ECO202: PRINCIPLES OF MACROECONOMICS
FIRST MIDTERM EXAM
SPRING 1998
Prof. Bill Even

Directions

1. There are two parts to the exam. The first part consists of multiple choice and short answer questions. The first 38 questions are worth 2 points each. Answers for the first 38 questions should be placed on the answer sheet attached at the end of the exam. The second part of the exam consists of short essay problems worth a total of 20 points. **ANSWER ONLY 4 OF THE 5 SHORT ESSAY QUESTIONS.** There is space provided after each question for the second part of the exam.

2. No credit will be given for answers that are misplaced.

3. You may use a calculator.

4. You have until the end of the period to finish the exam. No extra time will be allowed.

5. Academic dishonesty is a serious offense. In the event I found someone behaving in a dishonest manner, I will ask that the maximum penalty allowed by the university be imposed.
Consider the following information taken from the *Economic Report of the President* to answer the 4 following questions:

<table>
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<th>Year</th>
<th>Nominal GDP (in billions)</th>
<th>Real GDP (in billions)</th>
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<tr>
<td>1990</td>
<td>5743.8</td>
<td>6138.7</td>
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<tr>
<td>1995</td>
<td>7253.8</td>
<td>6742.9</td>
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Give all growth rates to the nearest one-tenth of one percent -- e.g. 8.2%).

1. What was the average annual rate of growth in **Real GDP** between 1990 and 1995?

2. What was the average annual rate of growth in **Nominal GDP** between 1990 and 1995?

3. What was the GDP deflator in 1995?

4. What was the average annual inflation rate between 1990 and 1995?

To answer the next 2 questions, use the following information: Between 1980 and 1990, the average nominal wage rate increased from $6.66 to $10.01 per hour. Over the same period, the real wage (in 1982 dollars) decreased from $7.78 to $7.52.

5. Given that the consumer price index (CPI) was used to convert nominal to real wages, the CPI in 1980 was _____.

6. Consumer prices in 1990 were _____ percent higher than they were in 1980.

7. According to the equation of exchange, an increase in inflation can be caused by _____ growth in the money supply, _____ growth in the velocity of money, or _____ growth in real GDP.
   a. increased; increased; increased.
   b. decreased; decreased; decreased.
   c. decreased; increased; decreased.
   d. increased; decreased; increased.
   e. none of the above.

Suppose that borrowers and lenders agree to a 20 year loan at a fixed interest rate of 7%. At the time they make the loan, they expect inflation to average 2% over the next 20 years.

8. Based on this information, the expected real interest rate is
   a. 3.5%  b. 5  c. 7%  d. 9%

9. Based on the equation of exchange and the determinants of the inflation rate, lenders that agreed to the above 20 year loan would be made worse off if the Fed _____ the growth rate of the money supply or the growth rate in real GDP _____.
   a. increased; decreased.
   b. decreased; increased.
   c. increased; increased.
   d. decreased; decreased.
For the next 3 questions, round your answers to the nearest dollar.

10. If you deposit $1000 in a savings account for 5 years at 6% interest, what will your account balance be at the end of the 5 years?

11. If you want a $2000 balance in your savings account 20 years from today, how much must you deposit in the bank today if the nominal interest rate is 6%?

12. If you promised to pay the bank $1000 per year for 2 years with the first payment to be made one year from today, what is the most the bank would lend you if it charges you a 10% interest rate on the loan?

To answer the next 3 questions, suppose that your life is split into two periods -- this year and next year. You earn $40,000 this year and $20,000 next year. Unless told otherwise, round all of your answers to the nearest dollar.

13. What is your wealth today assuming a 6% interest rate?

14. Assuming that you can borrow or lend at 6% interest, how much can you consume next year if you consume $30,000 this year?

15. If you wish to “smooth out” consumption (i.e. have the same level of consumption in each period), how much can you consume in each period?

16. If interest rates increase, the wealth effect will cause borrowers to save (more, less) and savers to save (more, less).
   a. more; more.  b. more; less  c. less; less  d. less more.

17. In the financial markets, the supply of loans is generated by:
   a. saving  b. investment  c. the government deficit  d. both b and c.

18. In the financial markets, the demand for loans is generated by:
   a. saving  b. investment  c. the government deficit  d. both b and c.

19. If consumers become more concerned about future retirement income and choose to permanently increase their level of saving, the result would be that interest rates would ______ and investment would ______.
   a. fall; rise.  b. fall; fall.  c. rise; rise.  d. rise; fall.
To answer the next 3 questions, consider the following investment opportunity. You can purchase a machine today for $45,000. You can rent this machine to a customer for $15,000 per year for each of the next 3 years. At the end of the 3 years, you can scrap the machine and sell it for $8,000. Your first payment will come at the end of the first year. The expected inflation rate is zero.

20. What is the NPV of this investment if the interest rate is 8%? (round your answer to the nearest dollar)

21. The internal rate of return on this project will increase as the scrap value of the machine (increases, decreases) as the purchase price of the machine (increases, decreases), or as the rent on the machine (increases, decreases).
   a. increases; decreases; increases.
   b. increases; decreases; decreases.
   c. decreases; increases; increases.
   d. increases; increases; decreases.

22. Consider a one year bond with a coupon rate of 6 percent, and a maturity value of $10,000. What is the effective yield on this bond if the selling price today is $10,200? (give your answer to the nearest one-tenth of a percent -- e.g. 6.2%).

23. Consider a 5 year zero coupon bond with a maturity value of $10,000. What is the effective yield on this bond if the selling price today is $7,500? (Give your answer to the nearest one-tenth of a percent.)

24. Suppose that a one year bond has a coupon rate of 10 percent, a maturity value of $10,000 and sells for $8,200. If there is a 20% percent chance that the bond issuer will default on the bond, what is the expected yield on this bond? (Give your answer to the nearest one-tenth of a percent.)

25. When the price of a bond is above its maturity value (i.e. the price is “above par”), the yield will be ______ its coupon rate.
   a. greater than. b. less than. c. equal to.

26. If the theory that stock prices equal fundamental values is true, then an increase in a company’s stock price could be caused by:
   a. increases in future expected dividends or higher interest rates.
   b. increases in future expected dividends or lower interest rates.
   c. decreases in future expected dividends or higher interest rates.
   d. decreases in future expected dividends or lower interest rates.

27. If John sells Mary a put option on Ford Motor stock, it is likely that John believes Ford stock prices in the future will be (higher, lower) than Mary believes. If Larry sells Leon a call option on Ford Motor stock, it is likely that Larry believes Ford stock prices in the future will be (higher, lower) than Leon believes.
   a. higher; higher.
   b. higher; lower.
   c. lower; lower.
   d. lower; higher.
28. Suppose it is announced that Ford Motor has just patented a new engine that has 50% higher gas mileage than engines with comparable horsepower. This good news for Ford Motor is likely to cause the price of Ford put options to (rise, fall) and the price of Ford call options to (rise, fall).
   a. rise; rise.          b. rise; fall.          c. fall; fall.          d. fall; rise.

29. Suppose that the yield on one year bonds is currently 6% and the yield on 2 years bonds is 8%. Assuming no risk premium for longer term bonds, this must mean that people believe one year bond rates next year will be ____ percent.

30. Assuming no international trade (i.e. net exports equal 0), when the economy is in equilibrium,
   a. Saving = Investment + Deficit.
   b. Consumption + Investment + Taxes = Consumption + Saving + Government Purchases.
   c. Investment + Taxes = Deficit.
   d. Consumption + Saving + Investment = GDP.

31. If the federal government increases government spending by $100 billion annually and raises taxes by $60 billion annually, the federal budget deficit will:
   a. increase $160.       b. increase $40       c. decrease $40       d. decrease $160

32. Suppose that the federal government has a $100 billion annual deficit and it permanently raises income taxes by $100 billion per year. According to the “majority view” of how deficits affect financial markets:
   a. loan supply and loan demand will decrease by the same amount. This will leave interest rates and investment unchanged.
   b. loan demand will decrease and loan supply will be unchanged. This will cause lower interest rates and increased investment.
   c. loan demand will increase and loan supply will be unchanged. This will cause higher interest rates and increased investment.
   d. loan supply and loan demand will increase by the same amount. This will leave interest rates and investment unchanged.

33. As compared to the majority view of deficits, the minority view is that a reduction in the deficit will:
   a. cause interest rates to fall less and investment to increase less.
   b. cause interest rates to fall more and investment to increase more.
   c. cause interest rates and investment to rise less.
   d. cause interest rates and investment to rise more.

34. If a worker is searching for his first job after graduating from college, he is ____ unemployed. If a worker just lost her job because the product that her employer produced has become obsolete, she is ____ unemployed.
   a. structurally; frictionally.
   b. structurally; cyclically.
   c. frictionally; structurally.
   d. none of the above.

35. If the unemployment rate is below the natural rate of unemployment, the economy is producing _____ the full employment level of output and there will be _____ pressure on real wages
   a. beyond; upward.       b. beyond; downward.       c. below; upward.       d. below; downward.

36. When the economy is at full employment and the unemployment rate equals the natural rate, there is only:
   a. frictional unemployment.
   b. frictional and cyclical unemployment.
   c. frictional and structural unemployment.
   d. structural and cyclical unemployment.
37. Which of the following tax cuts is likely to generate the **least** economic growth in the future?
   a. an income tax cut.
   b. a capital gains tax cut.
   c. an investment tax credit (i.e. a tax cut for those that invest).

38. Which of the following increases in government spending is likely to generate the **least** economic growth in the future?
   a. spending on infrastructure.
   b. spending on research and development.
   c. additional spending on food stamps.
   d. spending on education.
YOUR ANSWERS TO THE QUESTIONS BELOW SHOULD BE BRIEF AND CONCISE. BE SURE TO READ THE QUESTIONS CAREFULLY AND ANSWER ONLY WHAT IS ASKED.

ANSWER ANY 4 OF THE 5 QUESTIONS! (IF YOU ANSWER ALL 5, I WILL GRADE THE FIRST 4). EACH QUESTION IS WORTH 5 POINTS.

1. In testimony before Congress on Tuesday, Alan Greenspan, the Federal Reserve chairman, warned investors and lenders Tuesday against assuming that economic good times would last forever and suggested they could be underestimating the risks confronting the economy's powerful seven-year-old expansion. If this testimony causes consumers to be less optimistic about their future income, how is it likely to affect the level of consumption spending in the economy and the stock prices of companies that produce consumer goods? EXPLAIN the reasoning behind your answer.

   If Greenspan’s announcement makes people less optimistic about their future income, they will increase saving (and decrease consumption) today in order to facilitate consumption smoothing. This decrease in consumption today will drive down the demand for the products of companies that produce consumer goods and reduce their profits. The lower expected profits (and dividends) of these companies will reduce their fundamental values and the price of their stocks will fall.

2. It has been observed that communist economies have experienced less economic growth than free market (capitalist) economies. Provide an explanation for why this might be the case.

   Unlike a capitalist economy, in a communist economy capital is owned by the government and private ownership of capital is prohibited. Since the government owns the capital (business), there is little incentive for people to innovate and search for better (more cost effective) methods for producing since they will not reap the profits of such innovation. In the capitalist economy, firms and their workers are rewarded for any innovations that improve the efficiency and profitability of their companies.

3. Quoting from the 1996 Economic Report of the President: “Investment is a key factor in stimulating growth. Reducing the deficit should ... stimulate private investment.” Define how economic growth is measured and explain why investment is a key factor in stimulating growth.

   Economic growth is measured by real GDP per capita. Investment refers to the purchase of capital goods (such as plant and equipment). With additional investment, the amount of capital in the economy grows and this enhances our capacity to produce goods and services.
4. How does reducing the deficit stimulate private investment? Use your knowledge of financial markets to explain (i.e. refer to supply/demand of loans).

A reduction in the deficit represents a decrease in the demand for loans (shifting D1 to D2). This causes interest rates to fall from $r_0$ to $r_1$ and investment to increase from $I_0$ to $I_1$. The intuition behind this is that, when the deficit falls, the federal government borrows less money and this causes interest rates to fall. The lower interest rates make investment (purchases of capital goods) more profitable.

5. According to the 1996 Economic Report of the President, “.recent evidence strongly argues that the sustainable rate of unemployment has fallen below 6 percent, perhaps to the range of 5.5 to 5.7 percent”. The most recent unemployment statistics place the U.S. unemployment rate at 4.7 percent. If the administration is correct that the “sustainable rate of unemployment” (which we refer to as the natural rate) is between 5.5 and 5.7 percent, is the economy producing above or below the “full employment level”? Would this suggest inflationary pressures in the near future are high or low? Explain.

If the unemployment rate (4.7%) is currently below the “natural rate of unemployment”, the economy is producing beyond the full employment level of output. To the extent that the unemployment rate is too low, there will be upward pressure on wages as firms compete for the scarce workers. These higher wages will drive up firms costs and force them to raise prices in the future. Hence, inflationary pressures would be high if the economy’s unemployment rate is below the natural rate.
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