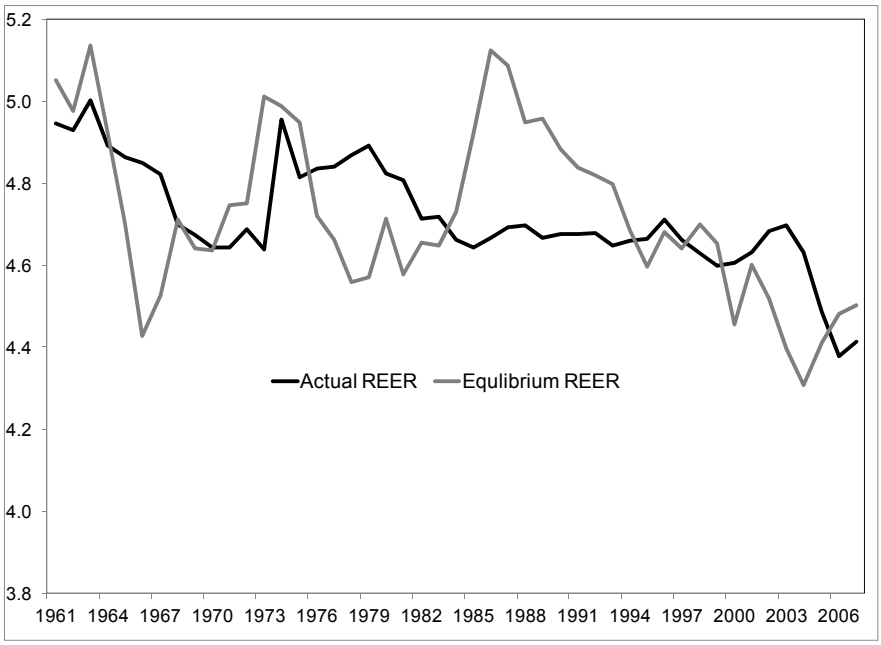
The actual and fitted (equilibrium) real exchange rate, as well as the extent of misalignment (i.e., the difference between the two) are shown in Figures 4–5. We find that the Mauritian real exchange rate has generally been close to its equilibrium value over the period of estimation, with the exception of a period of overvaluation from the mid-1980s to the mid-1990s and a period of undervaluation in the early 2000s. These broadly coincide with the patterns identified using the MB approach. As for our period of interest (2006–07), we notice that at the end of the estimation period the degree of misalignment is close to zero.

IV. Robustness to Alternative Approaches

External sustainability (ES) approach

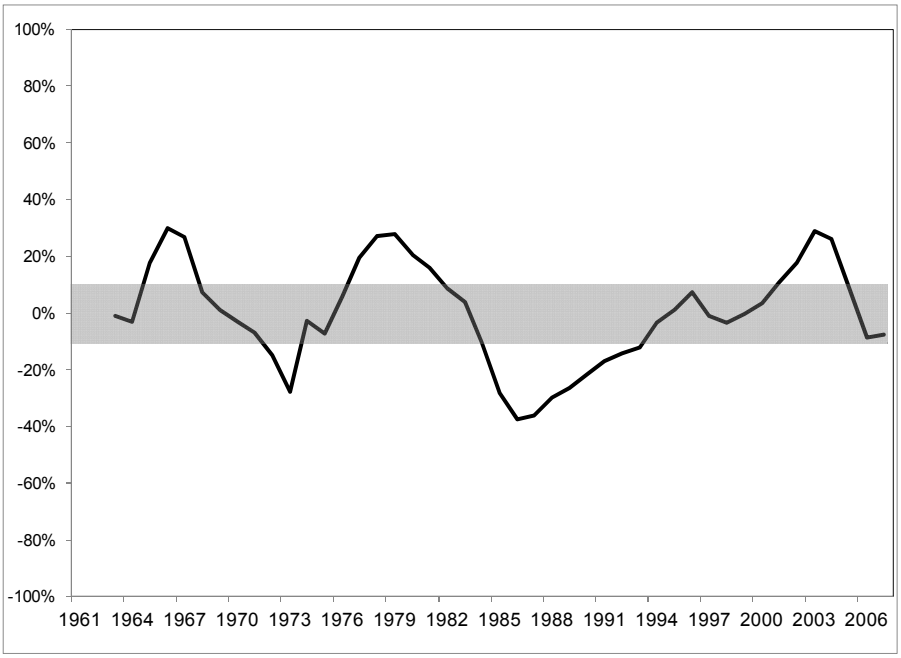
We assess the robustness of our findings to an alternative method—the external sustainability ('ES') approach—which is a variant of the forward-looking MB approach (Isard and Faruqee, 1998; Calderon et al., 1999). While it retains the main idea of assessing real exchange rate misalignment by comparing the underlying current account with the norm, it derives the latter based on a stock equilibrium concept. Specifically, the current account norm is an NFA-stabilizing balance and is given by:

Figure 4. FEER approach: Actual vs. equilibrium real effective exchange rate



Source: Authors' estimates.
Note: The actual and the fitted (equilibrium) real effective exchange rate (REER) are both log-transformed.

Figure 5. FEER approach: Estimate of misalignment



Source: Authors' estimates.
Note: The misalignment estimate is defined as the percent difference between the actual and fitted (equilibrium) real effective exchange rate. The highlighted grey area is the +/– 10 percent interval around 0 (i.e., no misalignment), which can be used as a rule-of-thumb threshold above/below which the extent of misalignment may be deemed a source of concern.

$$ca^{ES} = \frac{g+\pi}{(1+g)(1+\pi)} b^{ES} \qquad (4)$$

where g is the growth rate of real GDP, π is the inflation level, and b^{ES} is the benchmark NFA level (% of GDP). The aim is to identify what, if any, real exchange rate correction is needed to close the gap between the two current account balances. In most applications the ES approach is implemented by choosing a desirable NFA position and making assumptions about medium-run growth and inflation to compute the current account balance consistent with it.

The crucial step in this approach is choosing a benchmark NFA position (b^{ES}). One option is to employ a backward-looking target such as the latest observed NFA position.[15] Taking this approach, our benchmark is the end-2005 observed NFA position of 22 percent of GDP. Assuming a medium-term GDP growth rate of 5 percent and inflation rate of 5 percent (IMF, 2008), we obtain an NFA-stabilizing current account balance of 2 percent of GDP (against an underlying current account of –4.4 percent of GDP). Thus, we conclude that the real exchange rate would be slightly overvalued if Mauritius targeted a medium-term NFA stock in this range.

V. CONCLUSIONS

In this paper we have analyzed the equilibrium exchange rate using two structural models—the macroeconomic balance approach and the fundamental equilibrium exchange rate approach—in 2006–07 and over the medium term. As robustness check, we have also assessed whether our findings are similar based on a non-econometric method—the external sustainability approach. To our knowledge, this is the first paper to employ multiple structural models to assess the equilibrium real exchange rate for Mauritius. Our results suggest that the Mauritian rupee was close to its equilibrium, fundamentals-determined value at the end of the sample period, and little exchange rate adjustment appeared necessary over the medium term.

In the first approach we used parameters from an empirical model of the current account balance and IMF WEO projections to forecast the current account norm. We found this to be close to the underlying current account which eliminated temporary factors, embedded existing policies, and allowed for a Balassa-Samuelson effect. In the second approach we computed the equilibrium real effective exchange rate using variation in terms of trade shocks, trade openness, and government consumption. Both methods consistently identified earlier periods of over- and undervaluation, and suggested that the real exchange rate was in line with its fundamentals-based value in 2006–07. The result held up when considering a third method in which the current account norm was projected based on a level of net foreign assets deemed sustainable.

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APPENDIX

Data Sources and Definitions

The data have been extracted from the IMF's *International Financial Statistics* (IFS), *Information Notice System* (INS), *World Economic Outlook* (WEO), the World Bank's *World Development Indicators* (WDI), and Penn World Tables Mark 6.2. Mauritius' trading partners for purposes of calculating the real effective exchange rate are, in descending order of trade share, France, Germany, the US, the UK, Japan, South Africa, Italy, Belgium, Singapore, the Netherlands, Taiwan Province of China, Hong Kong SAR, Spain, Switzerland, India, Korea, Canada, China, and Thailand. Trade weights have been obtained from the INS.

Notes:

[1] Heerah-Pampusa and Hurree-Gobin (2006) applied the capital-enhanced equilibrium exchange rate approach to monthly data for the Mauritian rupee, and found that it was undervalued during the period 1998–2002 and overvalued over 2003–05.

[2] Simple conditions include (relative) purchasing power parity and uncovered interest rate parity. Balassa-Samuelson-type models focus on the role of productivity differentials in explaining exchange rate movements, while other models allow for richer sets of macroeconomic fundamentals to determine exchange rate changes.

[3] While we do not apply this normalization in our analysis, earlier evidence suggests that it amounts to between 1 and 4 percentage points (Lee et al., 2008).

[4] See Driver and Wren-Lewis (1999) for a sensitivity analysis of the FEER estimates of the US dollar, Japanese yen, and German mark to different assumptions.

[5] We use fiscal years in the projection to keep in line with the current budget cycle in Mauritius. We refer to the medium term as 2007–12 (or 2006/07–2011/12 based on the fiscal year).

[6] WEO forecasts have been shown to meet basic quality standards in many dimensions (e.g., unbiasedness and efficiency) and to perform at least as well as Consensus forecasts (Timmermann, 2007).

[7] For instance, Calderon et al. (2002) categorize the potential determinants of the current account balance as: internal conditions (GDP growth rate, relative income, private saving, public saving), external conditions (exports, real effective exchange rate, terms of trade, black market premium, balance of payments controls), and evolution of the world economy (industrialized output growth, world real interest rate). Richer models for the empirical determinants of the current account balance have been proposed by Chinn and Prasad (2003), who add financial deepening and trade openness among the covariates; and Chinn and Ito (2008), who bring in an institutional development perspective to the analysis, arguing that the effectiveness of financial deepening and financial openness in improving a country's savings-investment balance depends on the quality of the legal system and institutions. See also Christiansen et al. (2010) for current account regressions that include variables especially relevant to developing economies.

[8] Existing and announced policies are discussed, e.g., in IMF (2008).

[9] Temporary factors are one-time purchases (imports) of aircraft and ships, and represent 4 percent of GDP in 2006/07, 1.5 percent of GDP in 2007/08, and 1.7 percent of GDP in 2009/10. These are subtracted from the trade balance.

[10] The results are robust to re-estimating the model over 1982–2005, i.e., after the second devaluation of the Mauritian rupee.

[11] We caution that the model of the current account balance presented here should not be interpreted causally. For that, we would have to address problems of endogeneity using alternative estimation procedures. Here we use the coefficients solely as indicative of a stable relationship between the current account balance and macroeconomic determinants, and to predict it over the medium-run based on projections of the determinants.

[12] However, this stability was interrupted by two global shocks. In 2008 the substantial rise in imported food and fuel prices coupled with stronger-than-expected FDI inflows caused a real appreciation of 13 percent that year. In 2009, a 4.1 percent real appreciation was incurred largely due to the fiscal stimulus implemented in response to the global financial crisis (IMF, 2010).

[13] The bound-testing approach is superior to the conventional Johansen cointegration test in small samples, and the ARDL provides correct statistical inference regardless of the variables' order of integration (Chudik and Mongardini, 2007).

[14] The model has a lag structure given by ARDL (1,0,0,0) and is selected using the Schwartz Bayesian Criterion.

[15] Other possibilities are (1) assuming that the medium-term current account projection already represents a sustainable level (in which case, no real exchange rate adjustment is necessary), calculating the NFA position consistent with it, and determining whether it is plausible given the investment outlook and capacity to save of the country; (2) specifying a reduced-form model of NFA positions in a cross-section of countries, and obtaining equilibrium NFA estimates conditional on country characteristics (Calderon et al., 1999; Christiansen et al., 2010); and (3) assessing the sustainability of each balance of payments component in turn (see, e.g., Déléchat and Gaertner, 2008).