Problem Set #1 ANSWERS

Due Tuesday, February 12, 2008

Problem Sets MUST be word-processed except for graphs and equations.

QUESTIONS

A. Multiple Choice Questions. Circle the letter corresponding to the best answer. (1 points each.)

1. Positive analysis of economic policy:
   a. Examines the economic consequences of policies but does not address the question of whether those consequences are desirable.
   b. Examines the economic consequences of policies and addresses the question of whether those consequences are desirable.
   c. Generates less agreement among economists than normative analysis.
   d. Is rare in questions of economic policy.

2. Because government services are not sold in markets:
   a. They are excluded from measurement of GDP.
   b. The government tries to estimate their market value and uses this to measure the government’s contribution to GDP.
   c. They are valued at their cost of production. [Correct Answer]
   d. Taxes are used to value their contribution.

3. An adverse supply shock would:
   a. Shift the production function up and decrease marginal products at every level of employment.
   b. Shift the production function down and decrease marginal products at every level of employment. [Correct Answer]
   c. Shift the production function down and increase marginal products at every level of employment.
   d. Shift the production function up and increase marginal products at every level of employment.

4. Which of the following events would lead to an increase in the marginal product of labor for every quantity of labor?
   a. An increase in the real wage.
   b. A decrease in the real wage.
   c. A favorable supply shock such as a fall in the price of oil. [Correct Answer]
   d. An adverse supply shock such as a reduced supply of raw materials.
5. As a result of the superb economics essay that you wrote during this semester, you won the Adam Smith prize of $100. The receipt of these funds would be an example of:

a. The substitution effect being stronger than the income effect.
b. The income effect being stronger than the substitution effect.
c. **A pure income effect.**
d. A pure substitution effect.

6. A tremendous flood along the Mississippi River destroys thousands of factories, reducing the nation’s capital stock by 5%. What happens to current employment and the real wage rate?

a. Both employment and the real wage rate would increase.
b. **Both employment and the real wage rate would decrease.**
c. Employment would increase and the real wage rate would decrease.
d. Employment would decrease and the real wage rate would increase.

7. When a person gets an increase in current income, what is likely to happen to consumption and saving?

a. Consumption increases and saving increases.
b. Consumption increases and saving decreases.
c. Consumption decreases and saving increases.
d. Consumption decreases and saving decreases.

8. Suppose your company is in equilibrium with its capital stock at its desired level. A permanent decline in the expected interest rate now has what effect on your capital stock?

a. Raises it because the future marginal productivity of capital is higher.
b. Lowers it because the future marginal productivity of capital is lower.
c. **Raises it because the user cost of capital is now lower.**
d. Lowers it because the user cost of capital is now higher.

9. The saving-investment diagram shows that a higher real interest rate due to a leftward shift of the saving curve:

a. Raises the profitability of investment for firms.
b. Causes the amount of firms’ investment to increase.
c. Increases the total amount of saving because of the increase in the real interest rate.
d. **Causes the total amounts of saving and investment to fall.**

10. A temporary supply shock, such as a drought, would:

a. Increase the marginal productivity of capital and increase desired investment.
b. Decrease the marginal productivity of capital and decrease desired investment.
c. **Have little or no effect on desired investment.**
d. Decrease both the marginal productivity of capital and the marginal productivity of labor in the long-term future.
B. Answer BOTH of the following questions in the space below.

1. **Production Functions and Labor Market Equilibrium.** In 1995 an earthquake in Kobe, Japan destroyed thousands of factories, reducing the nation’s capital stock by 10%.

   a. Based only on this information, use Production Function and Labor Market diagrams to accurately and clearly show:

   1. Japan’s initial economic situation (before the earthquake), and

   2. The effects the earthquake had on Japan’s economic output, employment, and the real wage rate.
b. Provide a brief economic explanation of the changes you showed in your diagrams above. Be sure to discuss what happens to economic output, employment, and the real wage rate.

Japan’s initial equilibrium situation is with economic output at $Y_0$, with employment at $N_0$, and with real wages at $w_0$.

The earthquake destroyed 10% of the nation’s capital stock so $K_1 < K_0$. The decline in the capital stock is an adverse supply shock and can be represented by a downward shift of the production function. At every level of employment, the economy is now able to produce less output than it was before because of the lower capital stock (assuming productivity, $A$, has not changed).

The decline in the production function also reduces the marginal productivity of labor. Because the marginal productivity of labor is the same as the demand for labor, the demand for labor also declines at every real wage rate. This can be represented by a leftward shift of the demand for labor curve.

At the initial real wage rate, $w_0$, the supply of labor now exceeds the demand for labor. This causes the real wage rate to decline. The decline in the real wage rate will cause the supply of labor to decline (along the supply of labor curve) and the demand for labor to increase (along the new demand for labor curve). Once the real wage rate reaches $w_1$, the supply and demand for labor will again be in equilibrium at $N_1 < N_0$. Because the number of workers has declined, economic output will decline along the new, lower production function to $Y_1 < Y_0$.

The economy’s final equilibrium will be with economic output at $Y_1 < Y_0$, with employment at $N_1 < N_0$, and the real wage will be lower at $w_1 < w_0$.  
2. **Saving-Investment Diagram.** As part of an economic stimulus package, the government is going to reduce the effective marginal tax rate on capital.

   a. Based only on this information, use a Saving-Investment diagram to accurately and clearly show:

      1. The economy’s initial economic situation (before the change in tax rates).

      2. The effects that a reduction in the effective marginal tax rate on capital will have on saving, investment, and the real interest rate.

   b. Provide a brief economic explanation of the changes you showed in your diagram above. Be sure to discuss what happens to saving, investment, and the real interest rate.

   The economy’s initial equilibrium situation is with desired saving at $S^d_0$, desired investment at $I^d_0$, and expected real interest rates at $r_0$.

   The reduction in the effective marginal tax rate on capital reduces the user cost of capital. This will increase the desired capital stock and increase desired investment at every expected real interest rate level. This can be represented by a rightward shift of the desired investment curve.

   At the initial expected real interest rate, $r_0$, desired investment now exceeds desired saving. This forces the expected real interest rate up to $r_1$. As the expected real interest rates rises, desired savings will increase (along the desired savings curve) and desired investment will decrease (along the new desired investment curve). Once the expected real interest rate reaches $r_1$, desired saving and desired investment will again be in equilibrium, i.e., $S^d_1 = I^d_1$.

   The economy’s final equilibrium situation is with desired saving at $S^d_1 > S^d_0$, with desired investment at $I^d_1 > I^d_0$, with $S^d_1 = I^d_1$, and with the expected real interest rate at $r_1 > r_0$. 