
14.02 Principles of Macroeconomics
Problem Set 2
Spring 2003

Distributed Wednesday, March 12
Due Wednesday, March 19 in class

PLEASE FILL IN THE BLANKS BELOW AND ATTACH THIS COVER SHEET TO THE FRONT OF YOUR COMPLETED PROBLEM SET.

NAME: _____

MIT ID NUMBER: _____

TA: _____

CLASS TIME: _____

Part 1:

Answer true, false, or uncertain and explain your answer.

1. On average, in the United States, the number of people who change their jobs in a given year is greater than the number of people who are unemployed at any one time.
2. In an economy dominated by monopolies, the markup will be high. (Think of the presence of monopolies being equivalent to a lack of competition.)
3. If we want to consider the effects of price changes in the short run, we can use the IS-LM model.
4. The government of Macronesia decides to permanently increase unemployment benefits. The AS-AD model shows that there will be a short run effect on output, but no medium run effect.
5. Suppose workers and firms all perfectly anticipate changes in the money supply, know exactly when they will happen, and are able to change prices and wages immediately. In this environment, monetary policy will no longer have an effect on output even in the short run.
6. An increase in the interest rate leads workers to ask for higher wages, leading to a shift of the wage setting curve.
7. Increases in the marginal propensity to save decrease output in the short run, is neutral in the medium run, and may be beneficial in the long run through their positive effect on capital accumulation.
8. The president's political adviser says that war with Iraq will cause oil prices to increase only temporarily. He says that when prices drop to their original level, the AS curve will move back to where it was, and output will also return to its original level. If this is the case, the economy will have lost nothing in the process.

Part 2:

In our favorite country, Macronesia, there are 100 people. The table below describes these people.

Not in labor force:

Kids: 25

No job, of working age, not looking: 20

In labor force:

Employed: 50

No job, but looking: 5

- 1) What is the unemployment rate in this economy?
- 2) What would the unemployment rate be if half the employed lost their jobs and all 30 of the unemployed decided that there was no hope of finding work in Macronesia, leading them to stop looking for work? What does this tell us about the usefulness of unemployment as an indicator of labor market health?

Consider a nearby country, Macronesia2, which has a high proportion of children in the economy.

Not in labor force:

Kids: 55

No job, of working age, not looking: 20

In labor force:

Employed: 20

No job, but looking: 5

- 3) Suppose real GDP is 5000 in Macronesia and 4000 in Macronesia2. So per capita GDP is 50 in Macronesia and 40 in Macronesia2. Does this imply that Macronesia is more productive than Macronesia2? Why or why not?

Go back to plain old Macronesia. Assume each worker produces \$100 of real output. Take the wage-setting relation in the labor market to be described by the following equation, where Z is proportional to unemployment insurance levels and u is unemployment:

$$\frac{W}{P^e} = Z - 50u$$

Assume the markup, μ , is 1 and that $Z = 1$.

- 4) What is the natural level of unemployment in this economy and the natural level of output in Macronesia (given that each worker produces \$100 in output)?
- 5) Show on a graph the comparison between the real wage and unemployment for $\mu = 1$ and the case of perfect competition. What is the effect on the unemployment rate?
- 6) What happens to unemployment and output when the Macronesian government decides to raise unemployment insurance such that Z increases from 1 to 2? Show your answer both in terms of algebra and a graph.
- 7) In the medium run when $P = P^e$, what happens to wages, the rate of unemployment, unemployment, and employment in Macronesia² when 10 of the kids grow up and enter the labor force?

Part 3:

After all its success with short-run policy in IS-LM, Macronesia is feeling good about itself and decides it wants to acquire an empire. It decides to try to conquer half of the rest of the world. Consider there to be two effects of this imperialism on the Macronesian economy: 1) Increased spending on the military buildup and 2) an increased cost of production due to restrictions on travel within Macronesia.

1. Assuming the economy starts at the natural level of output and unemployment, shows what happens to the AS and AD curves. Explain in words what happens in the short run. When you draw the curves, assume that the overall effect on output is to decrease it in the short run.
2. Now consider what changes as the economy moves to the new natural level of output. Does the price increase further or decrease from the short to the medium run? What happens to output? Can we tell in the AS-AD framework? Show on a graph.
3. Summarize the short-run and medium-run effects of this combination of the two assumed effects.
4. What effect does the change in military spending have on the medium run level of output?
5. What happens to the price level during wartime in the Macronesian economy? What would be appropriate monetary and fiscal policies to change the movement in the price level? What trade-offs do the policy makers face?