1. The welfare implications of a nonzero inflation rate can be illustrated by comparing a monetary equilibrium with a command economy allocation. To do this, assume that the government will consume $G_t$ goods (in aggregate, $g_t = G_t/N_t$), and that they use seigniorage (with money growth rate $z$) to finance their expenditures. Write down the government budget constraint for this monetary economy, and derive the two life time budget constraint for the individuals who live in this economy. Assume no population growth and a stationary allocation. Compare the monetary equilibrium with the command economy–golden rule equilibrium and explain the inefficiency of the inflation tax.

2. The inefficiency of an inflation tax (seigniorage) does not imply that it should not be used. Governments must raise revenues to finance their expenditures, and an inflation tax is one distortionary way of doing so. Camp and Freeman argue that a non-distortionary lump sum tax produces a golden rule monetary equilibrium in an economy with no money growth, no population growth, a stationary allocation and the government budget constraint given by $G = N_t \tau$. The problem is that we do not observe lump sum taxes in the real world. Consider instead a consumption tax.

Assume that the government raises all of its revenues from taxes on the amount of consumption when young and old. Since the old do not receive an endowment, the government taxes their consumption at a lower rate. In other words, if the young and old consume stationary amounts $c_1$ and $c_2$, respectively, then the government raises $\tau_1 \cdot c_1$ and $\tau_2 \cdot c_2$ in tax revenues from each individual in each generation. (Assume $1 > \tau_1 > \tau_2$) Write down the government budget constraint for this monetary economy with no money growth and no population growth. Derive the life time budget constraint for the individuals in this economy. Now, compare the monetary equilibrium with consumption taxes to a monetary equilibrium with lump sum taxes and no money growth. How does the consumption tax distort consumer behavior?
Econ 440  
Spring 1997  
Midterm Exam

Answer both of the questions below. Be sure to fully explain and support your answer using graphs and algebra where necessary to augment your written explanation. Also be sure to clearly state your assumptions. You only have 50 minutes for this exam, so pay attention to your time constraint. Good luck.

1. Consider an economy with a shrinking stock of fiat money. Let \( N_t = N \), a constant, and let \( M_t = zM_{t-1} \) for every period \( t \), where \( z \) is positive but less than 1. The government taxes each old person \( t \) goods in each period, payable in fiat money, which it then destroys.

a. Find and explain the rate of return in a monetary economy.

b. Show and explain why the monetary equilibrium does not maximize the utility of future generations. Hint: Follow the steps you would use for a model with a subsidy, realizing that a tax is essentially a negative subsidy.

c. Do the initial old prefer this policy to the policy that maintains a constant stock of fiat money? Explain.

2. Suppose that Germany (Country A) and France (Country B) do not have foreign currency controls in effect. The total demand for money is always 2000 goods in Germany and 1000 goods in France. The fiat money supplies are 100 marks in Germany and 300 francs in France.

a. Find the value of each country’s money if the exchange rate, \( e_t \) (number of units of country B’s currency that can be purchased with one unit of country A’s money) is 5. Do the same if \( e_t = 1 \). Is one exchange rate more likely than the other? Explain

b. Suppose that the exchange rate is 5 and that France triples its fiat money stock, whereas Germany prints no new money. How many goods will France gain in seigniorage? What fraction of this seigniorage comes from German citizens?
Question 1. (70 points—35 minutes)
Suppose that individuals are endowed with $y_1$ units of the consumption good when young and $y_2$ when old. Assume that the fiat money stock is constant, and the population grows at gross rate $n$. The government taxes the young in each period $\tau$ goods and transfers the total tax revenues to the old alive in that period. Assume that for every good the government collects in taxes, it throws away .25 goods to maintain the complicated tax code.

- How big will the government transfer to the old be?
- What condition is necessary for money to be valued in this economy?
- Derive and explain the life time budget constraint of consumers living in this economy.
- Derive the feasible set line for a centrally planned economy. Note that the central planner has no need to tax the young to give to the old, because the planner already has the ability to costlessly allocate the total endowment between both generations.
- Find the rate of return on money in a stationary monetary equilibrium, and explain why this economy does or does not maximize the utility of all future generations.

Question 2. (30 points—15 minutes)
In the summer of 1997 the Thai Baht collapsed in value under the pressure of massive selling by foreign currency traders. This began the Asian currency crises, one of the many crises to have affected currency markets since the break up of the Bretton Woods system of fixed exchange rates. Since the crises, a number of countries have toyed with the idea of currency controls, currency boards (fixed exchange rates), or other policy measures to help stabilize their countries exchange rates.

Take a position (pro or con) on the issue of foreign currency controls and/or fixed exchange rate regimes. Make your case using verbal argument, analytical examples, or any other tools necessary. Be sure to discuss any supporting or dissenting views you are aware of in the economics literature, such as course readings.