Capital controls: a normative analysis[1]

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[1]The views expressed in this paper are those of the authors, and not necessarily those of the Federal Reserve Bank of New York or the Federal Reserve Board.

Motivation

- Countries' concerns with the value of their currency have been extensively documented
  - ...and the rationale for this has been the topic of a large literature on monetary policy in open economies
- But capital controls also can be (and often are) used as tool to manage exchange rate fluctuations
  - Recent examples: Brazil, Turkey, China
- This paper: shed light on whether countries can in fact benefit from using such tool and what could be the global consequences

Outline of the Paper

Question: Can capital controls be beneficial for individual countries?
Answer: Yes! But taxes on international borrowing and lending would limit international risk sharing and have adverse effect for global welfare

Question: Could such taxes be used to improve risk sharing?
Answer: Yes! But countries do not have this incentive

Conclusion: There is a role for international policy coordination

Outline of the Paper (2)

Approach: We develop a welfare-based analysis of whether and how countries should tax international borrowing/lending:

- We derive the optimal policy that maximizes local welfare
- and the policy that maximizes global welfare (or the coordinated policy)
- and the Nash equilibrium (or the uncoordinated policy)

Related Literature

Normative analysis of capital controls

- Capital controls can improve welfare by reducing the probability of financial crises (or their costs): Benigno et al (2010), Korinek (2012), Bianchi (2011), Bianchi and Mendoza (2011).
- Capital controls can increase welfare of individual countries by affecting intertemporal prices: Costinot et al (2011)
- In our work, capital controls can be useful for 2 reasons:
  - ...to improve consumption risk-sharing when there is an imperfect access to international borrowing/lending
    Incomplete markets and risk-sharing: e.g. Cole and Obstfeld (1991), Baxter and Crucini (1995), Corsetti, Dedola and Leduc (2008)
  - ...to change the composition of demand
    Terms of trade externality: e.g. Corsetti and Pesenti (2001), Benigno and Benigno (2003), Sutherland (2006)

Model

Two-country model:

- Households supply labor and consume Home and Foreign goods (home bias and non-unitary trade elasticity)
- Firms take prices as given, producer currency pricing (law of one price holds)
- Asset Markets: households have access to a non-state contingent international real bond (incomplete markets)
- Stochastic environment: persistent domestic and foreign productivity shocks

Households

- Utility:

$$U_t = E_t \sum_{s=t}^{\infty} \beta^{s-t} \left[\log C_s - \frac{N_s^{1+\eta}}{1+\eta} \right].$$

- Home bias (Sutherland 2001): $(1-v) = (1-n)\lambda$

$$C = \left[v^{\frac{1}{\theta}} C_H^{\frac{\theta-1}{\theta}} + (1-v)^{\frac{1}{\theta}} C_F^{\frac{\theta-1}{\theta}} \right]^{\frac{\theta}{\theta-1}}.$$

- Production: n $(1-n)$ goods produced in the Home (Foreign) economy

Asset Markets

Households' budget constraint

$$\begin{aligned} C_t + B_{F,t} &\leq B_{F,t-1}\frac{Q_t R^*_{t-1}(1+\tau_{t-1})}{Q_{t-1}} + p_{H,t}(Y_t + Tr_t) - \frac{\delta B^2_{F,t}}{2} \\ C^*_t + B^*_{F,t} &\leq B^*_{F,t-1} R^*_{t-1}(1+\tau^*_{t-1}) + p^*_{F,t}(Y^*_t + Tr^*_t) \end{aligned}$$

- $B_{F,t} < 0$, $\tau_t > 0$: Tax on international borrowing/capital inflow
- $B_{F,t} < 0$, $\tau_t < 0$: Subsidy on international borrowing/capital inflow
- $B_{F,t} > 0$, $\tau_t > 0$: Subsidy on international lending/capital outflow
- $B_{F,t} > 0$, $\tau_t < 0$: Tax on international lending/capital outflow

- Home (Foreign) taxes rebated to Home (Foreign) households as transfers.
- Adjustment costs faced by Home paid to Foreign households also in the form of transfers

Economic inefficiencies

- Inability to fully share risk with the rest of the world

$$\frac{U_C\left(C_{t+1}\right)}{U_C\left(C_t\right)}\frac{Q_{t+1}}{Q_t} - \frac{U_C\left(C^*_{t+1}\right)}{U_C\left(C^*_t\right)}$$

- Agents do not internalize the effect of their decisions on international relative prices (terms of trade externality)
  - Social planner in each country has an incentive to strategically manipulate the terms of trade
- (Fluctuations in the tax instrument itself create inefficiencies: distort households intertemporal decisions)

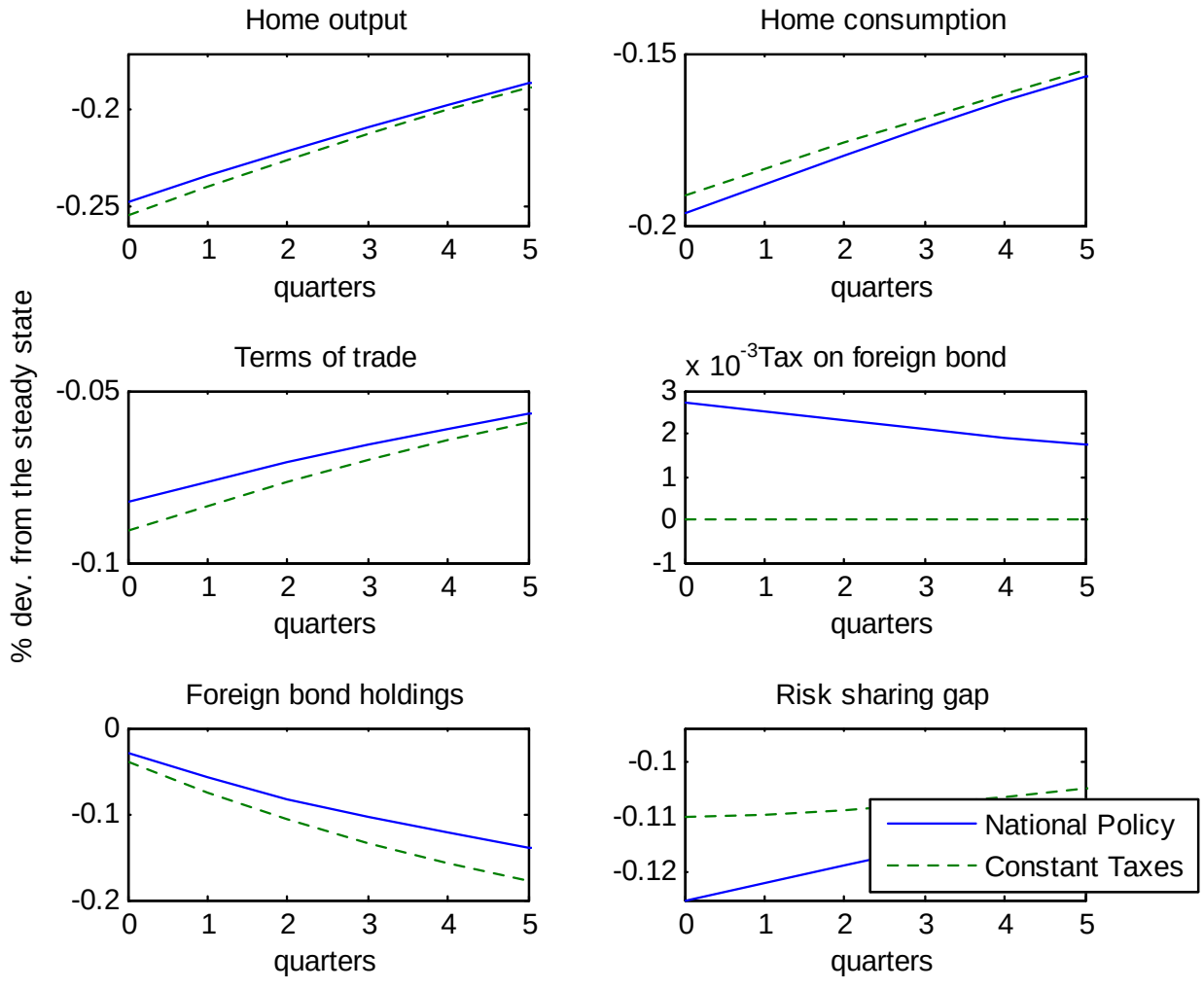
Calibration

Parameter values used in the quantitative analysis

Parameter	Value	Notes:
β	0.99	Quarterly model with 4% ss real interest rate
η	0.47	Following Rotemberg and Woodford (1997)
ρ	1	Log utility
λ	0.5; $[0.1, 1]$	Benchmark 0.5, but other values considered
n	0.5; $[0.1, 0.9]$	Benchmark 0.5, but other values considered
θ	3; $[0.5, 3]$	Benchmark 3, but other values considered
δ	0.01	Following Benigno (2009)
$sdv(\varepsilon), sdv(\varepsilon^*)$	0.71%	Following Kehoe and Perri (2002)
$\kappa^{(\varepsilon)}$, $\kappa^{(\varepsilon^*)}$	0.95	Following Kehoe and Perri (2002)

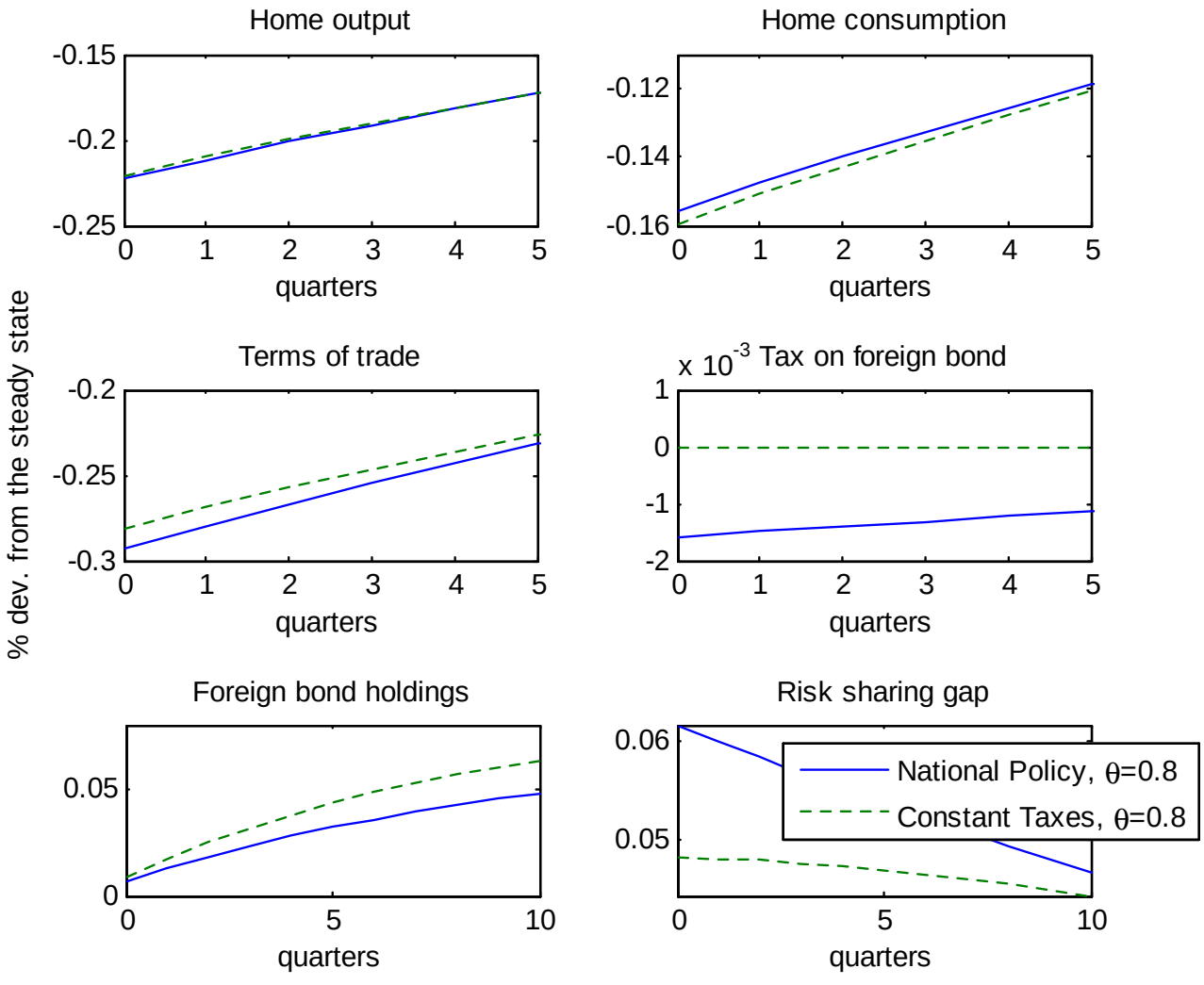
Optimal taxes under incomplete markets: maximizing national welfare

Impulse responses to a negative productivity shock, $\theta = 3$



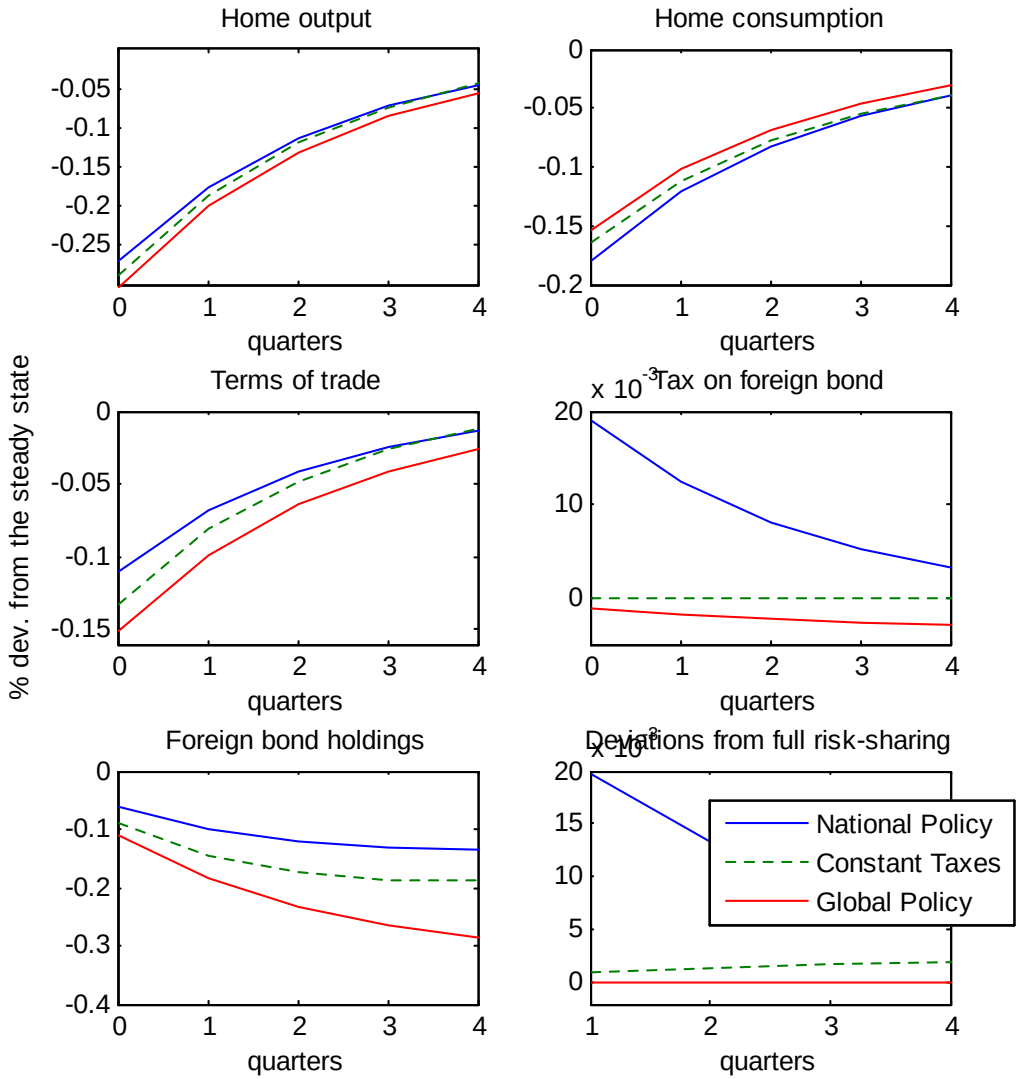
Optimal taxes under incomplete markets: maximizing national welfare (2)

Impulse responses to a negative productivity shock, $\theta = 0.8$



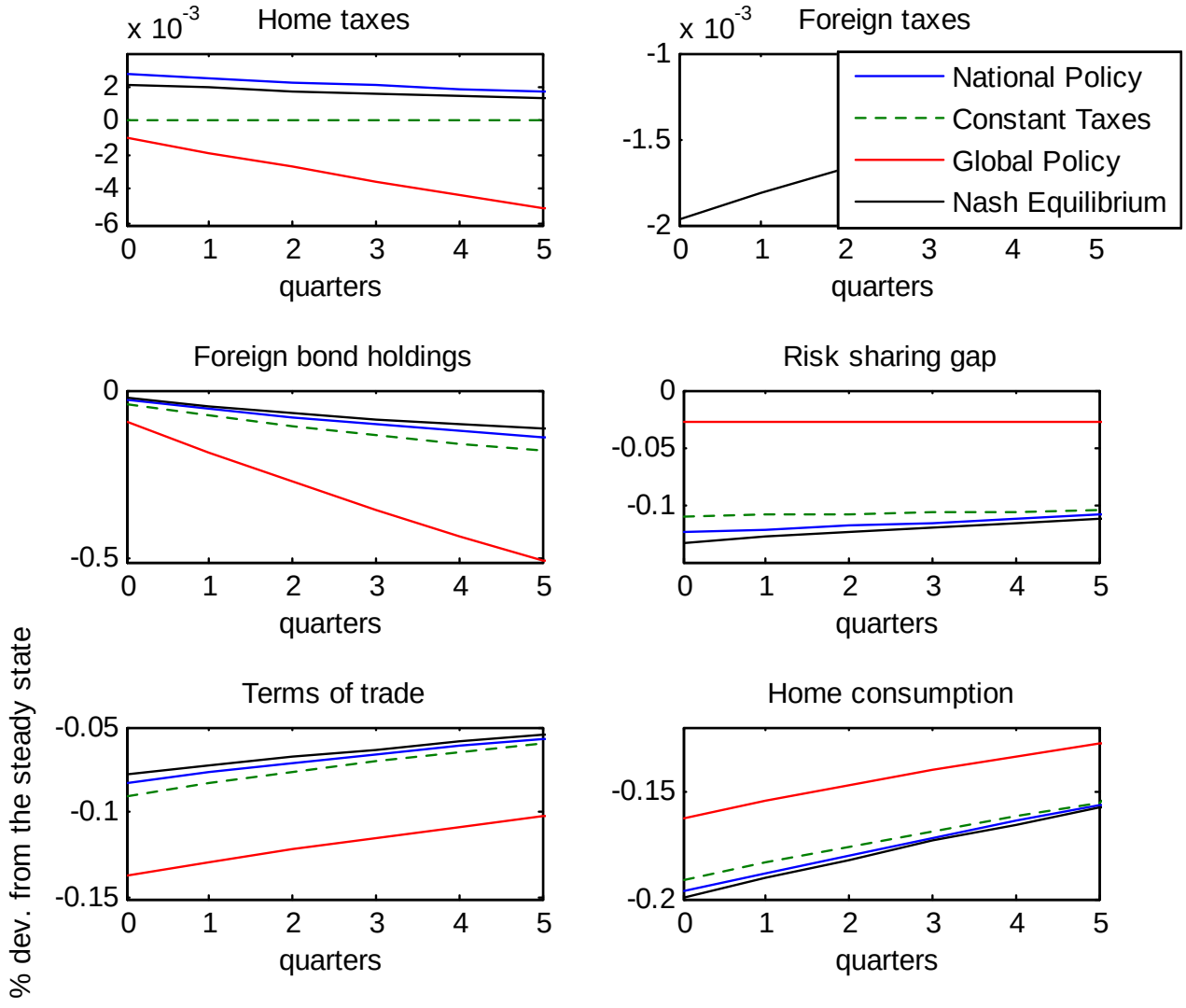
Optimal taxes under incomplete markets: maximizing global welfare

Impulse responses to a negative productivity shock, $\theta = 3$

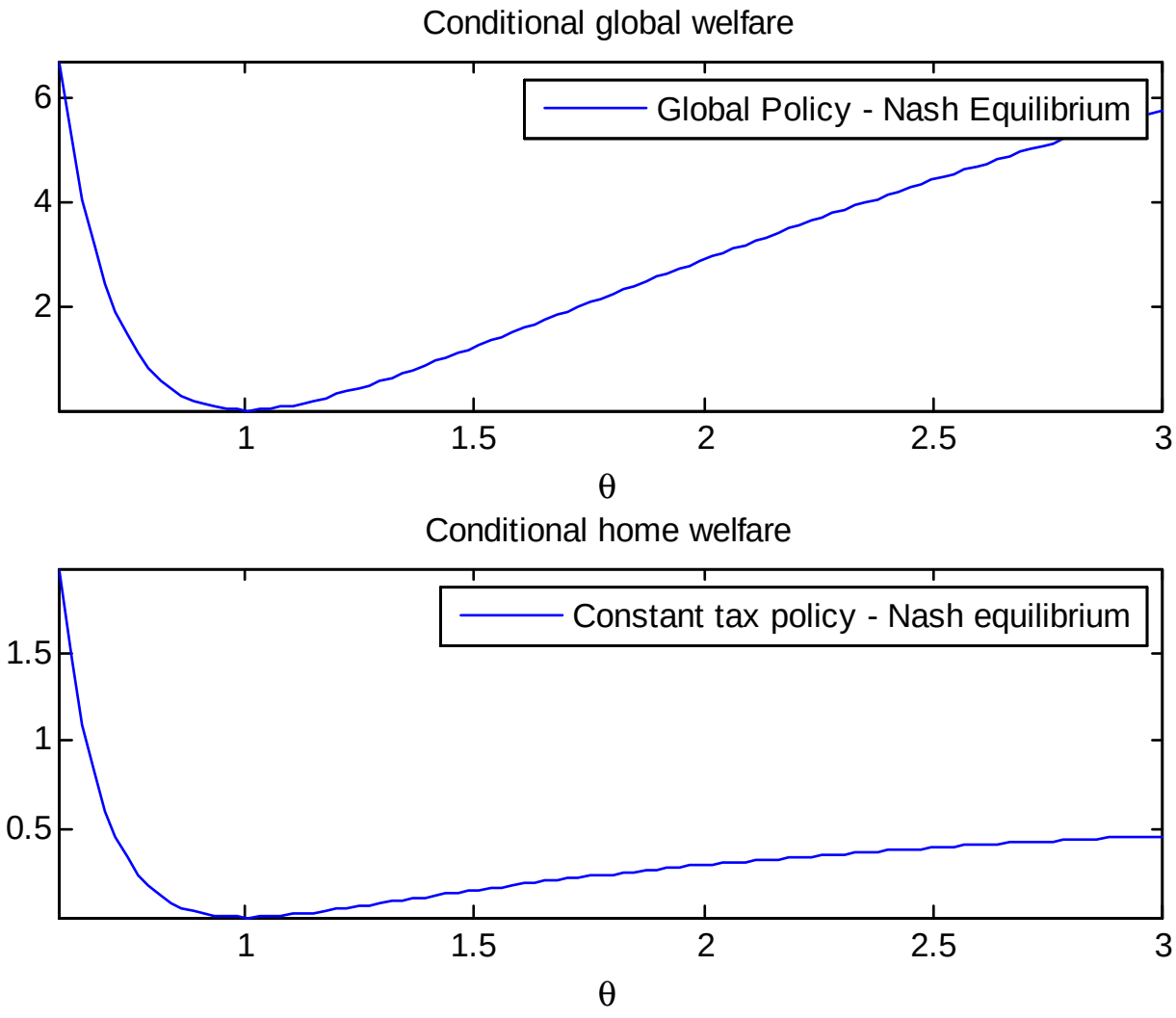


Optimal taxes under incomplete markets: Nash equilibrium

Impulse responses to a negative productivity shock, $\theta = 3$



Role for policy coordination



Conclusions

- Global and national policy have opposing prescriptions
- Uncoordinated policy limits international risk sharing
- Capital control "wars" – everyone worse off
- Role for policy coordination

Further steps

- Sensitivity analysis
- Quantitative analysis: assess gains from coordination
    - Model calibration/extensions to generate realistic risk-sharing properties (Corsetti, Dedola and Leduc (2008))