Discussion of "Financial Vulnerabilities and Monetary Policy"

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- Short description of the set-up
- A ”small” deviation
- Back to the this paper: optimal monetary policy
- What’s the difference with the presented results?

The set-up

- Standard households

- Standard tecnologies and goods market structure

- "Friction": assets hold by households are restricted
  - banks should intermediate between firms and households
  - households can hold deposits and bank's equity
  - banks with a particular objective, a particular constraint and subject to shocks

A small deviation: a model with flexible prices

- Identical households and firms but flexible prices

- Continuum of intermediate goods, indexed by $i \in [0,1]$.

$$Y_t = \left[\int_0^1 Y_t(i)^{\frac{\epsilon-1}{\epsilon}} di\right]^{\frac{\epsilon}{\epsilon-1}}, \theta > 1.$$

  Demand function for each intermediate input:

$$Y_t(i) = \left(\frac{P_t(i)}{P_t}\right)^{-\epsilon} Y_t.$$

- P_t is the price level

$$P_t = \left[\int P_t(i)^{1-\epsilon} di \right]^{\frac{1}{1-\epsilon}}$$

$$Y_t(i) \leq AN_t(i)$$

FOC:

$$P_t(i) = \frac{\epsilon}{(\epsilon - 1)} \frac{W_t}{A}$$

The price level

$$P_t(i) = P_t = \frac{\epsilon}{(\epsilon - 1)} \frac{W_t}{A}$$

Flexibel price equilibrium (FPE):

$$Y_t(i) = Y_t = AN_t = C_t$$

$$\frac{N_t^{\xi}}{C_t^{-\gamma}} = \frac{A}{\frac{\epsilon}{(\epsilon-1)}}$$

$$N_t = N^{FP} = \left(\frac{A^{1-\gamma}}{\frac{\epsilon}{(\epsilon-1)}} \right)^{\frac{1}{\xi+\gamma}}$$

$$C^{FP} = Y^{FP} = \left(\frac{A^{1+\xi}}{\frac{\epsilon}{(\epsilon-1)}} \right)^{\frac{1}{\xi+\gamma}}$$

Prices and returns FPE:

- D_t cost one unit of good and will pays R_t goods in every state of $t+1$:

$$R_t e^{-\beta} E_t \left[\left(\frac{C_{t+1}}{C_t} \right)^{-\gamma} \right] = 1$$

$$R_t^{FP} e^{-\beta} = 1$$

Monetary policy:

- Short term nominal risk free rate $1 + i_t$:

$$(1 + i_t) \, e^{-\beta} E_t \left[\left(\frac{C_{t+1}}{C_t} \right)^{-\gamma} \frac{P_t}{P_{t+1}} \right] = 1$$

$$\left(1 + i_t^{FP}\right) e^{-\beta} E_t \left[\frac{P_t}{P_{t+1}}\right] = 1$$

- Monetary policy neutral with FP:
  - allocations independent of i, $E_t\left[\frac{P_t}{P_{t+1}}\right]$ and P_t.
  - a given $1+i_t^{FP}$ determines $\frac{1}{E_t\left[\frac{P_t}{P_{t+1}}\right]}$.
  - can be supported by very different paths for P_t.

- Take a particular one, so that:

$$P_t = P_{t+1} = P$$

$$e^{-\beta}\left(1 + i_t^{FP}\right) = 1$$

- Local determinacy:

$$\left(1 + i_t^{FP}\right) = e^{\beta}\left(\frac{P_{t+1}}{P_t}\right)^{\alpha}, \alpha < 1$$

Back to this paper

- Calvo pricing as in Calvo (1983).
  - Every period, a firm is able to revise the price with probability $1-\alpha$

$$P_t^* = \frac{\epsilon}{(\epsilon - 1)} E_t \sum_{j=0}^{\infty} \eta_{t,j} \frac{W_{t+j}}{A},$$

$$\eta_{t,j} = \frac{(\alpha\beta)^j \, u_C(t+j) \left(P_{t+j}\right)^{\theta-1} Y_{t+j}}{E_t \sum_{j=0}^{\infty} (\alpha\beta)^j \, u_C(t+j) \left(P_{t+j}\right)^{\theta-1} Y_{t+j}}$$

$$C_t = \left[\sum_{j=0}^{t+1} \varpi_j \left(\frac{P^*_{t-j}}{P_t}\right)^{-\theta}\right]^{-1} AN_t = \upsilon_t AN_t$$

ϖ_j : share of firms set prices j periods before, $\varpi_j = (\alpha)^j(1-\alpha)$, $j = 0, 1, 2, ..., t$, and $\varpi_{t+1} = (\alpha)^{t+1}$, share of firms that have never set prices so far

- when monetary policy is such that

$$P_t = P^*_t = P_{t-1} = P$$

then

$$\upsilon_t = 1$$

- Calvo constraint is not bidding

- FPE feasible in the implementable set

But:

- With Calvo pricing FPE allocations is the Second Best: mark-up distortion.

- So this is the optimal monetary policy:

$$e^{-\beta}\left(1+i_t^{SB}\right)=1$$

- Local determinacy:

$$\left(1+i_t^{SB}\right)=e^{\beta}\left(\frac{P_{t+1}}{P_t}\right)^{\alpha},\alpha<1$$

The results of this article:

- The solution that is presented is the one where, due to deviation from this rule, monetary policy with Calvo pricing creates volatility in this economy