# Debt Redemption and Reserve Accumulation What to do with the Brazilian Swap Program ?

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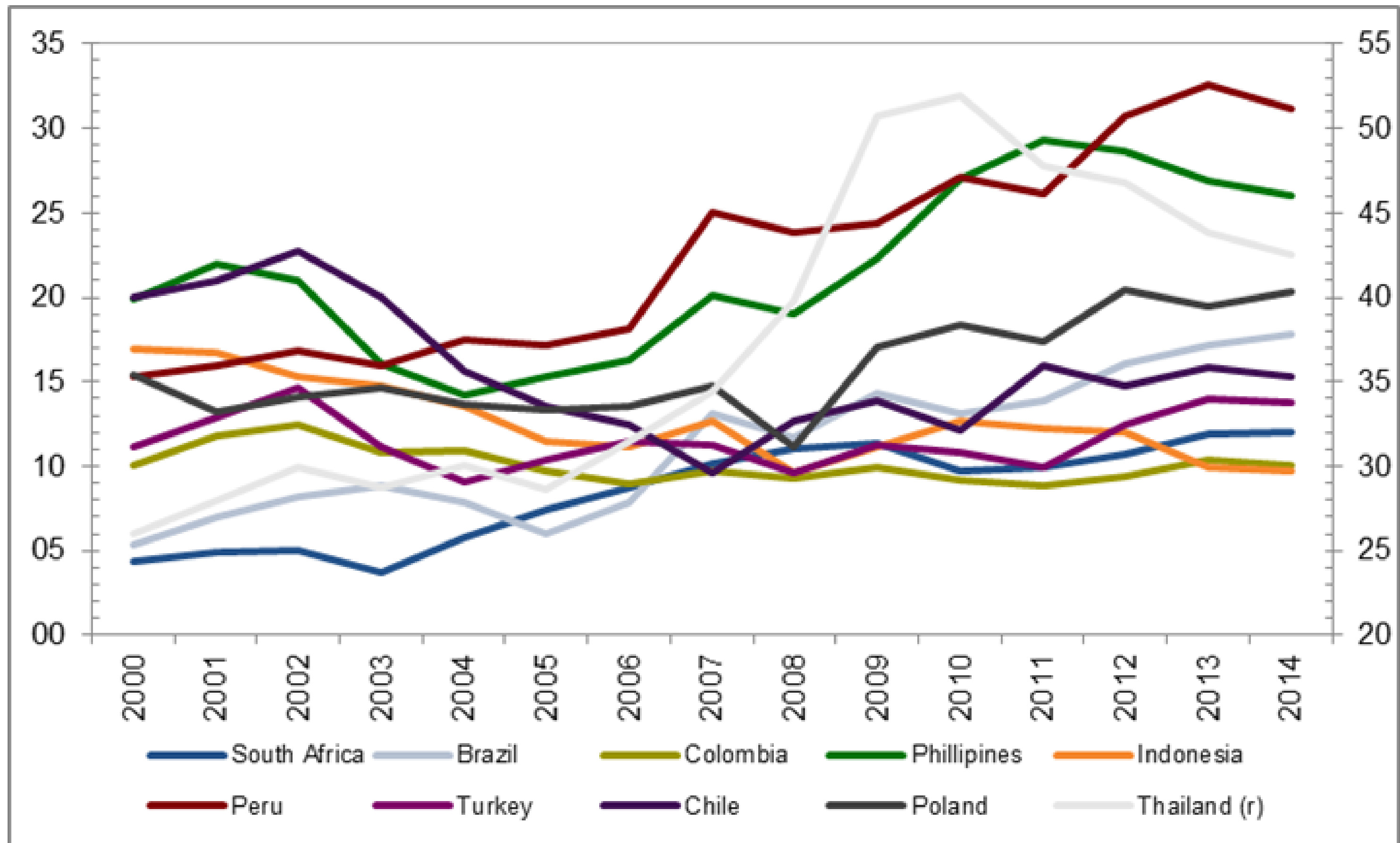
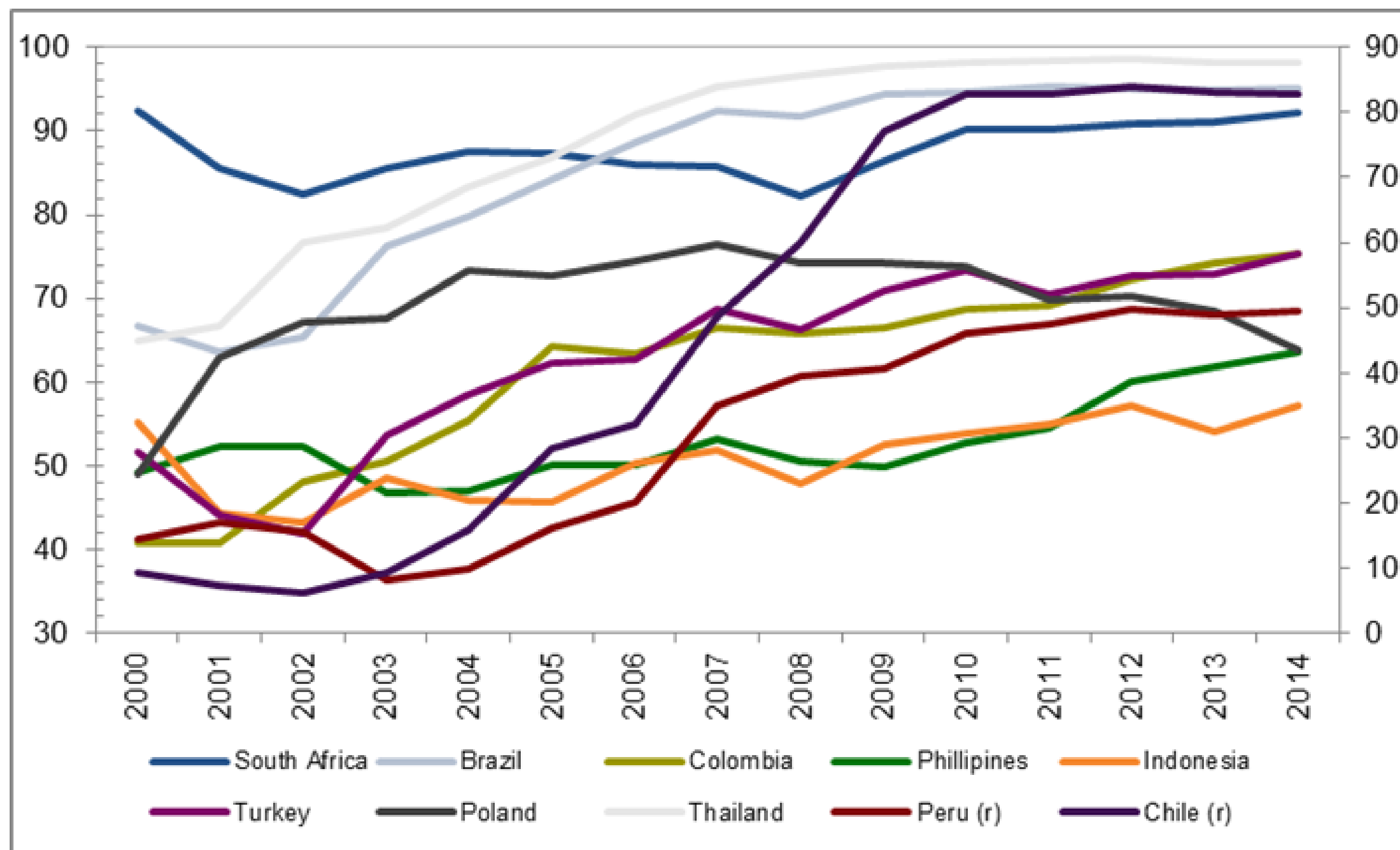
# EME International Currency Exposure

International Reserves (% GDP)



# EME International Currency Exposure

Domestically Denominated Debt as a Fraction of total Government Debt



# Motivation

What is the optimal level of international reserves?

"Insurance mechanism against the risk of an external crisis"

- But reserves are very "costly" (difference in interest rates)
- In addition, reserves and debt level affect debt sustainability (CDS)
- Why don't use reserve to repay debt?

- ➢ Alfaro & Kanczuk (JIE 2009) – optimal reserve level is zero (quantitative)
- ➢ Now assume Government issues domestically denominated bonds
- ➢ New role: portfolio valuation effect smooths consumption

Bad shock → currency appreciates → less debt → more consumption

# The Model

- Economy populated by a sovereign country that borrows funds from a continuum of international risk-neutral investors.
- Consumption of tradeable and nontradeable goods
- Shocks in output (tradeable endowment)
- Benevolent government may choose optimally to default on its international commitments to smooth consumption.
- If the government defaults on its debts, it is assumed to be temporarily excluded from borrowing in the international markets
- Focus on Markov perfect equilibria: define states of the economy in which the sovereign chooses to default, which determines prices (international investors); solve sovereign problem, determining default, use in the next iteration.
- Calibrate to Brazil

# Results

| Case | Foreign Den. Debt (% GDP) | Locally Den. Debt (% GDP) | Internat. Reserves (% GDP) | Probab. Default (%) | Exchange Rate S.D. (%) |
|---|---|---|---|---|---|
| (i) | 48.0 | - | 0.0 | 6.1 | 26.2 |
| (iii) | - | 28.6 | 24.0 | 0.4 | 4.2 |

- Large Reserve accumulation
- Very low default probability
- Much Lower Exchange Rate volatility
- Reserves are not depleted in bad times

# FX Swap Program in Brazil

Governor Tombini (March 24th, 2015) at the Senate:

"Within admissible parameters of risk and return, the FX swap program represents important smoothing instrument against the effects resulting from exchange rate fluctuations, since its impact is simmetrical, but with inverted signal, to those of the international reserves."

- GDP = 5.5 R$ trillion / 3 R$/US$ = 1.8 US$ trillion
- Reserves = 370 billion = 21% GDP
- Swaps = 110 billion = 6% GDP
- Reserves – Swaps = 15% GDP

This paper: Optimal Reserve Level = 24% (that is, Reserves – Swaps)

→ Get rid of Swap Program, accumulate a bit more reserves