

## Answers to Homework Set Eight

1. (5%) In East Wonderland, GDP consists of corn and lima beans. Last year 50,000 bushels of corn and 30,000 bushels of lima beans were grown. Corn sold for \$10 a bushel and lima beans sold for \$20 a bushel. This year 60,000 bushels of corn and 20,000 bushels of lima beans were grown. Corn sold for \$15 a bushel while lima beans went for \$10 a bushel. What was the inflation rate, as the government would measure it?
2. (5%) People in Knockwurst consume Sauerkraut and (what else?) Knockwurst. Last year, individuals ate 100 pounds of Sauerkraut and 400 pounds of Knockwurst; each cost 5 Snickers each (the local currency). This year Knockwurst is costing 8 Snickers. What is the inflation rate?
3. (5%) If the government did not require banks to keep reserves, they would not do so. Explain whether you agree or disagree with this statement.
4. (5%) If Federal Reserve notes were not legal tender, people would not use them. Explain whether you agree or disagree with this statement.
5. (5%) If goods cost more, then prices have gone up, no matter how much better quality they are. Explain whether you agree or disagree with this statement.
6. (5%) If the government engages in an open market operation exchanging bonds for money on a dollar for dollar basis, there are no impacts on individual wealth. Explain whether you agree or disagree with this statement.
7. (5%) If a bank creates money by making loans, there are no impacts on individual wealth. Explain whether you agree or disagree with this statement.
8. (10%) If the Federal Reserve System sells a government bond, there is a decrease in the monetary base; if the US Treasury sells a bond, there is no change in the monetary base. Explain whether you agree or disagree with this statement
- (10%) Economists relate money and GDP by the equation  $MV = PY$  where  $M$  is the stock of money,  $V$  is the velocity of money (essentially a constant that makes this equation work),  $P$  is the price level and  $Y$  is real GDP. Real GDP is \$100; nominal GDP is \$1000. The  $M_2$  velocity of money is 4 and the  $M_2$  multiplier is 5. What is the monetary base?

9. (20%) There are ten parts:
- a) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 50% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - b) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 0% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - c) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 0% tax rate, that consumption is subject to a 100% tax, and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - d) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 50% tax rate and that capital income is subject to a 0% tax rate. Calculate the decision maker's consumption for all periods.
  - e) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$336,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 50% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - f) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$392,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 50% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - g) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 25% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
  - h) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 40% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.

- i) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$336,000 and \$392,000 in periods 2 and 3 respectively; that the discount rate is 50%, and that wages are subject to a 40% tax rate and that capital income is subject to a 20% tax rate. Calculate the decision maker's consumption for all periods.
- j) Suppose the bachelor decision maker expects to live four periods and receive a wage income of \$224,000 and \$196,000 in periods 2 and 3 respectively; that the discount rate is 100%, and that wages are subject to a 1/3 tax rate and that capital income is subject to a 25% tax rate. Calculate the decision maker's consumption for all periods.

10. (10%) Senator Mustard is at it again. Some of her latest quotes:

- I understand there is a deficit in social security, and, if we want to keep payments at the promised level, we must raise taxes. I also understand the problems of taxing wages. So why don't we tax consumption instead?
- It is too difficult to deal with Social Security now. Why don't we just promise individuals that we will eventually fix the problem without cutting benefits?
- If young people dislike the system so much, why don't we let them simply opt out?

Reason with this poor woman

11. (10%) The Republic of Crawford has a GDP of \$10 billion per year, growing at 5% per year. Its national debt is \$3 billion, and it is currently running a budget deficit of \$200 million. (To make things easy, you may assume the current interest rate is 0). Crawford's Ministry of Economic Projections indicates that this deficit is expected to continue indefinitely at a rate of \$200 million per year. Can this policy be sustained? (You may assume what you wish about the bequest motive.
12. (5%) The Republic of Crawford has a GDP of \$10 billion per year, growing at 5% per year. Its national debt is \$3 billion, and it is currently running a budget deficit of \$150 million. (To make things easy, you may assume the current interest rate is 0). Crawford's Ministry of Economic Projections indicates that this deficit is expected to continue indefinitely. Can this policy be sustained? (You may assume what you wish about the bequest motive.