

Past-paper walk-through

Nominal v. Real Interest Rates ■ 4.2

eXercise

Questions in this set

- 2026 Q1
- 2024 Set 1 Q1
- 2022 Set 2 Q1
- 2021 Set 2 Q1
- 2017 Q2
- 2016 Q1

Reading the mark scheme

- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 1

2026 ■ Q1

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

(a)(i) 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.

The current equilibrium real output and price level, labeled Y_1 and PL_1 , respectively.

(a)(ii) 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.

The full-employment real output, labeled Y_F .

Question 1

2026 ■ Q1

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

(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.

Question 1

2026 ■ Q1

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

(c)(i) 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.

Identify a specific open-market operation that the central bank of Micanapy would implement to close the inflationary gap in the short run.

(c)(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.

Question 1

2026 ■ Q1

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

(d)(i) 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?

International financial capital flows into Micanapy. Explain.

(d)(ii) 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?

The price of previously issued bonds in Micanapy.

(d)(iii) 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?

Private domestic investment spending in Micanapy.

Question 1

2026 ■ Q1

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

(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.

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

(a) Calculate Alpha's natural rate of unemployment. Show your work.

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

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

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

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

(c)(i) Assume that policymakers take no action to close the output gap.

Explain how Alpha's economy will adjust to full employment in the long run.

(c)(ii) On your graph in part (b), show how Alpha's economy will adjust to full employment in the long run, labeling the new equilibrium price level PL_2 .

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

(d) Assume instead that Alpha's central bank is considering using monetary policy to close a recessionary output gap. The banking system in Alpha has ample reserves. Identify a specific monetary policy action the central bank of Alpha would take to close the output gap in the short run.

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

(e) Draw a correctly labeled graph of the reserve market in Alpha, and show the effect of the action taken by the central bank identified in part (d) on the policy rate.

Question 1

2024 Set 1 ■ Q1

The economy of Alpha is in short-run equilibrium with a cyclical unemployment rate of 3%, a frictional unemployment rate of 4%, and an actual unemployment rate of 8%.

(f)(i) Based on the change in the policy rate shown in part (e), what would happen to each of the following in the short run in Alpha?

The price of previously issued bonds

(f)(ii) The price level. Explain.

Solution 1

(a)

Mark scheme

- Natural UER = Actual UER – Cyclical UER = $8\% - 3\% = 5\%$. (Equivalent method: Structural UER = Actual UER – Cyclical UER – Frictional UER = $8\% - 3\% - 4\% = 1\%$; Natural UER = Frictional UER + Structural UER = $4\% + 1\% = 5\%$.) Final answer: natural rate of unemployment = 5%, with work shown by either method.

Solution 1

(b)

Mark scheme

- Draw a Price Level (vertical axis) vs. Real GDP (horizontal axis) graph. Point 1: a downward-sloping AD1 curve and an upward-sloping SRAS1 curve intersecting at a point labeled PL1 (price level) and Y1 (real GDP) directly below it. Point 2: add a vertical LRAS curve positioned to the right of Y1, with its base on the horizontal axis labeled YF (full-employment output) — showing Alpha currently below full employment ($Y1 < YF$, a recessionary gap).

Solution 1

(c)(i)

Mark scheme

- With no policy action, the recessionary gap ($Y_1 < Y_F$) means unemployment exceeds the natural rate, so input prices (e.g., nominal wages) and/or inflationary expectations fall over time. This lowers production costs, causing SRAS to increase (shift right), and this continues until the economy returns to full employment output Y_F .

Solution 1

(c)(ii)

Mark scheme

- On the graph from part (b), shift SRAS1 rightward to SRAS2 so that it now intersects AD1 and LRAS at the same point, at output YF. Label the new, lower equilibrium price level PL2 ($PL2 < PL1$). Also show the SRAS curve shifting right and output moving from Y1 to YF.

Solution 1

(d)

Mark scheme

- The central bank would decrease its administered interest rate(s) — e.g., decrease the interest rate paid on reserves (IOR) — or otherwise decrease interest on reserves, lowering the policy rate as expansionary monetary policy to close the recessionary output gap.

Solution 1

(e) Mark scheme

- Draw the reserve market graph: Policy Rate on the vertical axis, Quantity of Reserves on the horizontal axis. Point 1: a vertical supply curve SR and a demand curve DR that slopes down then becomes flat, intersecting SR within the flat 'ample reserves' region at PR1, Q1 — a correctly labeled graph with S intersecting D in the ample-reserves range. Point 2: show the effect of the action in part (d) — the administered rate (floor of DR) shifts down, so the flat portion of DR shifts down, producing a new, lower policy rate $PR2 < PR1$ at the same quantity Q1 (equivalently framed as a decrease in the lower bound of the reserve demand curve lowering the policy rate).

Solution 1

(f)(i)

Mark scheme

- The price of previously issued bonds will increase. Because the policy/nominal interest rate has fallen, existing bonds carrying the older, higher fixed coupon become relatively more attractive, so their market price rises (bond prices move inversely with interest rates).

Solution 1

(f)(ii)

Mark scheme

- The price level will increase. Explanation: the decrease in the nominal interest rate lowers borrowing costs, which increases interest-sensitive spending — consumption (especially durable goods), investment, and/or net exports — thereby increasing aggregate demand (AD shifts right) and raising the price level in the short run.

Question 1

2022 Set 2 ■ Q1

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

Question 1

- (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?

Question 1

- (i) The euro
- (ii) The dollar

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.

Solution 1

(a) Mark scheme

- Draw an AD–AS graph: axes Price Level (vertical) and Real GDP (horizontal), with a downward-sloping AD_1 and an upward-sloping $SRAS_1$ intersecting at price level PL_1 and real output Y_1 (dashed lines to both axes) — 1 point. Second point: add a vertical LRAS curve positioned to the LEFT of Y_1 , with its base labeled Y_F (full-employment output), showing the economy currently producing above full employment ($Y_1 > Y_F$, an inflationary/expansionary gap) — 1 point. Total 2 points for a correctly labeled graph showing both the current equilibrium (PL_1, Y_1) and full-employment output Y_F .

Solution 1

(b)

Mark scheme

- On the graph from part (a), shift AD_1 rightward to AD_2 (an arrow indicating the shift), reflecting the increase in government spending. The new equilibrium is at the intersection of AD_2 and $SRAS_1$: real output rises to Y_2 ($Y_2 > Y_1$) and the price level rises to PL_2 ($PL_2 > PL_1$), both labeled with dashed lines to the axes. 1 point for correctly showing the rightward AD shift with both Y_2 and PL_2 labeled at the new, higher intersection.

Solution 1

(c)(i)

Mark scheme

- Maximum increase in real output = 500 billion. *Work : the spending multiplier* = $1 \div (1 - MPC) = 1 \div (1 - 0.8) = 1 \div 0.2 = 5$. *Maximum Real Output* = $spending\ multiplier \times Government\ Spending = 5 \times 100\text{ billion} = 500\text{ billion}$. 1 point for the correct value (500 billion) with the multiplier calculation shown. (In the official scoring guidelines this single point is shared with part (c)(ii) — both the real-output and household-savings values are required together for the point.)

Solution 1

(c)(ii)

Mark scheme

- Maximum increase in household savings = 100 billion. *Work* : $MPS = 1 - MPC = 1 - 0.8 = 0.2$. $MaximumHouseholdSavings = MPS \times maximumRealOutput(from\ part(c)(i)) = 0.2 \times 500\ billion = 100\ billion$ —equal to the initial increase in government spending, since with no taxes or import substitution. (Shares its official 1 point with part (c)(i); each value is graded here for its own point.)

Solution 1

(d) Mark scheme

- Draw a money-market graph: axes Nominal Interest Rate (vertical) and Quantity of Money (horizontal), with a vertical money supply curve MS_1 and a downward-sloping money demand curve MD_1 intersecting at nominal interest rate i_1 and quantity Q_1 (dashed lines to both axes) — 1 point. Second point: shift MD_1 rightward to MD_2 (an arrow indicating the shift), because the increase in real output from part (c)(i) raises money demand at every interest rate; the new equilibrium is at a higher nominal interest rate i_2 ($i_2 > i_1$, dashed line) at the same quantity Q_1 (MS is vertical/fixed) — 1 point. Total 2 points.

Solution 1

(e)

Mark scheme

- The price of previously issued bonds will DECREASE. Bond prices and interest rates move inversely, so the rise in the nominal interest rate shown in part (d) ($i_1 \rightarrow i_2$) causes the price of existing, fixed-coupon bonds to fall. 1 point.

Solution 1

(f)(i)

Mark scheme

- The demand for dollars will **DECREASE**. Explanation: the increase in the United States inflation rate (relative to the European Union) makes United States goods relatively more expensive than European goods, so Europeans buy fewer U.S. exports — reducing the quantity of dollars they need to demand in the foreign exchange market to purchase them. 1 point for stating the decrease **AND** giving this relative-price explanation.

Solution 1

(f)(ii)

Mark scheme

- The international value of the dollar will DEPRECIATE. Because the demand for dollars decreases (part (f)(i)) while the supply of dollars in the foreign exchange market is unchanged, the equilibrium price (value) of the dollar falls relative to the euro. 1 point.

Solution 1

(g)(i)

Mark scheme

- To keep the value of the dollar constant despite the depreciation pressure identified in part (f)(ii), the Federal Reserve should SELL euros in the foreign exchange market (increasing the supply of euros it offers in exchange for dollars). 1 point. (In the official scoring guidelines this is one combined point with part (g)(ii): 'sell the euro and buy the dollar' describes a single foreign-exchange intervention from two currency perspectives.)

Solution 1

(g)(ii)

Mark scheme

- Correspondingly, the Federal Reserve should BUY dollars in the foreign exchange market — using the euros it sells (part (g)(i)) to purchase dollars, which increases the demand for dollars and offsets the depreciation pressure from part (f)(ii), keeping the dollar's value constant. 1 point. (Shares its official 1 point with part (g)(i), the same single intervention stated from the dollar's side.)

Question 1

2021 Set 2 ■ Q1

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

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(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 .

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(c)(i) 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?

The natural rate of unemployment

(c)(ii) 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?

Nominal interest rates. Explain.

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(d) Assume instead the central bank intervenes to correct an inflationary output gap. What open-market operation should the central bank take?

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(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.

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(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.

Question 1

2021 Set 2 ■ Q1

Assume Smithland is in short-run equilibrium at a level of output that exceeds the full-employment level of output.

(g) Based solely on the exchange rate change identified in part (f), will Smithland's imports increase, decrease, or remain the same? Explain.

Solution 1

(a)

Mark scheme

- Draw a correctly labeled AD–SRAS–LRAS graph. First point: a downward-sloping AD and upward-sloping SRAS intersecting at the current equilibrium, with dashed lines to the axes labeling the price level PL and real output Y at that intersection. Second point: add a vertical LRAS curve positioned to the LEFT of Y , with its base labeled Y_F (full-employment output), showing the economy is currently above full employment (an inflationary gap). 2 points: 1 for the correctly labeled AD/SRAS graph with PL , Y at the intersection; 1 for the vertical LRAS left of Y labeled Y_F .

Solution 1

(b)

Mark scheme

- On the same graph, show the short-run effect of the income tax cut: AD shifts rightward from AD to AD (an arrow indicating the rightward shift), intersecting SRAS at a higher real output level, labeled Y (with $Y > Y$, shown via a dashed line and rightward arrow along the horizontal axis). 1 point for correctly showing the rightward AD shift and labeling the new short-run equilibrium output Y .

Solution 1

(c)(i)

Mark scheme

- The natural rate of unemployment will NOT change. It is determined by structural/frictional factors in the labor market, not by short-run cyclical changes in real output, so the AD-driven increase in Y from Y_1 to Y_2 has no effect on it. 1 point.

Solution 1

(c)(ii)

Mark scheme

- Nominal interest rates will INCREASE. Explanation: the increase in real output ($Y \rightarrow Y'$) raises households' and firms' income, which increases the (transactions) demand for money; with the money supply unchanged, the higher money demand raises the equilibrium nominal interest rate. 1 point for stating the increase AND giving this explanation.

Solution 1

(d)

Mark scheme

- The central bank should SELL bonds (a contractionary open-market operation) to reduce the money supply and correct the inflationary output gap. 1 point.

Solution 1

(e) Mark scheme

- Draw a correctly labeled money market graph: vertical axis = nominal interest rate, horizontal axis = quantity of money; a vertical money supply curve MS and a downward-sloping money demand curve MD intersecting at nominal interest rate i (1 point). Second point: show MS shifting LEFTWARD to MS (consistent with the central bank selling bonds in part (d)), intersecting MD at a higher nominal interest rate $i > i$ (dashed lines to i and i , arrow showing the leftward shift and the upward interest-rate movement). 2 points total: 1 for the correctly labeled base money-market graph, 1 for the leftward MS shift raising the nominal interest rate.

Solution 1

(f)

Mark scheme

- Smithland's currency will APPRECIATE. Explanation: the higher domestic nominal interest rate (from part (e)) attracts financial capital inflows as foreign investors seek the higher returns available in Smithland, which increases the demand for (or decreases the supply of) Smithland's currency on the foreign exchange market, causing it to appreciate. 1 point for stating appreciation AND giving this explanation.

Solution 1

(g)

Mark scheme

- Smithland's imports will INCREASE. Explanation: the appreciation of Smithland's currency makes foreign goods relatively less expensive (cheaper in domestic-currency terms) for Smithland's residents, so the quantity of imports purchased rises. 1 point for stating increase AND giving this explanation.

Question 2

2017 ■ Q2

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)(i) Based on the change in the interest rate in part (a), what will happen to each of the following in the short run?

Prices of previously issued bonds

(b)(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?

Question 2

(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?

Solution 2

(a)

Mark scheme

- Graph axes: nominal interest rate vertical, quantity of money (M) horizontal. Draw a vertical money supply (MS) curve and a downward-sloping money demand curve (correctly labeled) (1 point). Show money demand shifting leftward from $MD1$ to $MD2$ (due to reduced money holdings), with the equilibrium nominal interest rate falling from $r1$ to $r2$ (1 point).

Solution 2

(b)(i)

Mark scheme

- The price of previously issued bonds will increase. Bond prices and interest rates move inversely: as the nominal interest rate falls (from part a), existing bonds with a fixed coupon become relatively more attractive, so their price rises.

Solution 2

(b)(ii)

Mark scheme

- Both the price level and real income (real GDP) will increase. Explanation: the lower nominal interest rate (from part a) increases interest-sensitive spending — consumption, investment, and/or net exports — which increases aggregate demand, raising both the price level and real income/real GDP.

Solution 2

(c)

Mark scheme

- The velocity of money will increase. Using the equation of exchange $MV = PY$: with the money supply (M) held constant while the price level and real income (PY) both increase (from part b(ii)), velocity (V) must rise to keep the equation balanced.

Solution 2

(d)

Mark scheme

- The central bank would sell bonds (conduct an open market sale). Selling bonds decreases the money supply, which reverses the earlier fall in the interest rate by pushing the nominal interest rate back up.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(a) Draw a single correctly labeled graph with both the long-run Phillips curve and short-run Phillips curve. Label the current short-run equilibrium point P.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(b) Assuming no policy actions are taken, will the short-run Phillips curve shift to the right (upward), shift to the left (downward), or remain the same in the long run? Explain.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(c) If the Federal Reserve Bank wants to lower unemployment, what expansionary open-market operation should it use?

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(d)(i) How will the open-market operation you identified in part (c) affect each of the following?

Federal funds rate. Explain.

(d)(ii) Real interest rate in the short run.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(e) Given your answer in part (d)(ii), what is the effect on real gross domestic product (GDP) in the short run? Explain.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(f) Japan and the United States are major trading partners. Indicate how the change in real GDP you identified in part (e) will affect the demand for the Japanese yen in the foreign exchange market.

Question 1

2016 ■ Q1

Assume that the United States economy is currently in a short-run equilibrium with the actual unemployment rate above the natural rate of unemployment.

(g) Draw a correctly labeled graph of the foreign exchange market for the Japanese yen, showing the effect of the change in demand identified in part (f) on the value of the Japanese yen relative to the United States dollar.

Solution 1

(a)

Mark scheme

- Draw a single graph with unemployment rate (%) on the horizontal axis and inflation rate (%) on the vertical axis. Show a vertical Long-Run Phillips Curve (LRPC) at the natural rate of unemployment, and a downward-sloping Short-Run Phillips Curve (SRPC). Label the current short-run equilibrium point P on the SRPC to the right of (i.e., at a higher unemployment rate than) the LRPC. One point is earned for a correctly labeled graph showing a vertical LRPC and a downward-sloping SRPC; one point is earned for showing point P on the SRPC to the right of the LRPC.

Solution 1

(b)

Mark scheme

- The SRPC will shift to the left (downward) in the long run. Because the economy is producing at a level of output below full employment (at point P, unemployment is above the natural rate), this creates higher unemployment, which lowers inflationary expectations. Lower inflationary expectations lead to lower nominal wages and lower input costs over time, which shifts the SRPC to the left.

Solution 1

(c)

Mark scheme

- The Federal Reserve should conduct an expansionary open-market operation by buying (purchasing) government bonds on the open market.

Solution 1

(d)(i)

Mark scheme

- The federal funds rate will decrease. Buying bonds injects reserves into the banking system, increasing the money supply; with more reserves available in the federal funds market, banks bid the federal funds rate down.

(d)(ii)

Mark scheme

- The real interest rate will decrease in the short run, since the nominal (federal funds) rate falls while inflationary expectations do not adjust immediately.

Solution 1

(e)

Mark scheme

- Real GDP will increase in the short run. A lower real interest rate makes borrowing cheaper, increasing interest-sensitive spending — both consumption (of durable goods) and investment in plant and equipment. This increase in spending raises aggregate demand, which increases real GDP.

Solution 1

(f)

Mark scheme

- The demand for the Japanese yen will increase in the foreign exchange market. Higher U.S. real GDP/income raises U.S. demand for Japanese goods (imports from Japan), and Americans need more yen to purchase those goods, so the demand curve for yen shifts right.

Solution 1

(g)

Mark scheme

- Draw a correctly labeled graph of the foreign exchange market for the Japanese yen: quantity of yen on the horizontal axis, price of yen in US dollars (US\$/yen) on the vertical axis, with an upward-sloping supply curve (S) and an original demand curve (D1) intersecting at equilibrium price e_1 . One point is earned for a correctly labeled graph of the market. One point is earned for shifting the demand curve rightward to D2 (consistent with part (f)), producing a new, higher equilibrium price $e_2 > e_1$ — i.e., the yen appreciates relative to the U.S. dollar.