Discussion on "Managing Capital Outflows with Limited Reserves" by S.Basu, A. Ghosh, J. Ostry and P. Winant

Gianluca Benigno

IMF and *London School of Economics*

BOI-SNB-CEPR "Foreign Exchange Market Intervention: Conventional or Unconventional Policy?"

Summary

- Interesting and well executed paper on FX intervention with lower bound on reserves: provides insight on commitment versus time-consistent optimal FX intervention with lower bound on reserves (novel part).
- Framework with imperfect substitutability and exchange rate stabilization objective.
- Main results:
  - Commitment solution: promise to intervene in the future. (expectation channel)
  - Time consistency problem from lower bound on reserves: optimal time consistent policy demands less intervention.
  - Persistence of the shock important for design of optimal policy.

Summary (model)

- Simple model with quadratic objective and linear constraint.

$$\sum_{t=0}^{\infty} \beta^t \left(\frac{e_t - e^*}{2} \right)^2$$

- Key assumption: imperfect substitutability in asset markets.

$$k_t = a(Ee_{t+1} - e_t) + z_t$$

- Foreign exchange rate intervention

$$f_t = R_t - R_{t+1}$$

- Balance of payment identity determines evolution of nominal exchange rate

$$k_t = ce_t + f_t$$

- Law of motion of exchange rate

$$e_t = \frac{1}{a+c} \left(z_t - f_t + aE_t e_{t+1} \right)$$

- Lower bound on reserves

Full commitment solution

- Consider permanent outflows shock and normalize exchange rate target to $e^* = 0$. Pure float equilibrium would be $\bar{e} = \frac{\bar{z}}{c} > e^*$.
- Why not intervene right now? Expectation channel of intervention. Promise of future intervention has effect on today's exchange rate.
- Time of intervention depends on trade-offs between waiting (expectation channel) and acting now (discounting deviation of exchange rate from target).
- Level of reserves affect timing of intervention (the higher, the sooner) and time-consistency problem (want to postpone intervention and re-optimize every period).

Time consistent solution

- Optimal intervention depends on the state variable (level of reserves at the beginning of the period).
- Upfront intervention becomes optimal and compare benefit of intervening today with benefit of postponing intervention tomorrow (Expectation channel is weaker).

Discussion

- Neat model: very simple in its structure and intuitive.
- Extend insight to richer framework: generality of the results might depend on rationalization of key assumptions. (loss function and imperfect substitutability)
- Interaction between different policy tools in practise and theory.

Rational for loss function and imperfect substitutability

- Which exchange rate in the loss function?
- What is the rationalization of it? Which are the underlying distortions?
- New Open Macro Model with incomplete markets two bonds (home and foreign currency bonds) (P.Benigno,2009 and De Paoli, 2009)
  - Cost of holding foreign bonds creates deviations from UIP and possibility of FX intervention.

$$E_t(e_{t+1} - e_t) = i_t - i_t^* + \delta b_t$$

  - Objective function: besides inflation stabilization and terms of trade externality there is cost of imperfect financial market.
  - Flexible price allocation is no longer optimal and there is rationalization for the use of alternative policy tool.

General Analysis

- General framework: use of standard interest rate tools for inflation stabilization purposes might influence the desirability/ or the extent of FX intervention.
- Level of reserve might affect the complementarity among policy tools.
- It would be interesting to explore how time consistency problem might be mitigated by the presence of alternative policy tools and macroeconomic condition (inflation).

FX intervention: not by itself?

- Central Bank of Russia 2008Q3: marginal increase in the policy rate from 10.5% (June 2008) to 13% (December 2008).
- Central Bank of Korea 2008Q3:decrease in the policy rate second half of 2008 from above 5% to 2% at the beginning of 2009.
- Central Bank of Brazil 2013Q3: rasing rate as well during Taper Tantrum along with removal of capital controls.

FX intervention: not by itself? (IMF discussion note 09/14)

Figure 21. Policy Tools Deployed by Emerging Markets

	Monetary policy		Fiscal policy	Macroprudential Policy	CFMs	FX intervention	Liquidity provision measures
	Tight	Loose	Tight	Tight	Removal		
Brazil	✓		✓		✓	✓	✓
India	✓		✓	✓	✓	✓	✓
Indonesia	✓			✓	✓	✓	✓
Russia	✓					✓	
S Africa	✓						
Thailand		✓					
Turkey	✓			✓		✓	✓
Poland		✓				✓	

Source: Desk economists, recent FSAPs, and Article IV Staff Reports.

Conclusion

- Interesting paper that provides insight on the role of lower bound on reserves for the conduct of FX intervention.
- it would be interesting to extend the analysis to more general settings.
- Compare results with ZLB on nominal interest rate: Adams and Billi (2006 and 2007)