Discussion of "Fiscal Policy and the Zero Lower Bound" by Karel Mertens and Morten Ravn

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ESSIM 2010, Roda de Barà

I like this paper

I mean it

Summary and intuition

- Fiscal policy in liquidity trap à la Benhabib, Schmitt-Grohe and Uribe.
  - contradicts recently emerging "conventional wisdom" (see also Braun and Korber, 2010)
- Important: nothing "fishy" here, this is in the background of previous studies (Christiano et al, etc.), but has simply been overlooked or ruled out.
- Intuition: self-fulfilling liquidity trap, G goes up, taxation goes up:
  - income goes down, save less.
  - BUT: zero equilibrium savings, so another force needs to pull savings up
  - real interest rate needs to increase: more $deflation$.
- This dominates the expansionary forces coming from:

  demand = $inflation$; and taxation = work more, produce more ...
- IFF (either) labor inelastic enough, probability of staying pessimistic high enough, prices flexible enough
- Alternative: we all know that a monetary expansion leads to more $deflation$ in a liquidity trap.

  * If G is debt-financed at zero interest ... this IS a monetary expansion!

This discussion

1. My attempt to understand this paper: some analytical results;

    * e.g.: whenever sunspot condition fulfilled, consumption multiplier is negative!

2. Is the multiplier derived in the liquidity trap unique?

    "unintended" steady state (liquidity trap) is a sink, intended steady state (target inflation) a source.

3. The beef may be elsewhere: FTPL (and passive monetary policy)

A simpler model

Cashless (well, bonds with zero interest rates ...), separable utility (!)

Rotemberg pricing (no price dispersion): pay a quadratic price adjustment cost (function of inflation) each time you adjust, coefficient κ

- FOC for pricing:

$$\kappa\Pi_t\left(1+\Pi_t\right)=\beta\kappa E_t\left[\Pi_{t+1}\left(1+\Pi_{t+1}\right)\right]+\left(1-\theta\right)+\theta v_L\left(C_t\left(1+\frac{\kappa}{2}\Pi_t^2\right)+G_t\right)\frac{1}{U_C\left(C_t\right)} \quad (1)$$

$$\text{where } C_t\left(1+\frac{\kappa}{2}\Pi_t^2\right)+G_t=L_t \quad (2)$$

Euler equation (demand for bonds/savings)

$$1=\beta E_t\left[\frac{1+I_t}{1+\Pi_{t+1}}\frac{U_C\left(C_{t+1}\right)}{U_C\left(C_t\right)}\right] \quad (3)$$

Interest rate rule (zero target)

$$1+I_t=\Phi\left(1+\Pi_t\right),\Phi\left(1\right)=\beta^{-1}$$

- Steady states ($G=0$,Log-quadratic example):

$$\text{Intended} \quad : \quad \Pi^I = 0, \frac{v_L(C)}{U_C(C)} = \left(C^I\right)^2 = \frac{\theta-1}{\theta}$$

$$\text{Unintended, zero bound:} \qquad \Phi(1+\Pi) = 1 \longrightarrow \Pi = \beta - 1$$

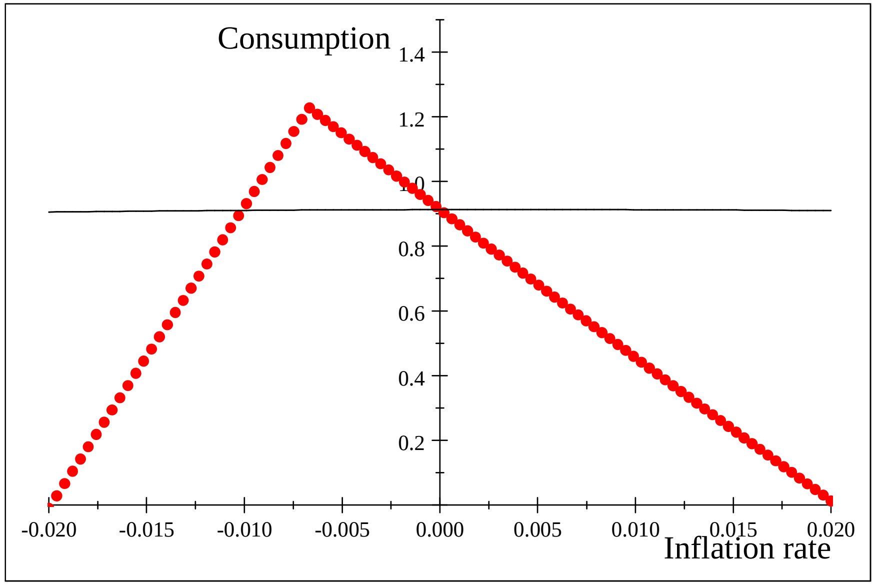
$$\left(C^U\right)^2 = \frac{\theta - 1 - (\beta-1)^2 \kappa\beta}{\theta\left(1+\frac{\kappa}{2}(\beta-1)^2\right)} < \frac{\theta-1}{\theta} = \left(C^I\right)^2$$

Calibrate for $\kappa = 58$ which gives price duration 4 quarters: : $C^U = 0.911\,03,\ C^I = 0.912\,87$

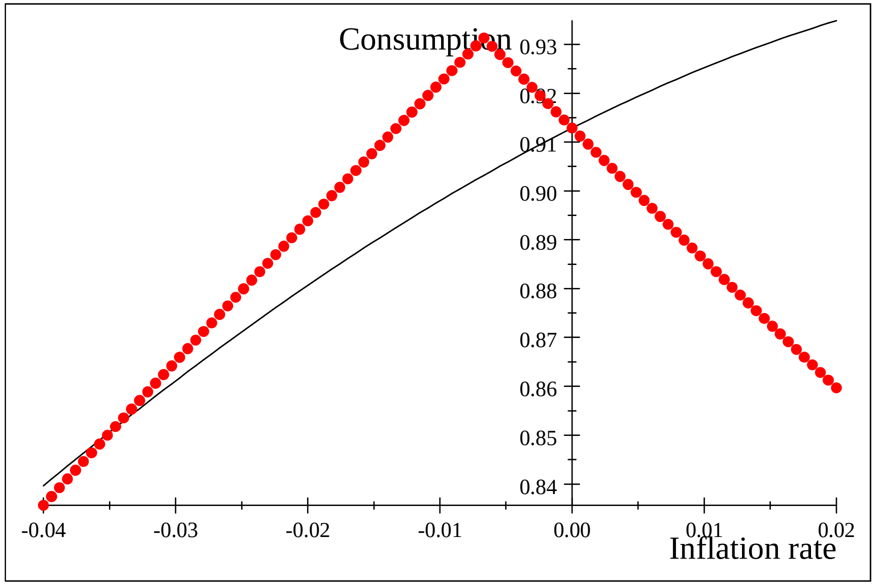
- Sunspot equilibrium, transition probability q, $\Pi^O = 0$, $\Phi\left(1+\Pi^P\right) = \max\left(\frac{\left(1+\Pi^P\right)^\phi}{\beta}, 1\right)$

$$C^P = \sqrt{\frac{\theta - 1 + \kappa(1-\beta q)\Pi^P\left(1+\Pi^P\right)}{\theta\left(1+\frac{\kappa}{2}\left(\Pi^P\right)^2\right)}} \tag{4}$$

$$1 = \beta\Phi\left(1+\Pi^P\right)\left[\frac{q}{1+\Pi^P} + (1-q)\sqrt{\frac{\theta}{\theta-1}}C^P\right] \tag{5}$$



Euler Equation (red dots) and Phillips Curve, transition probability $q \to 1$



Euler Equation (red dots) and Phillips Curve, transition probability $q = 0.75$

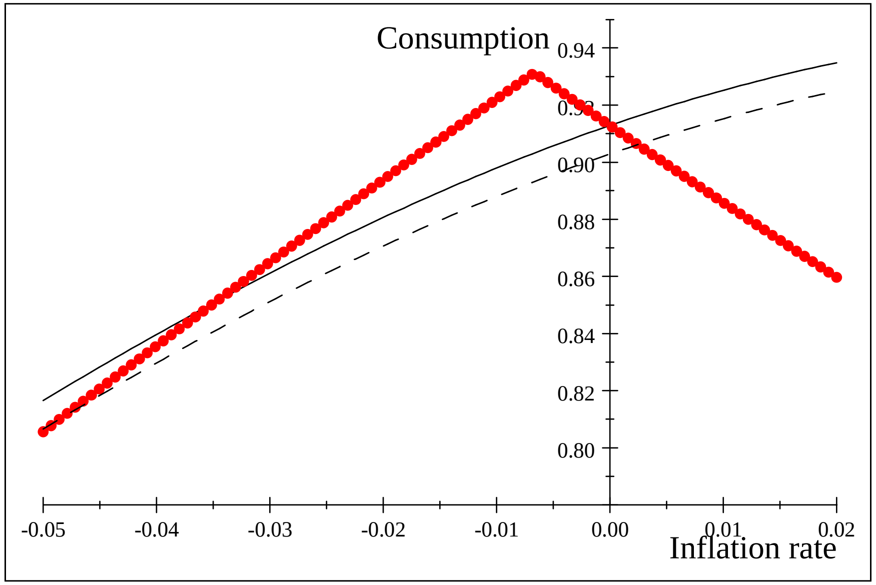
Sunspot condition (log-CRRA): NPC slope $lower$ than EE slope at pessimistic state.

$$\frac{q}{(1-q)(1-\beta q)} > \frac{\kappa(2\beta-1)}{(\theta-1)(1+\varphi)}$$

NOTE: $Opposite$ of Christiano, Eichenbaum and Rebelo!

- Sunspot for arbitrarily small probability iff: flexible prices; perfect competition; inelastic labor (endowment economy)
    - * consistent with Benhabib et al.

Consumption multiplier



Effect of a government spending increase in pessimistic times.

Proposition: In sunspot equilibrium, consumption multiplier is negative.

$$\frac{\partial c^P}{\partial g} = \left(\frac{(1-\beta q)(1-q)}{q} - \frac{(\theta-1)(1+\varphi)}{\kappa(2\beta-1)} \right)^{-1} \frac{(\theta-1)\varphi}{\kappa(2\beta-1)}$$

Same(-ish) as around INTENDED SS (but deflation)!

- BUT: is multiplier unique? Loglinearize around liquidity trap SS.

$$\begin{aligned}
\pi_t &= \beta E_t \pi_{t+1} + \frac{\theta - 1}{\kappa (2\beta - 1)} (1 + \varphi) c_t + \frac{\theta - 1}{\kappa (2\beta - 1)} \varphi g_t \\
c_t &= E_t c_{t+1} + E_t \pi_{t+1}
\end{aligned}$$

- Liquidity trap is locally indeterminate (as with a peg), so effects of fundamental shocks can in principle be anything ...

On the role of fiscal policy in a liquidity trap: how to get out

- Effects of fiscal policy here are conditional upon being in a Ricardian regime
  - * Role for non-Ricardian fiscal policy in eliminating the pessimistic equilibrium
- High enough government spending may be perceived as unsustainable and make the liquidity trap inconsistent with rational expectations.
- Spend heavily/irresponsibly (cut taxes) and commit to keep doing so in the future, under nominal debt the price level has to increase to restore equilibrium.
- Passive monetary policy makes the liquidity trap a source, and the intended steady state a sink?
- "Pigou effect": when price level drops - real balances increase - demand increases.

Conclusion

- Great paper: challenges emerging conventional wisdom, takes multiple equilibria and non-fundamental fluctuations seriously, without any "exotic" assumptions.

- Three suggestions:

1. Simplify model to make mechanism more transparent
2. Clarify local indeterminacy: Is the response to exogenous, fundamental shocks unique at zero lower bound?
3. Think of role of fiscal policy more broadly (unconventionally) in a liquidity trap