Unemployment Insurance in Macroeconomic Stabilization
by
Kekre

Discussion by Sushant Acharya

November 2019

Question

Should UI be used for stabilizing short run fluctuations when other policy instruments might not be available?

Hypothesis

More generous UI can stabilize economy stuck at ZLB by stimulating demand through redistribution and precautionary savings channels.

Simple(r) Model

- unit mass of agents: **employed** get profits and wages, **unemployed** get UI
- **zero borrowing limit**: no one can borrow $\Rightarrow$ no one saves in equilibrium
- workers must exert **search effort** to find a job
- **jobs last one period**
- constant real wage

Equilibrium conditions

- unemployed borrowing constrained, euler eqn of employed:

$$u'\left(c_t^e\right) = \beta \frac{P_t\left(1+i_t\right)}{P_{t+1}} \left\{p_{t+1} s_{t+1} u'\left(c_{t+1}^e\right) + \left(1 - p_{t+1} s_{t+1}\right) u'\left(c_{t+1}^u\right)\right\}$$

- free entry

$$\kappa = q(\theta)(1-w)$$

Equilibrium conditions

- unemployed borrowing constrained, euler eqn of employed:

$$u'\left(c_t^e\right) = \beta \frac{P_t\left(1+i_t\right)}{P_{t+1}}\left\{p_{t+1}s_{t+1}u'\left(c_{t+1}^e\right) + \left(1-p_{t+1}s_{t+1}\right)u'\left(c_{t+1}^u\right)\right\}$$

- free entry

$$\kappa = q(\theta)(1-w)$$

- search effort

$$\max_s \left\{p(\theta)su(c^e)+(1-p(\theta)s)\,u(b)\right\}-\frac{\psi}{2}s^2 \qquad \Rightarrow \qquad \boxed{s^* = \frac{p(\theta)\left[u\left(c_t^e\right)-u\left(b\right)\right]}{\psi}}$$

Equilibrium conditions

- unemployed borrowing constrained, euler eqn of employed:

$$u'\left(c_t^e\right) = \beta \frac{P_t\left(1+i_t\right)}{P_{t+1}} \left\{p_{t+1} s_{t+1} u'\left(c_{t+1}^e\right) + \left(1 - p_{t+1} s_{t+1}\right) u'\left(c_{t+1}^u\right)\right\}$$

- free entry

$$\kappa = q(\theta)(1-w)$$

- search effort

$$\max_s \left\{p(\theta) s u(c^e) + \left(1 - p(\theta) s\right) u(b)\right\} - \frac{\psi}{2} s^2 \qquad \Rightarrow \qquad \boxed{s^* = \frac{p(\theta)\left[u\left(c_t^e\right) - u\left(b\right)\right]}{\psi}}$$

- GE

$$n = p(\theta) s \qquad \text{and} \qquad n c^e + (1-n) b = n$$

Baily-Chetty formula

Planner maximizes:

$$\max_b \left\{ nu(c^e) + (1-n)\,u(b) \right\} - \frac{\psi}{2}s^2$$

s.t.

$$s^* = \frac{p(\theta)\left[u\left(c^e\right) - u\left(b\right)\right]}{\psi} \text{ and } \text{ GE}$$

optimal b:

$$\boxed{\frac{u'(b) - u'(c^e)}{u'(c^e)} + \frac{d\ln s}{d\ln b}\frac{1}{1-n} = 0}$$

Fixed prices, one time β shock, $\beta_1 > 1$

- monetary policy implements flex price level of output when possible

$$i \geq 0 \qquad n \leq n^* \qquad \text{at least one equality}$$

- If no ZLB

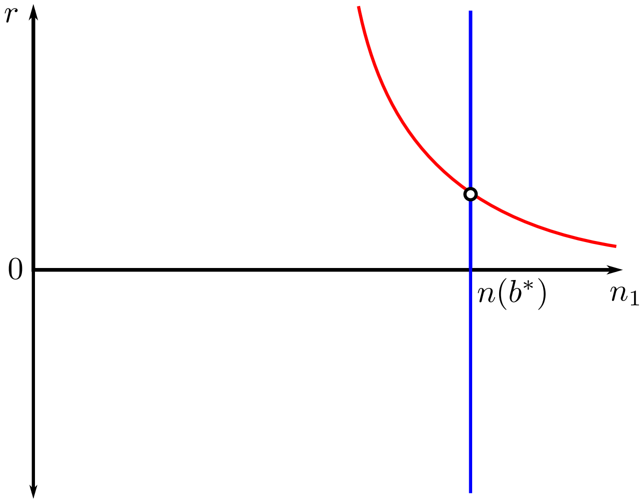
$$u'\left(c_1^e\right) = \beta_1(1+i)\left\{n_2 u'\left(c_2^e\right) + \left(1-n_2\right)u'\left(b^*\right)\right\}$$

- ZLB at $t=1$, not $t=2$ onwards, c_1^e pinned down by euler equation with $i=0$

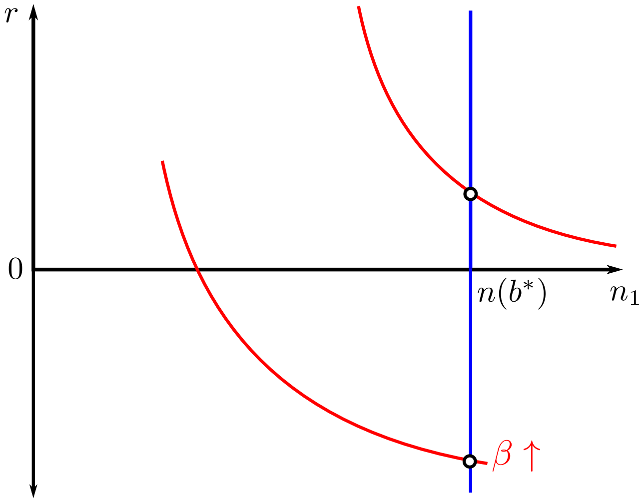
$$u'\left(c_1^e\right) = \beta_1\left\{n_2 u'\left(c_2^e\right) + \left(1-n_2\right)u'\left(b^*\right)\right\}$$

n_1 is demand determined

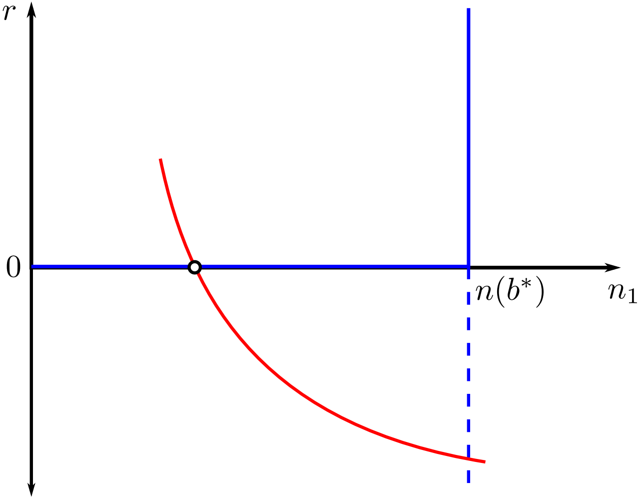
Flexible Prices



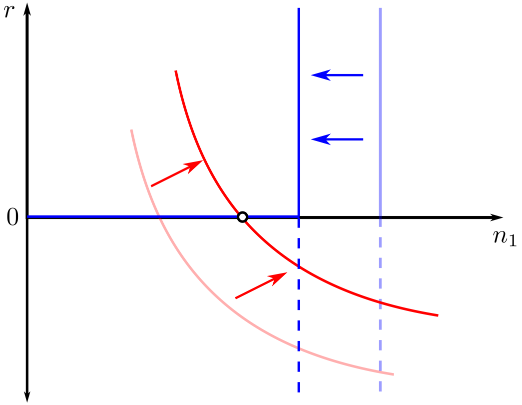
Flexible Prices: β shock



ZLB



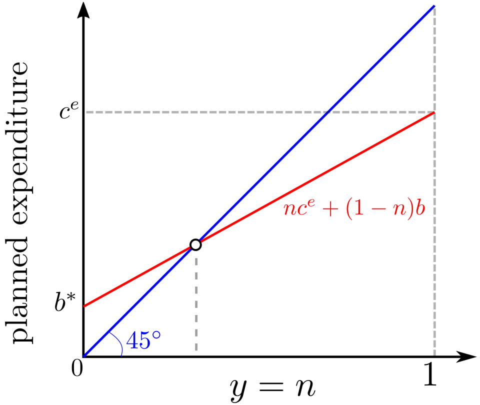
Redistribution channel: higher b_1 at ZLB



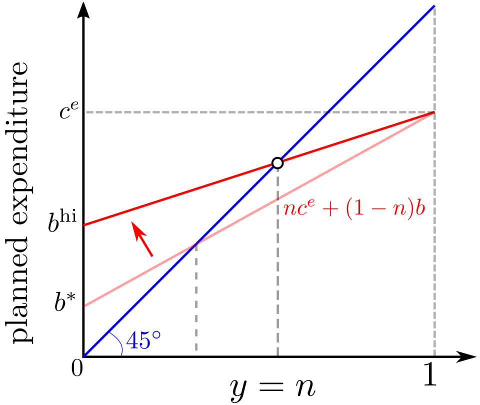
- **mpc channel**: given $r, \uparrow b_1 \Rightarrow \uparrow n_1$
- **moral hazard**: $\uparrow b \Rightarrow \downarrow n^*$
- incentive constraints **not** binding at ZLB

$$n_1 = \frac{b_1}{1 - c_1^e + b_1}$$

Redistribution channel: higher b_1



Redistribution channel: higher b_1



- mpc $= 1$ for unemp. $b \uparrow \Rightarrow \Delta c^u = \Delta b$
- higher demand $\Rightarrow$ more output $\Rightarrow$ more employment.
- **everyone better off**: more employed people, also unemp have higher c

Precautionary savings channel: Higher b_2

Euler equation at ZLB:

$$u'(c_1^e) = \beta \left\{ n_2 u'(c_2^e) + (1 - n_2)\, u'(b_2) \right\} \qquad \text{with} \qquad c_2^e > b_2$$

- $\uparrow b_2$ towards c_2^e directly lowers precautionary savings

Precautionary savings channel: Higher b_2

Euler equation at ZLB:

$$u'(c_1^e) = \beta \left\{ n_2 u'(c_2^e) + (1 - n_2) u'(b_2) \right\} \qquad \text{with} \qquad c_2^e > b_2$$

- $\uparrow b_2$ towards c_2^e directly lowers precautionary savings
- At $t = 2$
  - **no ZLB**: $b_2 \uparrow \Rightarrow n_2, c_2^e \downarrow \Rightarrow c_1 \uparrow\downarrow??$ effect ambiguous
  - **ZLB**, $\uparrow b_2 \Rightarrow c_2, n_2 \uparrow \Rightarrow c_1 \uparrow$ unambiguous

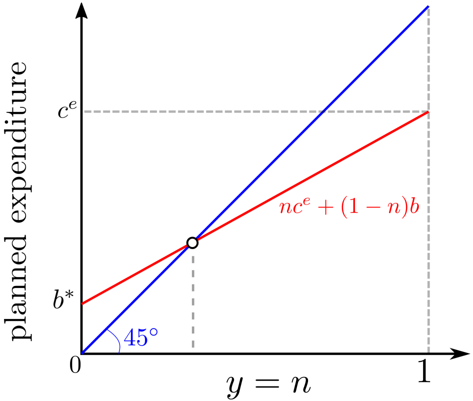
Precautionary savings channel: Higher b_2

- no ZLB at $t = 2$, $n = n^*$. Baily-Chetty $\Rightarrow$ expected utility maximized:

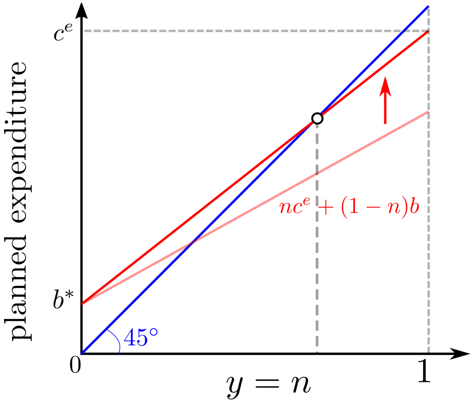
$$b_2^* = \underset{b}{\operatorname{argmax}}\, \mathbb{E}u(c_2) - \frac{\psi}{2}s^2$$

- $\uparrow b$ from b^* **lowers expected utility** unambiguously
  - effect on expected **marginal** utility ambiguous, depends on preferences
  - CARA: $\downarrow \mathbb{E}u(c) \Rightarrow \uparrow \mathbb{E}u'(c)$: $\uparrow b_2$ **does not** reduce precautionary savings
  - CRRA: depends on coefficient of prudence

precautionary savings channel (when it works)



precautionary savings channel (when it works)



- $\uparrow c_1^e$ requires $\uparrow y_1 \Rightarrow n_1 \uparrow$
- **distributional effects different** fewer unemployed, resources of unemployed unchanged

Comment: Interpretation of quantitative Results

- other policies: **-ve rates, higher π target, forward guidance** work by $\uparrow c_1^e$
- monetary policy in paper: Taylor rule (s.t. ZLB) without persistence
- with persistence (lagged interest rate),
  - higher $\mathbb{E}\pi$ would counter ZLB, bring economy closer to the non-ZLB world
  - in reality, CBs used forward guidance etc to reduce potency of ZLB
- $\uparrow b$ would have smaller effects