

14.02 Fundamentals of Macroeconomics

Problem Set 5

1. *Aggregate Supply*

Consider the standard labor market equilibrium:

$$W = P_t^e F(u, z)$$

$$P_t = W(1 + \mu) \quad Y = \alpha N$$

a. Write down the equation for aggregate supply, relating P to Y . Draw aggregate supply in (P, Y) space. What is the price level which corresponds with the natural level of output? Give the intuition for the slope of the AS curve.

b. What happens to the aggregate supply curve when labor unionization falls? How will the Clinton 1996/97 welfare reforms affect the AS curve?

c. What happens to the aggregate supply curve when anti-trust legislation is passed to limit monopolies?

d. What happens to the aggregate supply curve when the expected price level increases?

e. Assume that expectations are backward looking ($P_t^e = P_{t-1}$). Using the AS curve as a guide, where is output relative to its natural level when the price level is higher than the previous period's price level? Give the intuition behind this.

f. The "bare-bones" IS-LM framework described in chapters 1-6 allowed us to ignore aggregate supply. Why was this? Draw the aggregate supply curve assumed in the "bare-bones" IS/LM model of chapters 1-6 in (P, Y) space.

2. *Aggregate Demand*

Consider the standard IS/LM relationships:

$$\text{IS: } Y = C + I + G = [c_0 + c_1(Y - T)] + [a_0 Y - a_1 i] + G$$

$$\text{LM: } M/P = b_0 Y - b_1 i$$

a. Write down the equation for the aggregate demand curve (i.e., Y is a function of exogenous or predetermined variables). Draw aggregate demand in (P, Y) space. Give the intuition behind the slope of the aggregate demand (AD) curve.

b. How does an increase in government expenditure affect the AD curve? Show this in (P, Y) space. Assume a supply curve described in question 1f. If G increase by 100 units, what is dY ?

c. How does an expansionary monetary policy affect the AD curve? Illustrate your response graphically.

d. How do the proliferation of credit cards (and other financial innovations making money less desirable as a means of transaction) affect the AD curve? Illustrate your response graphically.

3. *Equilibrium in the Short Run and Long Run: AS + AD*

Consider the AS and AD relationships described in questions 1 and 2. In addition assume that expectations are backward looking.

a. Assume AS and AD intersect at a point (P^*, Y^*) where Y^* is greater than Y_n . Label the intersection accordingly. label P_e in this diagram. Show graphically using the AS/AD framework and explain briefly the process through which equilibrium (P, Y) will converge to (P_n, Y_n) in the long run.

b. Now assume the intersection of AS and AD is at (P_n, Y_n) . The Federal Reserve decreases interest rates. Show graphically and describe in words the immediate impact on AS and AD; label this equilibrium (P', Y') . What is the immediate impact on price level and output? Show graphically using AS/AD the transition from (P', Y') to (P_n, Y_n) . Describe in words this transition from (P', Y') to (P_n, Y_n) .

c. Use the IS/LM framework to show graphically the above transition from Y_n to Y' to Y_n .

d. What do the results in 3b and 3c imply about the neutrality of money in the long-run?

e. Assume again the intersection of AS and AD is at (P_n, Y_n) . There is a sudden drop in consumer confidence due to people's expectations of a decline in their non-human wealth (say through a bursting stock market bubble). Show graphically and describe in words the immediate impact on AS and AD; label this equilibrium (P'', Y'') . What is the immediate impact on price level and output? Show graphically using AS/AD the transition from (P'', Y'') to (P_n, Y_n) . Describe in words this transition from (P'', Y'') to (P_n, Y_n) .

f. Use the IS/LM framework to show graphically the above transition from Y_n to Y'' to Y_n .