The Case for Flexible Exchange Rates in a Great Recession

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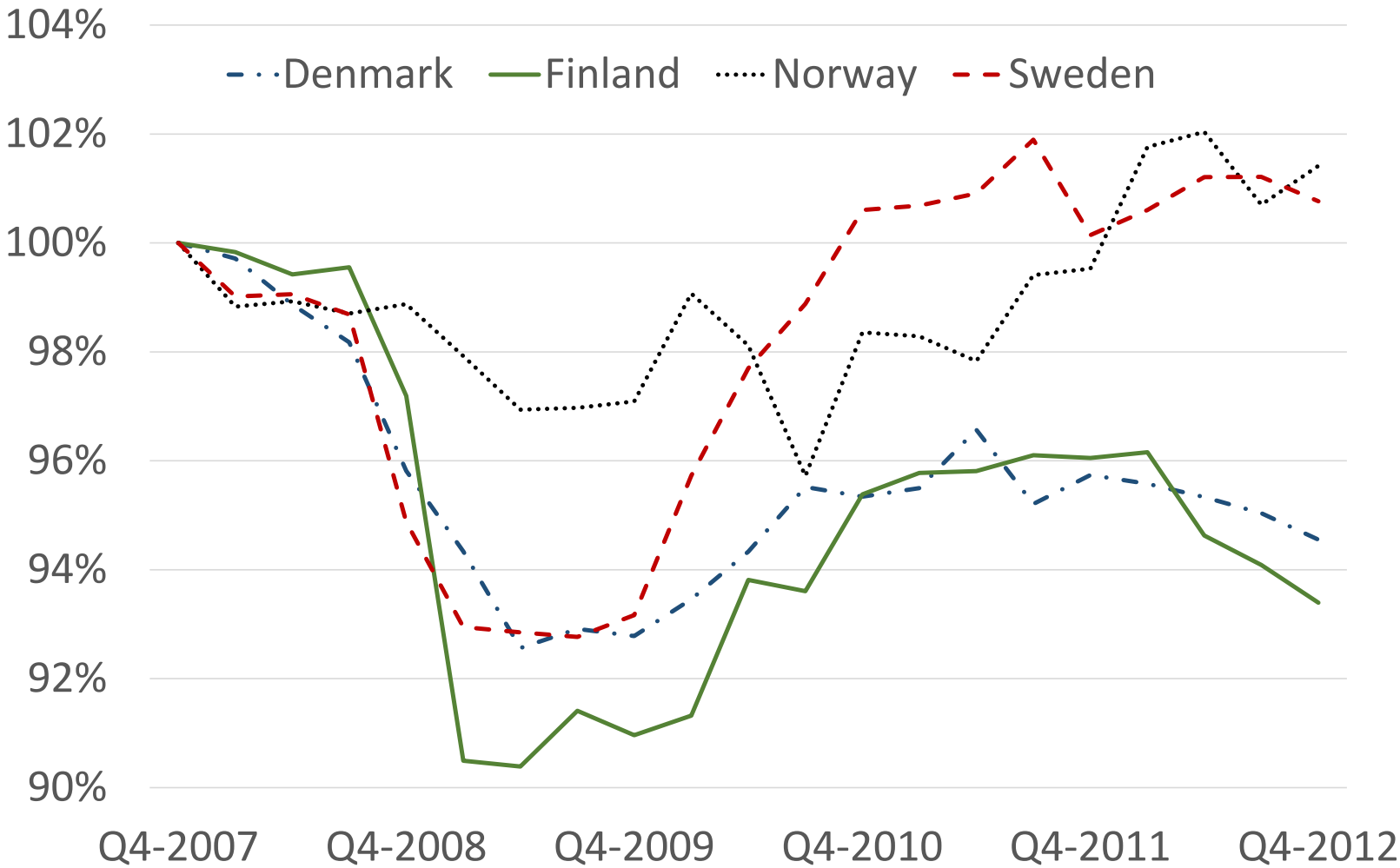
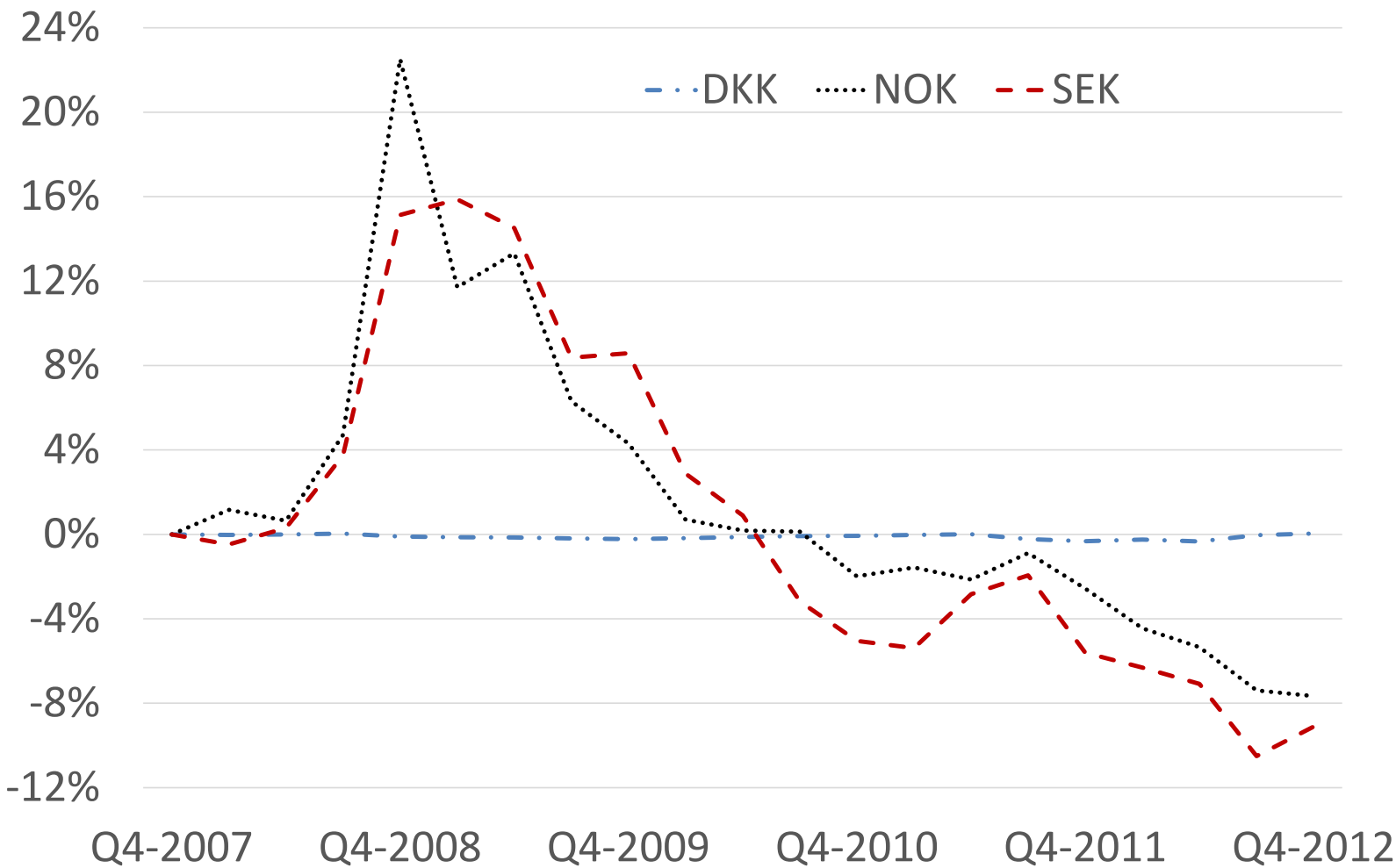
GDP during the Great Recession: four economies



Exchange rates: up means depreciation vis-à-via euro



The question

Consider small open economy

- Exposed to Great Recession in rest of the world
- Global output and inflation decline, global interest rates stuck at zero lower bound (ZLB)
- External demand falls

Can flexible exchange rates insulate the economy from the Great Recession?

- Depreciation may make up for collapse of external demand
- Yet scope for depreciation may be limited in ZLB environment

Scope for depreciation appears to be limited at ZLB...

Uncovered interest rate parity

$$r_t - r_t^* = E_t e_{t+1} - e_t$$

Interating forward

$$e_t = E_t \sum_{k=0}^{\infty} (r_{t+k}^* - r_{t+k}) + \lim_{k \to \infty} E_t e_{t+k}$$

Depreciation requires expectations of

- either interest rate in home below foreign level (at some point)
- or weaker long-run exchange rate

Framework

New Keynesian two-country model

- Focus on small open economy and possible repercussions of Great Recession in rest of the world
- Stylized framework: closed-form results and analytical insights

Alternative policy scenarios for domestic economy

- Constraints on monetary policy: ZLB or exchange rate peg
- Government spending as substitute for monetary policy
- Sovereign risk (see paper)

Some relevant literature

Modelling framework

- Galí-Monacelli (2005), De Paoli (2009), Corsetti et al. (2012)

Exchange rate flexibility

- Friedman (1953), Schmitt-Grohé-Uribe (2015)

Zero lower bound in open economies

- Cook-Devereux (2011,2013,2014), Erceg-Lindé (2014), Fahri-Werning (2012)

New Keyensian model

Two-country setup

- Monopolistically competitive environment and sticky prices
- Countries specialize in production of a set of varieties
- Size of domestic economy negligible: "Home"; rest of the world consolidated in "Foreign"
- Goods market integration incomplete due to home bias
- Complete financial markets

Exposition

- Approximate equilibrium conditions around deterministic and symmetric steady state
- Parametric restriction on home bias and trade-price elasticity

Foreign operates like a closed economy

Dynamic IS-equation with discount-factor shock ξ_t^*

$$y_t^* = E_t y_{t+1}^* - (r_t^* - E_t \pi_{t+1}^* + E_t \Delta \xi_{t+1}^*)$$

Phillips curve

$$\pi_t^* = \beta E_t \pi_{t+1}^* + \kappa (\varphi + 1) y_t^*$$

Monetary policy

$$r_t^* = \max\{\phi_\pi \pi_t^* - E_t \Delta \xi_{t+1}^*, 0\}$$

Home: a small open economy

Dynamic IS-equation ($v \in [0,1]$: import share)

$$y_t = E_t y_{t+1} - v E_t \Delta y^*_{t+1} - E_t \Delta g_{t+1} - (1-v)(r_t - E_t \pi_{H,t+1})$$

Phillips curve

$$\pi_{Ht} = \beta E_t \pi_{Ht+1} + \kappa \left\{ \left[\varphi(1-v) + 1 \right] y_t + g_t - v y^*_t \right\}$$

Risk sharing

$$y_t = (1-v)(e_t + p^*_t - p_{H,t} - \zeta^*_t) + g_t + y^*_t$$

And: monetary and fiscal policy

Great-Recession scenario

Saving shock in Foreign

- ζ_t^* drops to $\zeta_L^* < 0$
- Remains at same level for another period with probability μ
- Monetary policy does not lower policy interest rates for as long shock lasts

Solution for Foreign: output and inflation decline more strongly, the longer expected duration of shock (assuming determinacy)

$$y_L^* = \frac{(1-\beta\mu)(1-\mu)}{(1-\beta\mu)(1-\mu)-\mu\kappa(1+\varphi)}\zeta_L^* < 0$$

$$\pi_L^* = \frac{\kappa(1+\varphi)(1-\mu)}{(1-\beta\mu)(1-\mu)-\mu\kappa(1+\varphi)}\zeta_L^* < 0$$

Adjustment of Home: results

Natural rate in Home falls with external demand

$$r_L^n = \frac{(1-\mu)\varphi}{1+\varphi(1-v)} v y_L^*$$

Monetary policy

1. Flexible exchange rates, unconstrained monetary policy ensures price stability ($\pi_{Ht} = 0$)
2. Flexible exchange rates, constant policy rate (price stability afterwards)
3. Fixed exchange rates

Home government spending (on local goods only, financed by lump-sum transfers) may be adjusted for as long as shock lasts

1. Flexible exchange rates, unconstrained policy

External-demand multiplier below unity; natural output:

$$y_L = \frac{1}{1+\varphi(1-v)}\left(v y_L^* + g_L\right)$$

Terms of trade depreciate, as external demand declines

$$s_L = -\left[\frac{1-\chi}{v} + \frac{\varphi}{1+\varphi(1-v)}\right] v y_L^*$$

Nominal exchange rate

$$\Delta e_t = \Delta s_t - \pi_t^*$$

- Jumps to stabilize external demand and continues to depreciate to absorb deflationary drift abroad
- Exchange rate depreciates in the long run

2. Constant policy rates/ZLB

External-demand multiplier above unity

$$y_L = \Xi \left(v y_L^* + g_L \right), \text{ where } 1 < \Xi < \frac{1}{v}$$

Terms of trade response muted relative to unconstrained case

- Even though home inflation declines
- Less currency depreciation

$$\Delta e_t = \Delta s_t + \pi_{Ht} - \pi_t^*$$

Yet there is a "benign coincidence"

- Fiscal multiplier = external-demand multiplier

3. Exchange-rate peg

External-demand multiplier above unity

$$y_t = (1 - v)s_t + \alpha v y_t^* + g_t, \text{ where } \alpha > 1$$

Terms of trade appreciate in response to a drop of world output

$$s_t = \sum_{k=0}^{t} \delta^{t-k} \left(\Phi y_k^* - \Gamma g_k \right), \text{ where } \Phi, \Gamma > 0$$

No "benign coincidence"

- Fiscal multiplier smaller than unity, because higher spending appreciates terms of trade

Quantitative relevance

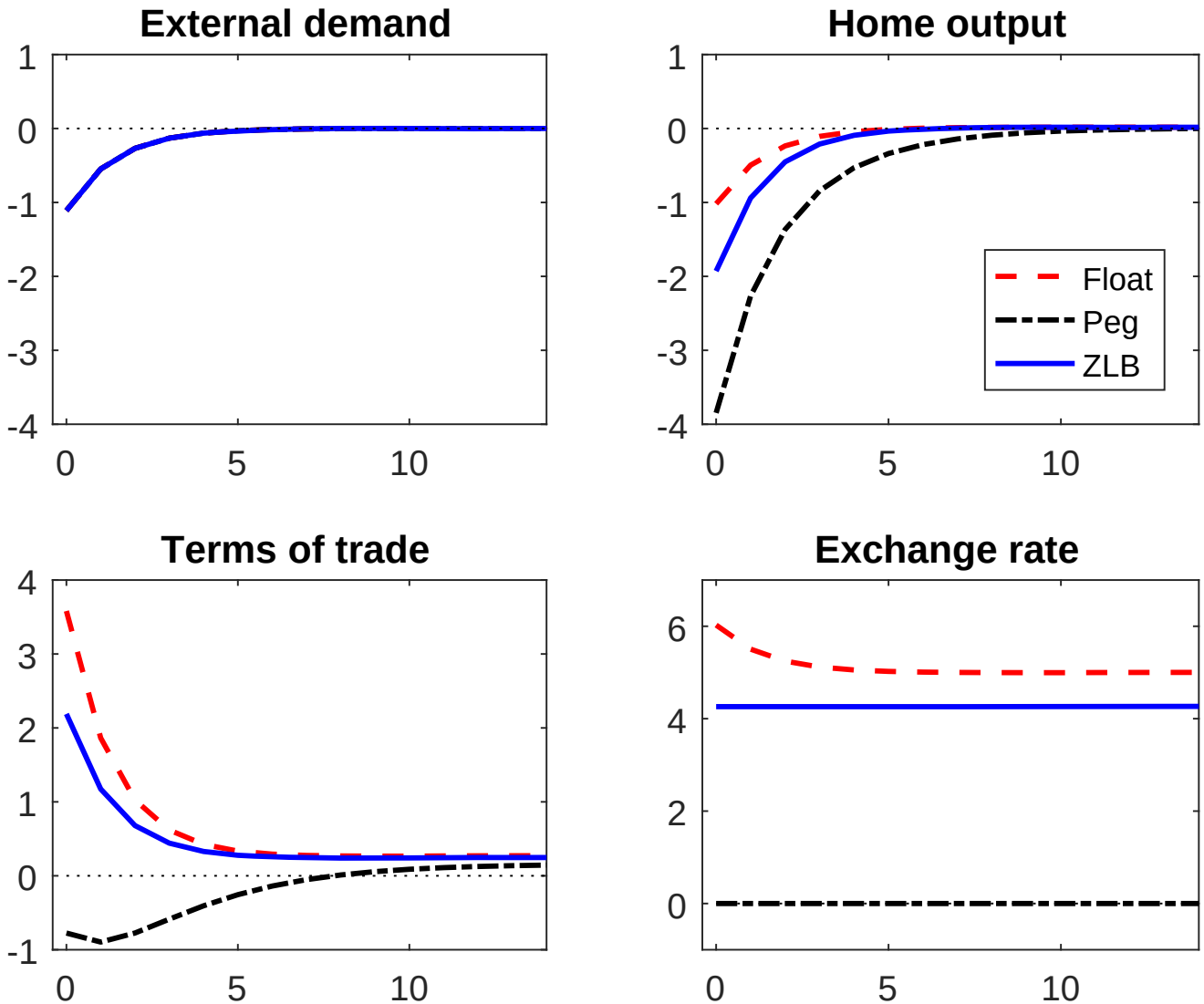
Solve model numerically assuming perfect foresight

- Assume that interest rates are constant for 10 quarters
- Relax parametric restriction on home bias and trade-price elasticity
- Allow for trade in nominally non-contingent bonds only

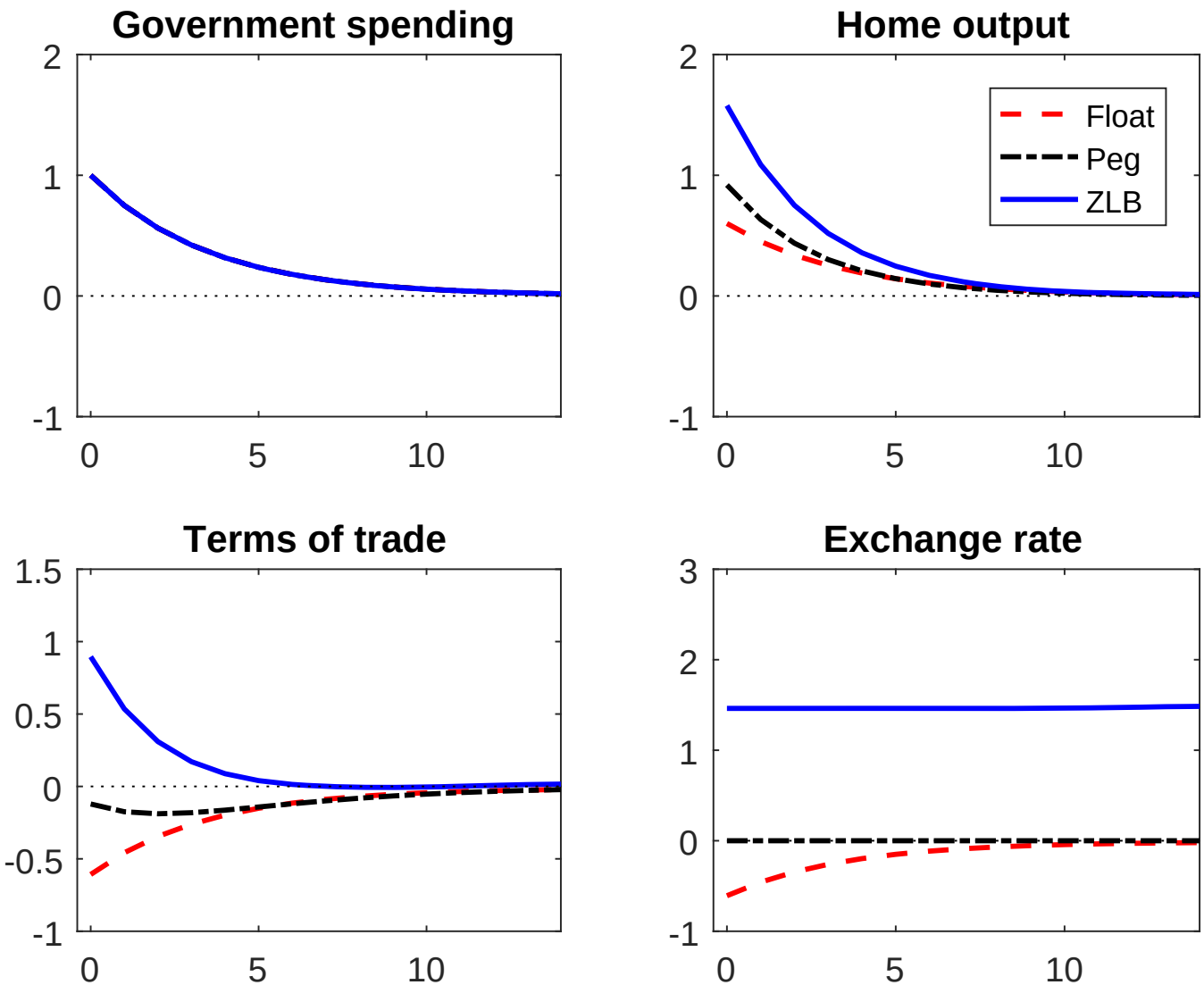
Fix parameters at conventional values

- $\beta = 0.99$, $\varphi = 1$, $\sigma = 2/3$, $v = 0.3$, Calvo parameter: 0.75, government-spending-to-GDP ratio in steady-state: 20%
- Foreign saving shock is autocorrelated with persistence parameter 0.5

Home: adjustment to Great Recession in rest of the world



Home: adjustment to higher government spending



Conclusion

Small open economy facing Great Recession in rest of the world

- Can flexible exchange rates insulate the economy?

Case for flexible exchange rates particularly strong

- Unconstrained domestic monetary policy: output fully stabilized at natural level—exchange rate stabilizes demand and absorbs deflationary drift abroad
- External-demand multiplier large at ZLB; yet there is still some depreciation and a benign coincidence
- Peg: real appreciation and large external-demand multiplier (no benign coincidence as fiscal multiplier small)