

**EXERCISE ON PRICE DETERMINATION AND DISCUSSION QUESTIONS FOR 9/22-26
PRECEPTS**

Exercise due 9/27 at lecture

Consider the two-period-lived overlapping generations model we have discussed in class, with the following change: Instead of a lump-sum tax τ imposed on the old at each date, there is a lump-sum tax τ imposed on the young at each date. Look for a steady-state equilibrium, i.e. one in which $C_{1t} = C_{1,t+s}$, all s and in which there is no storage ($S_t \equiv 0$). This is the only equilibrium when $\tau > 0$, but you don't have to prove that. Both the lump-sum tax τ and the gross interest rate R are kept constant in all periods, and as before the first-period old have B_1 one-period bonds to sell to the young born at $t = 1$.

- (a) Is every stationary equilibrium allocation (i.e., every equilibrium pattern of repeated $C_{1t}, C_{2,t+1}$ values) that can be obtained with a tax on the old also obtainable with a tax on the young? When the $C_{1t}, C_{2,t+1}$ pairs match, which tax is higher, that on the young, or on the old?
- (b) Is every $\tau > 0$ value consistent with existence of an equilibrium? If not, what is the range of possible values? (The answer may be different according to whether it is a tax on the young or on the old.)
- (c) How does the utility ($\log C_{1t} + \log C_{2,t+1}$) of the typical generation vary with τ (in both cases, tax on old and tax on young)?
- (d) How does the utility of the initial old depend on τ ?

Discussion topics for precepts On starred topics, discussion should be begun by students, not preceptors.

- (A) Setting up and solving constrained optimizations with Lagrange multipliers
- (B) Details of deriving the first-order conditions for the price-determination model displayed in lecture
- (C) "Coupon" vs. "discount" interest rates.
- (D) *Calculating the actual dollar earnings on a \$120,000 1-month treasury bill investment when the interest rate is 0.01% on an annualized, discount basis.
- (E) *You're sitting at the "open market desk" of the New York Federal Reserve Bank. Your job is to see that total reserves in the system remain constant. Exactly what do you do? It will involve buying and selling bonds, since that is what the open market desk does. What data do you need to track, and how do you respond to it? Will you be "printing money"?
- (F) *Some economists are worried that the vast excess reserves now being held by banks will at some point generate strong inflationary pressure — that is, that banks will start aggressively trying to reduce reserves by making loans. Other economists think that the Fed's ability to pay interest on reserves will prevent this. What is their argument? (This is not a deep question.)