

1. The economy of Micanapy is in short-run equilibrium and is experiencing an inflationary gap.

Part A

Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves for Micanapy, and show each of the following.

- i. The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
- ii. The full-employment real output, labeled Y_F

Part B

Assume that policymakers take no action to close the inflationary gap. Explain how Micanapy's economy will self-adjust to full employment in the long run.

Part C

Suppose instead that Micanapy's central bank is considering using monetary policy to close the inflationary gap in the short run. The banking system in Micanapy has limited reserves.

- i. Identify a specific open-market operation that the central bank of Micanapy would implement to close the inflationary gap in the short run.
- ii. Draw a correctly labeled graph of the money market in Micanapy, and show the effect of the open-market operation identified in part C (i) on the nominal interest rate.

Part D

Based solely on the interest rate change shown on your graph in part C (ii), will each of the following increase, decrease, or remain the same in the short run?

- i. International financial capital flows into Micanapy. Explain.
- ii. The price of previously issued bonds in Micanapy
- iii. Private domestic investment spending in Micanapy

Part E

Based solely on the change in private domestic investment spending identified in part D (iii), will the unemployment rate in Micanapy increase, decrease, or remain the same in the short run? Explain.

2. The economies of Country L and Country A are currently in short-run equilibrium at output levels below full employment. Both countries intend to use monetary policy to close their output gaps. Country L has a banking system with limited reserves, and Country A has a banking system with ample reserves.

- A. What open-market operation would Country L implement to move the economy toward full employment in the short run?
- B. What specific monetary policy action would Country A implement to move the economy toward full employment in the short run?
- C. Draw a correctly labeled graph of the reserve market in Country A, and show the effect of the monetary policy action identified in part B on the policy rate.
- D. Assume instead that no policy actions are taken in Country A and that the economy remains in short-run equilibrium at an output level below full employment. Will short-run aggregate supply in Country A increase, decrease, or remain the same as the economy self-adjusts in the long run? Explain.

2. The table provided shows economic data for the country of Louland. The base year is year 1, and the GDP deflator in year 2 is 115.

	Year 1	Year 2
Nominal GDP	800,000	1,035,000
Population	1,000	1,200

- (a) Calculate real GDP in Louland in year 2. Show your work.
- (b) How would the change in real GDP from year 1 to year 2 affect the demand for money and the nominal interest rate in Louland?
- (c) Did the standard of living of the average citizen in Louland increase, decrease, or remain the same from year 1 to year 2 ? Explain using numbers.
- (d) What was the numerical value of the inflation rate from year 1 to year 2 ?
- (e) If nominal wages increased by 10% from year 1 to year 2, what happened to the real wages of workers in Louland during this time? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

2. Assume that commercial banks must hold a minimum of 20% of their deposits as reserves. Now suppose that the central bank of the country sells \$100,000 of government bonds to commercial banks.
- (a) Calculate the maximum change and state the direction of change in the money supply as a result of the central bank bond sale. Show your work.
- (b) Draw a correctly labeled graph of the money market and show the effect of the change in the money supply identified in part (a) on the nominal interest rate.
- (c) Given the change in the money supply in part (a), if the velocity of money is constant, what will happen to the nominal gross domestic product? Explain.
- (d) Based on the change in the nominal gross domestic product in part (c), what happens to the price level if the real gross domestic product is constant?

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1. Assume the United States economy is in short-run macroeconomic equilibrium at an output level greater than potential output.
- (a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.
- (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1 , respectively
 - (ii) The full-employment output, labeled as Y_F
- (b) Assume government spending increases by \$100 billion. On your graph in part (a), show the short-run effect of the change in government spending on the equilibrium real output and price level. Label the new equilibrium output as Y_2 and the new equilibrium price level as PL_2 .
- (c) Assume the marginal propensity to consume is 0.8. As a result of the increase in government spending, what is the numerical value of the maximum change in each of the following in the short run?
- (i) Real output
 - (ii) Household savings
- (d) Draw a correctly labeled graph of the money market and show the effect of the change in real output identified in part (c)(i) on the equilibrium nominal interest rate.
- (e) Based on the change in the nominal interest rate shown in part (d), what will happen to the prices of previously issued bonds in the short run?
- (f) The United States and the European Union are trading partners with flexible exchange rates. The currency in the United States is the dollar, and the currency in the European Union is the euro. Assume the inflation rate in the United States increases relative to the inflation rate in the European Union. As a result of the change in the United States inflation rate, what will happen to each of the following in the foreign exchange market?
- (i) The demand for dollars. Explain.
 - (ii) The international value of the dollar
- (g) Suppose the Federal Reserve attempts to keep the value of the dollar constant in the foreign exchange market. Based on the change in the value of the dollar in part (f)(ii), should the Federal Reserve buy or sell each of the following?
- (i) The euro
 - (ii) The dollar

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1. Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.
- (a) Draw a correctly labeled graph of the aggregate demand, short-run aggregate supply, and long-run aggregate supply curves, and show each of the following.
- (i) The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
 - (ii) The full-employment output, labeled Y_F
- (b) Assume Smithland's government cuts individual income taxes. On your graph in part (a), show the short-run effect of the tax cut on equilibrium real output, labeling the new short-run equilibrium real output Y_2 .
- (c) Based solely on the change in real output on your graph in part (b), what will happen to each of the following in the short run?
- (i) The natural rate of unemployment
 - (ii) Nominal interest rates. Explain.
- (d) Assume instead the central bank intervenes to correct an inflationary output gap. What open-market operation should the central bank take?
- (e) Draw a correctly labeled graph of the money market, and show the effect of the open-market operation identified in part (d) on the nominal interest rate.
- (f) Based solely on the interest rate change identified in part (e), what will happen to the international value of Smithland's currency in the foreign exchange market? Explain.
- (g) Based solely on the exchange rate change identified in part (f), will Smithland's imports increase, decrease, or remain the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

MACROECONOMICS**Section II****Total Time—1 hour****Reading Period—10 minutes****Writing Period—50 minutes**

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Canada is an open economy that is currently in a recessionary output gap.
 - (a) Draw a correctly labeled graph of the long-run aggregate supply, short-run aggregate supply, and aggregate demand curves, and show each of the following.
 - (i) The current equilibrium real output and price level, labeled as Y_1 and PL_1 , respectively
 - (ii) Full-employment output, labeled Y_f
 - (b) The central bank and the government do not take any policy actions to close the output gap.
 - (i) Explain how the economy will adjust to full employment in the long run.
 - (ii) On your graph in part (a), show how the economy adjusts to full employment in the long run.
 - (c) Suppose the Canadian government is unwilling to wait for the long-run adjustment process. The marginal propensity to consume is 0.8. The equilibrium real output is \$500 billion and the full-employment output is \$540 billion.
 - (i) Calculate the minimum change and indicate the direction of change in government spending required to shift the aggregate demand curve by the amount of the output gap.
 - (ii) Calculate the minimum change and indicate the direction of change in taxes required to shift the aggregate demand curve by the amount of the output gap.
 - (d) Assume instead that the Canadian central bank takes actions to restore the economy to full-employment output by influencing investment spending. Draw a correctly labeled graph of the money market, and show the effect of the actions taken by the central bank on the equilibrium interest rate.
 - (e) Canada and Mexico are trading partners. Draw a correctly labeled graph of the foreign exchange market of the Canadian dollar, and show the effect of the change in the interest rate in part (d) on the value of the Canadian dollar with respect to the Mexican peso.

2. Assume that an economy is in long-run equilibrium. Assume that consumers wish to hold less money because they use credit cards more frequently to purchase goods and services than cash.
- (a) Draw a correctly labeled graph of the money market and show the effect of the reduced holdings of money on the equilibrium nominal interest rate in the short run.
 - (b) Based on the change in the interest rate in part (a), what will happen to each of the following in the short run?
 - (i) Prices of previously issued bonds
 - (ii) The price level and real income. Explain.
 - (c) With a constant money supply, based on your answer to part b(ii), will the velocity of money increase, decrease, or remain the same, or is the change indeterminate?
 - (d) If the central bank wishes to reverse the change in the interest rate identified in part (a), what open market operation would it use?
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MACROECONOMICS**Section II****Planning Time—10 minutes****Writing Time—50 minutes**

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Assume that the United States economy is operating below full employment.
 - (a) Draw a correctly labeled graph of long-run aggregate supply, short-run aggregate supply, and aggregate demand, and show each of the following.
 - (i) Current equilibrium output and price level, labeled as Y_1 and PL_1
 - (ii) Full-employment output, labeled as Y_f
 - (b) Assume that the Federal Reserve targets a new federal funds rate to reach full employment. Should the Federal Reserve target a higher or lower federal funds rate?
 - (c) Given the Federal Reserve action you identified in part (b), draw a correctly labeled graph of the money market and show the effect on the nominal interest rate.
 - (d) The policy makers pursue a fiscal policy rather than the monetary policy in part (b). Assume that the marginal propensity to consume is 0.8 and the value of the recessionary gap is \$300 billion.
 - (i) If the government changes its spending without changing taxes to eliminate the recessionary gap, calculate the minimum required change in government spending.
 - (ii) If the government changes taxes without changing government spending to eliminate the recessionary gap, will the minimum required change in taxes be greater than, smaller than, or equal to the minimum required change in government spending in part (d)(i) ? Explain.
 - (e) Assume the government lowers income tax rates to eliminate the recessionary gap. Will each of the following increase, decrease, or stay the same?
 - (i) Aggregate demand. Explain.
 - (ii) Long-run aggregate supply. Explain.

2. The Federal Reserve can influence the supply of money.
 - (a) Assume that the Federal Reserve targets a lower federal funds rate.
 - (i) What open market operation can the Federal Reserve use to achieve the lower target?
 - (ii) Given your answer to part (a)(i), what will happen to the price of government bonds?
 - (b) Using a correctly labeled graph of the money market, show the effect of the open market operation from part (a)(i) on the nominal interest rate.
 - (c) Assume that the Federal Reserve buys government bonds from commercial banks. Based only on this transaction, will the level of required reserves in the commercial banks increase, decrease, or remain the same?
 - (d) Another monetary policy action involves changing the discount rate. Define the discount rate.