Discussion of

Rethinking Optimal Currency Areas

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Rethinking Optimal Currency Areas

- Intriguing message: tight correlation between countries may make currency union less desirable
- Currency union is costly because countries loose an instrument and cannot respond to idiosyncratic shocks
- But there are some shocks to which you do not want to respond
  - — but cannot commit
- Loss of flexibility vs gain in commitment
- Currency union provides commitment ability
  - — even for symmetric countries
- But how about free-riding (fiscal externality)?
  - — Chari and Kehoe (2008), Amador et al. (2013)
  - — loss of coordination ($\sim$commitment)

Model

1. Small open economy with stochastic endowment

2. No sticky prices, no markup shocks, but...

3. One asset: nominal one-period bond
   $\longrightarrow$ time inconsistency (and a state variable)

4. Flow utility with exogenous cost of inflation:

$$u(c_t) - \psi(\pi_t),$$

   where, for example, $\psi(\pi) = \frac{\psi}{2}\pi^2$ and $\psi'(\pi) = \psi\pi$

5. Fisher equation:

$$1 + i_{t+1} = (1 + r^*)(1 + \mathbb{E}_t \pi_{t+1})$$

Ramsey Solution

$$V^R(b_0) = \max_{\{\pi_t\}} \mathbb{E}_0 \tilde{V}\big(\{\pi_t\}; b_0\big)$$

where $$\tilde{V}\big(\{\pi_t\}; b_0\big) \equiv \max_{\{c_t, b_{t+1}\}} \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t \big(u(c_t) - \psi(\pi_t)\big)$$

s.t. $$c_t + \frac{1 + \mathbb{E}_{t-1}\pi_t}{1 + \pi_t}(1 + r^*) b_t \leq b_{t+1} + y_t \quad \text{and} \quad \pi_0 = \mathbb{E}_{-1}\pi_0 = 0$$

- Ramsey solution satisfies:

$$u'(c_t) = \beta(1 + r^*)\mathbb{E}_t \left\{ \frac{1 + \mathbb{E}_t \pi_{t+1}}{1 + \pi_{t+1}} u'(c_{t+1}) \right\}$$

$$\psi'(\pi_t) = (1 + r^*) b_t \frac{1 + \mathbb{E}_{t-1}\pi_t}{1 + \pi_t} \left[\frac{u'(c_t)}{1 + \pi_t} - \frac{\mathbb{E}_{t-1} u'(c_t)}{1 + \mathbb{E}_{t-1}\pi_t} \right]$$

- $\mathbb{E}_{t-1}\pi_t \approx 0$ and $u'(c_t)/(1 + \pi_t) \approx \textit{const}$ when $\psi'(\cdot)$ small

Ramsey Solution

Currency Union

- Union central bank:

$$\max_{\{\pi_t\}} \mathbb{E}_0 \int_0^1 \tilde{V}^i\big(\{\pi_t\}; b_0^i\big)\mathrm{d}i$$

- Inflation satisfies:

$$\psi'(\pi_t) = (1+r^*)\frac{1+\mathbb{E}_{t-1}\pi_t}{1+\pi_t}\int_0^1 b_t^i \left[\frac{u'(c_t^i)}{1+\pi_t} - \frac{\mathbb{E}_{t-1}u'(c_t^i)}{1+\mathbb{E}_{t-1}\pi_t}\right]\mathrm{d}i$$

- $\mathbb{E}_{t-1}\pi_t \approx 0$, but no longer $u'(c_t^i)/(1+\pi_t) \approx const$ for i

- Proposition: *Currency union is strictly worse for every i, unless $\big(b_0^i, \{y_t^i\}\big)$ are identical for all i.*

Time Consistent Solution (MPE)

- Recursive formulation: $\max_\pi \tilde{v}(\pi; b, y)$, where

$$\tilde{v}(\pi; b, y) \equiv \max_{c,b'} \left\{ u(c) - \psi(\pi) + \beta \mathbb{E} v(b', y') \right\}$$

$$\text{s.t.} \quad c + \frac{1 + \tilde{\pi}(b)}{1 + \pi}(1 + r^*) b \leq b' + y$$

- Equilibrium requirement: $\tilde{\pi}(b) = \mathbb{E}\pi(b, y)$

- Optimality conditions:

$$u'(c_t) = \beta(1 + r^*)\mathbb{E}_t \left\{ \frac{1 + \mathbb{E}_t \pi_{t+1}}{1 + \pi_{t+1}} u'(c_{t+1}) \left[1 + \frac{\partial \log(1 + \mathbb{E}_t \pi_{t+1})}{\partial \log b_{t+1}} \right] \right\}$$

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$$\psi'(\pi_t) = (1 + r^*)b_t \frac{1 + \mathbb{E}_{t-1}\pi_t}{1 + \pi_t} \frac{u'(c_t)}{1 + \pi_t} \qquad \Rightarrow \qquad \pi_t > \pi_t^R$$

Time Consistent Solution (MPE)

Currency Union

- Union central bank: $\max_\pi \int_0^1 \tilde{v}^i\left(\pi; b^i, y^i\right)\mathrm{d}i$
- Inflation choice:

$$\psi'(\pi_t) = \frac{1+r^*}{1+\pi_t}\frac{1+\mathbb{E}_{t-1}\pi_t}{1+\pi_t}\int_0^1 b_t^i u'(c_t^i)\mathrm{d}i$$

- Proposition: *For symmetric countries upon entry into the currency union (i.e., same b_t^i and distribution of y_t^i),*

$$\pi_t^U \leq \pi_t^i \qquad \textit{and} \qquad \mathrm{var}(\pi_t^U) \leq \mathrm{var}(\pi_t^i),$$

with strict inequality if shocks not perfectly correlated.

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with strict inequality if shocks not perfectly correlated.

- However, the choice of b_t^i is endogenous and affected by participation in currency union (fiscal externality):

$$\partial\pi_t/\partial b_t^i = 0 \quad \Rightarrow \quad \text{higher } \{b_t^i\} \text{ and } \pi_t^U$$