Aggregate Supply and Aggregate Demand

14

→ BUSINESS CYCLES
→ AGGREGATE SUPPLY
→ AGGREGATE DEMAND
→ EQUILIBRIUM

WHY THE ECONOMY MOVES IN CYCLES

1. The average growth rate of the United States economy, as measured by the percentage change in real GDP, is just over three percent per year for the postwar period, yet only in a very few instances has the economy grown at its average rate. It typically grows faster than average and then in some years real GDP falls or shows negative growth. We call these negative growth periods *recessions.*
2. All economies experience fluctuations in economic activity—contractions and expansions. The ups and downs in economic activity are recurrent but do not conform to a uniform schedule. The longest postwar recession in the United States lasted 18 months, the shortest just 6 months. The longest expansion was more than 10 years, while the shortest lasted only 12 months.
3. One business cycle is comprised of an expansion and a recession. The fact that business cycles do not conform to a time schedule and differ in other respects, such as their severity, makes them extremely difficult to predict. Economic forecasters get lower grades for accuracy than the weatherman.

Our task in this chapter, however, is not to predict when the next recession will occur, but to explain *why* the economy moves in cycles. We will build a replica, or model, of the economy and see if that model moves in fits and starts like the real economy. Our model should also display other well-known characteristics of capitalist economies. For instance, large increases in income tend to result in inflation. Does our model confirm this? Technological advances tend to increase output while putting downward pressure on prices. Does our model explain this? Inflation and unemployment tend to be inversely related—when one is up, the other is down—but not always. Does our model explain this tendency and is it flexible enough to allow for exceptions to the relationship?

The name of the model that addresses all of these questions is the *aggregate supply/aggregate demand (AS/AD) model.* The AS/AD model highlights the factors that determine output, income, employment, and prices in the economy. Before we begin to build the model, we must consider what Classical economic theory indicates are the important factors determining output, income, employment, and prices in the economy.

CLASSICAL ECONOMIC THEORY

Classical economic theory was the predominant paradigm in economic analysis from about 1800 until 1930. The basis of Classical thought is Say's Law—supply creates its own demand. As we pointed out earlier, whenever anything is produced, it generates an amount of income equal to its value. Say's Law indicates that it would be impossible to produce too much because of this fact. When something is produced (supplied), it generates enough income to purchase (demand) the item.

However, there is no rule that says the income generated in the production process must be used to purchase the item produced. Workers and managers may decide to save a portion of their earnings. Say had a response to this: The unpurchased items would collect in inventories. Swelling inventories would induce producers to lower prices, the items in inventory would now sell. In other words, even if wage earners do not use their incomes to purchase all that was produced, prices would adjust to ensure there was no excess production.

Therefore, demand for products was never a concern for Classical thinkers. There would always be enough demand. The most important factor determining output was supply. And the most important factors determining supply were the amount of resources in the economy and the state of technology. Classical analysis has a very simple response to the question, "What determines the amount of output in the economy?" Resources and technology do.

Given this analysis it is easy to understand why Classical theory fell out of favor in 1930 during the Great Depression. Here, output in the economy had fallen sharply, yet there was no decrease in the amount of land, labor, and capital available. What's more, the productivity of those resources had not diminished either. That is to say, the state of technology was not deteriorating. The Classical economists could not explain why output fell so precipitously during the Great Depression.

KEYNESIAN THEORY

In 1936 John Maynard Keynes (pronounced KANES), a British economist, published a book entitled *The General Theory of Employment, Interest, and Money.* The book pointed out flaws in Classical theory and went on to suggest another, more general, theory. Basically, Keynes suggested that the price adjustment the Classical economists relied upon to ensure that supply would always equal demand did not work under certain circumstances. Essentially, Keynes pointed out that Say's Law, the basis for Classical analysis, did not hold true in all cases.

Keynes' model of the way the economy works is handed down to us in the form of the AS/AD model. The model indicates that the Great Depression was caused by a lack of demand for goods and services. Based on this assessment of the situation, Keynes developed a brilliant remedy for the Great Depression. Unfortunately, the remedy Keynes suggested was considered too radical and the Great Depression lingered on until World War II when both Great Britain and the United States were forced to apply Keynes's remedy.

To truly appreciate Keynes's solution to the Great Depression (and to do well on the Advanced Placement exam) we have to build an AS/AD from scratch.

Aggregate Supply

Aggregate means "sum total"; aggregate supply is the supply of all goods and services by all suppliers in the economy. In other words, aggregate supply is the supply of everything by all producers.

We are specifically interested in how the supply of everything by all suppliers is affected by the level of prices in the economy. We already know from our look into the production possibilities frontier that output depends on the amount of resources available and the state of technology, not prices. So if we drew an aggregate supply curve in line with that reasoning, it would be perfectly vertical, indicating that the price level in the economy can be high or low, it doesn't matter, because output or supply is going to be the amount indicated by where the vertical aggregate supply curve touches the horizontal axis. In Figure 14.1 the horizontal axis is labeled *Real GDP*. In many textbooks it is labeled *Quantity of Output* since real GDP is a measure of the quantity of output. The price level is best measured with the GDP deflator.

TIP

Questions concerning the economy in the long run should be addressed using the vertical aggregate supply curve. For questions concerning the short run, use the upward sloping aggregate supply curve.

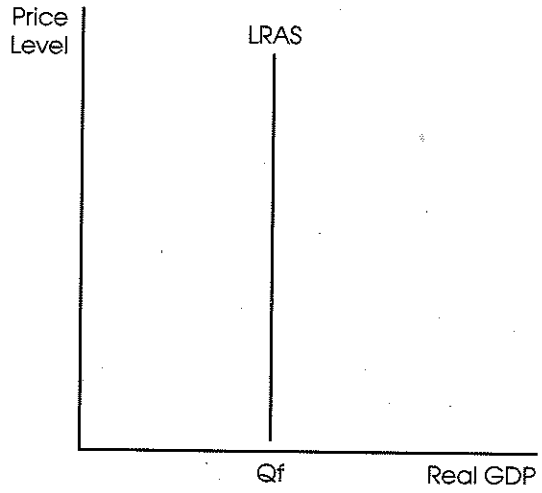


Fig. 14.1 A Long-Run Aggregate Supply Curve

The long-run aggregate supply curve touches the horizontal axis at the economy's potential GDP, Q_f. This is the amount that can be produced using the economy's resources fully and efficiently. It corresponds to an economy operating on its production possibilities frontier.

There may be situations, however, where the price level in the economy does indeed affect the amount supplied by all producers. For instance, if there is a surplus of unemployed resources, then when the price level rises the cost of these resources may not rise as much or at all. In this situation suppliers could get more for their product while production costs remain unchanged. This is an incentive to increase supply.

Macroeconomists often assume that changes in wages lag behind changes in the price level. This results in an upward-sloping short-run aggregate supply curve. The cost of a critical resource (labor) is not changing as fast as the price of final products is rising. Therefore, a rise in the price level brings forth a greater quantity supplied. This is only true in the short run. In the long run, wages rise in proportion to prices, so there is no incentive to supply more when the price level rises.

Shifts in Aggregate Supply

Both long-run and short-run aggregate supply will shift if there is a change in resources or productivity in the economy. However, some of these changes may affect only the short-run aggregate supply curve. For example, Hurricane Katrina destroyed many resources in a vast region of our macroeconomy. Fewer resources means aggregate supply shifted left:

However, the long-run aggregate supply curve would not shift in this instance since the loss in resources was temporary. (Some would argue that Katrina resulted in a long-run loss of resources.)

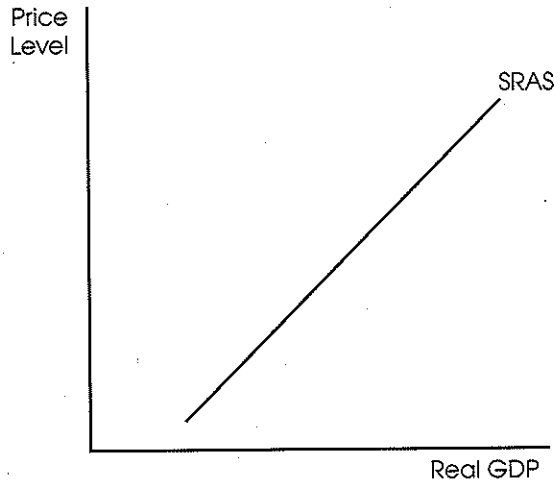


Fig. 14.2 A Short-Run Aggregate Supply Curve

A technological advance in production techniques would shift both short- and long-run aggregate supply to the right. However, if the technological advance was dependent on a licensing agreement with a foreign company and therefore only temporary, then only short-run aggregate supply would shift right.

There is one critical factor that will shift short-run, but not long-run, aggregate supply: a change in the expected price level. If suppliers think that they can get better prices for their products in a month, then they are often able to withhold supply until prices do indeed rise. However, changing expectations about future price levels does not shift long-run aggregate supply.

FACTORS SHIFTING AGGREGATE SUPPLY

Changes in resource availability

- Relaxing immigration laws to allow more labor into the country shifts aggregate supply right.
- Discovering new oil fields shifts aggregate supply right.

Changes in productivity

- New technologies that benefit producers shift aggregate supply right.
- Relaxing government regulations can increase productivity and shift aggregate supply right.

Changes in the expected price level (shifts only short-run aggregate supply)

- If suppliers expect prices to be lower in the future, they will supply more right now, shifting aggregate supply right.
- Resource prices change. A fall in resource prices increases profit margins and shifts short-run aggregate supply the right.

Aggregate Demand

The aggregate demand curve represents the total demand for goods and services in the economy by households, businesses, governments, and foreigners. In other words, aggregate demand is the demand for everything by everyone.

If the prices of goods and services rise, aggregate demand will fall, as shown in Figure 14.3.

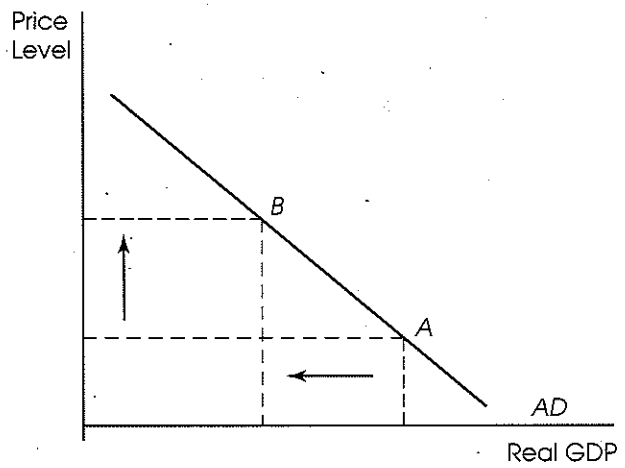


Fig. 14.3 An Increase in the Price Level Reduces Aggregate Demand

The question is why? Most people would say because high prices turn consumers off. But this answer is totally incorrect in this context. When the price level rises, incomes rise by the exact same proportion. Remember, whenever something is produced, it generates an equivalent amount of income. As prices rise in the economy, someone is benefiting. For example, the owners of businesses that manufacture the products that are rising in price are making more profits that eventually translate into more income for the owners. If incomes rise in proportion with prices, then why would aggregate demand fall?

There are three reasons why aggregate demand would fall when the price level rises: the wealth effect, the interest rate effect, and the foreign purchases effect. Each of these explanations takes into account that rising prices means rising incomes. They suggest aggregate demand would fall even though incomes are keeping pace with rising prices.

The aggregate demand curve slopes downward due to the

- Wealth effect
- Interest rate effect
- Foreign purchases effect

The Wealth Effect

The wealth effect points to the fact that rising prices erode financial wealth. Suppose you had $200,000 saved up for your retirement. As the price level rises, that $200,000 can buy less and less. You may decide to begin saving at a greater rate. Therefore, as prices rise in the economy, the value of financial wealth declines and people respond to this by saving more and demanding fewer goods and services.

The Interest Rate Effect

As the price level rises, so does the nominal interest rate. That is because lenders charge higher interest rates when they expect to be paid back with dollars that have lost some of their value due to inflation. Irving Fisher pointed this out long ago. The Fisher Hypothesis states that the nominal interest rate is equal to the real return lenders desire plus expected inflation.

FISHER'S HYPOTHESIS

Nominal Interest Rate = Real Interest Rate + Expected Inflation

Suppose you loan a friend $100 and would like a 5 percent return. You would ask for $105 to be repaid after a year. However, if inflation was 3 percent over the course of the loan, your real return would have been only 2 percent. If you expected inflation to be 3 percent over the course of the loan, then you would have charged 8 percent interest in order to have a real return of 5 percent.

A rising price level causes inflationary expectations to rachet upward. This, in turn, causes lenders to charge higher interest rates. The higher interest rates lead to lower aggregate demand because spenders often borrow the funds to make purchases. This is the interest rate effect.

THE INTEREST RATE EFFECT

Price level ↑ → Interest rate ↑ → Interest-sensitive spending ↓→ Aggregate demand ↓

The Foreign Purchases Effect

If the price level in the United States rises, then its goods will be more expensive to foreigners. The nation will export less. Moreover, foreign goods will be more competitively priced, so U.S. imports will rise. Net exports will decline, the result being a direct decrease in aggregate demand.

- **The wealth effect**—if the price level rises, consumers feel less wealthy even if their income keeps pace with inflation because their financial assets are worth less. They therefore save more and spend less.
- **The interest rate effect**—if the price level rises, so will the nominal interest rate. This reduces interest-sensitive spending.
- **The foreign purchases effect**—if the U.S. price level rises, U.S. goods look more expensive to foreigners, and U.S. exports fall. Foreign goods are relatively less expensive, and U.S. imports rise. Thus, total demand for U.S. goods falls.

It should be pointed out that all three effects work in reverse to ensure that a decrease in the price level causes an increase in aggregate demand.

Notice that a change in the price level will move the economy up or down the aggregate demand curve. We have not mentioned anything that will shift the aggregate demand curve. That is the subject of the next section.

Shifts in Aggregate Demand (AD)

It is important to know what can shift the aggregate demand curve left and right. A change in the price level will cause the economy to move from one point to another along the same aggregate demand curve. It will not cause a shift.

Many things can shift aggregate demand. Remember, aggregate demand is demand from households, businesses, governments, and foreigners. An increase in consumer confidence can shift aggregate demand. An increase in income taxes causes consumers to spend less and shift aggregate demand left. If foreigners suddenly decided that they did not want American products, aggregate demand would decrease and therefore shift left. An increase in federal spending would shift aggregate demand to the right. If it was paid for with a tax increase, that would lessen the effect because taxes reduce spending.

Anything that affects total spending in the economy, except a change in the price level, will shift aggregate demand. The box below delineates some aggregate demand shifters.

FACTORS SHIFTING AGGREGATE DEMAND

Changes in consumer spending:

- A rise in consumer confidence would shift AD right.
- A tax hike would shift AD left.

Changes in investment spending:

- An increase in expected future sales would shift AD right.
- A rise in interest rates shifts AD left.

Changes in government spending:

- An increase in military spending shifts AD right.
- A decrease in spending on highway construction shifts AD left.

Changes in net exports:

- A decrease in the value of the dollar shifts AD right.
- The French begin to loathe American products; AD shifts left.

Anything that affects C or I or G or X (except the price level) shifts AD. Also, changes in the money supply shift AD. That's because an increase in the money supply would reduce interest rates and cause an increase in interest-sensitive spending.

Aggregate Supply and Aggregate Demand Together

The aggregate supply curves and the aggregate demand curve have the price level on the vertical axis and the quantity of output on the horizontal axis. We can, therefore, draw the curves on the same diagram.

You may recall that we discussed two different aggregate supply curves. Let's ignore the long-run aggregate supply curve for now and examine how the macroeconomy behaves in the short run.

The economy will have a tendency to operate at point E in Figure 14.4 with a quantity of output of Q_e and price level of P_e. Say the price level was not P_e but P′. At P′ aggregate supply is greater than aggregate demand. This will cause inventories of products to bulge. Producers would respond by lowering prices.

A similar analysis suggests that if the price level was P″, aggregate demand would exceed aggregate supply. Inventories would fall. Producers would realize that they could raise their prices. In short, surpluses and shortages will drive the price level to P_e and the quantity of output Q_e. Only then will there be no surplus or shortage of output.

The economy will produce Q_e and experience price level P_e until something changes. Specifically, the equilibrium point will change when the aggregate supply curve or the aggregate demand curve shifts.

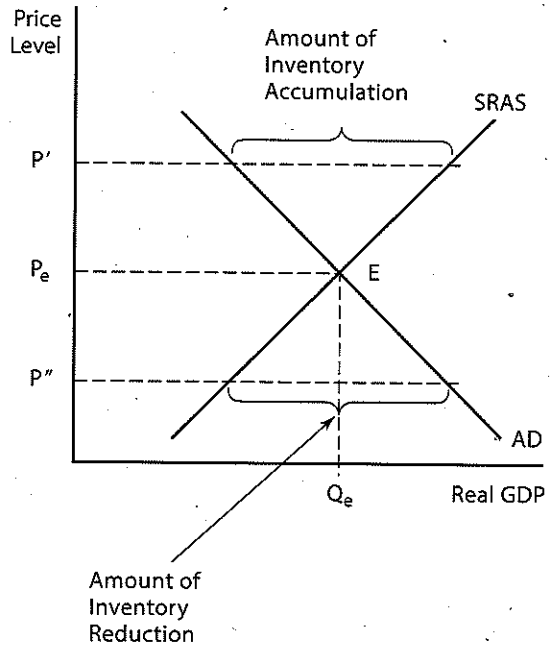


Fig. 14.4 Equilibrium of Aggregate Supply and Aggregate Demand

USING THE AS/AD MODEL

We are now in a position to put the AS/AD model through its paces. We can use the model to help us analyze what will happen under various conditions. For instance, suppose there is a technological advance that makes workers more productive. An example might be the development of the personal computer so that just about everyone can have one at his or her desk. In the 1970s computers were not developed to the point where one would fit on a desk and the cost of owning a personal computer was prohibitive. Now that productivity-enhancing computers are just about everywhere, how would this affect the economy?

Remember that a technological advance shifts the aggregate supply curve to the right. This is shown in Figure 14.5.

The original equilibrium is E_1. After the technological advance, the new equilibrium is E_2. Four specific conclusions can be made by comparing E_1 to E_2. First, prices are lower at E_2. Second, real GDP is higher. We are at Q_2 compared to Q_1. Because real GDP is higher we can draw two further conclusions: Unemployment will fall and income will rise.

Our AS/AD model tells us that we can expect lower prices, more output, less unemployment, and more income after a technological advance. Would a Classical economist respond differently? Let's redo the analysis using a long-run aggregate supply curve.

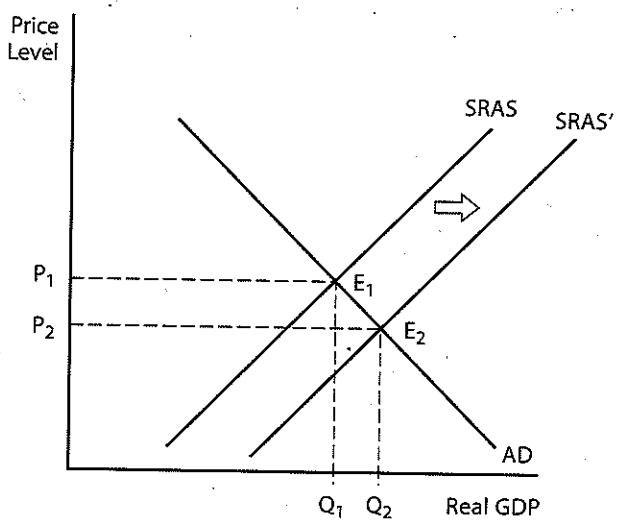


Fig. 14.5 The Effects of a Technological Advance

Figure 14.6 shows that an advance in technology would shift the long-run aggregate supply curve to the right. Comparing the original equilibrium, E_1, with the new equilibrium, E_2, gives the same results as when the aggregate supply curve was upward sloping: Prices are lower at E_2 and real GDP is higher. Higher output means unemployment will be lower and income will be higher. The results are the same using either aggregate supply curve.

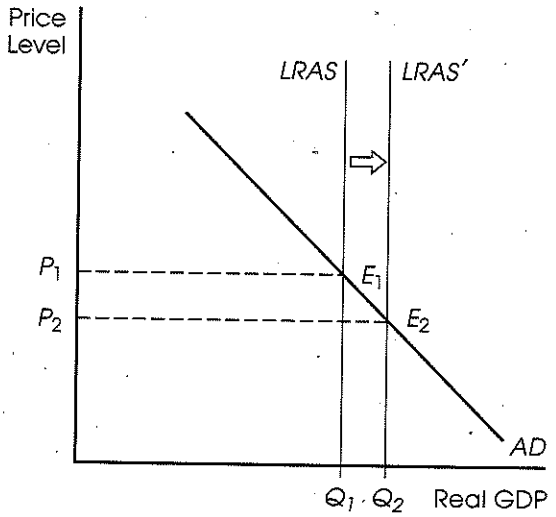


Fig. 14.6 The Effects of a Technological Advance with a Long-Run Aggregate Supply Curve

Let's try another example where the results will differ depending on what type of aggregate supply curve is used. This time let's consider the effects of a drop in consumer confidence on the economy. When consumers feel less confident about their future job prospects and income levels, they are not willing to spend as much of their current incomes. This causes the aggregate demand curve to shift to the left.

Comparing the initial equilibrium, E_1, with new equilibrium, E_2, in Figure 14.7 indicates that prices and real GDP will fall because of the decline in consumer confidence. Once real GDP falls we can conclude that unemployment will rise and income will fall. It seems that we have a self-fulfilling prophecy here. Consumers begin to think that the economic future will be bleak; so they reduce spending right now because they are not as certain of their job prospects in the future. Our AS/AD analysis indicates that this would cause a recession, where output falls along with income and employment. Prices should also fall.

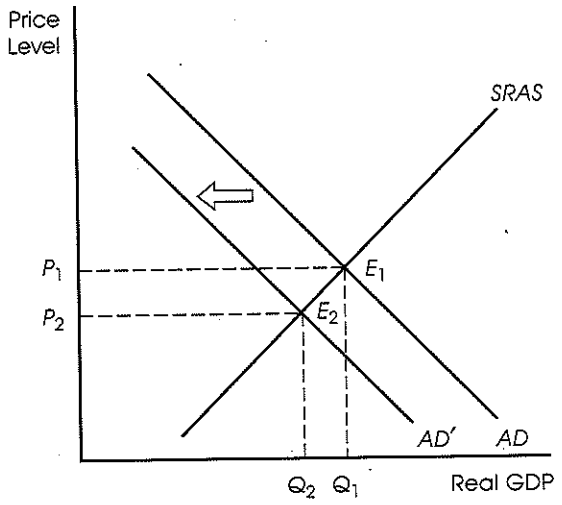


Fig. 14.7 The Effects of a Drop in Consumer Confidence

Would the same results hold if we used a long-run aggregate supply curve? Figure 14.8 indicates that they would not. The drop in consumer confidence again shifts the aggregate demand curve to the left, but the results of this are a steeper decline in prices than with a short-run aggregate supply curve and no change in real GDP. In the long run, prices fall even farther, and this pushes equilibrium real GDP to its original position at Q_1.

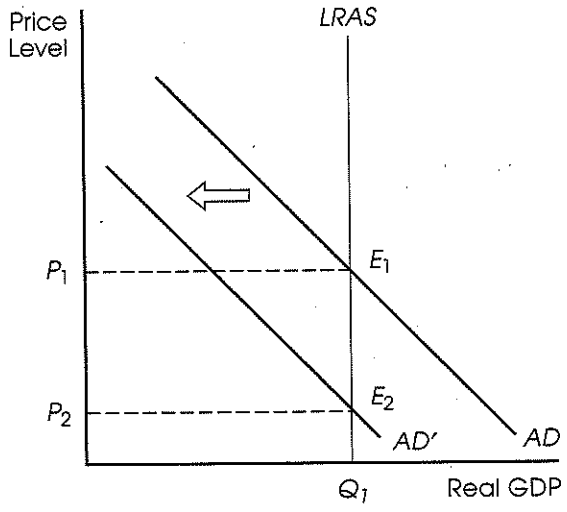


Fig. 14.8 The Effects of a Drop in Consumer Confidence with a Long-Run Aggregate Supply Curve

According to long-run analysis, when aggregate demand falls, prices fall, and this drop in prices should help maintain spending levels. Therefore, real GDP does not fall with the decline in aggregate demand.

The Short Run vs. the Long Run

We can consider the short- and long-run effects of any change in the economy with our aggregate supply and aggregate demand model. Figure 14.9 shows the effects of a tax cut on an economy that is already operating at its potential.

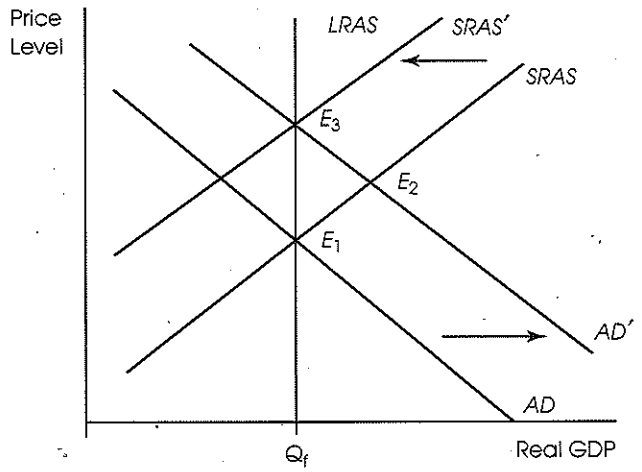


Fig. 14.9 The Effects of a Tax Cut on an Economy Operating at Potential GDP

Begin at E_1, where all three curves cross. This economy is operating at its potential because output is at Q_f, which represents potential GDP. The tax cut shifts the AD curve to the right, and the economy is now operating at E_2. This is the short-run effect of the tax cut. Output is up, which means that income and employment have increased as well. The price level is higher at E_2 than at E_1 as well.

Since E_2 is to the right of potential GDP, we know this economy is operating above potential. Resources are strained, and the price level is up. This leads to the expectation that prices will be higher in the future. If suppliers expect higher prices for their products in the future, many of them can reduce the supply right now. In addition to this, resource prices will rise in the long run since they are being used intensely with the very high production level. Rising resource prices also shift short-run aggregate supply to the left.

In the short run the tax cut stimulated the economy to produce beyond its potential. In the long run the economy was back at its potential. The price level is higher in the long run, but wages and incomes will be proportionally higher as well. The tax cut had no effect on living standards in the long run. This makes sense. Living standards in the long run depend on resources and technology, not tax cuts.

Let's use our model to understand the Great Depression. It is well known that the Great Depression was caused by a severe drop in aggregate demand. Several causes for the decline in aggregate demand have been highlighted by economic historians. First, the financial panic caused a 33 percent decline in the money supply. That would shift aggregate demand left.

The stock market crash caused businesses and households to cut spending. Some say new tariffs on international trade added to the reduction in aggregate demand.

Figure 14.10 shows the short- and long-run effects of a reduction in aggregate demand. In the short run the economy moves to E_2. Production, income, and employment are down. The price level has fallen as well. The Great Depression evinced all these effects. In the long run, the expectation is that a depression will lead to a further drop in prices. This is because resources are idle and there is plenty of labor to be employed at low nominal wages. When suppliers expect prices to be lower in the future, they attempt to supply more right now. This causes the aggregate supply curve to shift right. The economy ends up at E_3, producing at its potential.

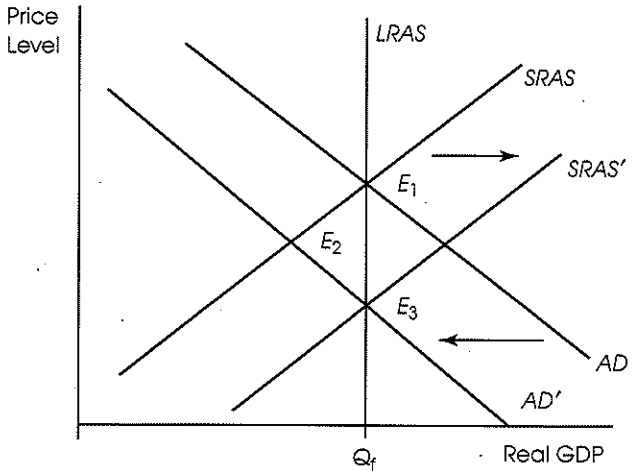


Fig. 14.10 The Effects of a Reduction in Aggregate Demand

There was just one problem with this analysis during the 1930s. Ten years went by, and the economy still had not returned to potential. Prices were falling, but some said they had not fallen enough. Government policies were put in place to prevent prices from falling because the lower prices were driving businesses into bankruptcy.

Keynesian economists like to point out that sticky prices do not allow the economy to return to its long-run potential as our analysis suggests. These economists say the government should take action during recessions because the long run may never come. Exactly what the government can do to move the economy toward its potential is the subject of the next two chapters.

SUMMARY

At this point some readers may be thinking, which analysis is correct, long run or short run? It turns out that the two analyses can be reconciled. We will do so in the coming chapters.

- The AS/AD model is a very powerful tool for thinking about how an economy will respond to given events, such as a technological advance or a dip in consumer confidence. If you are interested in the long-run effects, then it is best to use a vertical aggregate supply curve. Use a short-run aggregate supply curve in the opposite circumstances.
- The question we asked at the beginning of this chapter got lost in all the details: What causes business cycles? The AS/AD model suggests that shifts in the aggregate supply and demand cause fluctuations in economic activity. We listed the factors that could shift these curves. The resulting changes in equilibrium output and prices are the business cycles that we observe in the real world.

Finally, keep in mind that the AP exam in Macroeconomics emphasizes the material in this chapter. It will pay for you to become familiar with the graphs and understand what can cause the curves in each graph to shift. You may think about repeating the chapter if you do not do well on the sample multiple-choice and free-response questions.

TERMS

Aggregate Demand the demand for all goods and services by all households, businesses, governments, and foreigners

Aggregate Supply the supply of all goods and services by all producers in the economy

Business Cycle a wave of economic activity comprised of an expansion and a recession

Classical Economic Theory the predominant paradigm in economic analysis from about 1800 until 1930, based on Say's Law

Equilibrium Price Level the price level that equates aggregate supply and aggregate demand; the average level of prices in the economy

Equilibrium Quantity the amount of output that results in no shortage or surplus; the amount of goods and services bought and sold in the economy

Expansion a sustained improvement in economic activity

Potential GDP the amount that can be produced when all of the economy's resources are used fully and efficiently

Price Level the average price of goods and services in the economy, typically measured by the GDP deflator

Recession a sustained decline in economic activity

Say's Law theory that supply creates its own demand

MULTIPLE-CHOICE REVIEW QUESTIONS

1. Business cycles
   (A) occur infrequently in capitalist economies.
   (B) refer to reusing resources in production.
   (C) are predictable ups and downs in economic activity.
   (D) are each comprised of a recession and an expansion.
   (E) are the same as depressions.

2. Recessions
   (A) are a thing of the past.
   (B) are very severe depressions.
   (C) are marked by a sustained decline in output.
   (D) occur at regular intervals.
   (E) are typically accompanied by falling unemployment.

3. Say's Law
   (A) is the basis of Keynesian economic analysis.
   (B) is the basis of Classical economic analysis.
   (C) states that demand creates its own supply.
   (D) indicates that prices will be stable in capitalist economies.
   (E) was verified by the Great Depression.

4. Keynes
   (A) advanced Classical economic theory by making several refinements.
   (B) showed how Say's Law operated in capitalist economies.
   (C) was a great American economist.
   (D) explained the cause of and cure for the Great Depression.
   (E) advanced Classical economic theory by building on Say's Law.

5. Which of the following would NOT shift the aggregate supply curve?
   (A) An increase in the price level
   (B) A decrease in the amount of resources in the economy
   (C) An increase in the amount of resources in the economy
   (D) An improvement in technology
   (E) A decrease in productivity

6. Which of the following would shift the aggregate demand curve to the left?
   (A) An increase in consumer confidence
   (B) Business firms reduce spending on plant and equipment
   (C) Foreigners develop a preference for our products
   (D) Government increases its level of spending
   (E) An increase in the money supply

7. Which of the following would NOT shift the aggregate demand curve?
   (A) A change in consumer confidence
   (B) A change in technology
   (C) A change in the money supply
   (D) A change in spending by state governments
   (E) A change in foreign tastes for our products

8. What will happen to the equilibrium price level and the equilibrium quantity of output if the aggregate demand curve shifts to the right? Assume an upward-sloping aggregate supply curve.
   (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
   (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
   (C) The equilibrium price level and quantity of output increase.
   (D) The equilibrium price level and quantity of output decrease.
   (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

9. What will happen to the equilibrium price level and the equilibrium quantity of output if consumer confidence increases? Assume an upward-sloping aggregate supply curve.
   (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
   (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
   (C) The equilibrium price level and quantity of output increase.
   (D) The equilibrium price level and quantity of output decrease.
   (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

10. What will happen to the equilibrium price level and the equilibrium quantity of output if the aggregate demand curve shifts to the right? Assume a long-run aggregate supply curve.
   (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
   (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
   (C) The equilibrium price level and quantity of output increase.
   (D) The equilibrium price level remains unchanged while the equilibrium quantity of output increases.
   (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

11. What will happen to the equilibrium price level and the equilibrium quantity of output if the aggregate supply curve shifts to the left? Assume an upward-sloping aggregate supply curve.
   (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
   (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
   (C) The equilibrium price level and quantity of output increase.
   (D) The equilibrium price level and quantity of output decrease.
   (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

12. What will happen to the equilibrium price level and the equilibrium quantity of output if a major earthquake destroys much of the plant and equipment on the West Coast? Assume an upward-sloping aggregate supply curve.
    (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
    (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
    (C) The equilibrium price level and quantity of output increase.
    (D) The equilibrium price level and quantity of output decrease.
    (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

13. What will happen to the equilibrium price level and the equilibrium quantity of output if the aggregate supply curve shifts to the left? Assume a long-run aggregate supply curve.
    (A) The equilibrium price level increases while the equilibrium quantity of output decreases.
    (B) The equilibrium price level decreases while the equilibrium quantity of output increases.
    (C) The equilibrium price level and quantity of output increase.
    (D) The equilibrium price level remains unchanged while the equilibrium quantity of output increases.
    (E) The equilibrium price level increases while the equilibrium quantity of output remains unchanged.

14. An increase in the price level
    (A) shifts aggregate demand left.
    (B) increases real financial wealth and therefore decreases consumer demand.
    (C) reduces real financial wealth and therefore increases consumer demand.
    (D) increases real financial wealth and therefore increases consumer demand.
    (E) reduces real financial wealth and therefore decreases consumer demand.

15. According to the interest rate effect, aggregate demand slopes downward because lower prices
    (A) reduce interest rates and therefore decrease the quantity demanded in aggregate.
    (B) increase interest rates and therefore decrease the quantity demanded in aggregate.
    (C) reduce interest rates and therefore increase the quantity demanded in aggregate.
    (D) increase interest rates and therefore increase the quantity demanded in aggregate.
    (E) None of the above are correct.

FREE-RESPONSE REVIEW QUESTIONS

1. Draw an aggregate supply/aggregate demand diagram. Label the axes of your diagram. Make the aggregate supply curve upward sloping. Show which curve shifts when foreigners suddenly develop a distaste for our products. What will happen to equilibrium output and the equilibrium price level in the short run?

2. Would you expect the same thing to happen to equilibrium output and the equilibrium price level in the long run? Redraw the aggregate supply/aggregate demand diagram using a long-run aggregate supply curve. Now what happens when foreigners develop a distaste for our products?

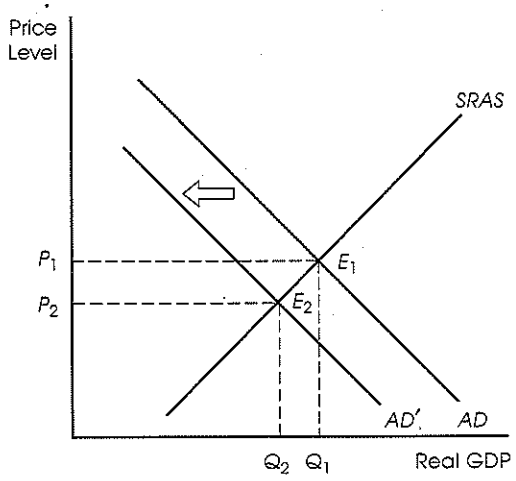
3. Explain why the long-run aggregate supply curve is drawn as a vertical line and the short-run aggregate supply curve is drawn upward sloping. Explain why the long-run effects of a change in foreign tastes are different from the short-run effects.

Multiple-Choice Review Answers

1. **(D)**	5. **(A)**	9. **(C)**	13. **(A)**
2. **(C)**	6. **(B)**	10. **(E)**	14. **(E)**
3. **(B)**	7. **(B)**	11. **(A)**	15. **(C)**
4. **(D)**	8. **(C)**	12. **(A)**	

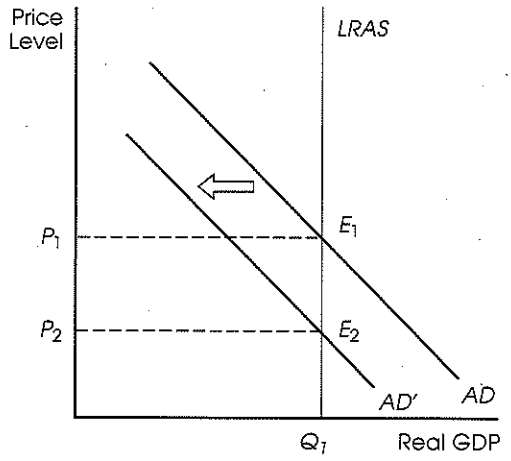
Free-Response Review Answers

1. AS/AD model when foreigners develop a distaste for our products



When foreigners develop a distaste for our products the aggregate demand curve shifts to the left. This causes the equilibrium price level and the equilibrium quantity of output to fall.

2. AS/AD model when foreigners develop a distaste for our products (with long-run aggregate supply curve)



The long-run, or Classical, economic analysis indicates that the equilibrium price level will fall when foreigners develop a distaste for our products, but the equilibrium quantity of output will remain unchanged.

3. The long-run aggregate supply curve is drawn as a vertical line because aggregate supply is not affected by the price level in the long run. Only the amount of resources and the state of technology affect aggregate supply in the long run. In the short run, however, an increase in the price level induces suppliers in the economy to bring more product to market. Therefore, when foreigners develop a distaste for our products, prices fall and this reduces the amount of product that suppliers are willing to bring to market. But in the long run, the change in foreign tastes has not affected the amount of resources we have or our state of technology, so the quantity of output remains unchanged.