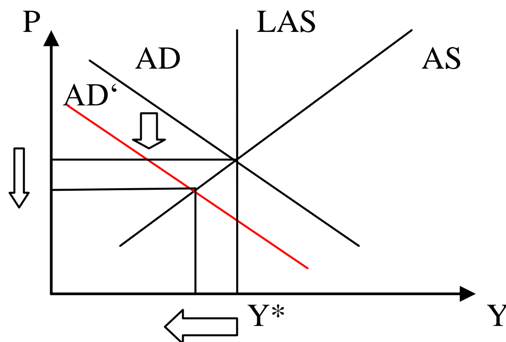
AGGREGATE DEMAND AND AGGREGATE SUPPLY
The Influence of Monetary and Fiscal Policy on Aggregate Demand

Suppose that the economy is undergoing a recession because of a fall in aggregate demand.
a. Using an aggregate-demand/aggregate-supply diagram, depict the current state of the economy.
b. What is happening to the unemployment rate?
c. "Capacity utilization" is a measure of how intensively the capital stock is being used. In a recession, is capacity utilization above or below its long-run average? Explain.

Solution

a)



b) Unemployment is increasing and it is higher than the natural rate of unemployment
c) Investments are typically more volatile than GDP. Thus, in a recession the decline in investements is typically higher than the decline in GDP meaning that compared with the long-run average capital has to be used more intensively. Thus capacity utilization rate in a recession should be above the long-run average.

Explain whether each of the following events will increase, decrease, or have no effect on long-run aggregate supply.
a. The United States experiences a wave of immigration.
b. Congress raises the minimum wage to $10 per hour.
c. Intel invents a new and more powerful computer chip.
d. A severe hurricane damages factories along the east coast.

Solution

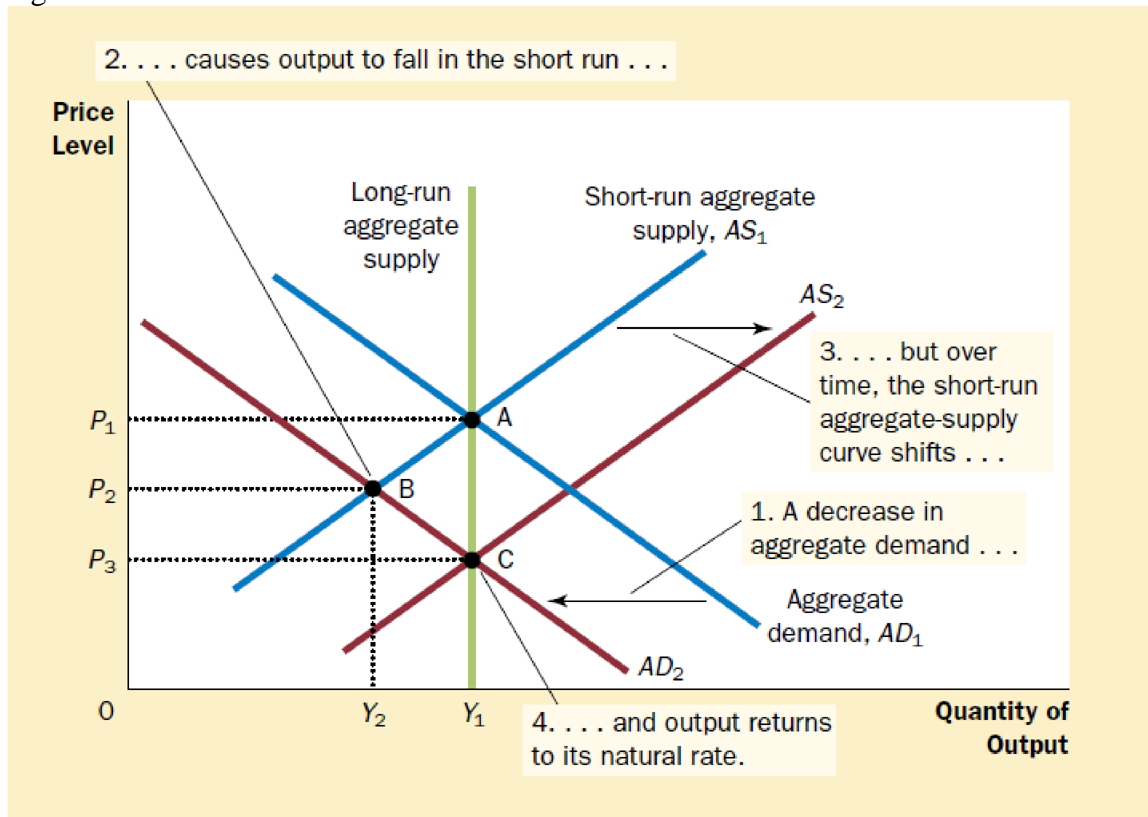
a) Wave of immigration to the US is likely to increase the total quantity of the labor force available , thus also increasing the potential GDP and long-run aggregate supply
b) Increase in wages implies an increase in total costs of the firms and thus can negatively affect the short-run aggregate supply . However, the potential GDP and thus long-run supply is not affected by this change.
c) Invention of the new chip is likely to cause an increase in productivity of factors of production and thus lead to an increase in long-run aggregate supply
d) If a hurricane damages production capacities, the potential GDP and thus long-run aggregate supply will be reduced.

In Figure 31-8, how does the unemployment rate at points B and C compare to the unemployment rate at point A? Under the sticky-wage explanation of the

short-run aggregate-supply curve, how does the real wage at points B and C compare to the real wage at point A?

Solution

Figure 31-8



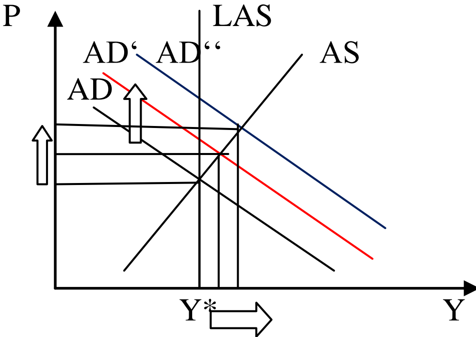
At point B the economy is in a recession thus the unemployment level is higher than at point A, where the potential GDP or natural GDP is produced at the unemployment is at its natural level. At point C the unemployment is at its natural level the same as in point A. If the nominal wage is sticky , the real wage at point B and C is higher than in point A since the price level compared with point A is lower.

Suppose the Fed expands the money supply, but because the public expects this Fed action, it simultaneously raises its expectation of the price level. What will happen to output and the price level in the short run? Compare this result to the outcome if the Fed expanded the money supply but the public didn't change its expectation of the price level.

Solution

Expansion of money supply will lead to a decrease in the interest rate thus stimulating aggregate demand . Increase in aggregate demand will lead to an increase both in a price as well as output in the short run. However , if, in addition public raises its expectations of the price level , it will want to increase the purchase of goods immediately to get rid of money .

Thus the consumption will increase more and aggregate demand will increase more than in the case when the public does not update its expectations. Consequently if the public raises expectations of the price level than the effect of increase in the money supply on output and price level will be higher than in the case when the expectations are not updated

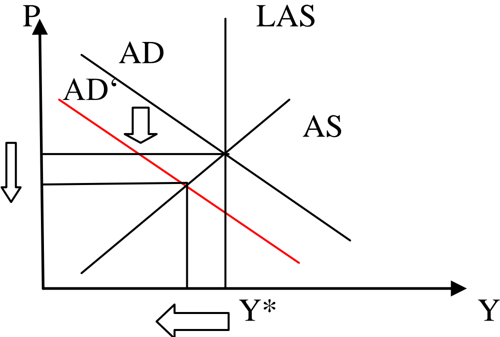


Explain whether each of the following events shifts the short-run aggregate-supply curve, the aggregate demand curve, both, or neither. For each event that does shift a curve, use a diagram to illustrate the effect on the economy.

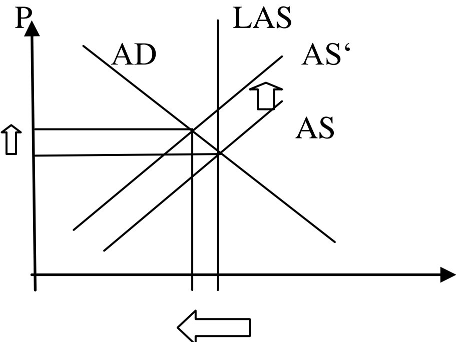
a. Households decide to save a larger share of their income.
b. Increased job opportunities overseas cause many people to leave the country.

Solution

a) If the larger fraction of income is saved this implies that lower fraction of income is consumed . Thus consumption will decrease and the aggregate demand will also decrease in the short run leading to a decrease in price level and output.



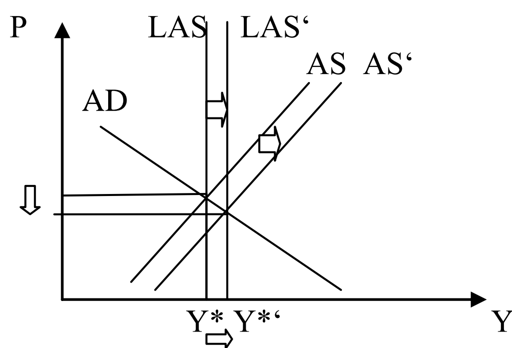
b) In this case the quantity of labor force in the country decreases which causes an increase in nominal wage. Thus, short-run aggregate supply declines and short-run aggregate supply curve shifts to the left causing price level to rise and ouput to decrease



For each of the following events, explain the short-run and long-run effects on output and the price level, assuming policymakers take no action.
a. The stock market declines sharply, reducing consumers' wealth.
b. The federal government increases spending on national defense.
c. A technological improvement raises productivity.
d. A recession overseas causes foreigners to buy fewer U.S. goods.

Solution

a) Reduction in consumer wealth is going to decrease consumption and to decrease aggregate demand thus leading to a decrease in price level and output in the short-run. In the long-run however the output is going to return the narutal GDP level but the pric level will be the lower than under the initial long-run equilibrium
b) Increase in government purchases is going to increase the aggregate demand thus leading to an increase in price level and output in the short-run. In the long-run however the output is going to return the narutal GDP level but the pric level will be higher than under the initial long-run equilibrium
c) Improvement in technology implies an increase in both short run as well as long-run aggregate supply thus leading to a lower price level and higher output both in the short run as well as in the long run.

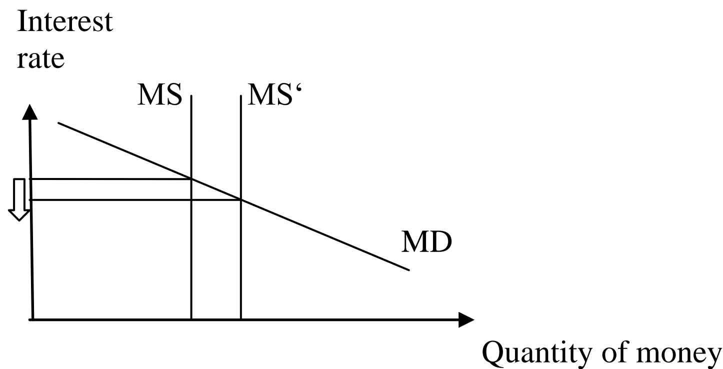


d) In this case export decreases which leads to a decrease in net export and a decrease in aggregate demand thus leading to a decrease in price level and output in the short-run. In the long-run however the output is going to return the narutal GDP level but the pric level will be the lower than under the initial long-run equilibrium

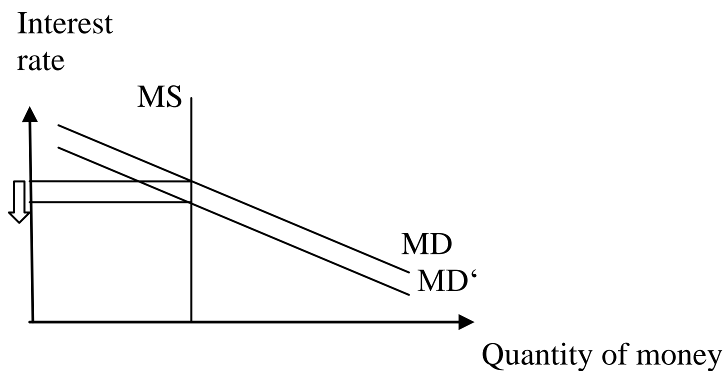
Explain how each of the following developments would affect the supply of money, the demand for money, and the interest rate. Illustrate your answers with diagrams.
a. The Fed's bond traders buy bonds in open-market operations.
b. An increase in credit card availability reduces the cash people hold.
c. The Federal Reserve reduces banks' reserve requirements.
d. Households decide to hold more money to use for holiday shopping.
e. A wave of optimism boosts business investment and expands aggregate demand.
f. An increase in oil prices shifts the short-run aggregate-supply curve to the left.

Solution

a) Buying bonds on the open market implies that Fed increases money supply which leads to a decrease in the interest rate

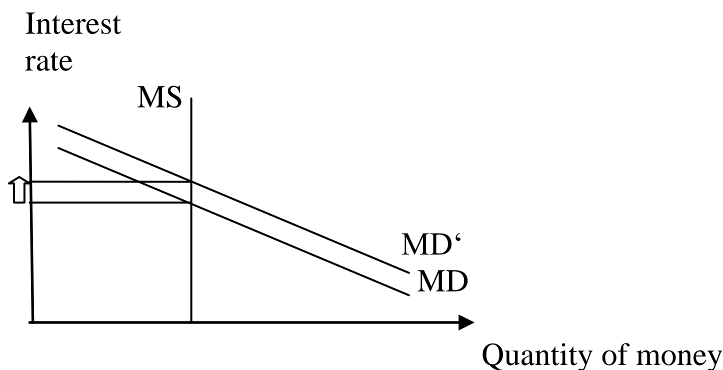


b) In this case people need to hold less cash so their demand for money decreases which leads to a decrease in the interest rate

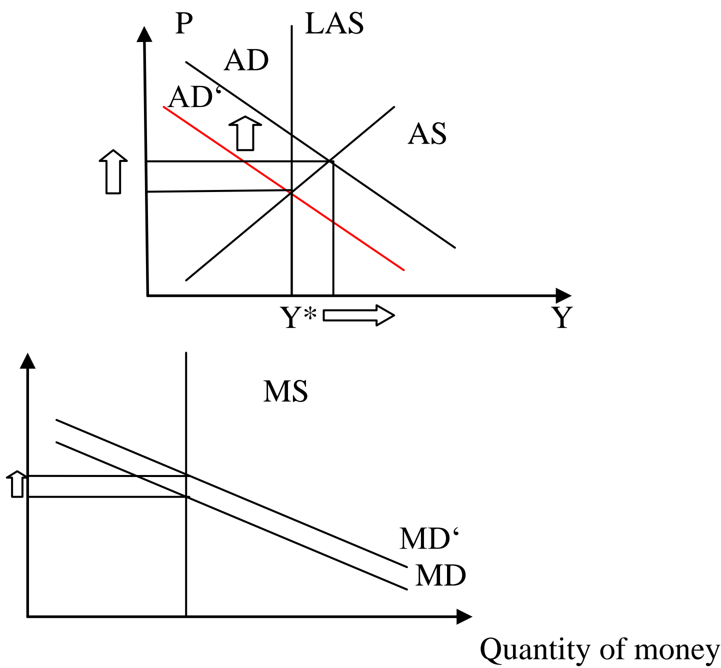


c) Reduction in reserve requirements implies an increase in money supply and decreases the interest rate (the same graph as in a))

d) In this case demand for money increases which leads to an increase in the interest rate .



e) Expansion of aggregate demand raises level of income the economy which leads to an increase in the demand for money . Thus interest rate increases

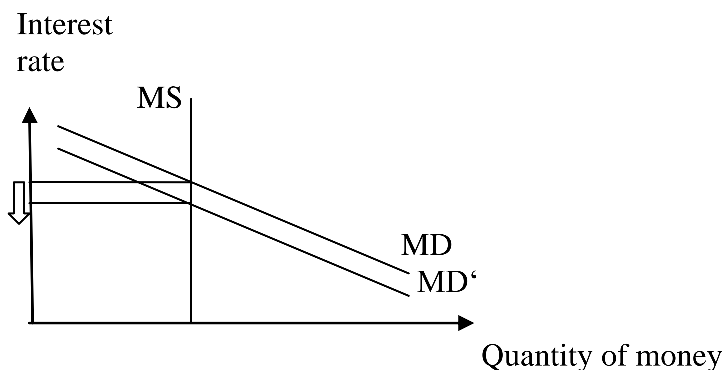


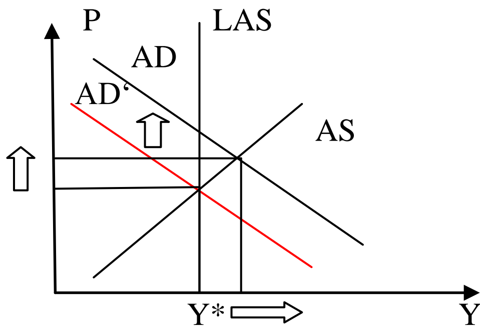
f) Shift of the aggregate supply to the left decreases the level of income in the economy and leads to a decrease in the demand for money. Thus interest rate decreases.

Suppose banks install automatic teller machines on every block and, by making cash readily available, reduce the amount of money people want to hold.
a. Assume the Fed does not change the money supply. According to the theory of liquidity preference, what happens to the interest rate? What happens to aggregate demand?
b. If the Fed wants to stabilize aggregate demand, how should it respond?

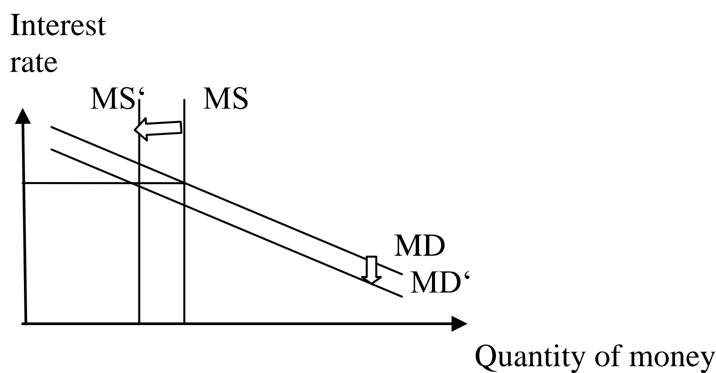
Solution

a) If the Fed does not change the money supply, the decrease in the demand for money caused by the instalation of automatic teller machines leads to a decrease in the interest rate . As a result aggregate demand increases .





b) If the Fed wants to stabilize aggregate demand, it should reduce money supply



Chapter 34 explains that expansionary monetary policy reduces the interest rate and thus stimulates demand for investment goods. Explain how such a policy also stimulates the demand for net exports.

Solution

In case of a small open economy a decrease in the interest rate leads to the outflow of capital to the foreign countries where the interest are higher. Because of this demand for domestic currency declines and the demand for foreign currency increases. Domestic currency depreciates making domestic goods cheaper. Because of this demand for net export increases.

Suppose economists observe that an increase in government spending of $10 billion raises the total demand for goods and services by $30 billion.
a. If these economists ignore the possibility of crowding out, what would they estimate the marginal propensity to consume (*MPC*) to be?
b. Now suppose the economists allow for crowding out. Would their new estimate of the MPC be larger or smaller than their initial one?

Solution

a) We know that change the total demand for goods and services and the initial change in government expenditures are linked by the formula :

$$\Delta Y = \frac{1}{1-MPC}\Delta G$$

$$30 = \frac{1}{1 - MPC} \cdot 10$$

$$3 = \frac{1}{1 - MPC}$$

MPC=0.66

b) If we take into account crowding out effect , which somewhat reduces positive effect of increase in government expenditures on aggregate demand , than we can conclude that MPC should be higher to get the observed change in aggregate demand.

Suppose the government reduces taxes by $20 billion, that there is no crowding out, and that the marginal propensity to consume is 3/4.
a. What is the initial effect of the tax reduction on aggregate demand?
b. What additional effects follow this initial effect?
c. What is the total effect of the tax cut on aggregate demand?
d. How does the total effect of this $20 billion tax cut compare to the total effect of a $20 billion increase in government purchases? Why?

Solution

a) The initial effect of this tax reduction is the increase in disposbale income by $20 billion which leads to an increase in consumption by (3/4)* 20=$15 billion.
b) The second effect which follows is the increase in aggregate demand by $15 billion which raises income by $15 billion
c) The total effect of tax cut on aggregate demand is determined as follows :

$$\Delta Y = -\frac{MPC}{1-MPC}\Delta T = -3 * (-20) = 60$$

d) The total effect of 20 billion tax cut compared to the total effect of 20 billion increase in government purchases is smaller since tax cut affects aggregate demand indirectly, through consumption while increase in government purchases affects aggregate demand directly.

Suppose government spending increases. Would the effect on aggregate demand be larger if the Federal Reserve took no action in response, or if the Fed were committed to maintaining a fixed interest rate? Explain.

Solution

The increase in government spending will have a larger effect on aggregate demand would be larger if the Fed were committed to maintaining the fixed interest rate, since in this case the negative crowding out effect would be compensated for.