

Problem Set 9
Due in class, Friday, November 17, 2006

1. Consider the following single good cash-in-advance economy with capital. The utility function of the representative agent is given by

$$\sum_{t=1}^{\infty} \beta^t U(C_t),$$

where $U' > 0$, $U'' < 0$ and $0 < \beta = \frac{1}{1+\rho} < 1$, where ρ is the pure rate of time preference. The agent maximizes this utility subject to a budget constraint and a cash-in-advance constraint. The budget constraint is:

$$C_t + K_{t+1} + M_t/P_t = f(K_t) + (1 - \delta)K_t + (M_{t-1} + G_t)/P_t$$

where K_t is the capital stock, M_t are nominal balances, C_t is consumption, P_t is the price level, G_t is the nominal money transfer received at the beginning of the period, and δ is the depreciation rate of capital. The production function $f(\cdot)$ has the standard properties: $f' > 0$ and $f'' < 0$.

The cash-in-advance constraint is

$$C_t \leq (M_{t-1} + G_t)/P_t.$$

Define *superneutrality* as the property that changes in the rate of the nominal money supply have no affect any real variables including the level of real balances.

- (a) Show that in the economy described above, money is superneutral.
(b) Does the Cooley-Hansen CIA model exhibit superneutrality? Explain.
2. Ljungqvist-Sargent, page 933, Exercise 25.1
3. Ljungqvist-Sargent, page 934, Exercise 25.3