



Week 3 Homework Assignment

You are to work alone to analyze and prepare answers/solutions for the following questions. The text should be your primary source of information throughout this course.

Consolidate your responses into one file and submit it to your instructor **not later than Sunday Midnight central time**. Name your file with your name and the week number, i.e. JonesWeek3. Your file should be in either Microsoft word (*.doc) or rich text (*.rtf) format.

Submit your assignment by attaching it into the Dropbox, by clicking on the Dropbox tab at the top of the course frame and choosing the current week assignment. **Do not paste your answers into the Dropbox!** Your Homework is worth 20 points. Good luck!

Homework Assignment

Ending each chapter and appendix in the text are the chapter summary, review questions and problems. You are to review the chapter summary and then prepare answers to the following problems:

Chapter 8. Problem 1 (a through e)

Chapter 9. Problems 4

Problems



Visit www.MyEconLab.com to complete these or similar exercises.

*Indicates that the problem requires the Appendix to Chapter 4.

1. You are given the following equations for the aggregate demand (AD) and short-run aggregate supply (SAS) curves:

$$AD: Y = 1.25A_p' + 2.5M^s/P$$

$$SAS: Y = 11,250 - 20W + 1,000P$$

where Y is real GDP, A_p' is the amount of autonomous planned spending that is independent of the interest rate, M^s is the nominal money supply, P is the price level, and W is the nominal wage rate. Assume that A_p' equals 5,000, M^s equals 2,000, W equals 50, and natural real GDP, Y^N , equals 11,250.

- Use the values for the amounts of autonomous planned spending that is independent of the interest rate and the nominal money supply to derive the equation for the aggregate demand curve. Compute the amount of aggregate demand when the price level equals 2.0, 1.25, 1.0, 0.8, and 0.5. Graph the aggregate demand curve.
- Derive the equation for the short-run aggregate supply curve, given that the nominal wage rate equals 50. Compute the amount of short-run aggregate supply when the price level equals 2.0, 1.25, 1.0, 0.8, and 0.5. Graph the short-run aggregate supply curve.
- Given your answers to parts a and b, explain what the short-run and long-run equilibrium levels of real GDP and the price level are.
- Given your answers to part c, explain what the equilibrium real wage rate is.
- Suppose that autonomous planned spending increases by 800 billion so that $A_p' = 5,800$. Explain if this increase is the result of increased willingness of financial market firms to lend to consumers and business firms or a collapse in the housing market, which reduces household wealth and housing construction. Derive the new equation for the aggregate demand curve. Compute the new amount of aggregate demand when the price level equals 2.0, 1.25, 1.0, 0.8, and 0.5. Graph the new aggregate demand curve.
- Given your graphs in parts b and e, explain what the new short-run equilibrium values of real GDP and the price level approximately are. (Note: You can find the exact equilibrium values of the real GDP and price level by setting the equation for the new aggregate demand curve equal to the equation for the short-run aggregate supply curve and solve for the price level. Solving for the

price level requires that you find the roots of a quadratic equation.)

- Explain what the new long-run equilibrium real GDP and equilibrium price level are, given the increase in aggregate demand. Explain how the short-run aggregate supply curve shifts as the economy adjusts to the new long-run equilibrium. Compute the new nominal wage rate at the new long-run equilibrium price level and derive the new short-run aggregate supply curve, given the new nominal wage rate.
 - Suppose policymakers want to prevent a rise in the price level that would otherwise result from the increase in planned spending. Explain by how much fiscal policymakers would have to reduce planned spending in order to prevent a rise in the price level. Explain by how much monetary policymakers would have to decrease the nominal money supply in order to prevent a rise in the price level.
2. Use the information given at the start of problem 1.
- Suppose that autonomous planned spending decreases by 1,000 billion so that $A_p' = 4,000$. Explain if this decrease is the result of increased willingness of financial market firms to lend to consumers and business firms or a collapse in the housing market, which reduces household wealth and housing construction. Derive the new equation for the aggregate demand curve. Compute the new amount of aggregate demand when the price level equals 2.0, 1.25, 1.0, 0.8, and 0.5. Graph the new aggregate demand curve.
 - Given your graphs in part a of this problem and part b of problem 1, explain what the new short-run equilibrium values of real GDP and the price level approximately are. (Note: Again you can find the exact equilibrium values of the real GDP and price level by proceeding as you did for part f of problem 1.)
 - Explain what the new long-run equilibrium real GDP and equilibrium price level are, given the decrease in aggregate demand. Explain how the short-run aggregate supply curve shifts as the economy adjusts to the new long-run equilibrium. Compute the new nominal wage rate at the new long-run equilibrium price level and derive the new short-run aggregate supply curve, given the new nominal wage rate.
 - Suppose policymakers want to prevent a rise in unemployment that would otherwise result from the drop in planned spending. Explain by how

- Phillips Curve for the second period when the inflation rate equals 0, 1, 2, 3, 4, and 5, given the expected inflation rate in the second period. Graph the short-run Phillips Curve for the second period.
- (b) If monetary policymakers wish to reduce the rate of inflation to 2 percent in the second period, what must they reduce the growth rate of the nominal GDP to in the second period and what is the output ratio at the end of the second period, given the monetary contraction?
- (c) What is the expected inflation rate in the third period? Compute points on the new short-run Phillips Curve for the third period when the inflation rate equals 0, 1, 2, 3, 4, and 5, given the expected inflation rate in the third period. Graph the short-run Phillips Curve for the third period. In order to maintain an inflation rate of 2 percent in the third period, explain why the growth rate in nominal GDP would have to be greater than 2 percent in the third period. What would the growth rate of nominal GDP have to be the long run in order to maintain an inflation rate equal to 2 percent?

Suppose that monetary policymakers have been able to establish a record of maintaining inflation at 2 percent. As a result, workers and employers expect that any increase or decrease in the inflation rate is only temporary because monetary policymakers take steps to change the growth rate of nominal GDP so as to quickly restore inflation to its long-run equilibrium level of 2 percent.

- (d) Given the expectation that any increase or decrease in the inflation rate is only temporary, does the short-run Phillips Curve shift up or down when the actual inflation rate deviates from the expected inflation rate?
- (e) Given your answer to part d, what must monetary policymakers reduce the growth rate of the nominal GDP to in the second period in order to reduce the inflation rate to 2 percent and what is the output ratio at the end of the second period, given the monetary contraction? What would the growth rate of nominal GDP have to be in the third period in order to maintain an inflation rate of 2 percent?

- (f) Explain why your answers to parts b, c, and e are different.

4. The purpose of this problem is to study the sacrifice ratio. Suppose that initially actual and natural real GDP both equal 11,000 and that the rate of inflation is 3.5 percent. Natural real GDP grows by 3 percent per year over the next five years. Actual real GDP decreases by 2 percent in the first year, but then grows by 4 percent in the second year, 5.5 percent in the third year, 4.2 percent in the fourth year, and 3.5 percent in the fifth year. Inflation in years 1–5 equals 3.1 percent, 2.2 percent, 1.6 percent, 1.3 percent, and 1.1 percent, respectively.
- (a) Calculate natural real GDP for years 1–5.
- (b) Calculate actual real GDP for years 1–5.
- (c) Calculate the output ratio for years 1–5.
- (d) Calculate the cumulative loss of output for years 1–5.
- (e) Calculate the sacrifice ratio.
5. Suppose that natural real GDP is constant. For every 1 percent increase in the rate of inflation above its expected level, firms are willing to increase real GDP by 2 percent. The output ratio is initially 100 and the inflation rate equals 2 percent.
- (a) Based upon the preceding information, draw the short-run Phillips Curve.
- (b) What is the growth rate of nominal GDP in the economy?
- An adverse supply shock raises the inflation rate associated with every output ratio by 3 percentage points.
- (c) Draw the new short-run Phillips Curve.
- (d) The government chooses to follow a neutral policy in response to this shock. What will be the growth rate of nominal GDP? What will be the new rate of inflation? What will be the output ratio?
- (e) If the government chooses to follow an accommodating policy, what would be the new inflation rate? The output ratio? The growth rate of nominal GDP?
- (f) If the government chooses to follow an extinguishing policy, what would be the new inflation rate? The output ratio? The growth rate of nominal GDP?

SELF-TEST ANSWERS

- p. 271. (1) Everywhere to the right of 100 percent actual inflation is greater than expected inflation (for instance, actual inflation of 3 percent at E_1 is greater than expected inflation of $p^e = 0$ along the SP_0 line). (2) Everywhere to the left of 100 percent actual inflation is less than expected inflation. (3) Only at 100 percent is expected inflation correct.

- p. 273. (1) A decline in aggregate demand moves the economy to the left of point E_3 , down along the SP_1 curve. (2) When real GDP declines from 100 to 94, the actual inflation rate drops to zero, and is now below the 3 percent inflation rate expected everywhere along the SP_1 curve. Eventually the expected inflation rate will decline as well, shifting