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The Case for Open-Market Purchases in a Liquidity Trap

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The case for expanding the monetary base

- (1) It increases the price level.
- (2) It increases the inflation tax, depreciates the public debt, and allows a reduction of other distortionary taxes.

Comments

- Focus on (1): Not convincing.
 - Empirical test: Japanese monetary base up 40% since Dec 2000.
 - Theory: Future monetary-base expansion not credible.
- Regarding (2): Not controversial, if (1) holds (and suitable initial conditions).

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Main result

- Assumption 1:

$$\begin{aligned} i_t &= 0 & (0 \leq t \leq T-1) \\ i_t &> 0 & (t \geq T) \end{aligned}$$

- Under flexible prices:

$$m_T \uparrow \Rightarrow p_0 \uparrow$$

- Under sticky prices:

$$m_T \uparrow \Rightarrow p_{1|0} - p_0 \uparrow, r_0 = 0 - (p_{1|0} - p_0) \downarrow, y_0 \uparrow$$

- Assumption 2:

$$m_T = m_0 + a$$

- Then $m_0 \uparrow$ has the same consequences as $m_T \uparrow$

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Theory

- Fisher equation

$$\dot{i}_t = r_t + p_{t+1|t} - p_t$$

- Money demand

$$\begin{aligned} i_t > 0: & \quad m_t = p_t + y_t - \eta i_t \\ i_t = 0: & \quad m_t \geq p_t + y_t \end{aligned}$$

($\eta \geq 0$; cash in advance: $\eta = 0$)

- Simplifying assumptions

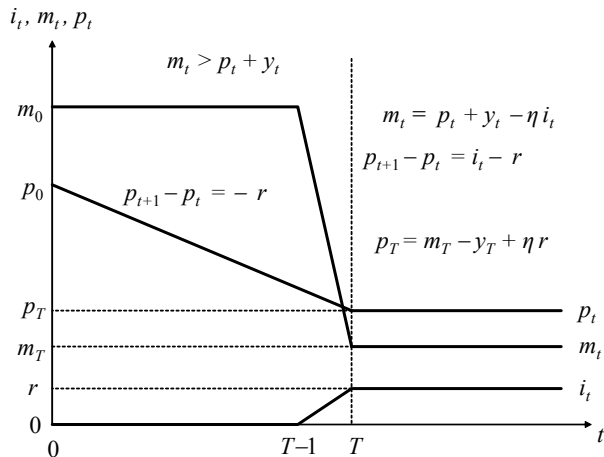
1. Flexible prices
2. $m_t = m_T \quad (t \geq T)$
3. $r_t = r, \quad y_t = y$

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More theory

- Fisher equation for p_0

$$\begin{aligned} p_0 &= p_{1|0} + r_0 - i_0 \\ &= p_{T|0} + \sum_{t=0}^{T-1} (r_{t|0} - i_{t|0}) \\ &= p_{T|0} + (T-1)r \end{aligned}$$



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- Fisher equation and money demand equation for p_T

$$\begin{aligned}
 p_{T|0} &= p_{T+1|0} + r_{T|0} - i_{T|0} \\
 &= p_{T+1|0} + r_{T|0} + \frac{1}{\eta}(m_{T|0} - p_{T|0} - y_{T|0}) \\
 &= \frac{\eta}{1+\eta}p_{T+1|0} + \frac{1}{1+\eta}(\eta r_{T|0} + m_{T|0} - y_{T|0}) \\
 &= \sum_{\tau=0}^{\infty} \frac{1}{1+\eta} \left(\frac{\eta}{1+\eta} \right)^{\tau} (\eta r_{T+\tau|0} + m_{T+\tau|0} - y_{T+\tau|0}) \\
 &= m_T + \eta r
 \end{aligned}$$

- Combine

$$\begin{aligned}
 p_0 &= m_T + \eta r - (T-1)r \\
 \frac{\partial p_0}{\partial m_T} &= 1
 \end{aligned}$$

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Problems

- No direct relation between m_0 and m_T : $m_0 \uparrow \not\Rightarrow m_T \uparrow$
 - $m_T \uparrow$ is not credible, expectations may not be affected
 - Krugman 98: “Commitment to future irresponsibility”
 - Commitment to future money supply (nominal government liabilities) would avoid liquidity trap (Woodford 99; Svensson 99; Benhabib, Schmitt-Grohé, Uribe 02)
 - Auerbach-Obstfeld: “[The central bank] need only commit itself not to reverse one-off increases in the money supply’s level.”
 - * But m_T lower when $i_T > 0$.
 - No commitment in terms of money supply (no monetary targeting); instead commitment to price stability, inflation targeting
- High inflation target need not be credible
 - No current action beyond announcement?
 - Future deviation/change in inflation target?

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Solution

- Open economy: Depreciate the currency (McCallum, Meltzer, Bernanke, Orphanides-Wieland, Coenen-Wieland, ...)
- The Foolproof Way (Svensson 01, Coenen-Wieland 02)
 1. Price level target
 2. Currency depreciation and temporary peg
 - Dramatic action, not just talk
 - Creates inflation expectations
 - Lowers long real interest rates
 - Jump-starts the economy
 - Creates inflation
 3. Exit strategy: Abandon peg and introduce inflation targeting when price-level target reached
- The Foolproof Way is likely to work for the U.S. and the euro area as well as for Japan (Svensson 03)

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