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Currency Wars, Coordination, and Capital Controls

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Introduction

- Raghu Rajan (2014): *"The disregard for spillovers could put the global economy on a dangerous path of unconventional monetary policy tit for tat. [...] World leaders must re-examine the international rules of the monetary game, with advanced and emerging economies alike adopting more mutually beneficial monetary policies"*

- Validity of complaints and scope for coordination?

Paper offers the following answers:

- Important cross border effects of AE monetary policies on EMs
- Scope for coordination between AEs and EMs? Not much

- Potential role of capital controls as macroeconomic instrument
- Potential role of capital controls as financial stability instrument.
- Controls versus FX intervention

I. Cross border effects (spillovers)

- Expansionary AE monetary policy leads to a higher demand for EM exports. (volume effect)
- Expansionary AE monetary policy leads to EM exchange rate appreciation (price effect)
- Expansionary AE monetary policy affects capital outflows to EMs (financial effect).

1. Higher demand for EM exports. Depends on:
   - Effect of interest rate on output. Does QE make a difference?
   - Effect of output on imports.
   - Back of the envelope: 1% AE policy rate cut (or equivalent) : 0.1%-0.2% increase in EM output.

2. Higher EM exchange rate. Depends on:
   - Effect of interest rate on exchange rate. Does QE make a difference?
   - Effect of exchange rate on net exports. Does Marshall Lerner still hold?
   - Back of the envelope: 1% AE policy rate cut, 3% EM exchange rate appreciation, 0.15% to 0.9% decrease in EM output

3. Gross flows and EM financial systems

- Rey and others: Global financial cycle.
- EM perceptions: "Tsunamis of liquidity"
- Misleading? If no FX intervention, gross inflows = gross outflows
- Poorly understood. Leave to later.

II. The scope for coordination

Defining coordination. What it is not:

- More communication. Useful but not ambitious enough.
- Asking countries to sacrifice for others. Overambitious.
- Asking countries to take into account "spillbacks". They should already do so.
- Asking countries to undergo policies that they do not want to undergo/feel they cannot do.

My definition (standard) of coordination: Changes in policies which make every country be better off (and perceived by them to be so).

More formally: Improvement upon decentralized (Nash) equilibrium.

A well known but very relevant theorem:

- Spillovers do not imply room for coordination.
- If countries have as many targets as instruments, the Nash equilibrium is efficient. How far are we from that?

- Targets: Output, inflation, exchange rate (why?), financial stability
- Instruments: Fiscal policy, Monetary policy, Macro prudential policy, FX intervention, capital controls

Enough? Too abstract. Look at a more concrete example, with focus on "currency wars"

Turn to an (old fashioned) country Mundell-Fleming model.

An old fashioned MF model

Domestic (AE) output is given by:

$$Y = A + NX$$

$$A = G - cR + X$$

$$NX = a(Y^* - Y) - bE$$

Symmetrically, foreign (EM) output is given by:

$$Y^* = A^* - NX$$

$$A^* = G^* - cR^* + X^*$$

$$NX = a(Y^* - Y) - bE$$

Finally, following UIP (relaxed later), the exchange rate depends on the difference between the domestic and the foreign policy rates:

$$E = d(R - R^*)$$

Each country cares about output and about net exports (normalization: potential output equal to zero):

$$\Omega = \min Y^2 + \alpha\, NX^2$$

$$\Omega^* = \min Y^{*2} + \beta\, NX^2$$

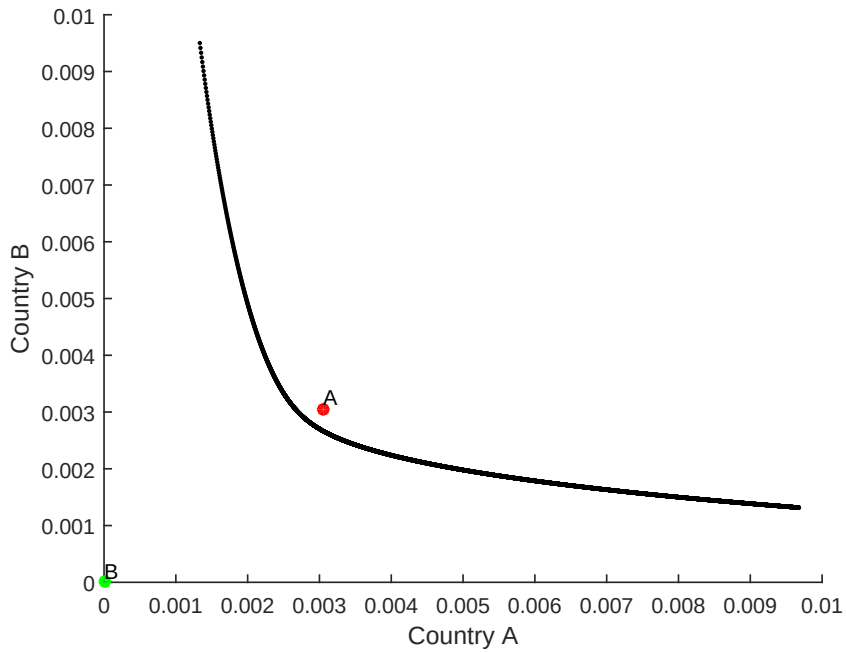
If each country can use fiscal and monetary policy, then Nash is efficient (2 targets, 2 instruments).

Assume shock to AE internal demand: $\Delta X < 0$. Fiscal is the right tool:

$\Delta G = -\Delta X$ and $\Delta R = \Delta R^* = \Delta G^* = 0$.

Assume instead that fiscal policy cannot be used (or not be used as much). Then, Nash equilibrium is inefficient. Coordination can improve the outcome.

Figure 1. AE and EM welfare under Nash and coordination



But...

Should AE interest rates be increased or decreased?

Depends on sign of $(ac - bd)$, strength of first (volume) effect versus second (exchange rate) effect.

Table 1. Policy Rates under Nash and Coordination

a	b	R (Nash)	R^* (Nash)	λ	R (Coord)	R^* (coord)
0.4	0.2	-.868	-.131	1	-.882	-.117
0.2	0.4	-.767	-.230	1	-.759	-.241

$(c = 1, d = 1, \alpha = \beta = .5)$

If $a > b$, then AEs should decrease their policy rates more
If $a < b$, they should decrease their rate less.

What do the multicountry models say? IMF simulation: Effects of an AE monetary expansion on AEs and EMs.

Year	1	2	3	4	5	6
Advanced Economies	1.00	1.60	1.38	0.94	0.61	0.39
Emerging Economies	0.17	0.39	0.39	0.33	0.28	0.22

What do policy makers think?

- Rajan: *c small: "Rather the mandates of systemically influential central banks should be expanded to account for spillovers, forcing policymakers to avoid unconventional measures with substantial adverse effects on other economies, particularly if the domestic benefits are questionable"*
- Bernanke: *a big: "US growth during the recent recovery has certainly not been driven by exports, and, as I will explain, the "expenditure-augmenting" effects of US monetary policies (adding to global aggregate demand) tend to offset the "expenditure-switching" effects (adding to demand in one country at the expense of others)*

Capital controls as the appropriate EM macro instrument

- Lack of internal demand. Right instrument is fiscal ("expenditure augmenting") : not (fully) available.
- So use monetary policy. But it has collateral effects: Through exchange rate, "expenditure switching".
- Restrictions on capital flows can eliminate the collateral effects.

Formalize controls as $E = d(R - (R^* - \theta))$. Interpretation of θ: tax on foreign holdings of domestic assets.

Then, Nash equilibrium:

$$\Delta R = \Delta X/c < 0,\ \theta = -\Delta R > 0$$

$$Y = Y^* = 0, NX = 0$$

Back to first best. Back to the origin in Figure 1. Too good to be true? Surely, but...

III. Monetary policy, capital controls versus FX intervention

Does monetary policy really trigger large increases in inflows, "tsunamis of liquidity" to EMs?

Not clear, on either theoretical or empirical grounds.

Theoretical grounds: An extension of UIP to think about gross flows and the effect of monetary policy:

$$FI = \alpha + \beta(d(R^* - R - z) + E)$$

$$FO = \alpha^* - \beta^*(d(R^* - R - \gamma z) + E)$$

Equilibrium in the foreign exchange market is given by:

$$FI = FO + FX(-NX)$$

Will ignore current account deficit, $(-NX)$. Does not move (much) in the short run. Interpretation of z, and of γ.

Effects of a decrease in R, if no FX intervention ($FX = 0$).

$$\Delta E = d\Delta R \ \rightarrow \ \Delta FI = \Delta FO = 0$$

So surely no tsunami... (incipient tsunami: yes. But eliminated by appreciation)
How to undo this result?

- Further differences between AE and EM investors? Need to look at players more closely.
- Monetary policy affects z. How? And how reliably?
- We are not there yet.

Empirical grounds

Difficult for usual reasons and more: Mediocre measures of flows, exogeneity of monetary policy, unconventional policies
Large number of studies. But claims overstated, and evidence muddled. My reading:

- Large movements in capital flows. (although not as large as often stated)
- VIX only robust variable.
- Different effects of AE monetary policy: QE1 leading to inflows into US, QE2 leading to inflows into EMs
- Points to a complex and variable relation between R and z. Monetary policy leading to less or more uncertainty.

Bottom line: Expansionary AE monetary policy probably increases gross flows to EMs, but it is not a main driver of the flows.

Whether higher gross flows matter depends on the composition of the inflows

- If AE investors buy EM government bonds, and EM investors reduce their holdings: little effect
- If AE banks reduce funds to EM banks, and EM investors reduce holdings of government bonds: more effect through domestic credit supply.
- Which composition of flows monetary policy triggers: Empirical evidence again weak. (and may again depends on relation of R and z.

Capital controls or FX intervention?

- FX intervention used much more than controls over last 7 years
- From macro viewpoint, controls and FX largely substitutes. Can in principle both achieve Y, e combination
- From financial viewpoint, very different. Controls decrease flows. FX intervention increases them.
- If worried about gross flows, controls dominate FX intervention.

Tentative conclusions

- "Currency wars:" Over reliance on AE monetary policy given limits on fiscal policy
- Little or no room for coordination

- Capital controls are, on paper, the right macro instrument
- "Tsunamis of liquidity" the wrong visual. But gross flows to EMs may increase
- Gross inflows may affect the financial system, depending on their nature.
- If gross inflows are bad, controls dominate FX intervention
- The usual relevant caveats about contingent controls: abuse, feasibility, efficacy (same as macro pru)