

Problem set 4. 14.461 Fall 2012.

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1 Fiscal Multipliers with Hand-to-Mouth Consumers.

Suppose a fraction χ of agents live hand to mouth (hereafter HM agents), without access to financial markets they consume their labor income net of taxes and transfers. The rest of the agents can access financial markets. For generality allow the taxes/transfers on HM agents to be different from other agents.

1. Setup all the equilibrium conditions (nonlinear).
2. Work out the log-linearized equilibrium conditions.
3. Derive the effects of current and future fiscal policy on the equilibrium level of aggregate consumption. Work out the effects on HM agents and other agents separately.

2 Fully Rigid Prices.

Consider a liquidity trap scenario where r is constant and negative up to T then positive after that. Suppose prices are completely rigid so that $\kappa = 0$. Solve for the optimal interest rate path. Prove that $i = 0$ up to some $T' > T$ and then $i = 0$ after T' .

3 Nonlinear Dynamics.

Consider the standard NK nonlinear model as described in Woodford's Handbook chapter. You may work in discrete or continuous time. Suppose we are in a liquidity trap scenario

because there is less subjective discounting for $t \leq T$ and then we return to the usual positive discounting after T . Assume monetary policy is not optimal, instead it sets $i(t) = 0$ before T and targets zero inflation after T .

1. Describe all the nonlinear equations that are needed to compute equilibrium. Describe how one can solve for the equilibrium after T and how one can solve backwards for an equilibrium before T .
2. Compute numerical examples for the full nonlinear solution and compare it to your linearized solution. Show a few representative parameter cases.
3. Redo the same exercise assuming that the liquidity trap scenario is generated by a temporary slow down in productivity growth.

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