Balance Sheets Exchange Rates and International Monetary Spillovers

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Motivating questions

- How does a US monetary contraction transmit through financially dollarized economies?
- Do adverse banks' balance sheet effects from local currency depreciation justify policy rules that contain exchange rate variability?
- More in general, how does financial dollarization impinge on a small open economy business cycle?

This paper builds a stylized mechanism with remarkably rich and intuitive predictions.

Main mechanism

- Local banks borrow in domestic currency and dollars.
- There is one agency friction (limited enforcement), worse for foreign liabilities (foreign loans are more easily divertable),
  - Banks' required excess return relative to foreign rates, ρ, is always higher than the banks' required excess return relative to domestic rates μ

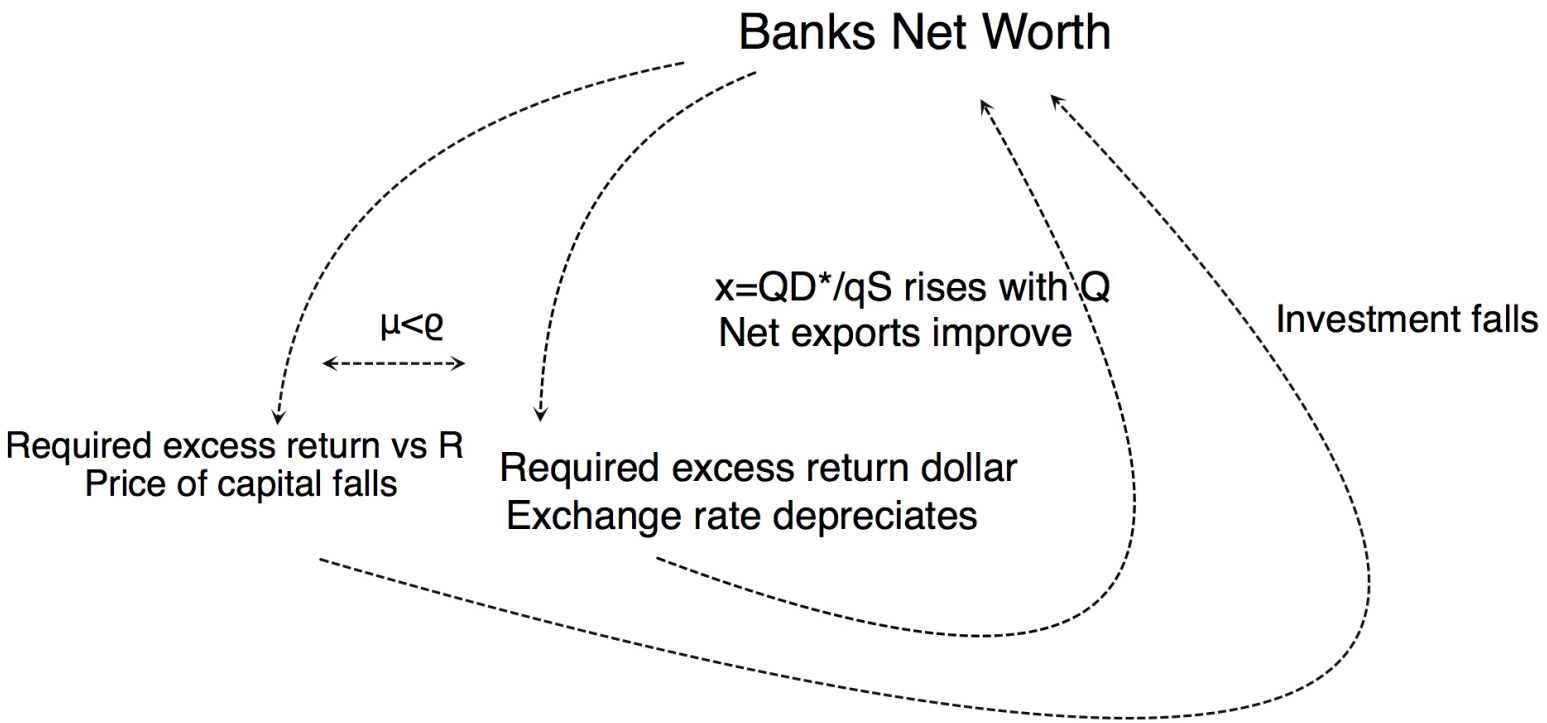
$$\rho = (1+\gamma)\mu \tag{1}$$

  - From the above, currency premia (deviations from UIP) move proportionally with μ

$$\rho - \mu = \gamma\mu = \beta\mathcal{E}_t(R_{t+1} - R^*_{t+1}\frac{Q_{t+1}}{Q_t}) \tag{2}$$

- Any shock reducing banks' net worth raises μ (the price of capital must fall), implying that ρ must rise by more (the exchange rates Q must depreciate).

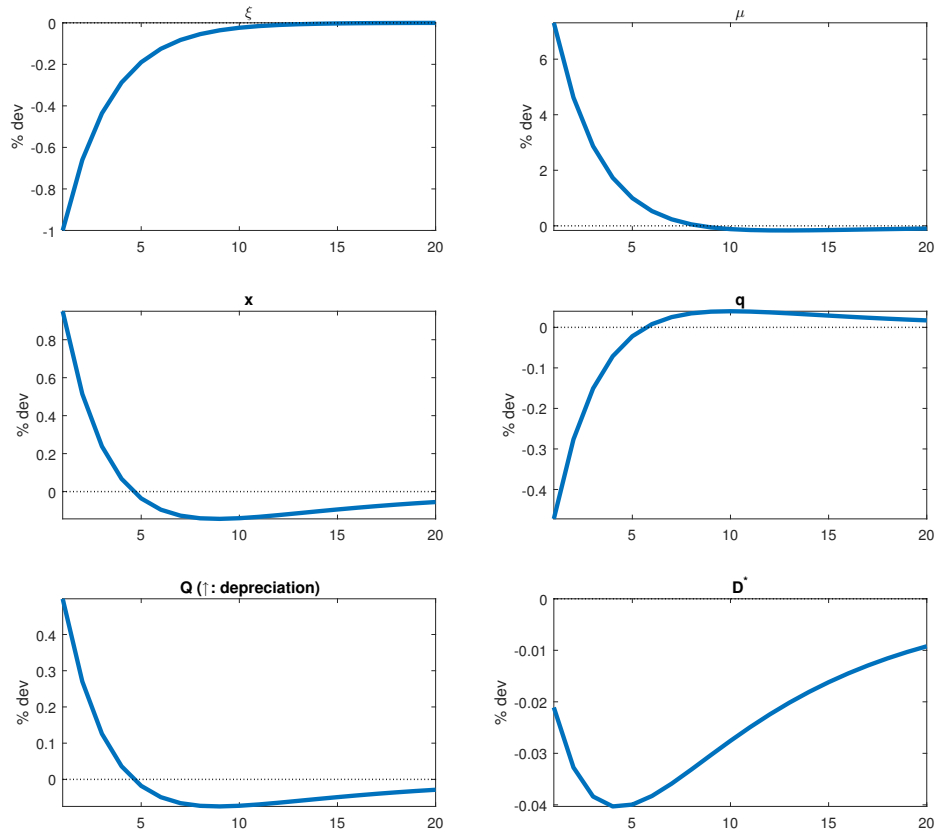
A simple scheme



The strength of the feedback on net worth depends on share of dollar liabilities in bank's balance sheet $x = \frac{QD^*}{qS}$. This raises endogenously with currency depreciation.

A shock to net worth

Figure: persistent ξ shock



$(\beta = 0.96, \beta^* = 0.99, \gamma = 1.0, \theta = 0.2, \xi = 0.25, \chi_m = \chi_x = .25; \rho = 0.66)$

The "AkQue-alto" in motion

Mechanism activated by many shocks:

- Tax, transfers, exogenous shocks to net worth
- Domestic monetary shocks
- Foreign monetary shocks

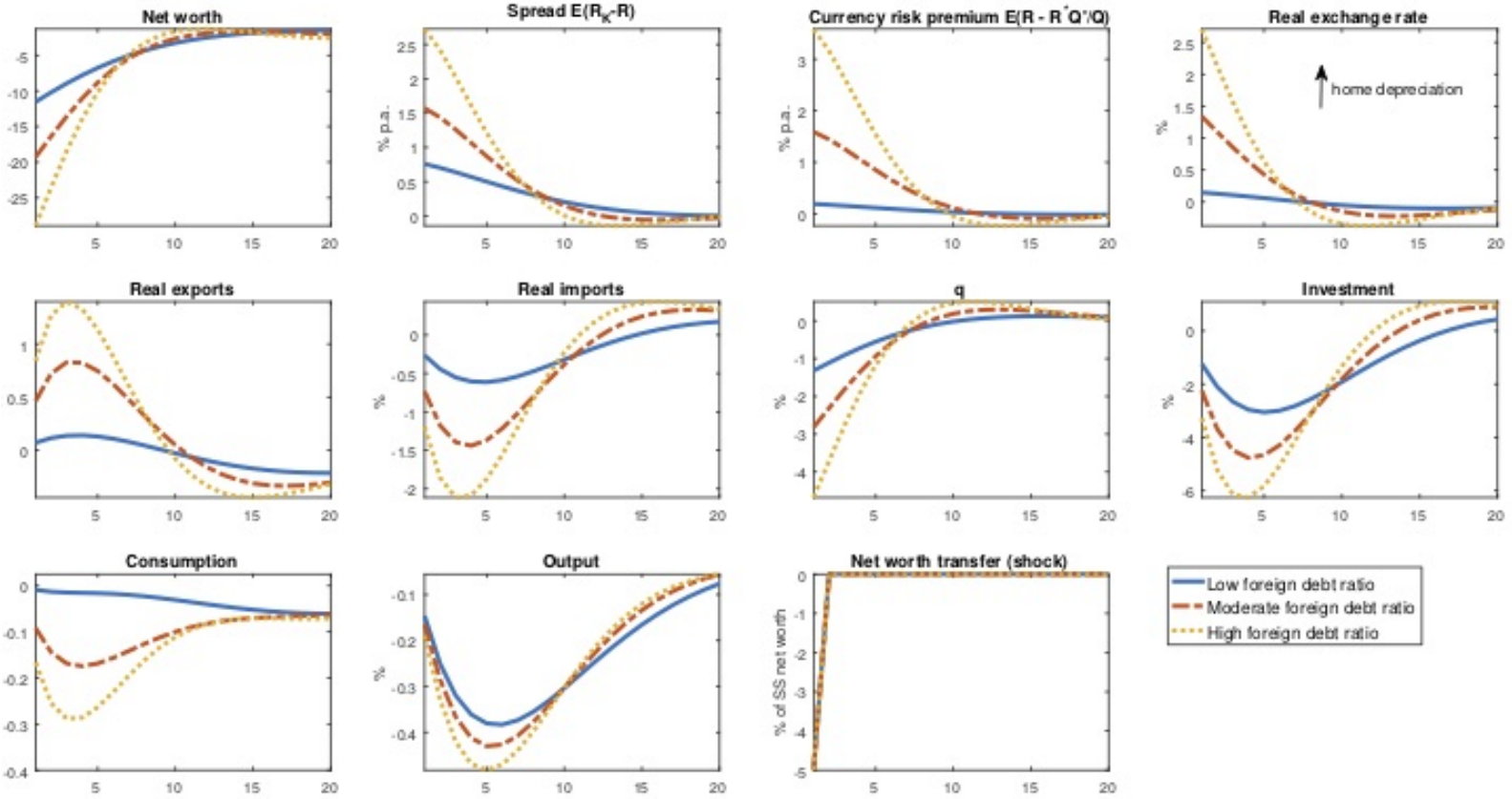
Throughout, note a link to Paul Krugman point in IMF-Economic Review: risk can be 'expansionary'. Depreciation change the composition of demand substituting falling domestic absorption with net export (see joint work with Mueller and Kuester also in IMF-ER).

In the following figures, focus on the plots of the exchange rate, net exports and investment.

Shock to net worth

Amplification via share of Foreign Liabilities in banks' balance sheet

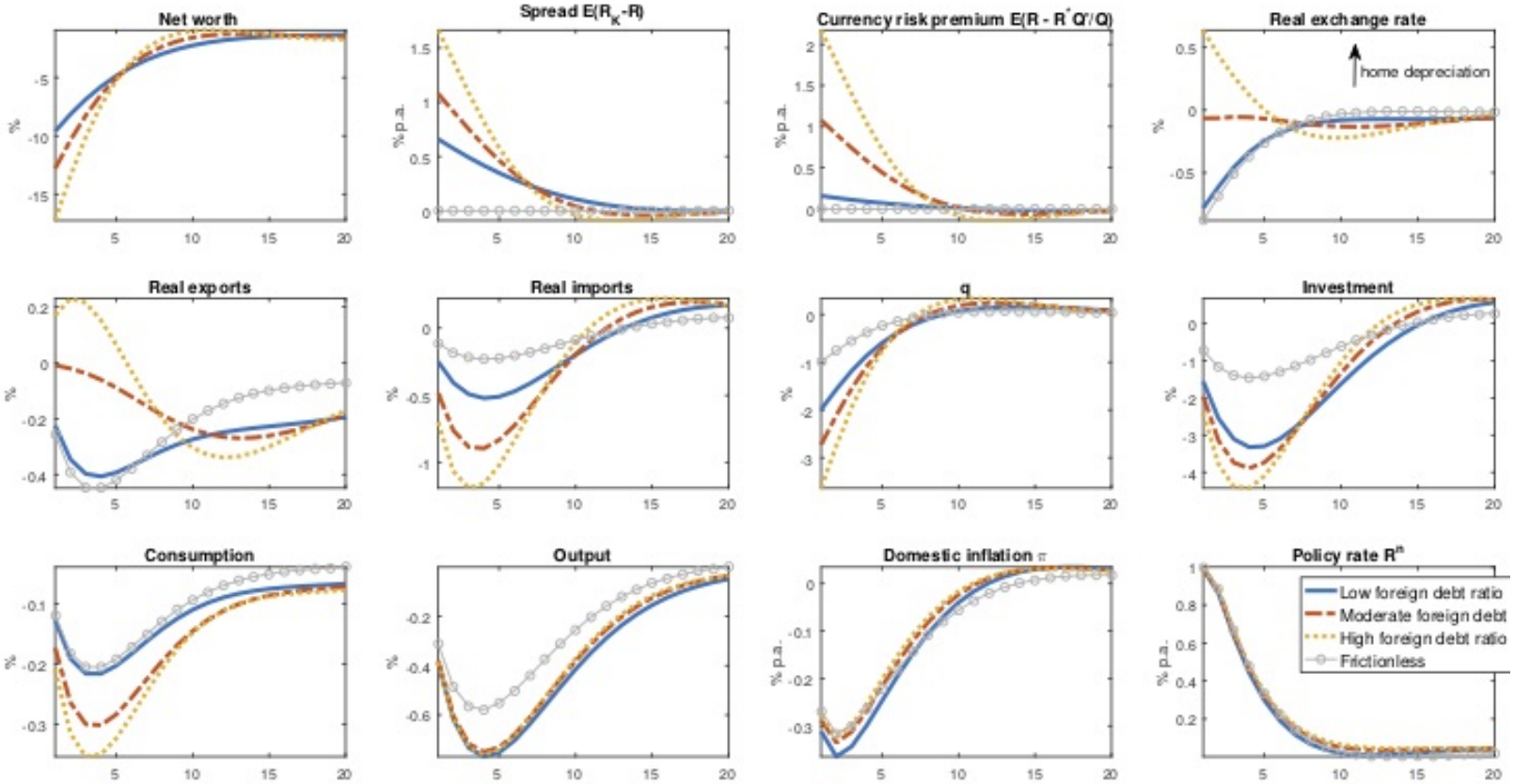
Figure: One-time drop in bank net worth



Domestic monetary tightening

Currency premia may cause the exchange rate to weaken

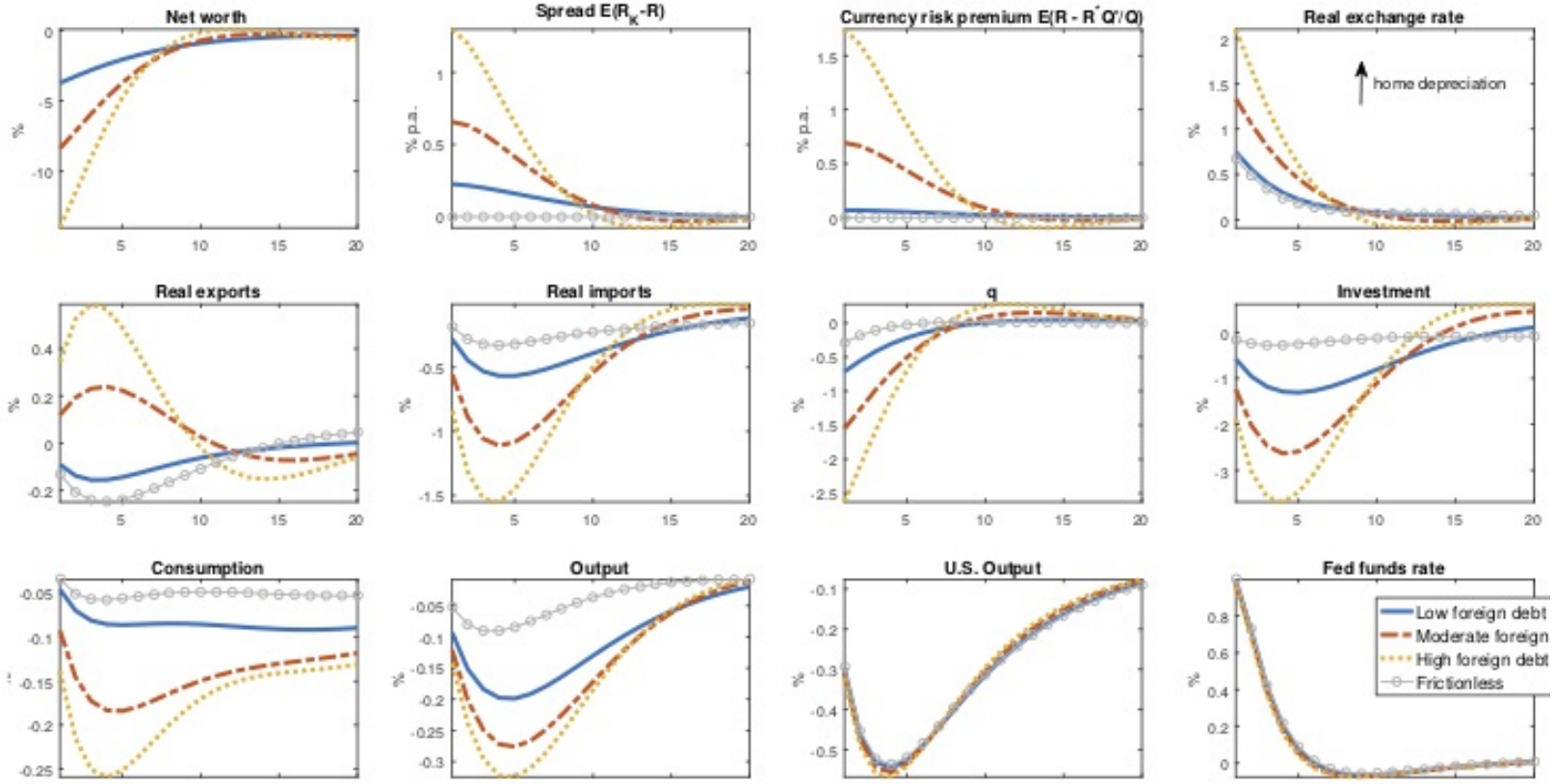
Figure: Domestic monetary tightening



US monetary tightening

Depreciation as shock absorber for output—not for consumption

Figure: U.S. monetary tightening in the model with frictions



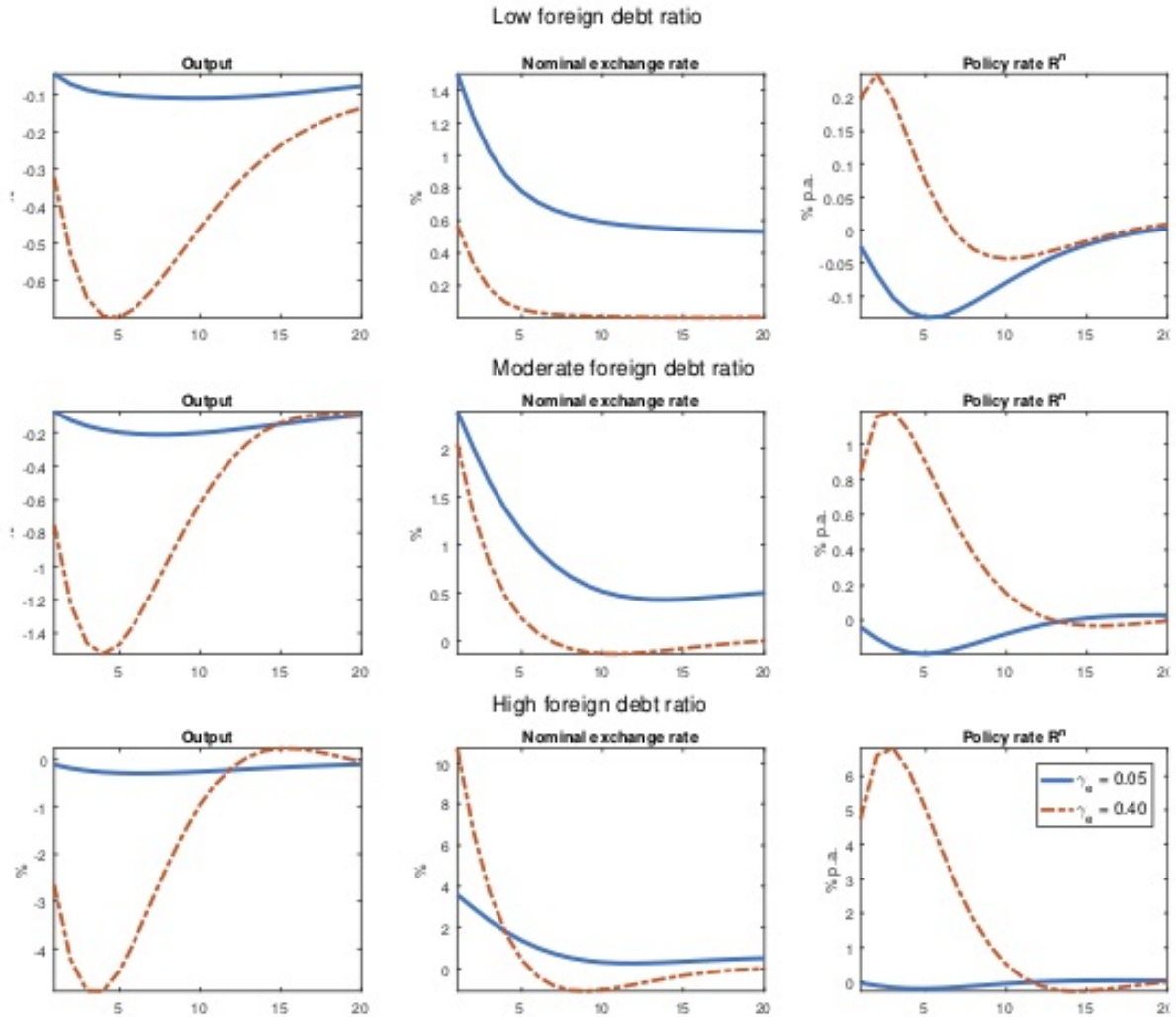
Misalignment and monetary policy

The financial friction that causes currency risk to translate into net worth losses and amplify financial accelerator effects prefigure a misalignment. While depreciation helps economic activity, it is questionable that the exchange absorbs rather than magnifying shocks.

- Is there an argument for pursuing policy rules reducing exchange rate 'misalignment'?
- The paper argues that exchange-rate-augmented Taylor rule would not necessarily work, on two grounds.
  - there is a trade-off with output stability—currency stability containing depreciation implies lower net export expansion.
  - for high enough liability dollarization, these rules may end up producing more misalignment and destabilize output.
    This possibility is illustrated in the following graph.

US monetary tightening: different Taylor rules

Trade-off output-real misalignment



Misalignment, imbalances and optimal monetary trade-offs

- With financial frictions, capital flows are not efficient and real exchange rates misaligned. How are these two 'gaps' traded-off by optimal policy?
- Ozge and Albert provide a great example: far from obvious that policy hikes are a good response to rising currency risk.
- A couple of developments are nonetheless required on logical ground: welfare and Dominant Currency Paradigm.

Back to the blackboard: NK workhorse model

Misalignment, imbalances and optimal monetary trade-offs

The question is actually central to open economy monetary theory. The follows draw on Corsetti Dedola Leduc (2018), in turn related to Engel (2011):

- Analytical solutions for (approximation to) loss function, targeting rules and economic dynamics under PCP and LPC (and DCP), for bond economies.
- Shocks producing inefficient capital flows and misalignment.

NK workhorse model

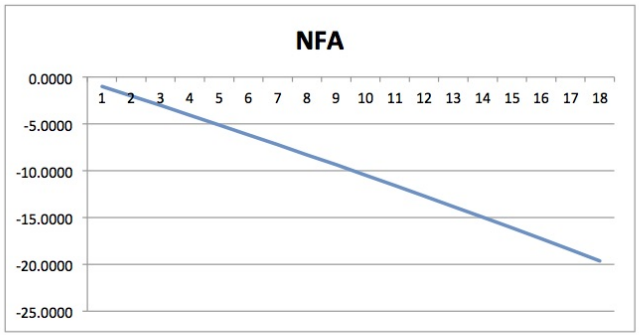
Misalignment, imbalances and optimal monetary trade-offs

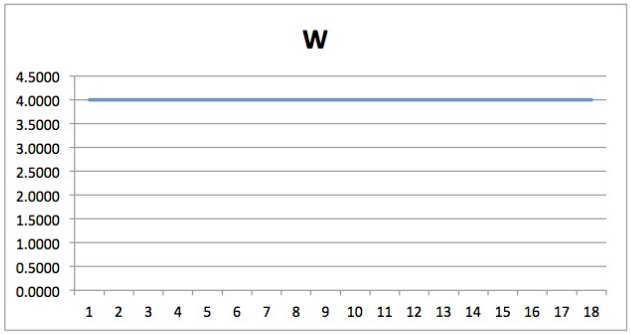
Key result in CDL 2018: the response to inflows that widen the deficit and appreciate the currency is not necessarily contractionary, nor follows the natural rate.

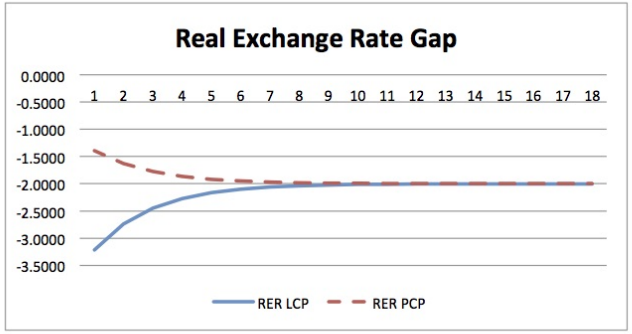
- Producer currency pricing PCP: optimal trade-offs resolved by leaning against the exchange rate at the cost of larger demand imbalances and inflation.
- Local currency pricing PCP: hike rates to stabilize demand, at the costs of below-target inflation and larger real exchange rate misalignment and variability.
    - Interesting rejoinder of LCP under complete markets: despite lack of useful expenditure switching effects, currency volatility implied by optimal policy may remain high (higher than under PCP).

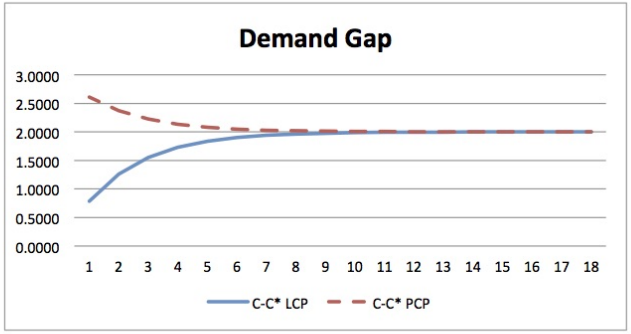
Inefficient capital flows in workhorse model: PCP vs LCP

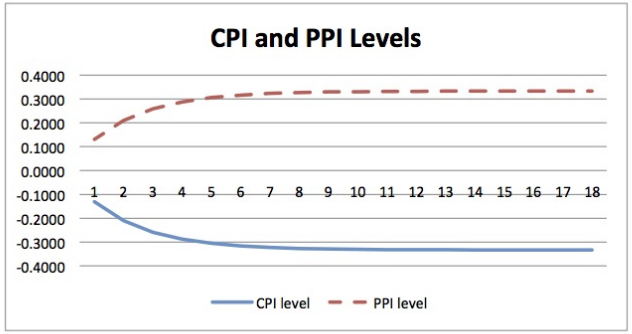
Holding underlying shock and size of flow identical

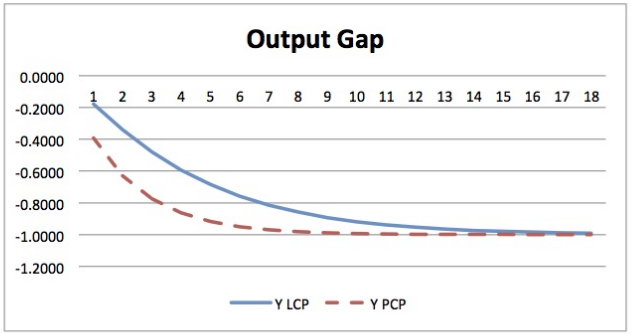












NK workhorse model

Misalignment, imbalances and optimal monetary trade-offs

With financial frictions, any shock opens a wedge in valuation across individual, which in turns defines a policy-relevant trade off between cross-border imbalances in demand $\widetilde{\mathcal{D}}_t$ and misalignment $\widetilde{\mathcal{Q}}_t$.:

$$\widetilde{\mathcal{W}}_t \equiv 2\sigma\widetilde{\mathcal{D}}_t - \widetilde{\mathcal{Q}}_t.$$

Under LCP, for instance, the cross-country optimal targeting rule (with cooperation and commitment) is:

$$\begin{aligned} 0 &= \theta\left(\pi_t - \pi_t^*\right) + \widetilde{\mathcal{D}}_t - \widetilde{\mathcal{D}}_{t-1} \\ &+ \frac{4a_{\mathrm{H}}\left(1-a_{\mathrm{H}}\right)\phi}{2a_{\mathrm{H}}\left(\phi-1\right)+1}\frac{\left(\sigma-1\right)}{\sigma}\left[\left(\widetilde{\mathcal{W}}_t - \widetilde{\mathcal{W}}_{t-1}\right) + \left(\widetilde{\Delta}_t - \widetilde{\Delta}_{t-1}\right)\right]. \end{aligned} \tag{3}$$

The above wedge is optimally traded-off with inflation and inefficient deviations from the law of one price Δ.

In conclusion

- Very intriguing paper: inspirational reading already, a promising framework
- Welfare and DCP should be included to complete the analysis
- Ongoing work on DCP (with Dedola and Leduc): targeting rules asymmetric, with added emphasis to deviations from the law of one price.
  Relative to the LCP case, we may expect less exchange rate variability associated with optimal policy.