

Deflationary equilibrium in Japan

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Is Japanese economy sustainable?

- What is necessary to restore sustainability?
 - Braun and Joines (2013)
 - Consumption tax rate 33 % with 2% growth
 - Consumption tax rate 53 % with 1.5% growth
 - Hansen and Imrohoroglu (2013)
 - Consumption tax rate 34% with 2% growth
 - Consumption tax rate 60% with 1.5% growth
- What happens if tax is not raised?
 - Inflation tax or hyperinflation
- Why does deflation continue now?
 - Deflation continues if banks are optimistic, even when hyperinflation is approaching (Braun and Nakajima 2013)

Hypothesis

People's fear for hyperinflation may exacerbate current deflation

Models of deflationary equilibrium

- Benhabib, Schmitt-Grohe, and Uribe (2001, JPE)
- Eggertsson and Mehrota (2014, NBER WP)
- A puzzle: Deflationary equilibrium is not compatible with expansionary monetary policy
 - Deflation = Increase in the price of money
 - Expansionary monetary policy = Increase in the quantity of money
 - Total value of money $\rightarrow +\infty$ (Contradiction)
- Benhabib et al and Eggertsson et al: Decrease in the quantity of money is required
(Transversality condition: $\lim_{t \rightarrow \infty} \beta^t \phi_t M_t = \lim_{t \rightarrow \infty} M_t = 0.$)

Is Japan in the deflationary equilibrium?

- Deflation has continued for 15 years
 - (Low productivity growth)
 - Expansionary monetary policy
 - Government debt accumulation
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- Existing theory cannot account for these features

Why does deflation continue in the time of monetary expansion?

- Public debt accumulation \Rightarrow Impaired credibility of monetary regime
- Risk of regime change emerges:
With a small probability, the fiat money lose value and the economy goes to the non-monetary equilibrium.

Hyperinflation: Money lose value with probability $1 - p$

- Value of money ϕ_t

$$\phi_{t+1} = \frac{\phi_t}{\pi_t} \quad \text{with probability } p,$$

$$\phi_{t+1} = 0 \quad \text{with probability } 1 - p$$

- Money is a risky asset when there is a risk of hyperinflation
- Risk premium for money: deflation by p
- For a smaller p , deflation gets more severe

Deflationary equilibrium in Japan

- Public debt accumulation
 - ⇒ Fear of hyperinflation: a smaller p
 - ⇒ Severer deflation
- Expansionary monetary policy is compatible with deflation
Because deflation is risk-premium for risky money

Policy implication of this hypothesis

- Zero nominal interest rate can enhance productivity
- Quantitative Easing has no real effects. Just increase the excess reserve.
- To escape from deflation, we need to reduce the probability of hyperinflation.
 - How?
 - Hyperinflation is the implicit default of sovereign debt
 - Tax increase
 - Spending cut
- Fiscal consolidation is necessary to escape from deflation