After Papua New Guinea’s Resource Boom: Is The Kina Overvalued?

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**Background**

Figure: Real Exchange Rate (RER) and Terms of Trade (TOT), 1999-2015
**Background**

- **Theory**: Sharp RER appreciation during resource boom and decline of tradable sector ("Dutch Disease").
- After the boom, RER depreciation needed to restore internal and external balance.
- In PNG, RER continued to appreciate even after the boom (See previous Figure)
- FX restrictions since 2014 (US$ 1B excess demand).
- Macroeconomic instabilities via RER induced by volatility in commodity prices one of the causes of the "resource curse" (Frankel, 2010).
- Interference in macroeconomic adjustment process imposes high costs!
- RER overvaluation leads to resource misallocation → lower growth.
- Overvalued exchange rates not sustainable in the long run → BOP crisis.
This Paper

- Issue for policy makers: Equilibrium RER (ERER) is unobserved.
- There are no previous estimates, only informal ones.
- Purpose: Inform policy debate on current level of RER misalignment.
- We follow a theory-informed approach by estimating the ERER as a function of macro fundamentals.
- On the basis of our ERER estimate we compute the degree of RER misalignment.

**Main result:** RER currently significantly overvalued by around 20%.
The RER is the ratio of the domestic price of nontraded goods relative to the price of traded goods:

\[ RER \equiv \frac{P_N}{E \times P_T} \]

The ERER is that value of the RER that results in the simultaneous attainment of both internal and external equilibriums, given sustainable values of relevant variables achieving this objective (Nurkse, 1945).

- Internal balance: Nontraded goods market clears.
- External balance: CA deficit can be financed through "sustainable" capital inflows.

Increase in RER denotes real appreciation.
Nurkse (1945) implies that ERER is a function of a set of fundamentals. Theoretical contributions of Edwards (1989), Faruqee (1995), and Montiel (1999) suggest:

\[
ERER = ERER(TOT, \phi, \zeta, G_N, G_T, NFA),
\]

where \( TOT \): terms of trade,
\( \phi \): trade policy,
\( \zeta \): productivity differentials (Balassa-Samuelson effect),
\( G_N, G_T \): government consumption on nontradables/tradables, and
\( NFA \): net foreign asset position.
Estimating the ERER

**Estimation:** Three-step procedure ("Single-equation approach")

- **Step 1** Use empirical equivalent of (1) and estimate:
  \[ \ln RER_t = \beta' F_t + \nu_t. \]
  
  Estimator: Fully-Modified Ordinary Least Squares (FMOLS)
  

- **Step 2** Compute ERER using sustainable values of the fundamentals, \( F^S \) (trend-cycle decomposition):
  \[ \ln ERER_t = \beta' F^S_t. \]

- **Step 3** Calculate RER misalignment:
  \[ RERMIS_t = \frac{RER_t - ERER_t}{RER_t}. \]
  
  RER overvalued when \( RERMIS_t > 0. \)
The Data

- **RER** Multilateral (trade-weighted), CPI-based [Source: IMF]
- **Trade Policy**
  - OPEN: \((M+X)/GDP\) [PWT]
- **Balassa-Samuelson-Proxy**
  - PROD: ratio of GDP per capita to OECD average [WDI]
- **Government Consumption on Tradables and Nontradables**
  - GEXP: Total government consumption (equality restriction on \(G_N\) and \(G_T\)) [PWT, BPNG]
- **NFA** Wealth of Nations database [Lane & Milesi-Ferretti, 2007]
- **TOT** [WDI, World Development Reports, and BPNG]
Results

Our preferred specification:

\[ \ln RER_t = 0.15 \ln TOT + 0.17 NFA + 1.75 GEXP - 0.71 OPEN - 0.007 \text{Trend} + 4.48, \]

\[ (0.05) \quad (0.06) \quad (0.41) \quad (0.09) \quad (0.004) \quad (0.23) \]

Observations: 35 \quad \bar{R}^2 = 0.86 \quad L_c : 0.48.

\[ L_c \]: Hansen (1992) test statistic. \( H_0 \): Parameters are stable and cointegrated.
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Results

Figure: RER and ERER, 1990-2015.

Note: An increase in RER denotes appreciation. Therefore, RER > ERER indicates RER overvaluation.
Results

Figure: RER misalignment (%), 1990-2015.

Note: Positive values indicate RER overvaluation.
Results

Projections for 2016

- Real overvaluation in 2015 = 22%.
- In 2016, slow but steady depreciation vis-à-vis US dollar (1% p.m. up until recently).
- However, positive inflation differential between PNG and main trading partners (7% vs. 1.5%).
- Further gov’t budget cuts and worsening in TOT → ERER depreciates.
- Therefore, significant real overvaluation of about 20% ongoing in 2016.
We find that the kina is significantly overvalued.

Policy implication: BPNG should devalue the kina by about 20% in order to restore both internal and external balance.

Benefit: Better allocation of resources $\rightarrow$ higher economic growth.

If not, economic costs are high due to resource misallocation.
In the long run, FX restrictions are extremely unlikely to preserve international reserves and the exchange rate!

Black markets might develop eventually (see Latin America in 1970s/80s, Nigeria, Venezuela, and others.).

Parallel markets are costly: Rent-seeking behavior, lower seigniorage and tariff revenues.

Also, export receipts diverted from official channels → BOP crisis.