

1. Assume that the economy of Barrikos is in short-run equilibrium, with its economic data summarized in the table provided. The government budget is balanced, and the capital and financial account (CFA) balance is zero.

Cyclical unemployment rate	6%
Natural unemployment rate	4%
Structural unemployment rate	1%
Actual inflation rate	3%
Expected inflation rate	5%

- A. What is the numerical value of the actual unemployment rate in Barrikos?
- B. Using the relevant numerical values, draw a correctly labeled graph of the short-run and long-run Phillips curves for Barrikos. Indicate the current short-run equilibrium with a point labeled X. Plot the relevant numerical values on the graph.
- C. Based on your graph in part B, identify one specific fiscal policy action that the government of Barrikos would take to move the economy toward long-run equilibrium.
- D. Assume that the fiscal policy action identified in part C is implemented.
- Will the government budget in Barrikos move into surplus, move into deficit, or remain balanced? Explain.
 - Assume there is no change in inflationary expectations. On your graph in part B, show a possible new short-run equilibrium point, labeled Z, that would result from the fiscal policy action identified in part C.
 - Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part C on the real interest rate.
- E. Barrikos has an open economy and a flexible exchange rate. Based solely on the change in the real interest rate in Barrikos shown on your graph in part D (iii), will Barrikos' capital and financial account (CFA) balance move into surplus, move into deficit, or remain the same? Explain.
- F. Based on the change in Barrikos' capital and financial account (CFA) balance identified in part E, what will happen to the international value of Barrikos' currency? Explain.

1. Assume that the economy of Moneyland is in equilibrium with an actual unemployment rate equal to the natural rate of unemployment.
- (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.
- The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively
 - The full employment output, labeled Y_F
- (b) Assume that consumer spending in Moneyland decreases from \$110,000 to \$100,000 as a result of a decrease in disposable income in Moneyland from \$135,000 to \$110,000.
- Calculate the marginal propensity to consume in Moneyland. Show your work.
 - Show the short-run effect of the decrease in consumer spending in Moneyland on your graph in part (a), labeling the new equilibrium real output and price level Y_2 and PL_2 , respectively.
- (c) Following the decrease in consumer spending, explain how the economy would adjust in the long run in the absence of any policy actions.
- (d) The central bank of Moneyland is concerned about the short-run effects of the decrease in consumer spending on the broader economy and is considering taking action rather than waiting for the long-run adjustment process. Assuming the banking system in Moneyland has ample reserves, identify a specific monetary policy action the central bank of Moneyland would take to increase consumer spending.
- (e) Draw a correctly labeled graph of the reserve market in Moneyland, and show the effect of the monetary policy action identified in part (d) on the policy rate.
- (f) How would the change in the policy rate shown on your graph in part (e) affect each of the following in Moneyland in the short run?
- The quantity of national savings
 - Unemployment. 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.

1. Assume the economy of Vanderlandia is in short-run equilibrium with a real GDP of \$500 million. The full-employment level of real GDP is \$550 million.
- (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 no policy action is taken to restore full employment.
- (i) Explain how the economy will adjust in the long run.
 - (ii) Following the long-run adjustment process, will the price level in Vanderlandia be greater than, less than, or equal to PL_1 shown on your graph in part (a)?
- (c) Assume instead that policymakers in Vanderlandia are considering changing government spending to restore full employment in the short run and that the marginal propensity to save is 0.2.
- (i) Calculate the minimum change and state the direction of change in government spending required to completely close the output gap in the short run. Show your work.
 - (ii) On your graph in part (a), show the short-run effect of the change in government spending in part (c)(i), labeling the new equilibrium price level PL_2 .
- (d) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in government spending in part (c)(i) on the equilibrium real interest rate.
- (e) Based on the change in the real interest rate shown on your graph in part (d), what will happen to each of the following?
- (i) The price of previously issued bonds
 - (ii) The rate of economic growth in the long run. 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.

1. Assume a country's economy is operating below full employment.
- (a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, 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) Identify one fiscal policy action the country's government can take to restore full employment.
- (c) Assume instead that no fiscal policy action is taken. Suppose a change in investment spending causes real GDP to increase by \$200 billion. Calculate the minimum change in investment spending that could have caused this increase in real GDP if the marginal propensity to save is 0.25. Show your work.
- (d) Assume the output gap was initially \$800 billion. On your graph in part (a), show the short-run effect of the change in investment spending identified in part (c), labeling the new equilibrium real output as Y_2 and the new equilibrium price level as PL_2 .
- (e) Given your answer to part (d), is the actual rate of unemployment greater than, less than, or equal to the natural rate of unemployment? Explain.
- (f) Assume that private savings now increase. Draw a correctly labeled graph of the loanable funds market and show the effect of the increase in private savings on the real interest rate.
- (g) Based solely on the change in the real interest rate shown in part (f), what will happen to each of the following?
- (i) Real GDP in the short run. Explain.
 - (ii) Long-run aggregate supply. 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.

3. The economy of Country Zeta is in long-run equilibrium; however, the government is concerned about the size of the national debt.
- (a) Identify one specific fiscal policy action the government could take to reduce the national debt.
- (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the real interest rate.
- (c) Based on the change in the real interest rate identified in part (b), what will happen to each of the following?
- (i) Aggregate demand in the short run. Explain.
 - (ii) Potential real output. 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.

STOP**END OF EXAM**

2. Assume a country's economy is currently operating below full employment.

- (a) Identify a fiscal policy action the country's government could implement to restore full employment.
- (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the fiscal policy action identified in part (a) on the equilibrium real interest rate.
- (c) Based solely on the real interest rate change shown in part (b), what will happen to each of the following?
 - (i) Net exports. Explain.
 - (ii) The stock of physical capital. 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 the expected inflation rate in a country is 3%, the current unemployment rate is 6%, and the natural rate of unemployment is 4%.
- (a) Draw a correctly labeled graph of the short-run and long-run Phillips curves. Label the current short-run equilibrium as point X and plot the numerical values above on the graph.
 - (b) Is the actual inflation rate greater than, less than, or equal to the expected inflation rate of 3%?
 - (c) Assume loans were made taking into account the expected inflation rate of 3%. Will lenders be better off or worse off after they realize the actual inflation rate identified in part (b)? Explain.
 - (d) Based on the relationship between the actual and the expected inflation rates identified in part (a), what will happen to the natural rate of unemployment in the long run?

3. Assume that households in Econland increase their savings for retirement.

- (a) Using a correctly labeled graph of the loanable funds market, show how the increase in savings will affect the equilibrium real interest rate.
- (b) Based solely on the real interest rate change identified in part (a), what will happen to Econland's purchases of foreign assets? Explain.
- (c) Consider the foreign exchange market for Econland's currency.
 - (i) Based on your answer to part (b), what will happen to the international value of Econland's currency?
 - (ii) Based on your answer to part c (i), would Econland's central bank buy or sell its currency in the foreign exchange market to offset the change in the value of its currency?

STOP**END OF EXAM**

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. Assume the economy of Artland is currently operating above full employment.
 - (a) Draw a correctly labeled graph of the short-run aggregate supply, long-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) The full-employment output, labeled as Y_f
 - (b) Assume the central bank and the government do not take any policy actions to close the output gap.
 - (i) On your graph in part (a), show how the economy automatically adjusts in the long run and label the new equilibrium price level PL_2 .
 - (ii) Explain the cause of the adjustment shown in part (b)(i).
 - (c) Alternatively, suppose the government wants to close the output gap using fiscal policy.
 - (i) Identify a fiscal policy action the government could implement to close the output gap.
 - (ii) How will the fiscal policy action identified in part (c)(i) affect the following?
 - The unemployment rate
 - The natural rate of unemployment
 - (iii) In closing the output gap, will the automatic adjustment identified in part (b)(i) produce a higher, a lower, or the same price level compared to the fiscal policy identified in part (c)(i) ?
 - (d) Draw a correctly labeled graph of the market for loanable funds. Show the effect of the fiscal policy action identified in part (c)(i) on the equilibrium real interest rate.
 - (e) Given the interest rate change identified in part (d), will the long-run aggregate supply curve shift to the right, shift to the left, or remain the same in the long run? Explain.

2. Assume the economy of Ucheland is currently at full employment. The government of Ucheland reduces the tax rate on household interest earnings.
 - (a) What will happen to private savings in Ucheland?
 - (b) Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in private savings identified in part (a) on the equilibrium real interest rate.
 - (c) Given the real interest rate change identified in part (b), answer the following questions.
 - (i) What is the short-run effect on aggregate demand? Explain.
 - (ii) What is the long-run effect on potential real gross domestic product in Ucheland? Explain.

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?
3. A country is at full employment and produces two types of goods: consumer goods and capital goods.
 - (a) Draw a correctly labeled graph of the production possibilities curve, with consumer goods on the horizontal axis and capital goods on the vertical axis. Indicate a point on your graph, labeled X, that represents full employment and a possible combination in which both goods are being produced.
 - (b) Assume there is an increase in the country's national savings. Draw a correctly labeled graph of the loanable funds market, showing the change in the real interest rate from the increase in savings.
 - (c) On the same graph from part (a), show another point, labeled Z, that represents full employment and a new combination of consumer goods and capital goods consistent with the increase in the country's national savings.
 - (d) Referring to your answer to part (c), will the long-run aggregate supply curve shift to the right, shift to the left, or remain the same? Explain.

STOP**END OF EXAM**

2. Country X and Country Y are trading partners, and both produce furnaces and solar panels. The countries can produce the following amounts using equal amounts of resources.

Country X: 6 furnaces or 8 solar panels

Country Y: 6 furnaces or 12 solar panels

- (a) Which country has an absolute advantage in producing solar panels?
- (b) Calculate the opportunity cost of a furnace in Country Y.
- (c) Which country has the comparative advantage in producing furnaces? Explain.
- (d) If the terms of trade were that 2 furnaces are exchanged for 1 solar panel, should Country X produce solar panels domestically or import solar panels from Country Y?

3. Exchange rates and interest rates are important for macroeconomic decision making.

- (a) How does an increase in Japan's government budget deficit affect each of the following?
 - (i) The real interest rate in the short run in Japan. Explain.
 - (ii) Private domestic investment in plant and equipment in Japan
- (b) Draw a correctly labeled graph of the foreign exchange market for the euro, and show the effect of the change in the real interest rate in Japan from part (a)(i) on each of the following.
 - (i) Supply of euros. Explain.
 - (ii) Yen price of the euro
- (c) To reverse the change in the yen price of the euro identified in part (b)(ii), should the European Central Bank buy or sell euros in the foreign exchange market?

STOP

END OF EXAM

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. In answering the questions, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. 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 currently operating below the full-employment level of real gross domestic product with a balanced budget.
 - (a) Draw a correctly labeled graph of aggregate demand, short-run aggregate supply, and long-run aggregate supply, and show each of the following in the United States.
 - (i) Current output and price level, labeled as Y_1 and PL_1 , respectively
 - (ii) Full-employment output, labeled as Y_f
 - (b) The United States government increases spending on goods and services by \$100 billion, which is financed by borrowing. How will the increase in government spending affect each of the following?
 - (i) Cyclical unemployment
 - (ii) The natural rate of unemployment
 - (c) If the marginal propensity to consume is equal to 0.75, calculate the maximum possible change in real gross domestic product that could result from the \$100 billion increase in government spending.
 - (d) Using a correctly labeled graph of the loanable funds market, show the effect of the \$100 billion increase in government spending on the real interest rate.
 - (e) Based on the real interest rate change in part (d), what is the effect on the long-run economic growth rate? Explain.
 - (f) Now assume that instead of financing the \$100 billion increase in government spending by borrowing, the United States government increases taxes by \$100 billion. With this equal increase in government spending and taxes, will the real gross domestic product increase, decrease, or remain the same? Explain.