

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

Rohan Fox[†] and Marcel Schröder^{†,‡}

[†] Development Policy Centre, Australian National University

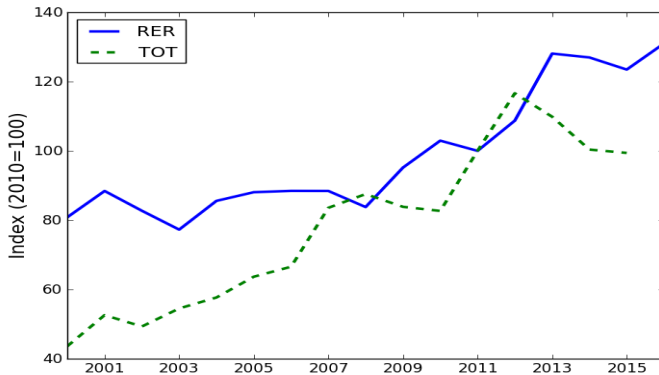
[‡] Department of Economics, Lebanese American University

PNG Update 2016

The University of Papua New Guinea, November 3-4, 2016

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)
- Reserves declined from US\$ 4B in 2012 to US\$ 1.7B in 2016.
- 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%.**

DEFINITION OF THE RER AND ERER

- 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 ERES is a function of a set of fundamentals.
- Theoretical contributions of Edwards(1989), Faruqee (1995), and Montiel (1999) suggest:

$$ERER = ERER \left(\underset{(+/-)}{TOT}, \underset{(-)}{\phi}, \underset{(+)}{\zeta}, \underset{(+)}{G_N}, \underset{(-)}{G_T}, \underset{(+/-)}{NFA} \right), \quad (1)$$

- where TOT : terms of trade,
- ϕ : trade policy,
- ζ : productivity differentials (Balassa-Samuelson effect),
- G_N, G_T : government consumption on nontradables/tradables, and
- NFA : net foreign asset position.

ESTIMATING THE E_{ER}

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)
- Sample Period: 1980-2015.
- **Step 2** Compute E_{ER} using sustainable values of the fundamentals, F^S (trend-cycle decomposition):

$$\ln E_{ER} = \beta' F_t^S.$$

- **Step 3** Calculate RER misalignment:

$$RERMIS_t = \frac{RER_t - E_{ER}}{RER_t}.$$

- 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:

$$\ln RER_t = 0.15 \ln TOT + 0.17 NFA + 1.75 GEXP - 0.71 OPEN - 0.007 Trend + 4.48,$$

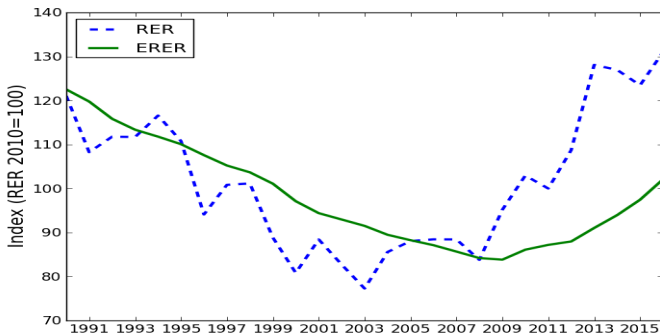
(0.05)
(0.06)
(0.41)
(0.09)
(0.004)
(0.23)

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

- L_c : Hansen (1992) test statistic. H_0 : Parameters are stable and cointegrated.

RESULTS

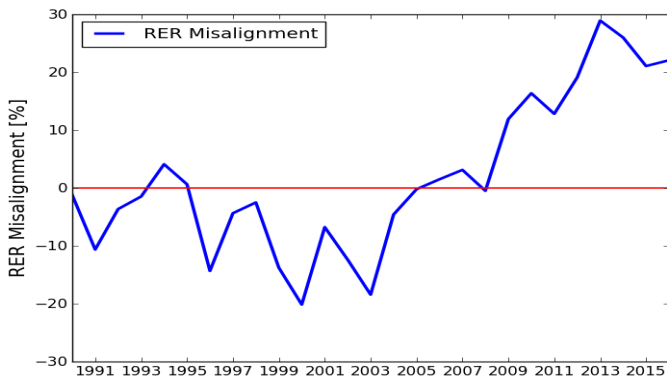
Figure: RER and ERER, 1990-2015.



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.

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 → ERES depreciates.
- Therefore, significant real overvaluation of about 20% ongoing in 2016.

CONCLUSION

- 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 → higher economic growth.
- If not, economic costs are high due to resource misallocation.

CONCLUSION

- 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.