Macro II

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NK open economy – Corsetti & Mueller

- Commissioned by the Swedish Fiscal Policy Council to analyze effectivenes on fiscal policy – size of fiscal multipliers.
- Open economy – domestic and foreign goods

$$Y_{H,t} = \left(\int_0^1 Y_{H,t}(i)^{\frac{\varepsilon-1}{\varepsilon}} di \right)^{\frac{\varepsilon}{\varepsilon-1}}, Y_{F,t} = \left(\int_0^1 Y_{F,t}(i)^{\frac{\varepsilon-1}{\varepsilon}} di \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

- Aggregated into domestic consumption

$$C_t \equiv \left((1-\omega)^{\frac{1}{\sigma}} (Y_{H,t})^{\frac{\sigma-1}{\sigma}} + \omega^{\frac{1}{\sigma}} (Y_{F,t})^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}}$$

- ε as before price elasticity between different goods and now another elasticity between domestic and foreign σ.
- Does not matter if we think of aggregator as utility or competetive final good production.

Prices and households

- Price indices

$$P_{H,t} = \left(\int_0^1 P_{H,t}(i)^{1-\varepsilon} di \right)^{\frac{1}{1-\varepsilon}}, P_{F,t} = \left(\int_0^1 P_{F,t}(i)^{1-\varepsilon} di \right)^{\frac{1}{1-\varepsilon}},$$

$$P_t = \left((1-\omega)(P_{H,t})^{1-\sigma} + \omega (P_{F,t})^{1-\sigma} \right)^{\frac{1}{1-\sigma}}$$

- Utility

$$E_t \sum_{t=1}^{\infty} \beta^t \left(\frac{C_t^{1-\gamma}}{1-\gamma} - \phi \frac{N_t^{1+\varphi}}{1+\varphi} \right).$$

- Two types
  - One type has access to international bond market – optimizes (satisfies an Euler equation).
  - One type hand-to-mouth – simply consumes their disposable income.
- A financial crisis can be modeled as an increase in share of hand-to-mouth.

Government

- Consumption

$$G_t = \left(\int_0^1 Y_{H,t}(i)^{\frac{\varepsilon-1}{\varepsilon}} di \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

- Budget constraint for government

$$Q_{D,t} D_t = D_{t-1}(1-\delta_t) + P_{H,t} G_t - \tau_t (W_t H_t + \Upsilon_t) - T_t$$

- δ_t is a default haircut with a probability that increases in D_t, τ_t and income tax rate applying to wage labor income $W_t H_t$ and profits Υ_t. T_t denotes lump sum taxes.
- Government follows a Taylor-like decision rule

$$\begin{aligned} G_t &= (1-\rho) G + \rho G_{t-1} - \psi_G \frac{D_t}{P_{H,t-1}} + \varepsilon_t \\ T_t &= \psi_T \frac{D_t}{P_{H,t-1}} \end{aligned}$$

Monetary policy

- Consider different policy regimes:
  1. Taylor rule.
  2. Fixed nominal exchange rate (interest rate parity).
  3. Fixed interest rate (zero lower bound) for 8 quarters.
  4. "Dirty float"

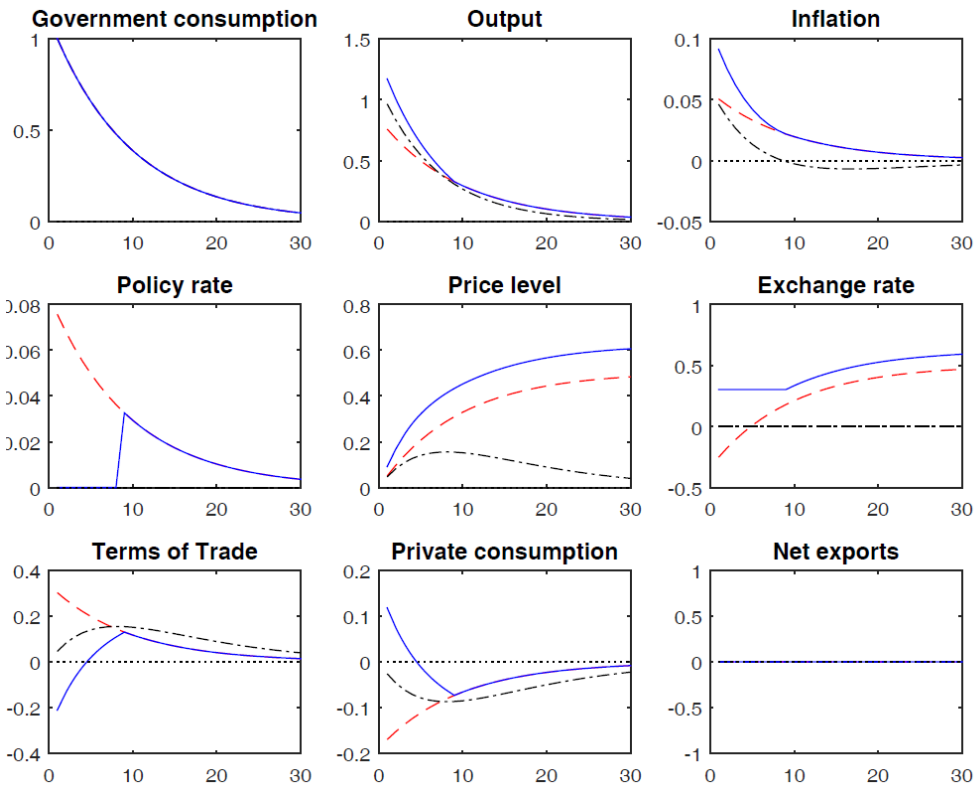
$$\ln R_t = \ln R + \phi\left(\pi_{H,t} - \pi_H\right) + (1.5 - \phi)\ln\frac{\epsilon_t}{\epsilon}$$

where ϵ_t is nominal exchange rate. $\phi \in [0, 1.5]$ is the weight on domestic inflation and $(1.5 - \phi)$ the weight on exchange rate deviations from target ε.

Parameters

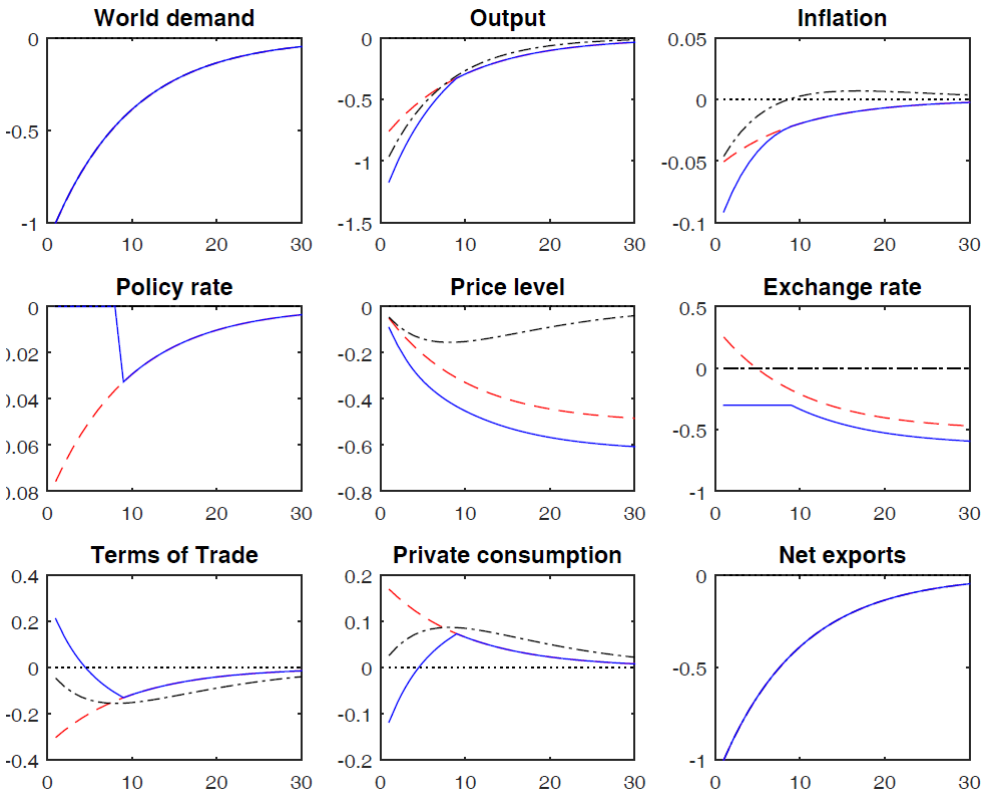
- Openness $\omega = 0.3$, price stickiness $\xi = 0.9$,
- Elasticity $\varepsilon = 11$,trade elasticity $\sigma = 1$,
- Patience $\beta = 0.99$,Frisch labor supply elasticity $\varphi = 1$.
- Government consumption $G = 0.2$.

Results – Fiscal policy shock



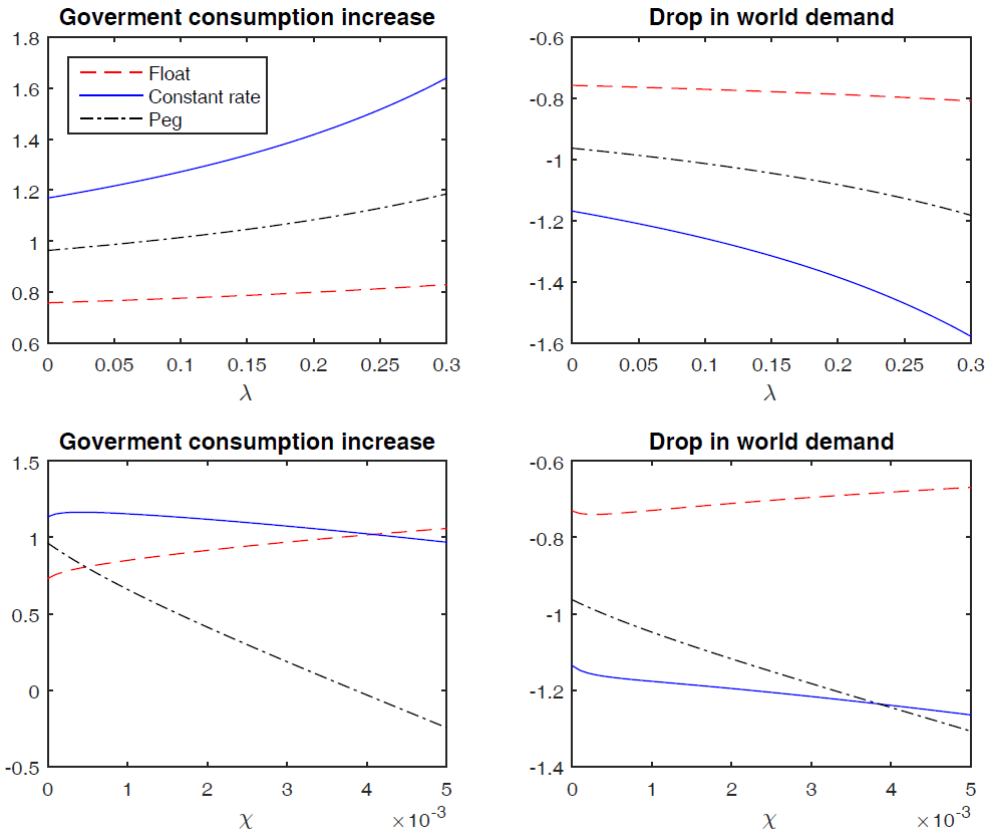
Dash-dot black – fixed exch.r, solid blue – ZLB, red-dash – float

Results – Foreign Demand shock



Dash-dot black – fixed exch.r, solid blue – ZLB, red-dash – float

Results – Fiscal and financial crisis



Higher share liquidity constrained λ, higher risk-premium sensitivity $\delta(D_t)$.

Fiscal multipliers

- Multipliers an equilibrium outcome – not a parameter.
- Large fiscal policy multipliers:
  - with fixed exchange rates
  - if zero lower bound binds
  - in financial crisis (many credit constrained households)
  - with low default risk (little debt)
  - if policy changes temporary