Discussion of *The Great Recession: A Slef-fulfilling Global Panic*

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Overview

- Motivation: stronger business-cycle comovements accross countries in great recession
- A Two-period Two-country New Keynesian Model with Multiple Equilibria
  - Comovements due to self-fulfilling global panics
  - Tight credit, the zero lower bound, unresponsive fiscal policy, increased integration

An oversimplified version: one country

- Unit mass of firms at period 1/The $n \leq 1$ mass of firms remain at period 2/Firms use labor input
- No money/Numeraire is wage/Lifetime average wealth of households w/Price of goods at period t p_t/p_1 preset
- Each firm faces a demand function $D_t(w, p_1, p_2)$ at period t
- Real cost shock z applied to $1 - \bar{n}$ mass of firms at the end of period 1/No lending to firms to cover z

In equilibrium,

$$w = p_1 \cdot D_1(w, p_1, \hat{p}_2) + n \cdot \hat{p}_2 \cdot D_2(w, p_1, \hat{p}_2) - (n - \bar{n}) \cdot z \quad (1)$$

where

$$\begin{aligned} p_1 \cdot D_1(w, p_1, \hat{p}_2) &\geq z \Rightarrow n = 1, \\ p_1 \cdot D_1(w, p_1, \hat{p}_2) &< z \Rightarrow n = \bar{n}, \end{aligned}$$

and where

$$\hat{p}_2 = p_2(w, p_1) \quad (2)$$

is the solution to

$$\max p_2 \cdot D_2(w, p_1, p_2) - l$$

subject to $f(l) = D_2(w, p_1, p_2)$.

From (1) and (2), the equilibrium average wealth w can be written as

$$w = w(n, p_1).$$

The self-fulfilling panic equilibrum rises if

$$p_1 \cdot D_1(w(\bar{n}, p_1), p_1, p_2(w(\bar{n}, p_1), p_1)) < z.$$

Observations: wealth effect and rigidity

- The paper has money, giving a room to nominal rigidity and monetary policy

Example:

$$\begin{aligned} D_1(w, p_1, p_2) &= \gamma_1 \frac{w p_2}{p_1^2}, \\ D_2(w, p_1, p_2) &= \gamma_2 \frac{w p_1}{p_2^2}, \\ y &= \sqrt{l}. \end{aligned}$$

From

$$\max p_2 \cdot D_2(w, p_1, p_2) - [D_2(w, p_1, p_2)]^2$$

it follows that

$$(\hat{p}_2)^3 = \frac{\gamma_2}{4} w p_1.$$

Then from (1), $w(n, p_1)$ is determined by

$$\gamma_1 (\frac{\gamma_2}{4} w p_1)^{\frac{2}{3}} w - p_1 (\frac{\gamma_2}{4} w p_1)^{\frac{1}{3}} (w + nz - \bar{n}z) + n\gamma_2 (p_1)^2 w = 0.$$

Two countries

Let $p_1^* = p_1$ so for Home country

$$\begin{aligned} w &= \psi \times \{p_1 \cdot D_1(w, p_1, \hat{p}_2, p_1, \hat{p}_2^*) \\ &\quad + n \cdot \hat{p}_2 \cdot D_2(w, p_1, \hat{p}_2, p_1, \hat{p}_2^*)\} \\ &\quad + (1-\psi) \times \{p_1 \cdot D_1^*(w^*, p_1, \hat{p}_2, p_1, \hat{p}_2^*) \\ &\quad + n \cdot \hat{p}_2 \cdot D_2^*(w^*, p_1, \hat{p}_2, p_1, \hat{p}_2^*)\} \\ &\quad - (n - \bar{n}) \cdot z, \end{aligned}$$

where

$$\begin{aligned} & p_1[\psi D_1(w, p_1, \hat{p}_2, p_1, \hat{p}_2^*) + (1-\psi) D_1^*(w^*, p_1, \hat{p}_2, p_1, \hat{p}_2^*)] \\ \geq \quad & z \Rightarrow n = \bar{n}, \\ & p_1[\psi D_1(w, p_1, \hat{p}_2, p_1, \hat{p}_2^*) + (1-\psi) D_1^*(w^*, p_1, \hat{p}_2, p_1, \hat{p}_2^*)] \\ < \quad & z \Rightarrow n = 1, \end{aligned}$$

and where

$$\begin{aligned}\hat{p}_2 &= p_2(w, w^*, p_1, \hat{p}_2^*),\\ \hat{p}_2^* &= p_2^*(w, w^*, p_1, \hat{p}_2).\end{aligned}$$

The equilibrium average wealth w and w^* can be written as

$$\begin{aligned}w &= w(w^*, n, p_1),\\ w^* &= w^*(w, n^*, p_1).\end{aligned}$$

For a range of μ the panic must be global; that is, if $n = \bar{n}$, n^*, $\hat{p}_2$, $\hat{p}_2^*$, w, and w^* satisfy the above equilibrium conditions, then $n^* = \bar{n}$.

Comments: Why the panic equilibrium arises?

- The vulnerability analysis interesting; but
  - fiscal and monetary conditions make the panic equilibrium more likely to emerge?
  - fiscal and monetary conditions make the panic equilibrium more difficult to disappear after it arises?

- Rigidity and multiple equilibria
  - When presetting prices, firms ought to assign probabilities to different equilibria.
  - When fiscal and monetary conditions make the panic equilibrium more likely to emerge, would firms preset prices making the panic equilibrium less likely to emerge?