SOLUTIONS TO TEXT PROBLEMS:

Quick Quizzes

1. A decrease in the money supply increases the equilibrium interest rate. The decrease in the money supply reduces aggregate demand because the higher interest rate causes households to buy fewer houses, reducing the demand for residential investment, and causes firms to spend less on new factories and new equipment, reducing business investment.

2. If the government reduces spending on highway construction by $10 billion, the aggregate-demand curve shifts to the left because government purchases are lower. The shift to the left of the aggregate-demand curve could be more than $10 billion because of the multiplier effect or it could be less than $10 billion because of the crowding-out effect.

3. If people become pessimistic about the future, they will spend less, causing the aggregate-demand curve to shift to the left. If the Fed wants to stabilize aggregate demand, it should increase the money supply. The increase in the money supply will cause the interest rate to decline, thus stimulating residential and business investment. The Fed might choose not to do this because by the time the policy action takes effect, the long lag time might mean the economy would have recovered on its own, and the increase in the money supply will cause inflation.

Questions for Review

1. The theory of liquidity preference is Keynes's theory of how the interest rate is determined. According to the theory, the aggregate-demand curve slopes downward because: (1) a higher price level raises money demand; (2) higher money demand leads to a higher interest rate; and (3) a higher interest rate reduces the quantity of goods and services demanded. Thus the price level has a negative relationship with the quantity of goods and services demanded.

2. A decrease in the money supply shifts the money-supply curve to the left. The money-supply curve now intersects the money-demand curve at a higher interest rate. The higher interest rate reduces consumption and investment, so aggregate demand falls. Thus, the aggregate-demand curve shifts to the left.

3. If the government spends $3 billion to buy police cars, aggregate demand might increase by more than $3 billion because of the multiplier effect on aggregate demand. Aggregate demand might increase by less than $3 billion because of the

crowding-out effect on aggregate demand.

4. If pessimism sweeps the country, households reduce consumption spending and firms reduce investment, so aggregate demand falls. If the Fed wants to stabilize aggregate demand, it must increase the money supply, reducing the interest rate, which will induce households to save less and spend more and will encourage firms to invest more, both of which will increase aggregate demand. If the Fed does not increase the money supply, Congress could increase government purchases or reduce taxes to increase aggregate demand.

5. Government policies that act as automatic stabilizers include the tax system and government spending through the unemployment-benefit system. The tax system acts as an automatic stabilizer because when incomes are high, people pay more in taxes, so they cannot spend as much. When incomes are low, so are taxes; thus people can spend more. The result is that spending is partly stabilized. Government spending through the unemployment-benefit system acts as an automatic stabilizer because in recessions the government transfers money to the unemployed so their incomes do not fall as much and thus their spending will not fall as much.

Problems and Applications

1. a. When the Fed's bond traders buy bonds in open-market operations, the money-supply curve shifts to the right from MS_1 to MS_2, as shown in Figure 1. The result is a decline in the interest rate.

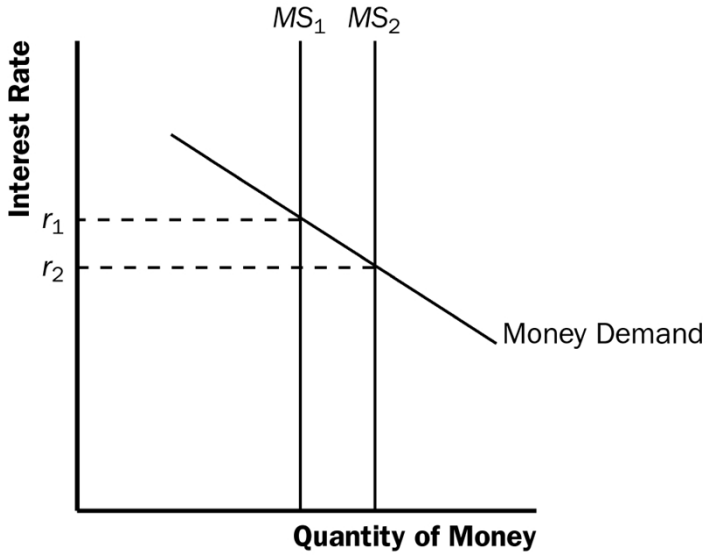

Figure 1

b. When an increase in credit card availability reduces the cash people hold, the money-demand curve shifts to the left from MD_1 to MD_2, as shown in Figure 2. The result is a decline in the interest rate.

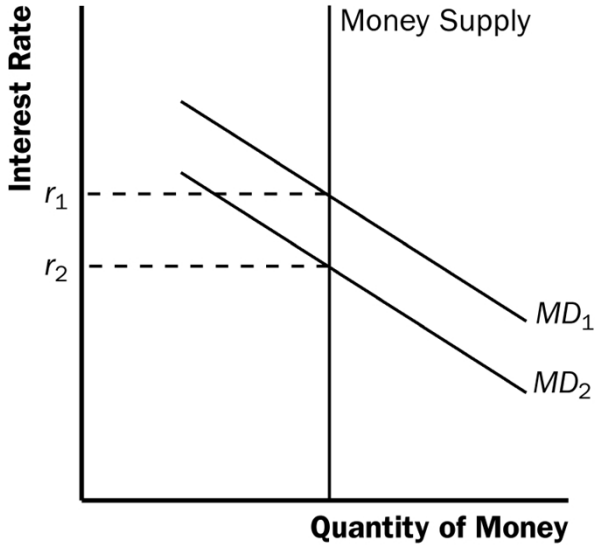

Figure 2

c. When the Federal Reserve reduces reserve requirements, the money supply increases, so the money-supply curve shifts to the right from MS_1 to MS_2, as shown in Figure 1. The result is a decline in the interest rate.

d. When households decide to hold more money to use for holiday shopping, the money-demand curve shifts to the right from MD_1 to MD_2, as shown in Figure 3. The result is a rise in the interest rate.

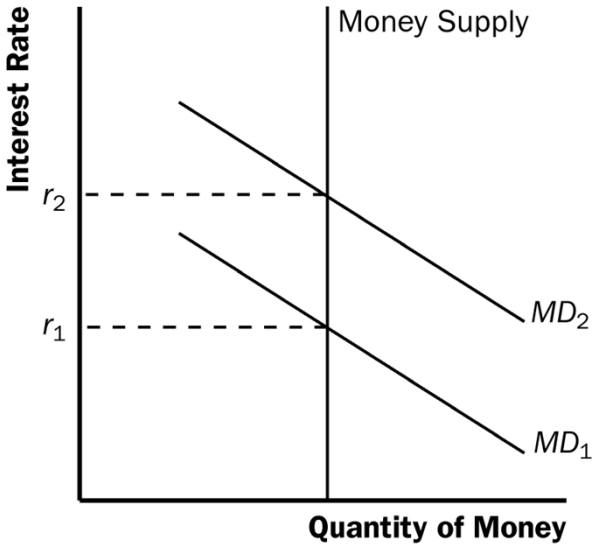

Figure 3

e. When a wave of optimism boosts business investment and expands aggregate demand, money demand increases from MD_1 to MD_2 in Figure 3. The increase in money demand increases the interest rate.

f. When an increase in oil prices shifts the short-run aggregate-supply curve upward, the increased price level increases money demand. The money-demand curve shifts to the right from MD_1 to MD_2, as shown in Figure 3. The result is a rise in the interest rate.

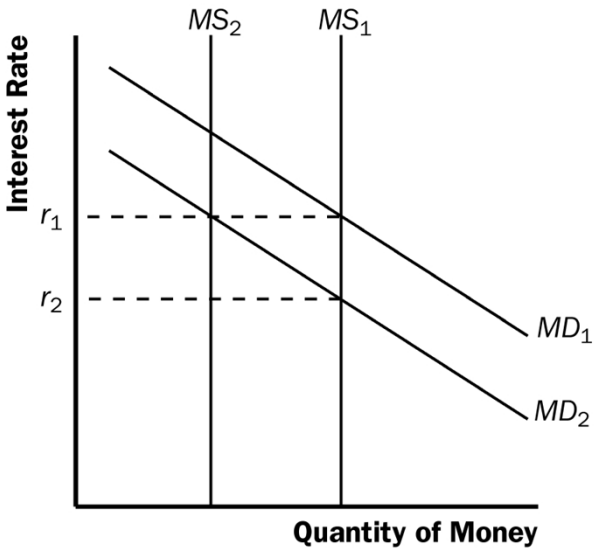

Figure 4

2. a. When more ATMs are available, money demand is reduced and the money-demand curve shifts to the left from MD_1 to MD_2, as shown in Figure 4. If the Fed does not change the money supply, which is at MS_1, the interest rate will decline from r_1 to r_2. The decline in the interest rate shifts the aggregate demand curve to the right, as consumption and investment increase.

b. If the Fed wants to stabilize aggregate demand, it should reduce the money supply to MS_2, so the interest rate will remain at r_1 and aggregate demand will not change.

3. A tax cut that is permanent will have a bigger impact on consumer spending and aggregate demand. If the tax cut is permanent, consumers will view it as adding substantially to their financial resources, and they will increase their spending substantially. If the tax cut is temporary, consumers will view it as adding just a little to their financial resources, so they will not increase spending as much.

4. a. The current situation is shown in Figure 5.

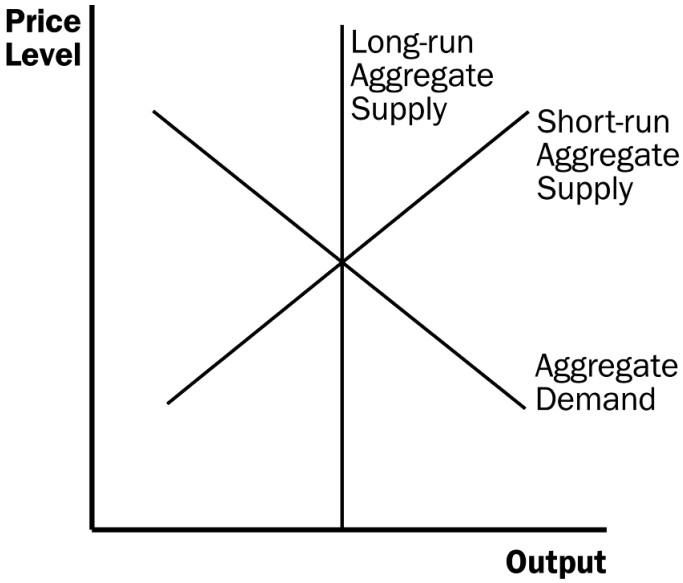

Figure 5

b. The Fed will want to stimulate aggregate demand. Thus, it will need to lower the interest rate by increasing the money supply. This could be achieved if the Fed purchases government bonds from the public.

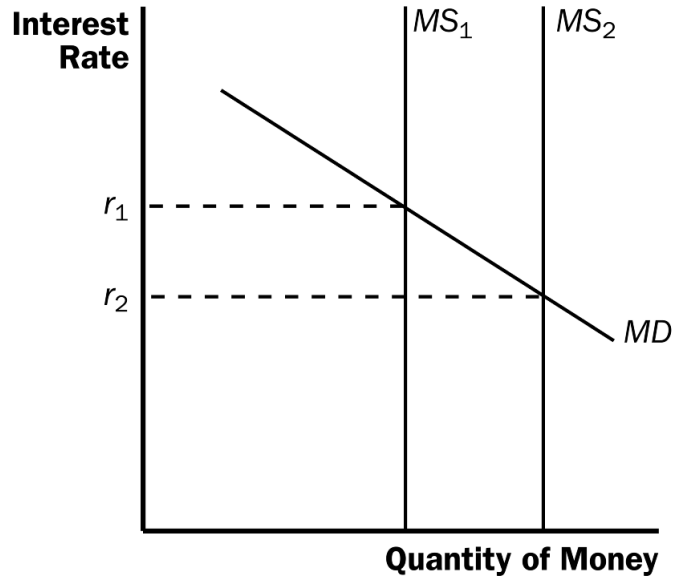

Figure 6

c. As shown in Figure 6, the Fed's purchase of government bonds shifts the supply of money to the right, lowering the interest rate.

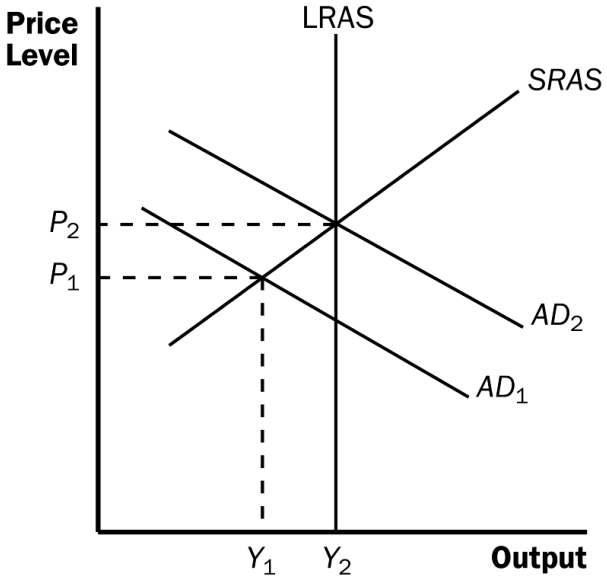

Figure 7

d. The Fed's purchase of government bonds will increase aggregate demand as consumers and firms respond to lower interest rates. Output and the price level will rise as shown in Figure 7.

5. a. Legislation allowing banks to pay interest on checking deposits increases the return to money relative to other financial assets, thus increasing money demand.

b. If the money supply remained constant (at MS_1), the increase in the demand for money would have raised the interest rate, as shown in Figure 8. The rise in the interest rate would have reduced consumption and investment, thus reducing aggregate demand and output.

c. To maintain a constant interest rate, the Fed would need to increase the money supply from MS_1 to MS_2. Then aggregate demand and output would be unaffected.

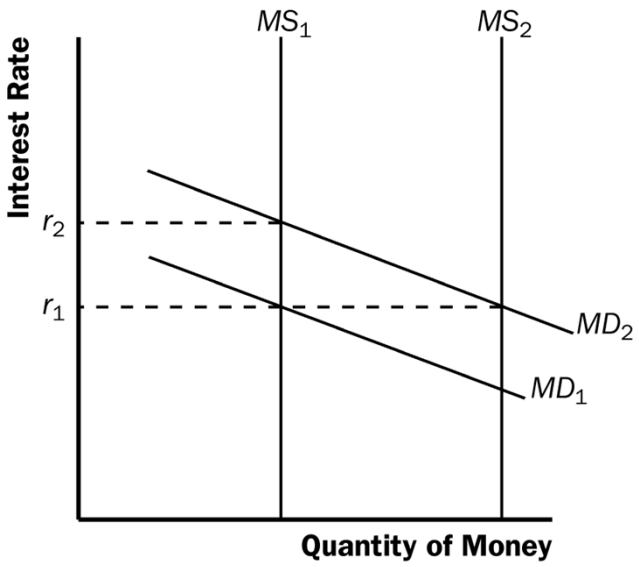

Figure 8

6. The demand for net exports is stimulated by expansionary monetary policy through the exchange-rate effect. The decline in the interest rate increases net capital outflow, thus increasing net exports.

7. a. If there is no crowding out, then the multiplier equals 1/(1 – *MPC*). Since the multiplier is 3, then *MPC* = 2/3.

   b. If there is crowding out, then the *MPC* would be larger than 2/3. An *MPC* that is larger than 2/3 would lead to a larger multiplier than 3, which is then reduced down to 3 by the crowding-out effect.

8. a. The initial effect of the tax reduction of $20 billion is to increase aggregate demand by $20 billion x 3/4 (the *MPC*) = $15 billion.

   b. Additional effects follow this initial effect as the added incomes get spent. The second round leads to increased consumption spending of $15 billion x 3/4 = $11.25 billion. The third round gives an increase in consumption of $11.25 billion x 3/4 = $8.44 billion. The effects continue indefinitely. Adding them all up gives a total effect that depends on the multiplier. With an *MPC* of 3/4, the multiplier is 1/(1 – 3/4) = 4. So the total effect is $15 billion x 4 = $60 billion.

   c. Government purchases have an initial effect of the full $20 billion, since they increase aggregate demand directly by that amount. The total effect of an increase in government purchases is thus $20 billion x 4 = $80 billion. So government purchases lead to a bigger effect on output than a tax cut does. The difference arises because government purchases affect aggregate

demand by the full amount, but a tax cut is partly saved by consumers, and therefore does not lead to as much of an increase in aggregate demand.

9. If government spending increases, aggregate demand rises, so money demand rises. The increase in money demand leads to a rise in the interest rate and thus a decline in aggregate demand if the Fed does not respond. But if the Fed maintains a fixed interest rate, it will increase money supply, so aggregate demand will not decline. Thus, the effect on aggregate demand from an increase in government spending will be larger if the Fed maintains a fixed interest rate.

10. a. Expansionary fiscal policy is more likely to lead to a short-run increase in investment if the investment accelerator is large. A large investment accelerator means that the increase in output caused by expansionary fiscal policy will induce a large increase in investment. Without a large accelerator, investment might decline because the increase in aggregate demand will raise the interest rate.

b. Expansionary fiscal policy is more likely to lead to a short-run increase in investment if the interest sensitivity of investment is small. Since fiscal policy increases aggregate demand, thus increasing money demand and the interest rate, the greater the sensitivity of investment to the interest rate the greater the decline in investment will be, which will offset the positive accelerator effect.

11. a. An increase in government spending would shift the aggregate demand curve to the right, increasing output. The rise in output would raise consumption spending, since people would have higher incomes, and raise investment spending through the accelerator. But money demand would also increase, raising the interest rate. This would tend to reduce consumption, as people would save more, and reduce investment, since the cost of investing would be higher. Overall, the changes in both consumption and investment are ambiguous.

b. A reduction in taxes would directly increase consumption spending, since people would have higher after-tax incomes. Also, since the reduction in taxes increases consumption spending, aggregate demand increases, so total output increases. The rise in output would raise consumption spending further, since people would have higher incomes, and raise investment spending through the accelerator. But money demand would also increase, raising the interest rate. This would tend to reduce consumption, as people would save more, and reduce investment, since the cost of investing would be higher. Overall, consumption must increase (otherwise aggregate demand would not have increased at all) while the change in investment is ambiguous.

c. An expansion in the money supply reduces the interest rate, thus increasing aggregate demand and output. The rise in output would raise consumption spending, since people would have higher incomes, and raise investment spending through the accelerator. The lower interest rate would increase consumption, as people would save less, and increase investment, since the cost of investing would be lower. Overall, both consumption and investment would increase.

12. a. Tax revenue declines when the economy goes into a recession because taxes are closely related to economic activity. In a recession, people's incomes and wages fall, as do firms' profits, so taxes on all these things decline.

b. Government spending rises when the economy goes into a recession because more people get unemployment-insurance benefits, welfare benefits, and other forms of income support.

c. If the government were to operate under a strict balanced-budget rule, it would have to raise tax rates or cut government spending in a recession. Both would reduce aggregate demand, making the recession more severe.

13. a. If there were a contraction in aggregate demand, the Fed would need to increase the money supply to increase aggregate demand and stabilize the price level, as shown in Figure 9. By increasing the money supply, the Fed is able to shift the aggregate-demand curve back to AD_1 from AD_2. This policy stabilizes output as well as the price level.

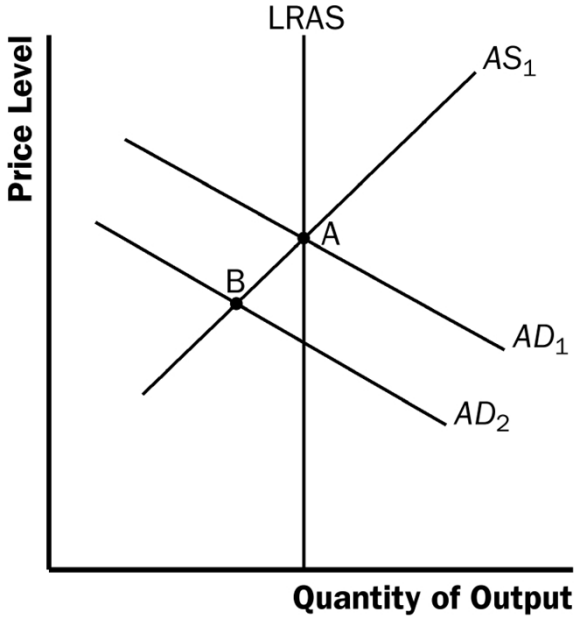

Figure 9

b. If there were an adverse shift in short-run aggregate supply, the Fed would need to decrease the money supply to stabilize the price level, shifting the aggregate-demand curve to the left from AD_1 to AD_2, as shown in Figure 10. This worsens the recession caused by the shift in aggregate supply. To stabilize output instead of the price level, the Fed would need to increase the money supply, shifting the aggregate-demand curve from AD_1 to AD_3, but this action would raise the price level.

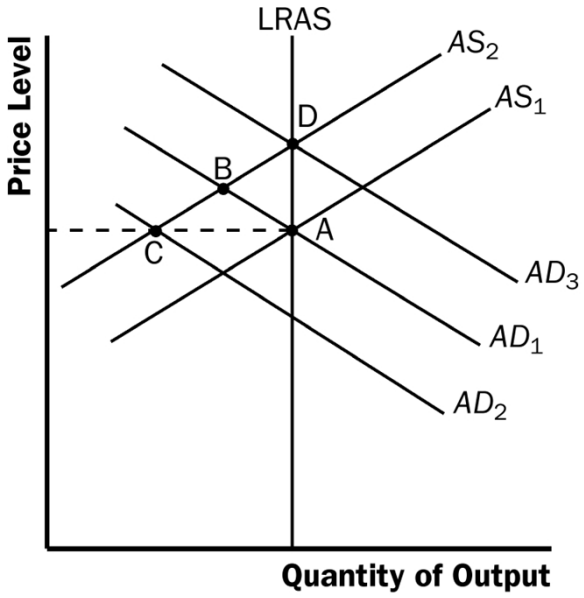

Figure 10

14. Many answers are possible.