Global Effects of Foreign Exchange Intervention at the ZLB[1]

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ECB - BoE - IMF Workshop on Global Spillovers: How Much Do We Really Know? - Frankfurt, April 26-27, 2016.

[1] The views expressed herein are those of the author and should not be attributed to the IMF, its Executive Board, or its management

Introduction

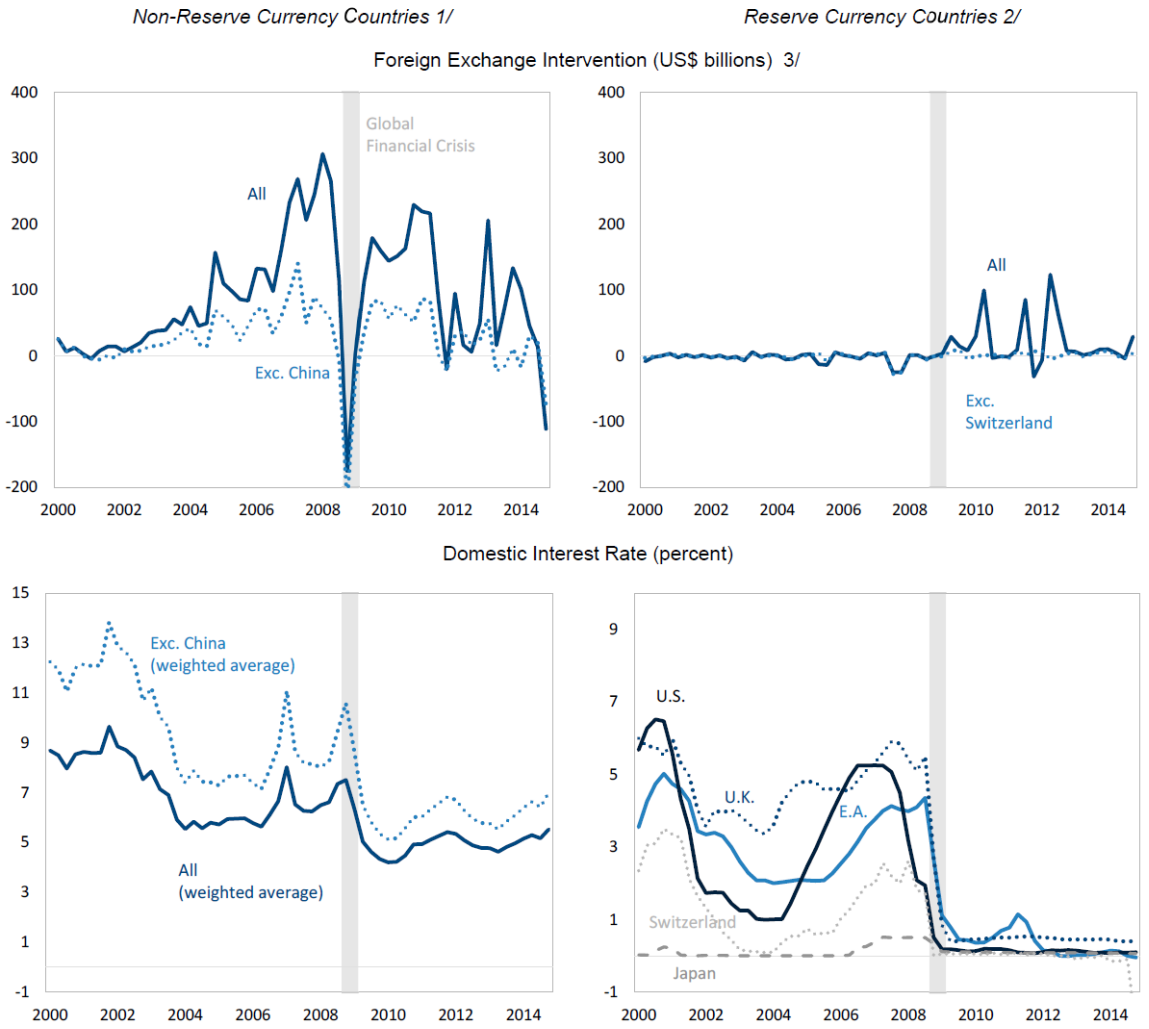
- What are the global effects of foreign exchange intervention?
- How large is the “beggar-thy-neighbor” effect from FX intervention?
- There is a disconnect between theory and practice.

Theory: Policymakers should not be concerned about international policy policies

- Obstfeld and Rogoff (2002), Korinek (2012), Jeanne (2014), Ostry et al. (2015).

- Gains from policy coordination are small.
- If each country's policies pursue national macroeconomic stability, the global equilibrium outcome will be close to the first best.
- Since countries have the same set of policy instruments they are capable of offsetting negative external spillovers.

Practice: Countries do not deploy policy instruments with the same intensity…



Sources: IMF International Financial Statistics; and authors' calculations.
1/ Non-reserve countries include Argentina, Brazil, Chile, Colombia, China, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, New Zealand, Norway, Peru, Philippines, Russia, Sweden, South Africa, Thailand, Turkey.
2/ U.S., Euro Area, U.K., Japan, Australia, Canada and Switzerland.
3/ Change in international reserves as reported in balance of payments statistics, minus estimated interest flows.

Practice: Policymakers are concerned about external spillovers to emerging economies…

- "We're in the midst of an international currency war, a general weakening of currency. This threatens us because it takes away our competitiveness. "

  Guido Mantega, Former Brazil's Finance Minister, September 2010

…and to advanced economies.

- "…The Report notes that the Korean authorities have intervened to resist won appreciation **in the context of a large and growing current account surplus,…We have made clear that the Korean authorities should reduce foreign exchange intervention,** limiting it to the exceptional circumstance of disorderly market conditions, and allow the won to appreciate further.. "

  US Treasury Department's Report to Congress on International Economic and Exchange Rate Policies, April 2015

This paper

Analyze the international spillovers of foreign exchange (FX) intervention under two scenarios :

- Normal times (positive interest rate).
- Zero lower bound (reserve-currency economies).

Main Results

- **In normal times,** FX intervention generates a small shift in external demand (beggar-thy-neighbor) without affecting world output.
- **At the zero lower bound**, FX intervention not only generates a larger beggar-thy-neighbor effect but also reduces world output.
- **The duration of the liquidity trap** depends positively on the magnitude of FX intervention.
- These results point to the high macroeconomic costs of an uncoordinated use of foreign exchange reserves at the zero lower bound.

Caveat

- We abstract from alternatives policy instruments that could also be deployed during a liquidity trap.

- As long as alternative instruments are not powerful enough or not fully utilized such that the zero lower bound remains ***binding***, our results will hold.

Outline

1. Related Literature
2. Two-country model
3. Foreign Exchange Intervention in Normal Times
4. Foreign Exchange Intervention at the ZLB
5. Global Implications
6. Sensitivity Analysis
7. Concluding Remarks

1. Related Literature

International Policy Spillovers

- Obstfeld and Rogoff (2002), Jeanne (2014), and Korinek (2013).
- Blanchard and Milessi-Ferreti (2011) and Bodenstein et al. (2009).

Foreign Exchange Intervention

- Ostry et al. (2015),Benes et al. (2015), Gabaix and Maggiori (2015).

2. Two-country model

Main Features:

- Two countries : Non-reserve currency (home) and reserve currency (foreign).
- Two goods.
- Habit formation.
- Sticky prices.
- Real wage rigidities (No divine coincidence).
- Imperfect asset substitutability.
- Monetary policy and FX intervention rules.

2. Two-country model

Asymmetry in using policy instruments

- **Simulations in normal times and at the Zero Lower Bound:**
  - We assume a binding ZLB in the reserve-currency country (foreign).

- **Foreign Exchange Intervention:**
  - We assume that only the non-reserve currency country (home) intervenes in the foreign exchange market.
- **Work in progress: gains of policy coordination in a two-country model with FX and QE**

Foreign Exchange Intervention

- **Imperfect Asset Substitutability:**
- Gabaix and Maggiori (2015) and Schmitt-Grohé and Uribe (2003).

$$\widehat{R}_t^* = R_t^* \Gamma(D_t) \qquad \Gamma(D_t) = (D_t/\overline{D})^{\rho}$$

- ρ calibrated according to Bayoumi et al. (2015).
- **Central Bank:**

$$\begin{aligned} & F_t S_t - B_t \\ = \; & -R_{t-1} B_{t-1} + R_{t-1}^* S_t F_{t-1} + T_t, \end{aligned}$$

$$\frac{F_t}{\overline{F}} = \left(\frac{F_{t-1}}{\overline{F}}\right)^{\rho^f} \exp(\varepsilon_{fi,t}) \qquad \frac{R_t}{\overline{R}} = \left(\frac{CPI_t}{CPI_{t-1}}\right)^{\varphi_\pi} \left(\frac{GDP_t}{\overline{GDP}}\right)^{\varphi_y}$$

Calibration

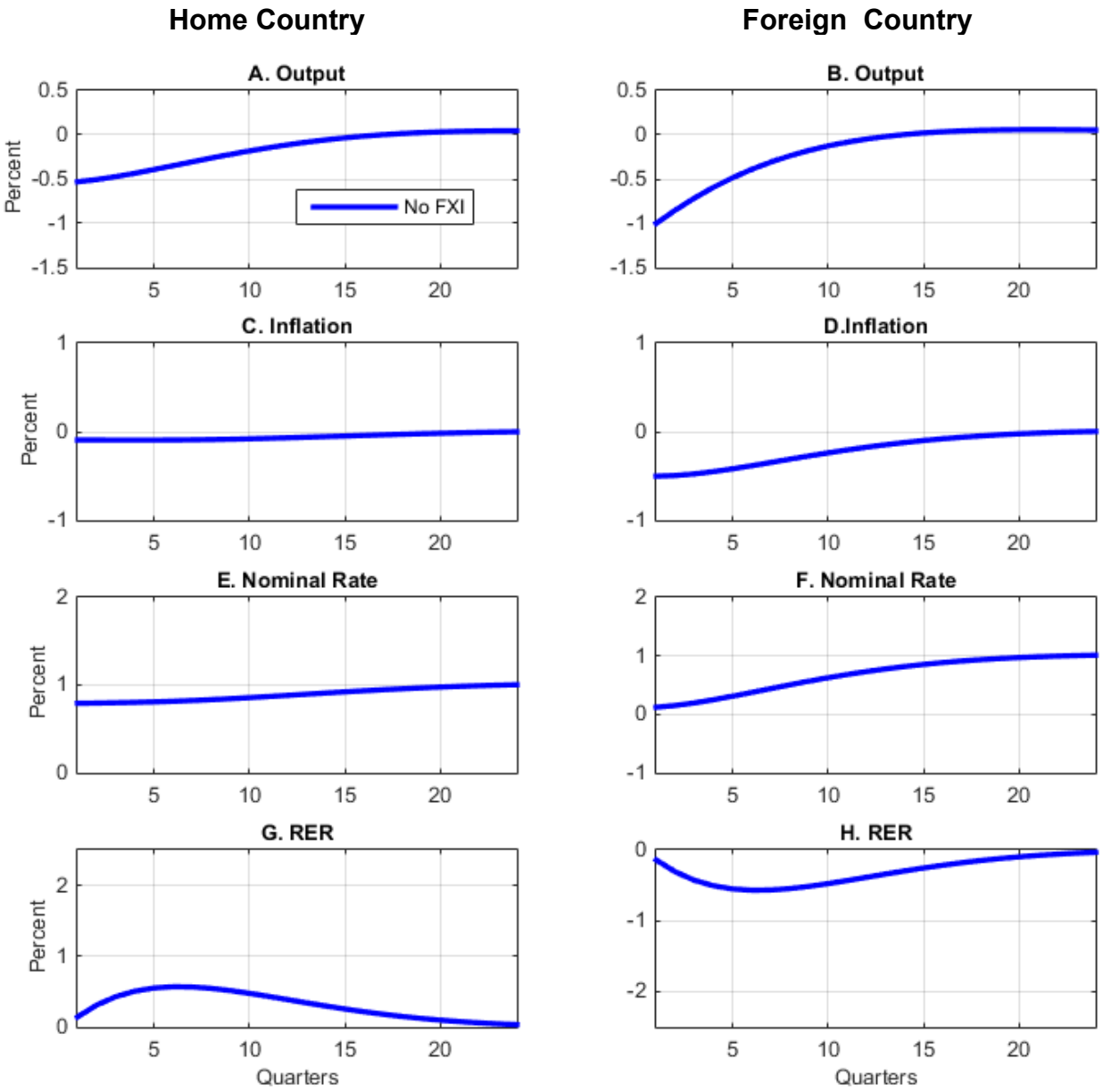
Table 1. Calibrated Parameters

Parameter	Value	Description
β	0.99	Discount factor
$1-\omega$	0.3	Imports Share
η	1	Elasticity of substitution of intermediate inputs
θ	0.75	Calvo parameter
γ	0.9	Wage rigidity
b	0.7	Habit formation
ψ	1	Disutility of Labor
φ	1	Inverse of Frisch Elasticity of Labor Supply
ϕ_π	1.5	Inflation coefficient - Taylor rule
ϕ_y	0.5	Output coefficient - Taylor rule
ρ	0.6	Elasticity of risk premium
ρf	0.9	Persistency of FXI

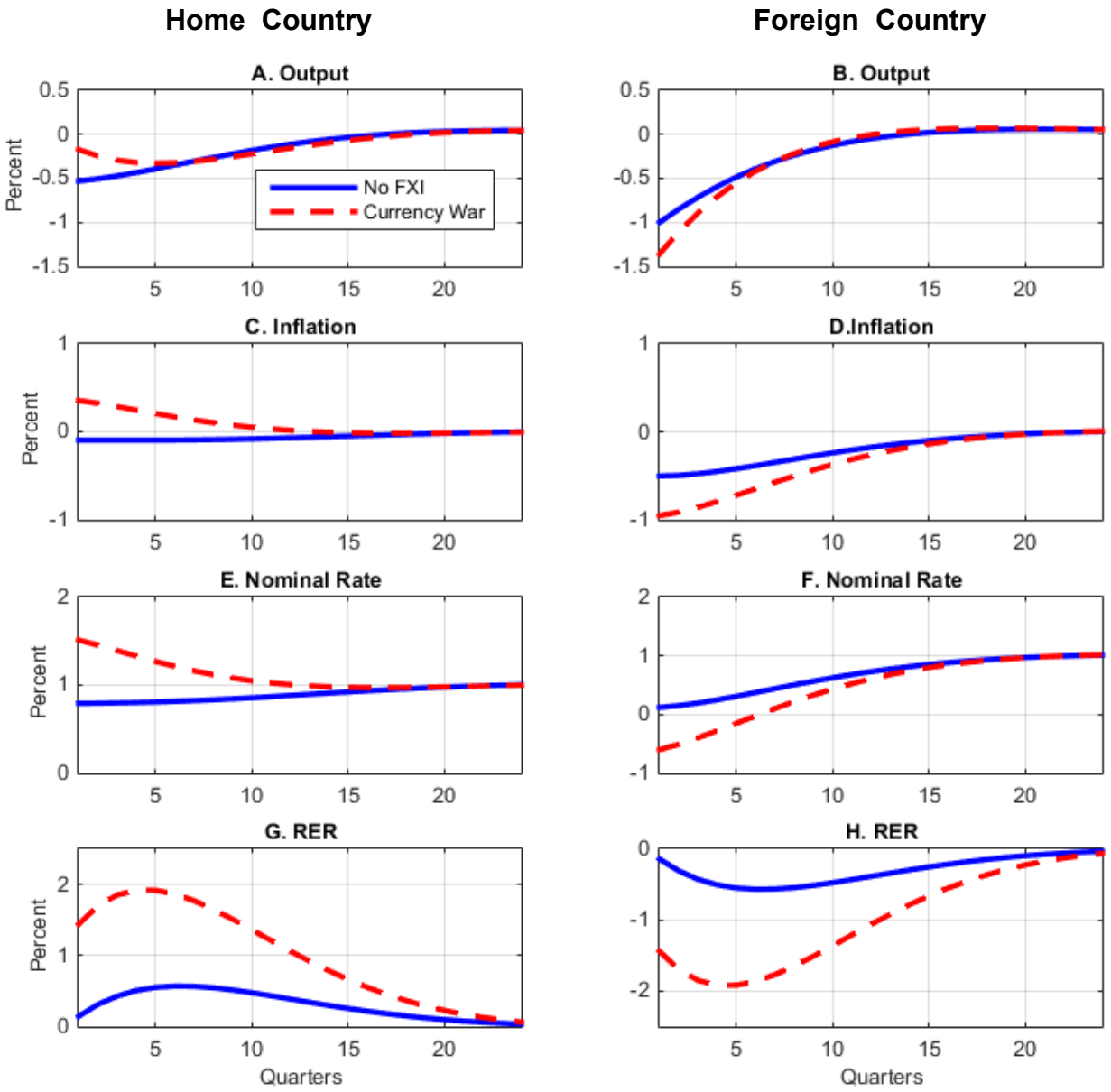
Simulation

- **Global Recession**
  - 1 percent decline in foreign output induced by a preference shock.
- **Foreign Exchange Intervention**
  - Accumulation of foreign exchange reserves of 1 percent of GDP.
- **At the Zero lower bound**
  - Binding when the nominal interest rate decline by 1 percentage point.

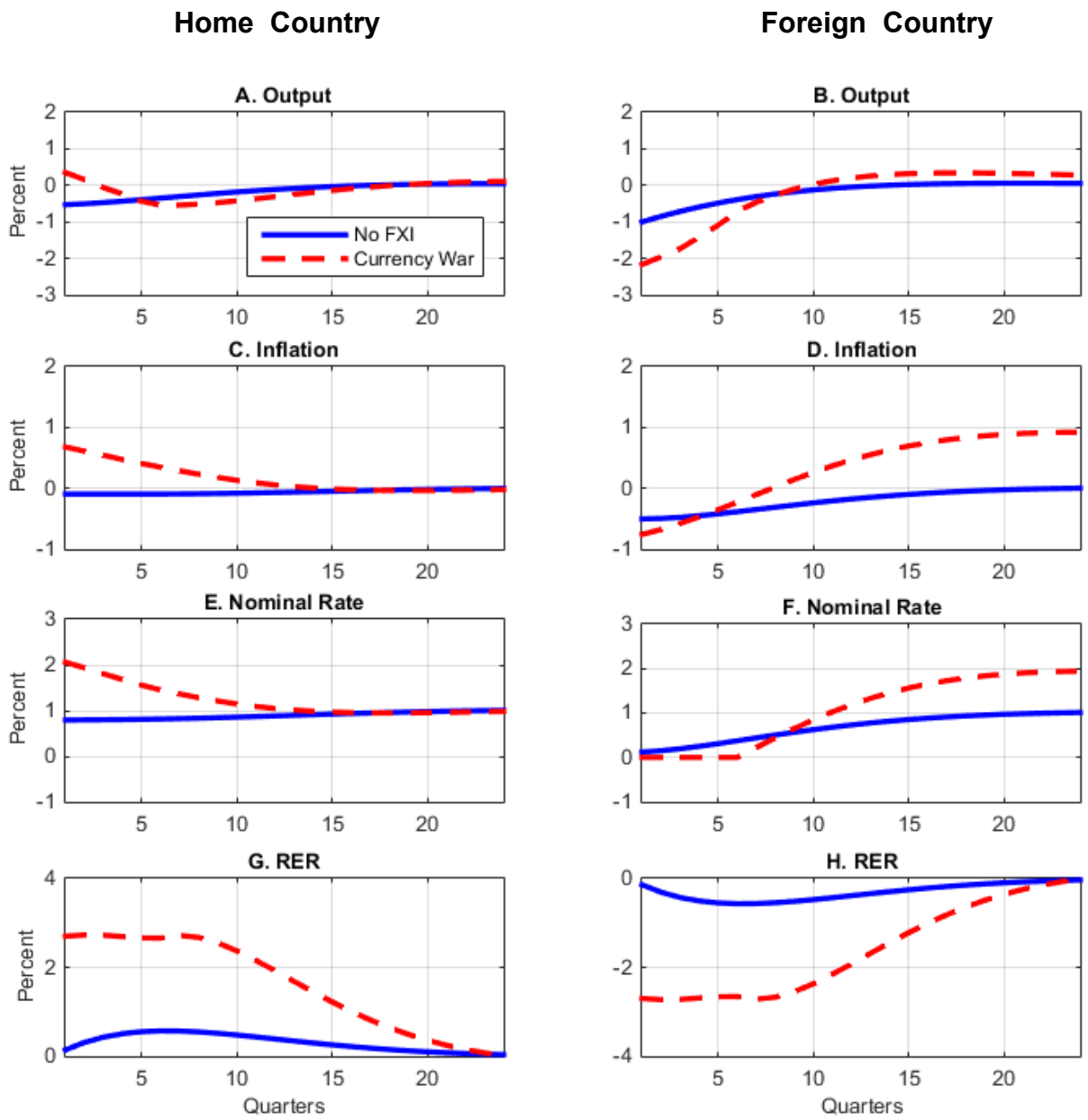
3.A. Normal Times



3.B. Normal Times: small spillover of FXI

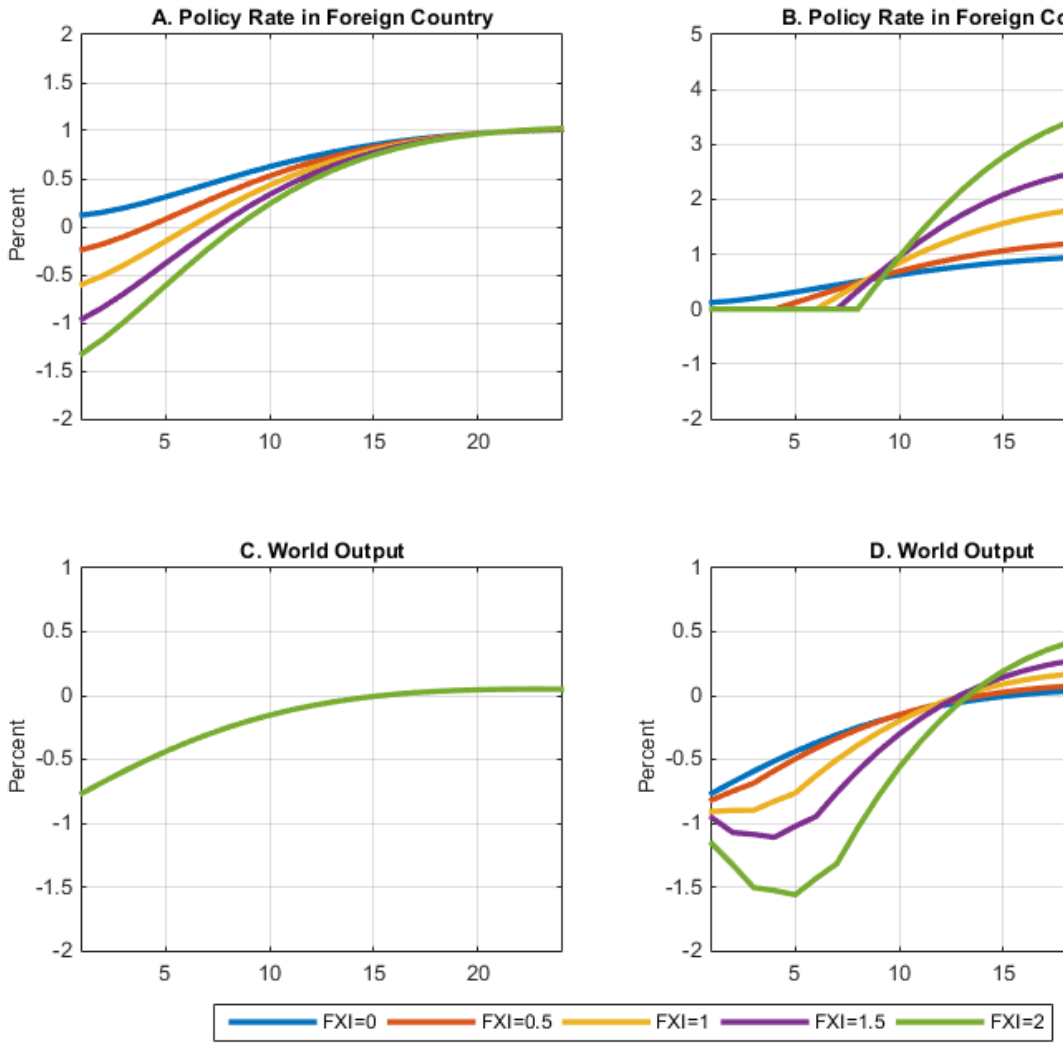


4. A the Zero Lower Bound: bigger spillover of FXI



5. Global Implications at ZLB: Size of FXI affects global GDP and duration of ZLB

Unconstrained Monetary Policy **Zero Lower Bound**

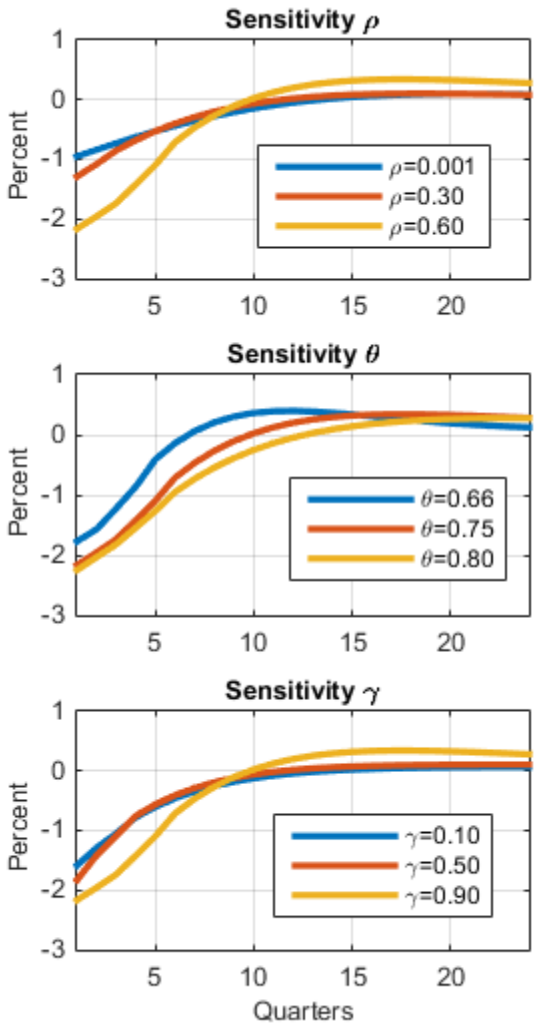


6. Sensitivity Analysis

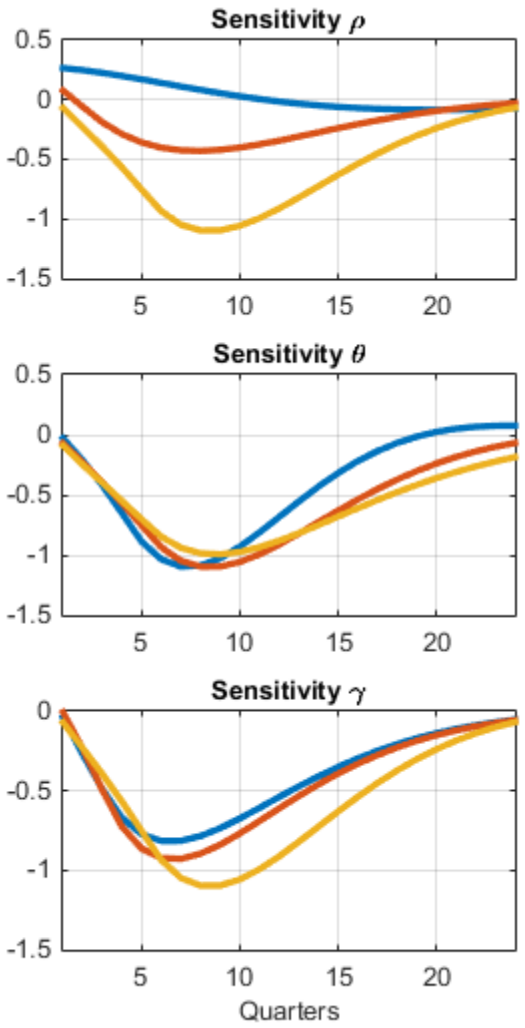
- Capital Account Openness
- Price Stickiness
- Wage Rigidities

6. Sensitivity Analysis

Output Foreign Country



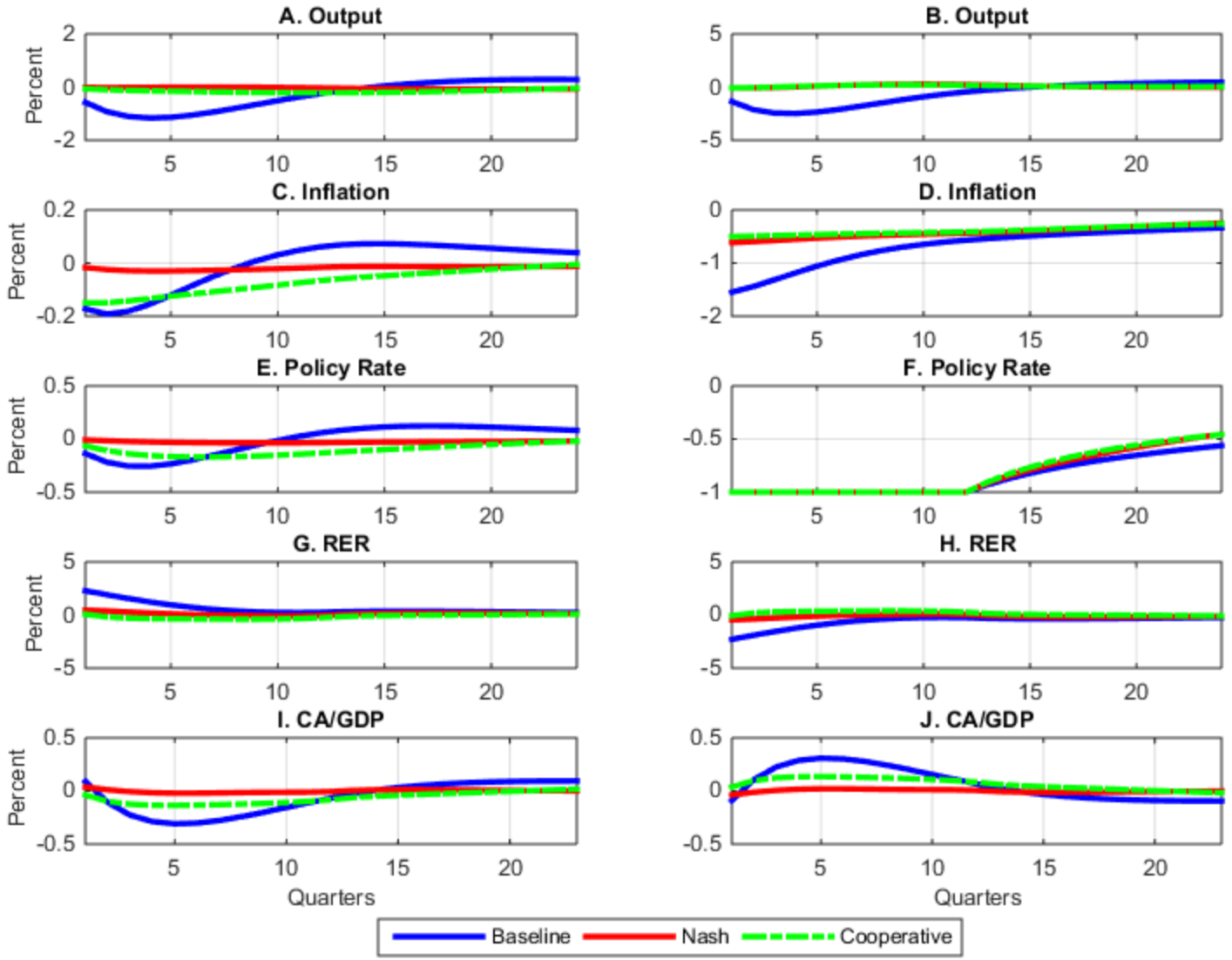
CA/GDP Foreign Country



7. Concluding Remarks

- We find that the spillovers from FX intervention depend on whether reserve-currency countries are at the ZLB or not.
- In normal times the spillovers are small.
- However, at the ZLB the spillovers are sizable and depresses global output.
- Extensions : Spillovers of FX intervention under alternative frictions (learning-by-doing, balance sheet effects, etc.)

8.A Work in progress: When one country optimally uses QE, it is able to stabilize the economy *and* offset the spillovers from FXI from the other country…



8.B Work in progress: But in practice, countries might not fully utilize unconventional tools (QE and FXI) which expose them to large negative spillovers