

Questions 1 – 3 are based on the following information. Output in France is produced using capital and labor. There is initially a fixed amount of capital available (K_0), but the amount of labor may be varied in accordance with market conditions. That is, use the “Classical Model” to answer these questions.

1. What will happen to real wages and real GDP in France if fighting in WWII destroys a large portion of France’s capital stock, but does not injure or kill anyone?
 - a. increase, decrease
 - b. decrease, decrease**
 - c. no change, no change
 - d. decrease, no change
 - e. decrease, increase

2. Suppose as a result of German occupation, French engineers learn how to produce something other than cheese. That is, suppose there is a technological change that increases the marginal product of labor in France. What will happen to the equilibrium quantity of labor and real GDP in France?
 - a. increase, increase**
 - b. increase, decrease
 - c. decrease, increase
 - d. decrease, decrease
 - e. no change, no change

3. What will happen to the equilibrium quantity of labor and real GDP in France if a per-unit tax is imposed on the suppliers of labor?
 - a. increase, increase
 - b. decrease, decrease**
 - c. increase, no change
 - d. decrease, no change
 - e. increase, decrease

Question 4 refers to the following information concerning the production function at a particular firm. Assume the firm can sell as much output as it wants at a price of \$2 / unit.

Hours of Labor	Units of output
0	0
1	8
2	12
3	14
4	15

4. How many hours of labor will this firm hire if the wage is \$4 / hour?
 - a. 0
 - b. 1
 - c. 2
 - d. 3**
 - e. 4

5. According to the substitution effect, as the wage increases
 - a. the opportunity cost of consuming leisure increases**
 - b. people will consume more leisure
 - c. people will work fewer hours
 - d. all of the above
 - e. only (b) and (c)

Questions 6 – 8 refer to following: The working age “population” in this example is 11.

- **Vernon Wormer** has a job as Dean of Faber College.
- **Robert Hoover** is a public defender in Baltimore Maryland, and is good at his job.
- **Greg Marmalard** has no job and has given up on looking for work, as he thinks no one will hire an ex-con involved with Watergate.
- **Donald Schoenstein** lost his job as he was preoccupied by divorce proceedings with Katy, but is looking for another.
- **Eric Stratton** has two jobs – one as a gynecologist, and another as Delta Rush Chairman, and is damn glad to meet you.
- **John Blutarsky** has a job as a Senator.
- **Larry Kroger** is the editor of National Lampoon magazine.
- **Kent Dorfman** works a sensitivity trainer.
- **Mandy Pepperidge** is married to Senator Blutarsky and is a homemaker. She neither has a job nor is looking for work.
- **Babs Jansen** – is a tour guide for Universal Studio. She works part-time, but would rather be working full time.
- **Otis Day** got fired from his last job as a bandleader, and is looking for work with a new band.

6. What is the unemployment rate?

- a. $2 / 9 = 22\%$
- b. $4 / 11 = 36\%$
- c. $3 / 11 = 27\%$
- d. $3 / 9 = 33\%$
- e. $2 / 7 = 29\%$

7. What is the labor force participation rate?

- a. $7 / 11 = 64\%$
- b. $7 / 9 = 78\%$
- c. $8 / 11 = 73\%$
- d. $9 / 11 = 82\%$
- e. $6 / 9 = 67\%$

8. Who is a discouraged worker, and who is underemployed, respectively

- a. Greg, Mandy
- b. Mandy, Babs
- c. **Greg, Babs**
- d. Mandy, Greg
- e. Babs, Otis

9. Assume that the unemployment rate is initially 6%. Now suppose that 10 million immigrants enter the U.S. All of them find jobs without displacing any existing workers from their jobs. As a result,

- a. the unemployment rate will rise because there are now more people in the labor force
- b. the unemployment rate will remain unchanged because the amount of unemployment and the labor force will have changed the same absolute amount
- c. **the unemployment rate will fall because, starting with an initial positive level of unemployment, the amount of employment and the size of the labor force rose by the same absolute amount**
- d. the unemployment rate will rise because new immigrants take jobs away from Americans
- e. both (a) and (d) are correct

10. Which of the following statements about deflation are true?
- deflation benefits lenders
 - deflation benefits borrowers
 - only unexpected deflation benefits borrowers
 - only unexpected deflation benefits lenders**
 - none of the above are true
11. Suppose initially, the nominal interest rate is 10% and expected inflation is 3%. However, actual inflation turns out to be only 1%. (You may assume that there is no default premium.) Given all of this information, what was the ex-ante real interest rate?
- 7%**
 - 9%
 - 10%
 - 11%
 - 13%
12. Suppose you buy a federal government bond for \$1000. It promises to pay \$1060 to the holder of the bond one year from the date of purchase, i.e. it “matures” on that date. Between the day you buy it, and the day it matures, is it possible for the market price of the bond to fall?
- Yes, as it would if the real interest rate rose
 - Yes, as it would if the expected inflation rate rose
 - No, not unless there was some chance the federal government would default on this bond
 - Both (a) and (b) are correct**
 - None of the above
13. You own an American car, which is expected to last 5 years, and a Japanese car, which is expected to last 10 years. At the initial rate of interest, both have the same market price. If the interest rate falls, which of the following is true?
- the price of both cars will rise, and the price of the American car will rise relative to the price of the Japanese Car.
 - the price of both cars will rise, but the price of the American car will fall relative to the price of the Japanese Car**
 - the price of both cars will fall, and the price of the American car will rise relative to the price of the Japanese Car
 - the price of both cars will fall, but the price of the American car will fall relative to the price of the Japanese Car
 - the price of both cars will fall, but the relative prices of the two cars will not change
14. Suppose the real interest rate is 6% and the expected inflation rate is 4% and the default premium is 4%. The nominal interest rate will be
- 6%
 - 8%
 - 10%
 - 16%
 - none of the above**

Questions 15 - 17 refer to the following. Today's date is March 3rd, 2004. Your name is Uncle Jesse, and you live on a farm in Hazard County, Georgia. Since you are a little short on money to make your mortgage payments, you decide to sell the General Lee to Boss Hogg. Boss Hogg offers you these three options.

- A -- \$1200 on March 3rd, 2005 and every March 3rd thereafter, forever
- B -- \$3000 on March 3rd, 2005
- C -- \$1500 on March 3rd, 2004 (today)

For simplicity, assume that Boss Hogg is happy to let you (or someone else) sell the rights to receive these payments to anyone else. That is, choose based on the present value of the options.

15. If the interest rate is 200% you will:
- a. Choose A
 - b. Choose B
 - c. **Choose C**
 - d. Be indifferent between A and B
 - e. Be indifferent between B and C
16. If the interest rate is 100%, you will:
- a. Choose A
 - b. Choose B
 - c. Choose C
 - d. Be indifferent between A and B
 - e. **Be indifferent between B and C**
17. If the interest rate is 50%, you will:
- a. **Choose A**
 - b. Choose B
 - c. Choose C
 - d. Be indifferent between A and C
 - e. Be indifferent between B and C
18. If you are given a choice between receiving \$100 now or \$200 in one year, you should:
- a. Choose the \$200 if the interest rate is more than 100%
 - b. Choose the \$100 if the interest rate is less than 100%
 - c. **Be indifferent between them if the interest rate is exactly 100%**
 - d. All of the above
 - e. None of the above
19. The amount of investment, I , in our model, can be properly thought of as
- a. money spent to purchase existing financial instruments such as stocks and bonds
 - b. money that firms are borrowing in order to purchase more capital
 - c. foregone current consumption in return for higher future consumption
 - d. **only (b) and (c)**
 - e. all of the above

Short Answer – you must answer all of the questions below. Point values are indicated

Suppose two economies, called the North and the South, are identical in every way. Now, suppose as a result of an event called the “Civil War”, a large quantity of capital is destroyed in the South.

1A. (2 pts) Which economy will have the lower GDP after the Civil War?

The South. They have a lower capital stock.

1B. (5 pts) After the Civil War, will one of the economies grow faster than the other? If so, which one and why? If not, why not?

The South will grow faster than the North. We know as an economy gets closer to the steady state level of capital, the growth rate of GDP will slow (and eventually stop). Since the economies are otherwise identical, and since the North is closer to K^* than the South is, the North will grow slower than the South.

2. (3 pts) According to the Solow Growth model with no technological change, what is the (algebraic) expression for the change in the capital stock?

$$\Delta K = s * Y - d * K$$

3. (5 pts) Suppose you are considering investing \$100 in a project that will produce \$120 of revenue next year. The real interest rate is 5%, and expected inflation is 4%. You ask your trusted economist friend, she tells you the investment is profitable (she’s right). Now, just before you undergo the investment project, expected inflation increases to 95%. Is the investment project profitable after this change? Justify your answer briefly.

The investment is still profitable. You could do some math, but you don’t have to.

$P = \$120 / (1.09) = \110 (roughly). The original project is profitable, and $R = 9\%$.

After the change, $R = r + \pi_e = 5\% + 95\% = 100\%$. But it is also the case that expected revenue of the project will increase if expected inflation increases. It won’t be $\$120 / (1 + 1) = \60 . This neglects the increase in revenue associated with inflation. Expected revenue will nearly double.

Another way to answer the question is to say the following – savings and investment decisions depend on the real interest rate (not the nominal interest rate). So long as r is still 5%, the profitability of the project is unaffected by the change in the nominal interest rate.

You have some leeway – if you told a plausible story about why revenue wouldn’t change or why the real interest rate would change, you may be ok.

4. (3 pts) Do you agree or disagree with the following statement. Explain briefly.

“In the Solow growth model with no technical progress, accumulating capital can lead to perpetual economic growth.”

The statement is incorrect. Accumulating capital will cause growth for a while, but eventually the economy will reach the steady state level and economic growth will stop. That is, growth caused by capital (assuming no technical progress) can not be perpetual.

A bit of leeway here as well. Normally, we would assume the amount of labor is fixed. If you suggested the amount of labor were to increase, you could get perpetual economic growth. You would have to mention this to get credit explicitly.

5. (6 pts) Use the space below to draw a picture of the Solow Growth model. Be sure to label your axes and label any relevant curves. Indicate the steady state level of capital and the steady state level of GDP.

You could label sY “investment” and dK “depreciation” if you like. See picture below.

