

Economics 101b; Fall 2000; Problem Set 5--Answers

Due in class October 12

1. Economists say that a government can raise real revenue--real power to buy goods and services--through the "inflation tax." Who is it that pays this inflation tax? How is it that the government collects it?

The inflation tax is a tax on people who hold money: inflation means that their money buys less real goods than it did before. The government "collects" this "tax" by printing money and spending it...

2. Suppose that real GDP is \$10,000 billion, the velocity of money is 5, and the money stock is \$2,500 billion. What is the price level?

The price level would then be 1.25, from the quantity equation $P \times Y = M \times V$.

3. Suppose that the rate of labor force growth is 3% per year but the efficiency of labor is stable, and the economy is on its steady state growth path. Suppose also that the rate of growth of the nominal money stock is 10% per year. Do you think that it is likely that the inflation rate is less than 5% per year? Why or why not?

Y looks to be growing at 3% per year in steady state. From the quantity equation $P \times Y = M \times V$ the inflation rate would be equal to 7% minus the growth rate of velocity. It is quite likely that velocity is growing at more than 2% per year because of increased automation in the financial sector, so it is likely that the inflation rate is less than 5% per year.

4. What would the Federal Reserve have to do if it wanted to raise the monetary base today by \$10 billion? What do you guess would happen to the price of short-term government bonds if the Federal Reserve did this?

It would buy \$10 billion of government bonds. Since this would decrease the outstanding supply of government bonds, their price would rise—which means that the interest rate they yield would fall.

5. Suppose that the economy is on its steady-state growth path, the rate of increase of the labor force is 2% per year, the rate of increase of the efficiency of labor is 1% per year, the velocity of money is rising at 2% per year, the rate of growth of the money stock is 10% per year, and the real interest rate is 4% per year. What is the nominal interest rate?

From the quantity equation, the rate of inflation is 5% per year. With a 4% real interest rate, the nominal interest rate will be 9% per year.

6. Do you think that unspent balances on credit cards--the difference between what you currently owe on your credit card and the limit that the credit card company allows you--should be counted as "money"? Why or why not?

I would say yes: “money” is supposed to be a measure of liquid purchasing power, and unspent credit card balances are definitely liquid purchasing power. But others do disagree...

7. In the third quarter of 1998 nominal GDP was \$8,574 billion. The monetary base H was \$494 billion; M1 was \$1,072 billion; M2 was \$4,210 billion. Calculate the velocities of the monetary base, of M1, and of M2.

For H: $8574/494 = 17.356$. For M1: 7.998. For M2: 2.036.

8. Suppose that you were told that the rate of inflation was about to decline significantly over the next decade. Would you expect the velocity of money to rise unusually fast, behave normally, or fall over the course of that subsequent decade?

I would expect the velocity of money to fall. A decline in the rate of inflation means a decline in the nominal interest rate in the long run. A lower nominal interest rate means that the opportunity cost of holding wealth in the form of liquid money falls. Hence people will like to hold more of their wealth in the form of liquid money. Thus the velocity of money will fall.