

Part III: Background to the Modern Period 1900-1945

Objectives for Chapter 11: 1900 to 1929

At the end of Chapter 11, you will be able to answer the following:

1. Briefly describe the main economic trends in the United States from 1900 to 1929.
2. Name the three parts of the **Classical Economic Theory**?
3. Show Equilibrium Real GDP on the Aggregate Demand - Aggregate Supply graph. Show the Potential Real GDP on the same graph. Show a recessionary gap. Then show an inflationary gap. (Review)
4. What is *Say's Law*? Use Say's Law to explain how an economy will automatically adjust to eliminate recessionary gap. Show this on the graph. Then, explain how an economy will automatically adjust to eliminate an inflationary gap. Show this on the graph.
5. What assumptions are necessary for Say's Law to be true?
6. What is the "*classical quantity theory of money*"?
7. What is the **equation of exchange**? Define "*velocity*".
8. What **assumptions** were made to convert the equation of exchange into the classical quantity theory of money?
9. What are the **conclusions** of the classical quantity theory of money? Show this on the aggregate demand - aggregate supply graph.
10. What conditions were necessary for a nation to be on the **Gold Standard**?
11. Explain the operation of the Gold Standard. To answer this, first assume there is **inflation in the United States**. Then, assume there is a **recession in the United States**.
12. What were the **advantages** of the Gold Standard?
13. What were the **problems** associated with the Gold Standard?

Chapter 11: 1900 to 1929 Classical Economics (latest revision August 2004)

1. Introduction: The American Economy from 1900 to 1929

In this course, we are studying Macroeconomic principles from the perspective of the economic history of the United States in the 20th century. In Chapter 11, we will begin our historical approach by looking at the period leading up to the Great Depression. In this period from 1900 to 1929, there was a substantial consensus among economists as to the ways by which a market, capitalist economy operated. The ideas for this consensus had been developed from the 18th century to the early 20th century. As we will see, these ideas came into question as a result of the Great Depression of the 1930s. However, these ideas still have considerable influence today, especially on the views of political conservatives. Today, these ideas are known as **Classical Economics**.

There are several aspects of the economic history of the period from 1900 to 1929 that are important for us to understand. **First, this was a period of important economic growth in the United States.** This period was associated with the **introduction of the mass production factory system.** The mass production factory system was designed to bring large numbers of relatively low skilled workers together with large amounts of capital on an assembly line. The workers did relatively simple tasks and could therefore be easily replaced. **For the first time, large numbers of workers became especially vulnerable to unemployment.** But by producing in this manner, the companies were able to lower their production costs. Lower production costs meant lower prices for buyers, making it possible for people to afford products they could never have afforded previously. More and more people were able to buy automobiles and the consumer appliances that make life so much easier. This ability to buy was enhanced by the **development of installment credit.** By 1929, industrial production was almost double what it had been in 1913. **Second, during this period of rapid economic growth, there were several recessions. But, as had been true in the 19th century, these recessions rarely lasted very long.** The brevity of these recessions greatly influenced the thinking of economists, as we shall see below. **Third, inflation was not much of a problem in this period.** The CPI, which was 9.8 in 1913, rose to 17.1 in 1929. But the entire rise came in the period during and following World War I. From 1919 to 1929, prices did not rise at all. **Fourth, the federal government in this period was very small, compared to its present importance in our economic life.** The federal income tax only came into existence in 1913. From 1913 until 1929, no more than 20% of Americans paid any federal income tax at all. Most revenues of the federal government came from tariffs on imported goods and other excise taxes. Except during World War I, the spending of the federal government amounted to no more than 5% of the Gross Domestic Product. There was no Social Security, no Medicare, no welfare spending, no unemployment benefits, and no farm subsidies. Even spending on the military was relatively small. **Fifth, this was a period of American isolationism.** High tariffs indicated little desire to engage in foreign trade. And the period saw the first restrictions on immigration into the United States. In 1914, over 1.2 million immigrants came into the United States, with no restrictions. When restrictions were enacted in 1924, the number of immigrants was reduced and fixed at 160,000. **Finally, this was a period of great inequality.** In the

period before World War I, probably half of all of the wealth of Americans was held by the richest 1% of the people (compared to about 35% of all wealth today).

2. Classical Economics

There are three parts to the view called Classical Economics. Let us examine them individually. **The first part is Say's Law**, named for a French philosopher, Jean Say, who created the "law" in 1795. **The second part is the Quantity Theory of Money.** While this was described in crude form as early as 1560, the description we will explore here was developed in the late 19th century. **And the third part is the Gold Standard.** Most of the industrial world was on the Gold Standard from the 1870s until the 1930s.

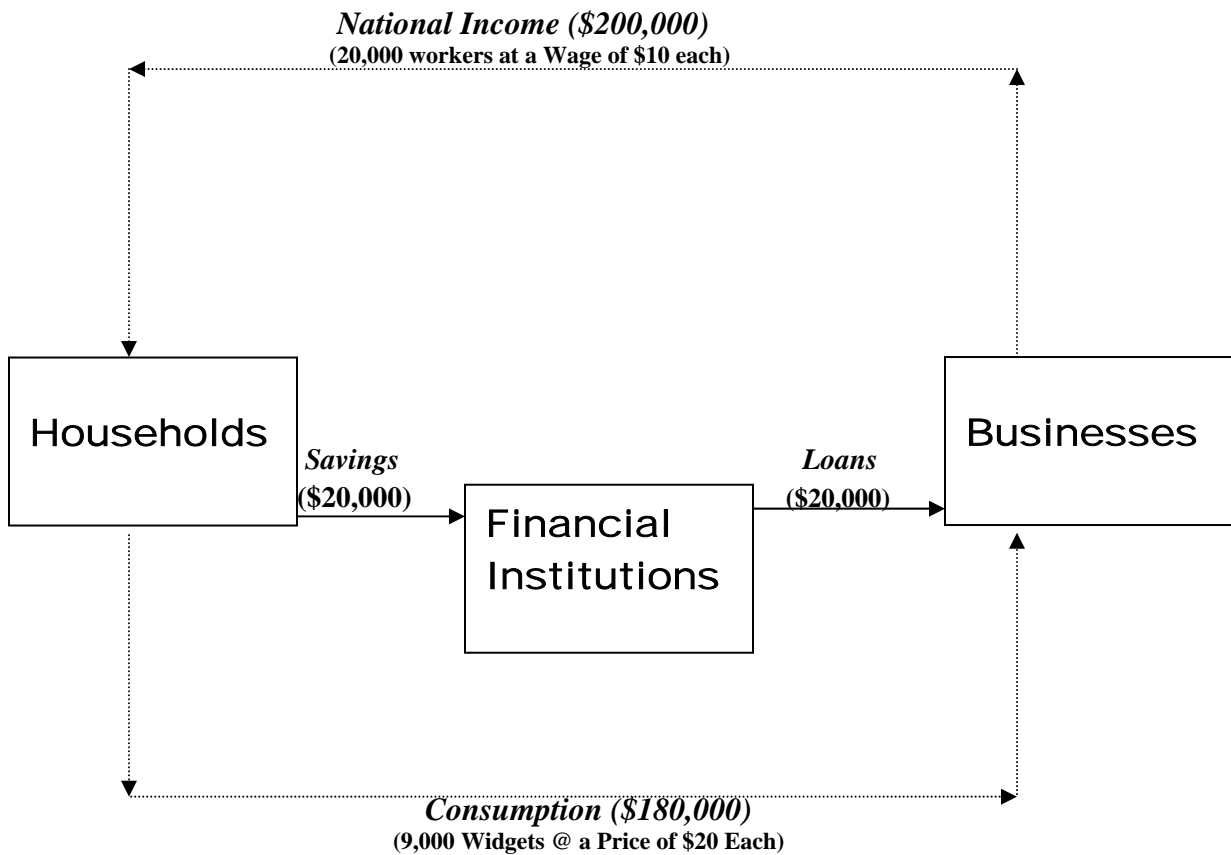
Part I: Say's Law

Say's Law is commonly stated in the following cliché form: ***"supply creates its own demand"***. **This means that everything that can be produced (called Potential Real Gross Domestic Product) will be bought. There will always be full employment; that is, there will be no cyclical unemployment (except temporarily).** To paraphrase the movie Field of Dreams, if they (the companies) build it, they (the buyers) will come! **Recessionary Gaps will not last long and will be eliminated automatically.** The focus is to be on production (supply), not on demand. (Remember that "full employment" does allow for people to be frictionally, seasonally, and structurally unemployed.)

We can explain Say's Law using the circular flow model of the previous chapter. The circular flow model (without government or foreign trade) is repeated on the following page. Remember that there are 20,000 workers who work for \$10 each, thereby earning a national income of \$200,000. When they worked, they produced 10,000 widgets (this is the Potential Real Gross Domestic Product) to sell at \$20 each. With their \$200,000 of income, households spend \$180,000 on Consumption, buying 9,000 widgets at the price of \$10 each. The other \$20,000 is saved in financial institutions. In the last chapter, we said that it was important for all \$200,000 of income to be spent. The \$20,000 that is saved needs to be loaned to businesses to spend on Business Investment Spending. Suppose that the businesses do not want to borrow all of the \$20,000. In fact, as we did in the last chapter, assume they wish to borrow zero. In the previous chapter, we said that this would cause a recessionary gap.

According to the Classical view, such a recessionary gap would last only a short time. **Automatically, three changes would occur that would end the recessionary gap.** First, the sellers have produced 10,000 widgets to sell at \$20 each. But consumers have only bought 9,000 widgets. The other 1,000 widgets is a surplus. What do sellers do when they have a surplus? The answer is that **they lower prices**. As prices fall, buyers will buy more goods and services -- widgets, in this case. When the price falls to \$18, the \$180,000 of consumer spending will buy all 10,000 widgets. Everything that can be produced (the Potential Real Gross Domestic Product of 10,000 widgets) will be bought.

The Basic Circular Flow Model With Savings and Investment



Second, the companies cannot receive \$180,000 from consumers and continue to pay their workers \$200,000. So, the companies will desire to reduce the number of workers hired. This reduction is another surplus. What will workers do when there is a surplus (that is, when there are unemployed workers)? Like all sellers, they will **lower the price (now called the wage)**. As wages fall, companies will be more willing to hire workers. **When the wages have fallen to \$9, all 20,000 workers will be hired. This is full employment.** Notice that, even though nominal wages have fallen from \$10 to \$9, the workers are not worse off. Before the wage reduction, a worker had to work two hours to buy one widget. After the wage reduction, a worker still has to work two hours to buy one widget. The **real wage** has not changed.

But we are not done. There is a third adjustment mechanism. The \$20,000 that households chose to save is in the financial institutions. These financial institutions are trying to lend this money out, but no one is borrowing. They also have a surplus. As with any other sellers, what do the financial institutions do when they have a surplus? The

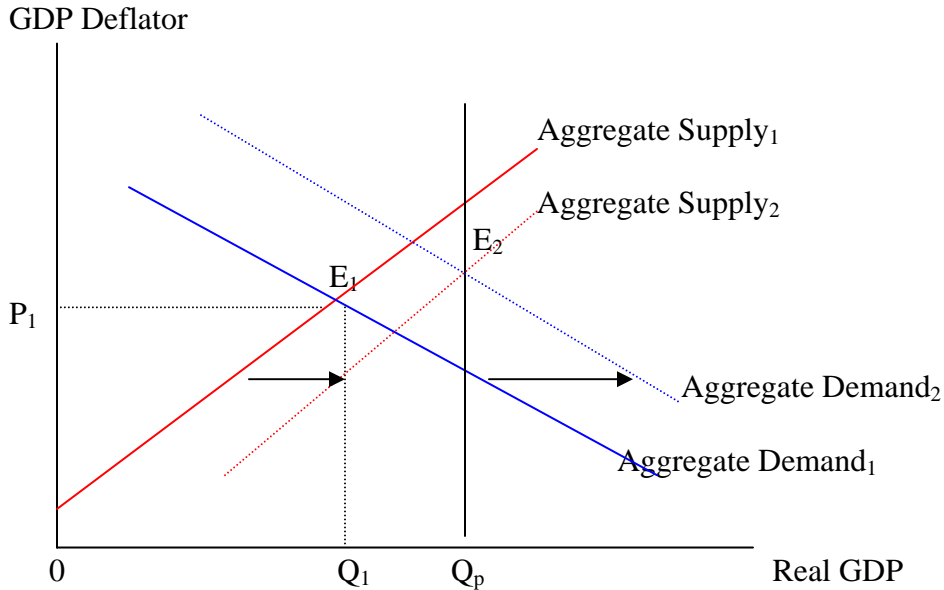
answer is that they lower the price (now called the interest rate). **As interest rates fall, households will desire to save less than the \$20,000 because savings is less rewarding. And both consumers and businesses will desire to buy more widgets because borrowing to pay for the widgets is cheaper.** Eventually, interest rates will fall enough that all \$20,000 will be spent by someone.

Let us summarize this view. If there is a recessionary gap, three adjustments will take place to eliminate the gap. First, the price level (GDP Deflator) will fall, encouraging people to buy more goods and services. Second, wages will fall, encouraging companies to hire more workers. And third, interest rates will fall, encouraging people to save less and to borrow more for consumer or business investment spending. In a relatively short time, the recessionary gap will be gone. Except for this short transition time, there will be full employment (no cyclical unemployment). All 10,000 widgets that can be produced will be bought.

This view might be analogous to a person getting a common cold. If you do get a cold and you do nothing about it, the cold will go away by itself. There are changes that will happen in your body that will get rid of the cold. You are not aware of these changes and do nothing to bring them about. You will not feel well for a short time --- perhaps up to two weeks. After that, you will feel fine and will forget that you were ever sick.

There are a couple of points to stress about Say's Law. **First, notice that all of these adjustments are automatic.** No government action has caused any adjustment to happen. Companies lower prices because they cannot sell their products. Workers accept lower wages in order to become employed. Financial institutions lower interest rates in order to lend the money they have. The end result is to eliminate the recessionary gap. If this is true, then what is the proper role for government? The answer, of course, is to do nothing. **The system works well with no government involvement.** From this point, it is easy to see why this view is still held by political conservatives, who wish to minimize the role of government. Second, go back to the more developed circular flow model that does include government spending and taxation. If it is true that interest rates will adjust so that savings and business investment spending are equal, then what should be the relation between government spending and tax revenues? The answer is that **government spending and tax revenues should be equal -- a balanced budget.** Because savings equal business investment spending, a budget deficit will cause inflation. **The belief that the government should always have a balanced budget and should never have a budget deficit was widely held until the 1960s.**

We can also explain Say's Law using the aggregate demand and aggregate supply curves of Chapter 9. Assume we begin with a recessionary gap. This is shown on the next page. In this graph, Q_1 represents the equilibrium Real Gross Domestic Product. Q_p represents the Potential Real Gross Domestic Product. The difference between the two numbers is the recessionary gap. According to the Classical view, this gap will not persist. Three adjustments will occur to eliminate the gap. First, **prices (the GDP**



Deflator) will decrease. This will cause buyers to buy more goods and services. **Second, wages will decrease.** This will reduce costs of production, causing producers to increase aggregate supply. Aggregate supply will shift to the right. **Third, interest rates will decrease.** This will increase consumer spending and business investment spending. Aggregate demand will shift to the right. **Both aggregate demand and aggregate supply will continue to shift right until there is no longer a recessionary gap.** Everything that can be produced (Potential Real Gross Domestic Product) will be bought. There will be full employment.

The classical view is very reassuring. It tells us that the economy has the ability to **self-correct**. No action by government is needed in order to correct economic problems. For this to be true, the Classical view had to **assume that wages and prices were flexible**. This means that they would move up or down according to changes in demand and supply. This was probably a good assumption for the United States until the 1920s. Since then, this assumption, and the corresponding conclusion, have been called into question.

Test Your Understanding

1. If interest rates fall, aggregate demand will shift to the right. Explain why, if interest rates fall, consumer spending will rise. Explain why, if interest rates fall, business investment spending will rise. And finally, explain why, if interest rates fall, net exports will rise. You may want to review the case in Chapter 7 for this last question.
2. On the aggregate demand and aggregate supply graph, draw the aggregate demand curve, the aggregate supply curve, and the Potential Real GDP so that there is an **inflationary Gap**. According to the Classical view, **what will happen to eliminate the inflationary gap?** Name the changes that will occur and show their effect on the graph.

Part II: The Quantity Theory of Money

The second part of the Classical view is called the Quantity Theory of Money. While this theory was crudely stated in a work from the year 1560, the description you will see here dates from the late 19th century. It begins with the *Equation of Exchange*.

The Equation of Exchange is the following: $M \times V = P \times Q$. Let us examine each of these four variables. In this equation, M stands for the **Money Supply**. Later, we will describe exactly how this is measured. For now, consider M as the total number of dollars in existence. In the equation, V stands for Velocity. *Velocity is defined as the number of times the average dollar is spent in a year.* You buy something with a dollar you have. Your dollar is spent once. The seller now has your dollar. Later on, the seller spends that dollar on something else. Now, the dollar has now been spent twice. And so on. When we multiply the money supply times the velocity, **we have a measure of aggregate demand (or total spending)**. That is, if there were \$10 and each dollar were spent 5 times in a year, the total spending would have been \$50 in that year. In January 2003, there were \$1,213.4 billion in existence by one measure. Each of these dollars was spent approximately 8.7 times. Therefore, the total spending (aggregate demand) was \$10,572.3 billion (\$1,213.4 times 8.7). Notice that we have broken aggregate demand (total spending) into categories before. When we did this earlier, we broke aggregate demand (total spending) into four groups of demanders: consumers, businesses (for investment spending), government, and foreigners. *Now, we are breaking the same aggregate demand (total spending) into different categories: how many dollars are there times how many times is each dollar spent.*

The right hand side of the equation is $P \times Q$. P stands for the **price level**. As you learned in Chapter 4, we measure the price level by the GDP Deflator. The GDP Deflator is calculated by taking the Nominal Gross Domestic Product and dividing by the Real Gross Domestic Product (and multiplying by 100). In the equation, Q stands for **quantity produced**. As you learned in Chapter 2, we measure the quantity produced by the Real Gross Domestic Product. When you multiply the price level times the quantity produced, using these measures, what do you get? The answer is the *Nominal Gross Domestic Product*. (Take Nominal Gross Domestic Product divide by Real Gross Domestic Product and then multiply by Real Gross Domestic Product. The Real Gross Domestic Product numbers cancel out, leaving only the Nominal Gross Domestic Product.) The Nominal Gross Domestic Product is the value of all final goods and services produced in the United States to be **sold**. Since the emphasis is on product sold, this is our measure of *aggregate supply*.

When we look at the equation of exchange, thus far it does not tell us much. In its present form, it only tells us that aggregate demand (the left side of the equation) equals aggregate supply (the right side of the equation). **To make the equation into a theory, two assumptions are necessary.** The first assumption is about Real Gross Domestic Product. This assumption was explained earlier in the chapter. According to Say's Law, **Real Gross Domestic Product will always equal Potential Real Gross Domestic Product**. Except temporarily, there can be no recessionary gap and therefore no cyclical

unemployment. Falling prices, falling wages, and falling interest rates would eliminate such a gap in a reasonably short time. So, we can say that ***Q is a constant equal to the Potential Real Gross Domestic Product***. It cannot be higher than this and, as we have seen, will not be lower. The second assumption is about Velocity. The classical economists assumed that ***velocity was basically constant***. We will discuss this assumption and the factors that affect velocity in detail in Chapter 22. The presumption is that those factors change slowly. While this assumption has been controversial, let us accept it here for now in order to understand the classical view.

If we do accept these two assumptions, there is ***an important conclusion*** that follows. We can state this conclusion in two different ways. First, assume that the money supply is increased. What will be the result? If Velocity and Real Gross Domestic Product are both constant, the only possible result is an increase in the Price Level. ***An increase in the money supply causes inflation and nothing else***. Now, let us state the same conclusion differently. Assume that there has been an increase in the Price Level – inflation. What must have caused it? If Velocity and Real Gross Domestic Product are indeed constant, there is only one possible answer – an increase in the money supply. ***Inflation is caused by increases in the money supply and by nothing else***.

As we will see, the classical view went out of favor when the Great Depression occurred. It was hard to accept a view that said that an economy could not experience a recessionary gap (except temporarily) when the American economy experienced the Great Depression for twelve years. We will discuss the Great Depression in the next chapter. In the mid-1950s, the classical view began to make a comeback. The comeback was the work of a group of economists who came to be called ***Monetarists***. A 1956 article from one of these economists began with a line that summarizes the previous paragraph: ***“Inflation is everywhere and always a monetary phenomenon”***. Their view was that every inflation in the history of the world has had one cause --- the creation of too much money. We will discuss the work of the Monetarists in Chapters 22 and 23.

If indeed Velocity is a constant, then it follows that aggregate demand (total spending) can change only if the Money Supply is changed. So, what determines the Money Supply? This leads us to the third part of the Classical view: the Gold Standard.

Test Your Understanding

1. According to the classical view, ***aggregate supply would be drawn as a vertical line (at the level of Potential Real Gross Domestic Product)*** and not as an upward-sloping line. Explain why this would be so.
2. On the graph, draw aggregate supply as a vertical line equal to Potential Real Gross Domestic Product. Then draw aggregate demand. Remember that aggregate demand is equal to M times V . ***Show the results of an increase in the money supply***. Make the appropriate shift or shifts. What happens to the Real Gross Domestic Product? What happens to the GDP Deflator?

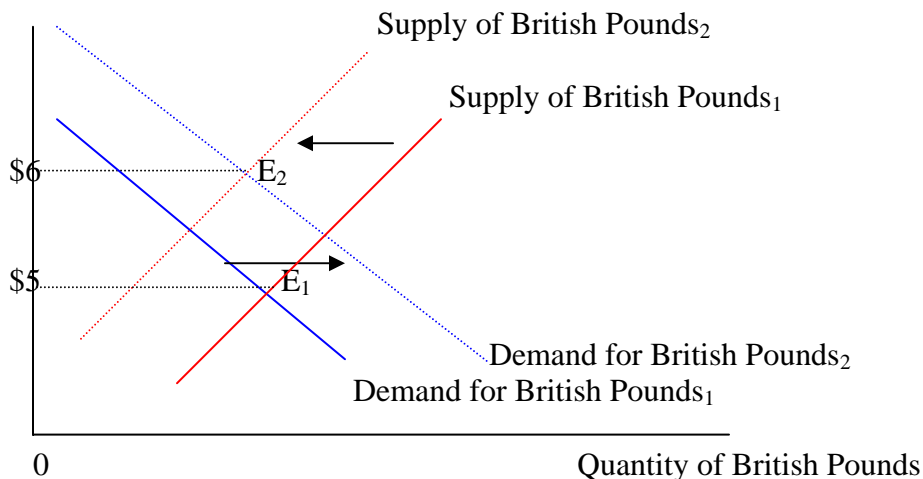
Part III: The Gold Standard

The third part of the Classical view was the Gold Standard. Britain went on the Gold Standard in 1816. But it was only around 1870 when the United States and most of the

other countries of the industrial world went on it. *To be “on the Gold Standard”, each country had to define its money in terms of gold. Also, each country had to agree to the unrestricted shipment of gold.* (Shipping gold cost very little, so we will ignore it here.) So, for the United States, \$100 was set equal to about 4.8 troy ounces of gold --- about \$20.46 per ounce. In Britain, 100 pounds was set equal to about 24 troy ounces of gold – about 4.2 British pounds per ounce. Thus, each pound was worth the same amount of gold as \$4.86. For simplicity, we will call it \$5 here.

To illustrate the operation of the Gold Standard, **assume there is inflation in the United States, but not in Britain.** As the foreign exchange market graph below shows, Americans would desire more British goods (because they are relatively cheaper). Therefore, **the demand for pounds would rise.** The British would also desire more British goods. Since they would buy fewer dollars, **the supply of pounds would fall.** The dollar price of the pound would rise, say from \$5 to \$6. This rise in price would create a profitable opportunity. Someone could take \$20 and buy approximately 1 ounce of gold in the United States. Then, she could ship the gold to Britain. In Britain, the ounce of gold could be sold for 4 pounds. At the new exchange rate of \$6 to the pound, she could come to the foreign exchange market and sell the 4 British pounds for \$24. In doing so, she would make \$4 of profit in a short time.

\$ Per Pound



In this scenario, notice that this person, who is only trying to make profit for herself, has done three important things. *First, by her taking gold out of the United States, the American money supply would decrease* (since each country’s money was based on the amount of gold it had).* As the quantity theory of money illustrated, **when the American money supply decreased, inflation in the United States would also decrease.** She would have acted in a way that helped solve the American problem. *Second, by bringing gold into Britain, she would also have increased the money supply there.* As we know from the last section, an increase in the money supply in Britain would cause inflation there. **The Gold Standard helped the United States to solve its problem of inflation. But it did so in part by passing that problem on to Britain.** Third, by selling the British pounds in the foreign exchange market, *she would have increased the supply of British pounds offered for sale. This increased supply of British pounds would lower the British price of pounds.* The process would continue

until the price had fallen from \$6 per British pound back to the original \$5. Except for this brief transition time, *the exchange rate would be fixed*.

* In reality, gold would not have left the United States. The American central bank would have acted to reduce the American inflation before the gold could ever leave.

Test Your Understanding

Assume that there are the two countries: Britain and the United States. Draw the graph for the foreign exchange market so that the exchange rate is \$5 for one pound. Now assume that **the United States has a deflation**. Analyze what would result. Gold would move from which country to which country? How would the American problem of recession be solved? What would happen to Britain?

The Gold Standard lasted until the 1930s. It lasted so long because it had some major advantages. **First, it assured that foreign exchange rates would be fixed**. For example, the exchange rate of \$4.86 for one British pound lasted from the 1870s to 1949. **Fixed exchange rates made it easier to deal with companies in other countries**. A company attempting to buy products from (or sell products to) a company in Britain would never have to worry that it could lose money because of a change in the exchange rate. This freedom from exchange rate risk helped expand world trade. **Second, the Gold Standard imposed monetary discipline on all countries**. No country could pursue policies that caused inflation for very long. If it did, gold would leave the country, reducing the country's money supply and helping to lower the inflation rate. As with Say's Law, **the Gold Standard had a mechanism to automatically correct economic problems**.

But the Gold Standard had some problems as well. These problems led to its ultimate demise. First, if gold left the country, the money supply would fall. When it did, the result was supposed to be deflation. But in fact, **by the 1920s, the result was more likely to be recession, as wages and prices did not fall**. Because so many workers had become vulnerable to unemployment, it became politically difficult for countries to allow the recessions that the Gold Standard required. Second, as we have seen, **the Gold Standard led to the international transmission of economic problems**. If the United States did something to create inflation, that inflation was then transmitted to Britain. An old adage was that "when the United States caught cold, Europe got pneumonia". **Third, especially in the last quarter of the 19th century, there was simply not enough gold**. A country's money supply depended on the amount of gold it had. If no new gold was discovered, there could be no new money. This lack of sufficient money caused some major economic problems and was the source of a major disagreement as to whether or not silver should also be the base for American money.

Test Your Understanding

Over time, the Potential Real Gross Domestic Product rises. It does so because the country has more people (workers), because the workers learn new skills, because there are new inventions, and so forth. Use the quantity theory of money to explain what will occur if the Potential Real Gross Domestic Product grows at 2% per year while the money supply is constant because there are no finds of gold.

3. Summary of the Classical View

The Classical economic view was a self-contained system. Because of Say's Law, an economy could not experience a recessionary gap (that is, cyclical unemployment) for very long. If this problem did arise for whatever reason, prices, wages, and interest rates would all fall automatically, eliminating the problem in a relatively short time. According to the Quantity Theory of Money, the total spending that is done (aggregate demand) is determined solely by the amount of money in existence. Increases in the money supply would result only in inflation. And, because of the Gold Standard, the amount of money was controlled by the requirement that it be based on gold. If a country tried to increase its money supply too much, there were again automatic corrections. The inflation would cause gold to leave the country, reducing the money supply and thereby reducing the inflation. *The self-correcting mechanisms were an important part of the Classical economic view. Because of them, there was no need for any kind of government action to try to improve the economy.* The government should simply have a balanced budget and stay out of economic affairs.

The Classical economic view fell out of favor with the coming of the Great Depression in 1929. It was just too hard to accept a view that said that the economy would automatically correct its economic problems when it seemed so obvious that it was not doing so. So, in the next chapter, we will discuss the Great Depression of the 1930s and the new economic view that developed because of it. This view was most associated with a British economist, **John Maynard Keynes**.

Practice Quiz for Chapter 11

- According to **Say's Law of the Classical View**, if there is a recessionary gap,
 - wages and prices will fall
 - real interest rates will fall
 - the gap will be automatically eliminated
 - all of the above
- According to Say's Law of the Classical View, the **Long-Run Aggregate Supply Curve** is
 - horizontal
 - vertical
 - upward-sloping
 - downward-sloping
- The **equation of exchange** is:
 - $MV = PQ$
 - $MP = VQ$
 - $M = VPQ$
 - $MQ = PV$
- To make the equation of exchange into **the quantity theory of money**,
 - The equation of exchange is considered untrue
 - V and Q are assumed to be constant
 - M and P are assumed to be constant
 - The money supply is assumed to be produced by the banking system and not exclusively in currency
- According to the **quantity theory of money**, if there is **inflation**, what must have caused it?
 - increased velocity
 - higher budget deficits
 - higher oil prices
 - an increase in the money supply
- Under the **Gold Standard**, the amount of money a country had was determined by:
 - its central bank
 - its government
 - the amount of gold it had
 - its interest rates

7. Under the **Gold Standard**, if there were inflation in the United States, gold would
- a. flow into the United States
 - b. flow out of the United States
 - c. not move at all
8. Under the **Gold Standard**, which of the following is/are true?
- a. exchange rates between countries would be fixed
 - b. a country experiencing inflation would lose money, causing its inflation rate to decrease
 - c. a country experiencing a recession could transmit its recession to other countries
 - d. all of the above
9. According to the **Classical Economic Theory**, when the Great Depression started, the government should have:
- a. done nothing
 - b. gone off the Gold Standard
 - c. had a large increase in government spending
 - d. enacted high tariffs, such as the Smoot-Hawley Tariff
10. According to the **Classical Economic Theory**, the government should:
- a. have a budget deficit during recession and a budget surplus during inflation
 - b. have a budget surplus during recession and a budget deficit during inflation
 - c. always have a balanced budget
 - d. always have a budget deficit