Principles of Macroeconomics

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Introduction

What's in This Chapter?

In this unit, we define economics and study important economic concepts.

We study economics to explain important economic relationships and to determine how to best increase a nation's standard of living and wealth. In this definition, wealth includes tangible (cars, houses, food), as well as intangible goods and services (protection from violence, clean air, entertainment, leisure time).

The production possibilities curve in this unit shows us the production choices we face given a certain amount of resources. No matter how abundant our resources are, they are limited, and we have to make choices regarding what and how much we want to produce and for whom.

In section 4, we look at the circular flow model. This model paints a picture of the main economic activities and groups in a country.

In free market economies, the decision as to what and how much to produce is made by the buyers and sellers of the products. Governments in free market economies exert relatively little control over prices of products and factors of production. Section 5 discusses the three main economic systems, which reflect the various degrees of government involvement: capitalism, socialism, and communism.

Section 6 defines and explains important fundamental economic concepts, such as the fallacy of composition, the fallacy of cause and effect, economic growth, opportunity cost, positive and normative economics, and real and nominal prices.

Section 7 discusses the increasingly important role of critical thinking, and suggests ways that you can increase your critical thinking skills in economics.

Section 1: Economics

The Definition of Economics

What is economics? Is it the study of money? Is it about trade-offs and scarce resources?

Is it about inflation, unemployment, and government budget deficits? Is it about eliminating poverty?

All of the above are important topics in the study of economics, but the main objective of economics is its ability to explain how we can most optimally achieve the highest standard of living and wealth. Therefore:

Economics is the study of how we can best increase a nation's wealth with the resources that we have available to us.

Wealth in this definition includes tangible products, such as cars and houses, as well as intangible products, such as more leisure time and cleaner air.

How Can We Best Increase Our Nation's Wealth?

There is substantial disagreement over how a country can best achieve optimum wealth. Some economists support considerable government involvement, price controls, and government rules and regulations. Others believe that government involvement should be minimal and limited to tasks including the provision of a legal system, military, police and fire protection, and providing certain public goods. Many believe that a combination of moderate government involvement and private initiative works best.

Controversial issues in economics include the role of profits, income and wealth distribution, unions, and government stimulus spending. Should we more heavily tax profits to more equally distribute the wealth in our country? Should we encourage spending and discourage savings to stimulate economic growth, or should we do the opposite? Should we limit CEO compensation? Do unions raise real wages or only nominal wages, and are they beneficial or harmful to our economic growth? These are just some samples of important economic issues that we will elaborate on throughout the text. Let's define some important

concepts first.

Marginal Benefit and Marginal Cost

When you make choices as a citizen, a business person, a student, or a government official, you make them, assuming you are rational and you make decisions voluntarily, by comparing marginal benefits and marginal costs. You will choose an activity (for example, going to school, accepting a job, or buying or selling a product), as long as your marginal benefit is equal to or greater than your marginal cost. When you choose to enroll in a college, you expect that your marginal benefit (a diploma, a better job, or higher earnings) will be at least as great as your marginal costs (the value of your time, your expenses on books, tuition, and other costs). When you buy a car, you make that decision because your expected marginal benefits (freedom to travel without having to rely on others to provide rides, status, and ability to accept jobs further away) are at least as great as your marginal costs (price of the car, gas, insurance, and maintenance). A business will make a specific product and a specific number of products based on its marginal benefits and marginal costs. If it wants to maximize its profits, it will choose to increase production as long as its marginal benefit (marginal revenue) is greater than its marginal cost.

The Difference Between Macroeconomics and Microeconomics

Macroeconomics includes those concepts that deal with the entire economy or large components of the economy or the world. The nation's unemployment rate, the inflation rate, interest rates, federal government budgets and government fiscal policies, economic growth, the Federal Reserve System and monetary policy, foreign exchange rates and the balance of payments are typical topics discussed in macroeconomics.

Microeconomics includes those concepts that deal with smaller components of the economy. Demand and supply of individual goods and services, the price elasticity (sensitivity) of demand for certain goods and services, production, cost functions, business behavior and profit maximization in various industries, income inequality and income distribution, and the effects of protectionism (tariffs, quotas, and other trade restrictions) on certain domestic industries are topics covered in microeconomics.

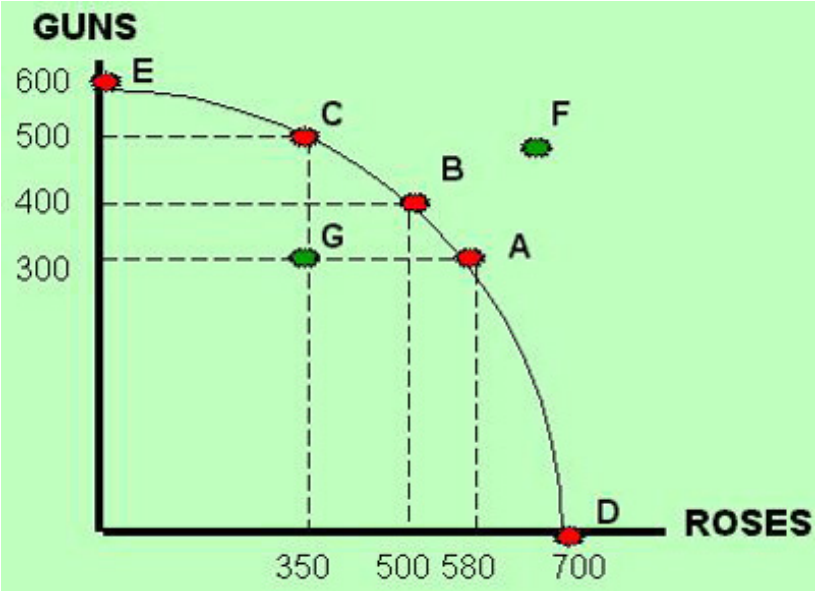
Macroeconomics looks at the bigger picture of the economy. Microeconomics looks at the individual components of the economy.
If macroeconomics is like studying a forest, microeconomics is like studying the individual trees.

Section 2: The Production Possibilities Curve

Production Choices

When we study how a country can best increase its wealth, we must look at its production behavior. In order to produce, a country must use its resources, including land, labor, capital, and raw materials. A production possibilities curve represents production combinations that can be produced with a given amount of resources.

Let's say that a very small hypothetical country uses 100 acres of land, 20 machines, and 50 workers, and is able to produce two products: guns and roses. You can think of "guns" as representing the category of military products.  "Roses" represents all consumer products. This country has some choices (possibilities) regarding how it uses its resources. It can produce 500 units of guns and 350 units of roses (point C on the graph below). However, it can also, with the same resources, produce 400 units of guns and 500 units of roses (point B). Or it can produce 300 units of guns and 580 units of roses (point A). Numerous other combinations (for example, points D, E, G or points in-between), are possible.



A production possibilities curve represents outcome or production combinations that can be produced with a given amount of resources.

Points on the Curve and Trade-offs

If an economy is operating at **a point on the production possibilities curve**, it is operating at full employment. All resources are used, and they are utilized as efficiently as possible (points E, C, B, A, and D). If a country does not use its resources efficiently, it experiences unemployment and is operating **inside the production possibilities curve** (point G).

Any point on the curve (full employment) illustrates an output combination that is the maximum that can be produced with the existing resources and technology. It follows that output cannot increase if resources and technology remain constant. When economists discuss the concept of scarcity, they mean that resources are limited and that at any given point in time, production is limited. If an economy is producing **on** the curve and the curve does not shift, increasing the production of one good or a category of goods always occurs at the expense (opportunity cost or trade-off) of the production of another good or category of goods.

A point inside the curve, for example 300 guns and 350 roses (point G), represents an output combination that is produced using fewer than the available resources (unemployment), or with all the resources, but with the resources used inefficiently (underemployment).

Point F is a production combination that cannot be achieved with the existing resources. Over time, the economy may grow and realize greater production capacities to produce, and we may get to point F in the future. This will be discussed in the next section.

Increasing Costs and the Concave Shape of the Production Possibilities Curve

The production possibilities curve graphed above bows outward (it is concave). This is because the production of the last 100 units of output (for example, the production change from 500 units of guns to 600 units of guns) requires more of a trade-off of roses than the production of the first 100 units of output. In any economy, the production of the first few units is usually easier and cheaper, because the resources to produce these products are more readily available. For example, a country that has no orange production and then chooses to produce 100 oranges per year will find it relatively easy to plant trees in areas that are conducive to growing oranges. However, if total production of bushels of oranges is at one million per year, and we want to produce another 100 oranges, it is more difficult and more costly,

because not as much good land is available to grow additional oranges. Thus the production of the first 100 oranges costs less in terms of opportunity cost (cost relative to other goods) than the production of the 100 oranges after one million oranges have been produced already.

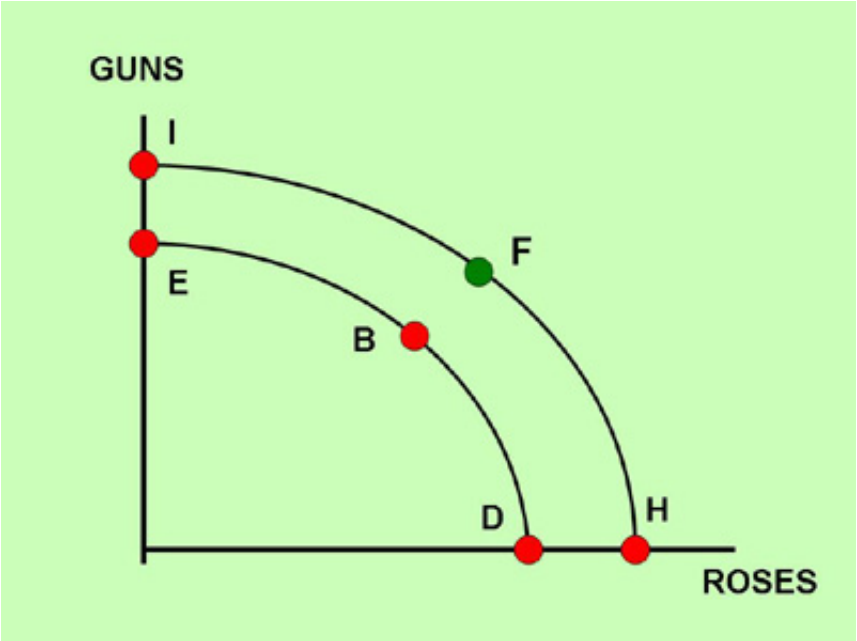
For a video explanation of the Production Possibilities Curve, please watch the following:

YouTube Video

Section 3: Economic Growth

Causes of Economic Growth

Economic growth occurs when the economy realizes greater production levels. In the graph below, the production possibilities curve shifts outward to the right (for instance, through point F from the graph in the previous section), so that the country's production capacity level rises. For the curve to shift outward, resources (land, labor, capital, and raw materials) must increase, or we must improve the way we use these resources (technology). Therefore, economic growth is made possible by advances in technology and/or increases in resources, such as natural resources (land, oil, trees, etc.), workers, and capital goods, including machinery, equipment, assembly lines, office buildings, factories, roads, highways, and airports.



How does a country increase its capital goods, and how does it achieve these advances in technology? Let's take a look at increases in capital goods first.

Increases in Capital Goods

Capital goods are produced just like other goods, such as cars, televisions, or food. If a country is producing at full employment (operating on the curve), more capital goods can be produced only if the country produces fewer consumption goods. Looking at the diagram in the previous section, this is reflected by a move from a point on the curve from the lower right to the upper left (for example, from

point D to point A, or from point B to point C). A government can encourage more production of capital goods by, for example, providing tax breaks for the production of capital goods, or by increasing taxes on the production or sale of non-capital (consumption) goods.

Advances in Technology

Advances in technology occur because of inventions and improvements in producing goods and services. Inventions and improvements take place when entrepreneurs have incentives to produce more efficiently and lower their costs. When lower costs lead to higher profits and greater rewards, entrepreneurs are motivated to continue to improve their products and production processes. Countries that allow entrepreneurs to keep most of these rewards (by limiting taxation and limiting government involvement) have been shown to experience greater rates of technological growth.

Advances in human technology also stimulate economic growth. When people become more productive (for example, by gaining skills and becoming more educated), the production possibilities curve shifts outward.

Economic Growth and Economic Systems

As evidenced by the 2008/2009 recession and the recent pandemic related downturn, we don't have economic growth all the time. However, during most years, industrialized countries experience economic growth (an increase in overall production). Among others, Western Economies, Hong Kong, Taiwan, Singapore, China, Vietnam, Chile, the United Arab Emirates, South Africa, Russia and several other East bloc countries have increased their production capacities significantly during the past several decades (Russia has stagnated recently due to the conflict with Ukraine and related sanctions). China adopted

significant free market elements primarily starting in the late 1980s, and as a result has experienced record growth. India has also become more capitalist and opened its borders to increased free international trade in the 1990s. These countries' production possibilities curves have shifted out considerably because of freer markets, greater incentives to produce and innovate, and increases in capital stock.

Communist (or command economy) countries, such as North Korea, Venezuela, and Cuba, have experienced far less economic growth than their capitalist counterparts. People in these countries have little freedom and few opportunities to advance, and the incentive to work hard and innovate is non-existent.

In addition, many third-world countries that have struggled with civil strife and governmental corruption have been unable to shift their production possibility curves outward, because the political instability has made it difficult for capitalism and free markets to properly function. For capitalism to succeed, a country needs a stable economic and political climate in which its government provides essential conditions, such as a just legal system, a just reward system (taxes and regulations that reward work and entrepreneurship), a proper infrastructure, strong national security, and protection of individual and property rights. Even the United States has felt the effects of uncertainty regarding the security of the country. When a country, its citizens, and its property are not protected properly, it can have a devastating effect on productivity and the motivation of its people to work hard. As security and stability improve, the conditions for a positive economic climate improve.

Conditions for Economic Growth

With the economic demise of many non-capitalist and often dictatorial statist countries, it has become clear during the past several decades that certain economic conditions must exist for healthy economic growth to occur. The free or mostly free countries and areas in our world, such as Japan, Taiwan, the United States, the United Kingdom, Canada, Hong Kong, Poland, Sweden, South Korea, and Singapore, have per capita (per person) earnings, that are much higher than the per capita earnings in statist countries, such as Cuba, Venezuela, Iran, and North Korea. The life expectancy in freer countries is higher than in statist countries, and even the large majority of the *poor* in the freer, capitalist countries lives at a level well beyond that of the *average* citizen in a statist country. Countries with the highest per capita earnings are characterized by all or most of the following:

1. Strong private property rights.

Societies experience the most economic growth when their citizens have optimal incentives to work. Hard and smart work then translates into greater wealth (a house, a car, a computer, a smart phone, stocks, bonds, etc.). These properties must be protected though, otherwise the incentive to work hard and smart disappears. Countries that protect their citizens' properties experience greater economic growth and have less absolute poverty than countries that have weak protection.

Andrew Bernstein in his "Capitalist Manifesto" states that: "Men often understand that an individual's life belongs to him and cannot be disposed of by society, but fail to grasp that his property must similarly belong to him and be protected against confiscation by society. In fact, men cannot live without an inalienable right to own property. The right to life is the source of all rights - and the right to property is their only implementation. Without property rights, no other rights are possible" (page 34).

2. Free markets, free international trade, and a stable price level.
Free markets are markets in which prices of goods and services, as well as wages, rents, interest rates, and foreign exchange rates, are determined by the interaction of private sector demand and supply.

Free international trade requires a free exchange of goods and services and resources between countries. Governments accomplish this by avoiding protectionism (trade obstacles, such as tariffs and quotas). A stable price level is achieved when there is little or no fluctuation in the country's average price level. The country's central monetary agency can accomplish this by keeping its money supply restricted or constant (see Units 7 and 9).

3. Essential government regulations and reasonable levels of taxation.
Some regulations are useful and necessary. The government must enforce clear and effective rules (laws) in order to safeguard economic and financial stability, product safety, and consumer, worker, business, and property protection. Taxes must be collected in order for the government to provide its essential functions. Reasonable and cost-effective regulations and taxation encourage businesses to start or continue production, with rewards that provide incentives for hard work, innovation, and creativity. High levels of taxation mean that most of a company's or an individual's earnings are given to the government and there is little incentive for hard work, productivity and efficiency. Excessive regulations lead to time consuming and expensive business operations. These discourage business start-ups and can cause businesses to fail or move abroad. An economy can only be productive if the economic environment is conducive to the development of new ideas and innovations. This also requires a strong educational system, and the promotion of research and development.

4. Minimal corruption.
A stable and secure environment is an essential condition for a free market and a productive society. If the government of a country is corrupt or allows corruption by private groups, and initiates force by taking away citizens' and businesses' private property, then there is no incentive for potentially hard-working and innovative workers to produce and accumulate wealth.

Why Do Statist Countries Continue to Exist?
If economic growth and wealth accumulation are so much higher in capitalist countries than in statist countries, why, then, don't statist countries change to capitalism and free markets? The answer is that capitalism requires freedom, and statist rulers and corrupt dictators are fearful that with freedom among

their citizens, they would lose their control and position of power. Dictators in statist countries mostly think of themselves and not the well-being of their citizens.

The Money Supply, Government Spending and the Production Possibilities Curve

The production possibilities curve does not shift outward with an increase in the nation's money supply or with increases in government spending. If this were the case, we would just need to print an unlimited amount of money or to increase government spending indefinitely. We will learn in later units that printing additional money and increasing government spending from an economic growth point of view can benefit the economy in the short-run, but has distinct economic disadvantages in the long-run. The only causes of long-term economic growth and outward shifts in the production possibilities curve are increases in resources and advances in technology. More and better resources allow businesses to produce more efficiently and effectively, lower costs, increase real incomes and increase purchasing consumers' power.

Potential Versus Actual Production

A country that experiences an outward shift of its production possibilities curve will increase its **potential** to produce. This does not mean that the country will increase its **actual** production. A country could be at a point inside of the curve and experience unemployment and inefficiency. North Korea, Iran and several other heavily government controlled states have large amounts of resources. However, due to limited economic and political freedom, these resources are not used at their maximum efficiency. Consequently, the real Gross Domestic Products of these countries (a measure of a country's overall productivity) are far less than that of freer countries. If they allow more capitalist elements and freedom into their economy, they will be able to shift their production possibilities curves outward, as well as to produce closer to their maximum efficiency level.

Natural Disasters and Military Conflicts

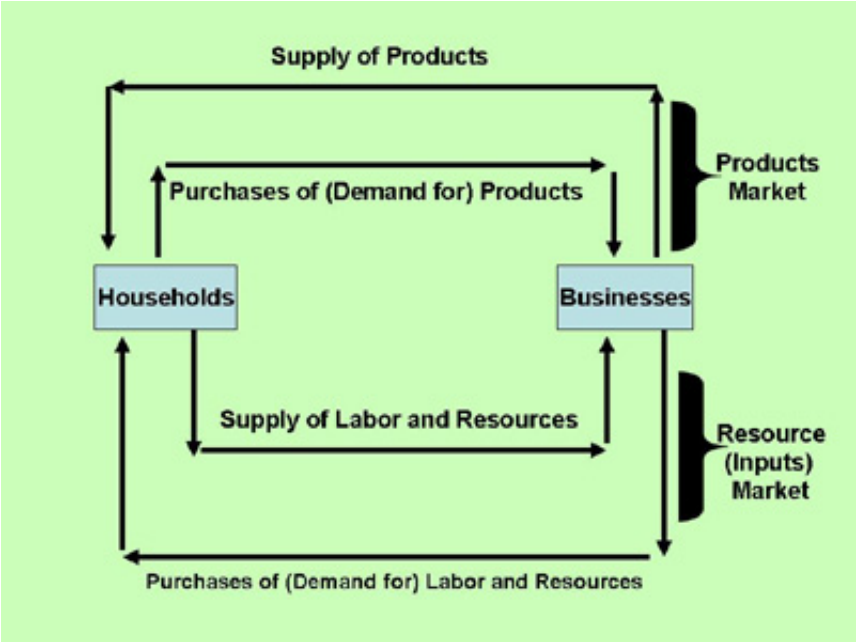
When natural disasters (hurricanes, floods, pandemics, etc.) occur, it takes away production resources. This shifts the production possibilities curve to the left and decreases an economy's capacity to produce. Wars and terrorist activities that destroy production capacities also shift the curve to the left.

Section 4: The Circular Flow

The Simple Circular Flow Model

An economy consists of many groups and individuals that participate in various economic activities. In its simplest form, an economy consists of buyers and sellers. Sellers are businesses that buy resources, including land, labor, capital goods, and raw materials and use these to produce goods and services. Households provide (sell) their labor to businesses, and use the income to buy products. Households also may own land, capital (money), capital goods, and raw materials which can be used for production.

In the graph below, a simple circular flow diagram shows the economic interactions between households and businesses. This paints a simplified picture of how our economy works.

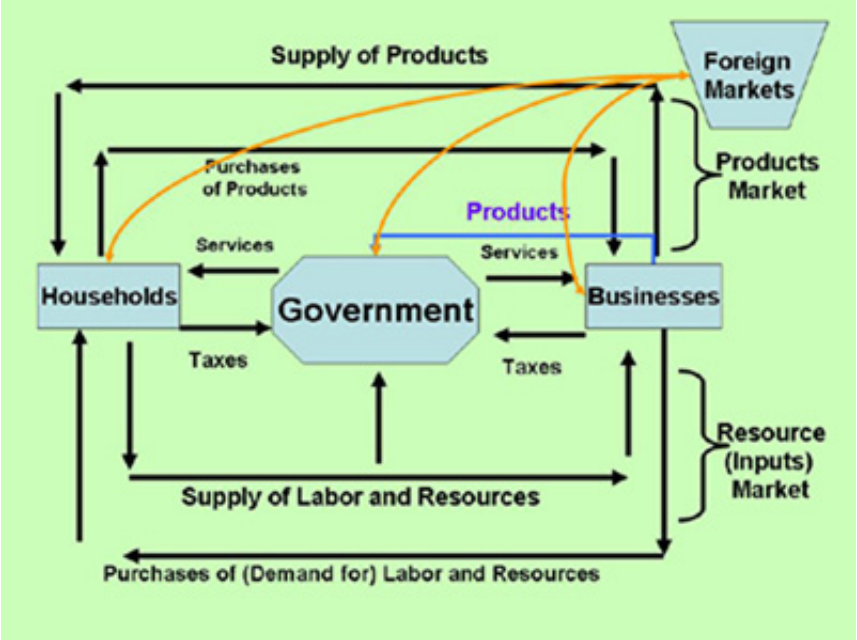


The Circular Flow with Government and Foreign Markets

A more realistic picture of our economy also incorporates the economic interactions of two other main participants in our economy: a government and foreign markets. This is illustrated in the diagram below.

Governments provide services to businesses, households, and foreign markets, and collect taxes to pay for these. Foreign markets buy and sell goods and services to and from our households, businesses, and governments.

So a typical economy consists of four main groups: households, businesses, governments, and foreign markets. The circular flow model illustrates the interactions between these four groups.



For a video explanation of the circular flow, please watch the following:

YouTube Video

Section 5: Economic Systems

The Three Economic Systems

1. A laissez-faire economy.
Laissez-faire is French for "let do." It means "hands-off" and represents a pure capitalist system, or a so-called price system, in which the supply and demand behavior of businesses and households determine

prices of goods and services and factors of production. The government plays an important role in a pure capitalist economy, but its role is limited to only the most essential functions such as providing a legal system, protecting private property, providing infrastructure and providing certain public goods.

2. A command economy.
A command economy is a communist system in which a country's government determines prices of goods and services and factors of production. The government is in control of all of the country's economic decisions.

3. A mixed economy.
A mixed economy is a combination of the two systems. Most industrialized countries around the world have mixed economies. The exact mix differs depending on the amount of government involvement.

Economic Systems around the World

The United States, Canada, Mexico, South Africa, China, Sweden, England, Norway, Japan, South Korea, Holland, Germany, and most other industrialized countries are examples of mixed economies. The private sector (businesses and households) plays a significant role, but so does the government in the form of various types of government spending, taxation, regulations, price controls, and monetary policies.

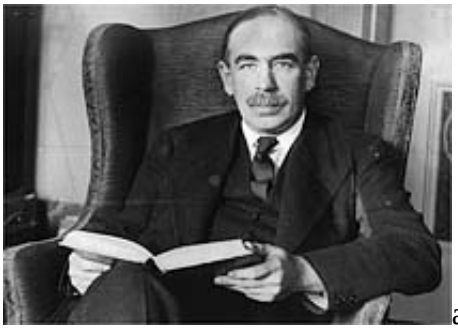
During a significant part of the nineteenth century, the United States had close to a free market, or laissez-faire economy. In this system, households and businesses had significant economic freedom. There was very little government involvement, minimal regulations, and free banking. The government was only in charge of the most essential economic and political functions, such as providing defense and national security, providing a legal system, and providing public goods, such as roads, highways and other infrastructure. The government collected taxes merely to pay for these essential functions. Prices, wages,

interest rates, and other economic variables were determined by the economic decisions of private businesses and households. The United States experienced significant industrial growth during this time period. Prices fell during most years, average wages of all income groups grew during most years, and private charity giving was common.

The Heritage Foundation publishes an index that ranks countries and economic areas around the world based on their economic freedom (visit https://www.heritage.org/index/ranking). In 2021, it ranks Singapore as the most economically free area in the world. The United States is ranked 21st. The 2021 ranking is based on criteria including the amount of government involvement (taxation, regulation), private property rights, and people's freedom and encouragement to produce, innovate and advance. The top ten freest countries in 2021 are:
1. Singapore
2. New Zealand
3. Australia
4. Switzerland
5. Ireland
6. Taiwan
7. United Kingdom
8. Estonia
9. Canada
10. Denmark

At the bottom and least free are:
178. Cuba
179. Venezuela
180. North Korea.

The increasing role of governments

In the years leading up to and including the 1920s and 1930s, due to influences of economists such as Karl Marx, Friedrich Engels, and John Maynard Keynes (pictured)  and the events of the Great Depression, industrialized countries experienced a dramatic change in economic beliefs about the role of the private sector and a country's government. Since this time the role of most governments around the world has increased considerably.

In 1913, the United States Federal Reserve System was created. Central banks took control of the country's monetary system. Also in 1913, the United States adopted the income tax. Throughout the 1920s and 1930s, labor unions, supported by government legislation, gained in influence. Regulations about worker safety, anti-discrimination and anti-trust laws grew significantly. In 1934, the Federal Deposit Insurance Corporation was formed. Social programs, such as Social Security, Unemployment

Compensation, various welfare programs, minimum wage laws, and farmer support programs became indispensable. New Deal types of government spending to create jobs, such as the Tennessee Valley Authority project, became commonplace. To fund these expenses and to pay for the growing number of government employees, taxes on individuals and businesses increased considerably. Government deficits also grew.

During the 1960s, the war on poverty added many new government programs. During the 1970s, environmental concerns increased government regulations to fight pollution. The Reagan administration supported limited growth and favored a smaller role for the government (except in the area of national security), but government spending continued to grow and government budget deficits took off . The George W. Bush administration supported a strong build-up of the military and homeland security in the aftermath of 9/11. Bush also supported corporate bailouts and government stimulus packages (increased government spending) during the 2007/2008 recession. This increased our already high national debt level. The Obama administration further increased the government presence in our economy, especially in the areas of national health care, energy, education and even in traditionally private sector industries such as banking, housing, and auto manufacturing. The Obama administration and a divided Congress struggled to find ways to reduce large deficits and a potentially disastrous growing national debt. The Trump administration has scaled back regulations and has attempted to reduce the role of the government by passing tax reform with lower rates for most households and businesses, but government spending continues to increase and there is more government intervention in the areas of international trade, immigration, and homeland security. Recently, due to the pandemic, government spending has increased significantly and this will affect future tax rates. It is expected that the Biden administration will continue to increase spending (even post Covid), especially in the social welfare area and climate change. This will further either increase the national debt, or raise future taxes or both.

Significantly increased government involvement during the past century has shifted the United States economy away from its mostly free market philosophy during significant parts of the 19th century. The degree of government involvement beyond its essential functions (protector of private and personal property, provider of a legal system, provider of essential public goods) will remain an important and controversial debate.

Section 6: Important Concepts and Definitions

In this section we clarify several concepts that we will come across throughout our text.

Nominal and Real Values

Nominal values, such as nominal prices, nominal earnings, nominal wages, nominal interest rates, and nominal Gross Domestic Product, refer to the actual dollar value of these variables. A person who earns $10 per hour in today's dollars earns a nominal wage of $10.

Real values are values in comparison, or relative, to price changes over time. You may earn $10 this year and you may earn $10 five years from now. Your nominal income remains the same, but $10 five years from now is not worth as much as $10 now. The real value of $10 five years from now is less than $10 in today's dollars.

We also distinguish between real and nominal when we discuss interest rates.
Real interest rates are nominal rates adjusted for inflation. In other words:
real interest rates = nominal interest rates - inflation.
For example, if you pay your bank 6% in nominal interest, you are only paying 2% in real interest if prices are rising by 4%.

Positive and Normative Economic Statements

Positive economic statements are facts, or statements, which can be proven. Normative economic statements cannot be proven. They are opinions or value judgments.

A positive statement does not have to be a true statement. The statement could be proven false, in which case, it is a false positive statement.

Predictions are neither positive nor normative statements. Predictions, such as "The New York Mets will win the World Series next year," or "Unemployment will fall below 3% next month," are neither normative nor positive statements. They are predictions unrelated to facts or value judgments.

Examples of positive economic statements are

1. The federal government experienced a budget surplus this past year (this is a false positive statement, but, by definition, a positive economic statement).
2. When the value of the dollar falls, Japanese products imported into the United States become more expensive (this is a true positive statement).
3. Legalizing drugs will lower the price of drugs and reduce the drug profits that illegal drug dealers make (this is a true positive statement).
4. The United States does not have a federally mandated minimum wage (this is a false positive statement).

Examples of normative economic statements are

1. The government should raise taxes and lower government spending to reduce the budget deficit.
2. We need to try to lower the value of the dollar in order to discourage the imports of Japanese goods into this country.
3. Our government should legalize the use of drugs in this country.
4. The federal minimum wage should be at least $15.00.

Ceteris Paribus

This Latin term means "if no other things in the economy change." For example, when college tuition increases, our chapter on supply and demand predicts that student enrollment (the number of course sign-ups) will decrease. Economists, indeed, predict this with the condition of *"ceteris paribus*," or if no other things in the economy change. But if students' (or their parents' or guardians') real incomes increase, then college enrollment may increase, despite the tuition increase. Tuition increases are still predicted to decrease college enrollment, but in this case, other things in the economy (incomes) did change, and the "*ceteris paribus*" condition was violated.

The Fallacy of Composition

You are subject to the fallacy of composition if you state that what is good for one is necessarily good for the entire group. If a college has a shortage of parking spaces for its students, it may be beneficial for a number of students to arrive very early and secure a parking space. However, if everyone arrives very early, the parking problem remains an issue. An economic example of the fallacy of composition is the broken window fallacy.

The Broken Window Fallacy

The economist Henry Hazlitt, in his book *Economics in One Lesson*, provides a good example of the fallacy of composition. In Chapter 2, the "Broken Window Fallacy," he describes that when a person throws a brick through a baker's window, it may seem that this stimulates the economy, because it provides a job for a glazier (window repair person).

According to Hazlitt, the fallacy occurs when we do not take into account the additional expenditures from the replacement of the window. This expense lowers the baker's spending on other goods and services. If the baker would have bought a suit from the tailor without the expense of repairing his window, then the tailor loses a job compared to if the window had not been broken. So if the window is broken, the glazier gains a job, but the tailor loses one. Overall, there is no gain in employment if someone throws a brick through a window. On balance, the baker loses, because he is without a suit compared to if the window had not been broken. Analogously, hurricanes, floods, and wartime activities do not provide a net gain in employment. They create jobs in one area of the economy, but take away jobs in another. Overall, they destroy wealth and are harmful to the economy.

The following section, written by the late Howard Community College professor, journalist and author, Bob Russell (pictured),  explains the Broken Window Fallacy in more detail.

"It is difficult to predict the impact of serious hurricanes on the U.S. economy, but there are a few things we can conclude. A lot of money and activity that might ordinarily travel to the hurricane affected areas will go to other areas of the country or the world. For instance, just consider the impact that these storms have had on the conference and meeting industry,
vacations, sporting events, etc. Many of these expenses are being diverted to other locations. On the other hand, lots of government spending, insurance claim payments, and private construction money go to the hurricane-affected areas, mostly to cover reconstruction and rebuilding expenses.

In 2005 all of our pocketbooks were affected by Katrina and Rita — especially at the gas pumps. These increased costs slowed the economy a bit. Fuel, heating, and transportation costs all rose, causing a reduction in output. Of course, reconstruction of the devastated areas provided a bit of an uplift to the construction industry and supply lines of repair items, wood and other building supplies, furniture, etc. Dollars spent on the reconstruction effort is money that will have to be diverted from money which would have been spent in other areas and with other goals.

This line of thinking provides us with an opportunity to talk a bit about the “Broken Window Fallacy,” a fascinating economic theory. It goes like this: If someone throws a stone through a shop window, the owner needs to fix it.

The cost to do so is, hypothetically, $250, selected to fit with Hazlitt’s example below. The repair puts people to work and increases total output. Since this creates jobs, might we do well to break lots of windows and repair them? Most folks think this is nonsense since, although it would employ labor, there

would be no benefit to the society at large. Yet there are many similar schemes, promoted by politicians and supported by the general public in the name of JOBS. Long ago, this fallacy was exposed by the French economist Frederic Bastiat in an essay entitled “What is seen and what is not seen.” Bastiat teaches us to understand the economic reality beneath the superficial appearance of everyday economic life. What is seen is the broken window repaired, the workers working and the money they spend. What is not seen is that these workers and resources would have been employed in something else if not for the broken window. What ultimately benefits society is not jobs,
but goods. In this instance, the glass store gains, but the broken window store owner loses (she probably would have spent the money on something else) – and the person that owns the shop that sells what she would have bought has a loss.

According to the late Henry Hazlitt in *Economics in One Lesson*, “Instead of [the shopkeeper] having a window and $250, he now has merely a window. Or, as he was planning to buy [a] suit that very afternoon, instead of having both a window and a suit he must be content with the window or the suit. If we think of him as a part of the community, the community has lost a new suit that might otherwise have come into being, and is just that much poorer.”

The Broken Window Fallacy endures because of the difficulty of seeing what the shopkeeper would have done. We can see the gain that goes to the glass shop. We can see the new pane of glass in the front of the store. However, we cannot see what the shopkeeper would have done with the money if he had been allowed to keep it, precisely because he wasn’t allowed to keep it. We cannot see the new suit foregone. Since the winners are easily identifiable and the losers are not, it’s easy to conclude that there are only winners and the economy as a whole is better off. Overall, the economy will suffer due to the hurricanes, not benefit as some media pundits have suggested, although the intensity and duration of the suffering is up for grabs."

From one of Bob Russell's newsletters (reprinted with permission).

For a video explanation of the Broken Window Fallacy, please watch the following:

YouTube Video

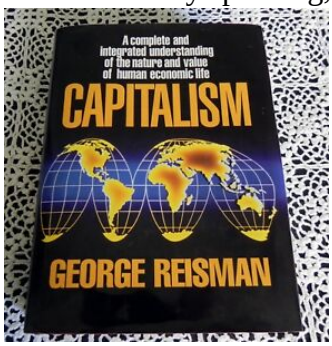
What is Good for One Industry is not Necessarily Good for the Country

Let's look at the farming industry as an example of the fallacy of composition. Currently, the United States government (and governments of many other industrialized countries) supports farmers in the form of direct subsidies and other programs.  These subsidies benefit most farmers and seem to be beneficial for the farming industry. Many people believe that what is good for the farming industry must automatically also be good for the entire country. It is certainly possible

that this is the case. However, to automatically conclude this is to suffer from the fallacy of composition. Farm subsidies and other farm support programs costs the government money. This increases taxes and hurts citizens. Furthermore, some farm programs (price supports) increase the price of certain agricultural products to consumers. Some economists also claim that the subsidies to farmers do not even benefit farmers themselves because it makes them weaker and less competitive in the long run. The subsidies may help the farmers in the short run, but not in the long run. For more information about farm programs and their economic effects, see our Microeconomics text, Unit 6.

Does a Demand Increase Stimulate the Economy?

George Reisman, in his book *Capitalism*, discusses another example of the fallacy of composition. He states that an increase in the demand for one product causes a price increase for that product. Assuming the cost of making the product does not increase, the product's profitability increases. Does this mean that if aggregate demand (demand for all products) increases, profitability of all products increases? Well, it depends. If a nation's total nominal income is constant, it is actually not possible for demand of all products to increase. Demand for one product may increase, but then the demand for other products must, mathematically speaking, decrease. So prices of some products increase, but prices of others decrease.



The only way for demand of all products to increase is if total nominal income increases. This is only possible if the nation's total money in circulation increases. This is possible if the nation increases its money supply. But in this case, prices increase, and if profits increase, it means merely that nominal profits increase and not real profits. An important implication of this realization is that if the government decides to "stimulate" the economy by encouraging people to spend more on consumer goods (by printing more money, or by distributing money through social programs, creating public works jobs), it does not really increase total aggregate demand. The demand for one particular good or category of goods (those bought by the elderly, for example, in the case of higher Social Security paychecks for the elderly) may rise, but the demand for other goods will have to fall. Nominal (the monetary amount of) spending may increase, but real spending will not. The only way to increase real profits is to increase productivity. This lowers costs and decreases prices, which allows increases in real profits and real demand.

The Fallacy of Cause and Effect

Cause and Effect Fallacy
Because A happens before B, A must necessarily be the cause of B.

It is tempting to conclude that if one event occurs right before another, the first event must have caused

the second event. Let's say your basketball team wins its first three games while you are out with an injury. The fourth game, you are back, and your team loses. You conclude that it must be your fault. Of course, your presence could have something to do with it, but you cannot automatically conclude this. Other variables may have played a role: the game conditions, the referees, the opponent, your other teammates' performance that day, the coach's performance, or bad luck.

Similarly, in economics, people sometimes conclude that if one event follows another, the other must have caused the one. The period following World War II has seen a rising standard of living in industrialized countries around the world. This period has also been accompanied by much greater government involvement in these countries. Can we conclude that greater government involvement has caused higher standards of living? Some would say it has contributed, but others may say that despite increasing government involvement, standards of living have risen. It would be a fallacy to *automatically* conclude that more government involvement leads to higher standards of living because we must look at other variables, such as technology changes and political and socio-economic changes that contribute to economic growth.

Section 7: Economics and Critical Thinking

Question Everything

Critical thinking is particularly important in today's Internet society and world of information overload and fake news. Authors, journalists, economists, politicians, talk-show hosts and even Hollywood celebrities and famous athletes make controversial and sometimes contradictory statements and express their opinions about social, political, and economic issues. It is useful to read their statements and to listen to their opinions. However, as educated citizens and critical thinkers, we must question everything. If we don't, we could end up with laws, regulations, and economic policies that harm our economy and our country.

When we evaluate a normative statement (for example, we should raise taxes on the rich) or question a positive statement (for example, if we raise taxes on the rich, then the government's deficit will decrease), what do we look for? Below are some guidelines.

Critical Thinking Guidelines
When evaluating a statement we must

1. Question the source.
Study the background of the person making the statement. If a union leader provides arguments and statistics to support her/his claim that trade restrictions are beneficial to the American economy and that free trade leads to increased unemployment, we need to consider the source. The union leader's objective is to represent her/his constituency (union workers). Therefore, (s)he is biased and will make arguments to support her/his union agenda. This doesn't necessarily mean that the union leader is incorrect. However, when a person is biased, we must be prepared to question the validity of the arguments. This also doesn't mean that we should not question statements from people who are not biased. We should, of course, evaluate all statements, but in particular from people who have an apparent bias.

2. Question the assumptions. An assumption is information you presume to be true. When several decades ago Washington, D.C. wanted to raise more revenue for the city, the city council decided that imposing a higher tax on gasoline would do the trick. They made the assumption that gasoline is a necessary good and, therefore, "inelastic." In microeconomics we learn that buyers of an inelastic product will not change their purchases of this product much when the price changes. Let's say that, for example, the tax was 30 cents before the tax increase, and people were buying 1 million gallons per month. Then the tax revenue to the city was 1 million times 30 cents, or $300,000. The mayor and his council raised the tax by 10 cents, and they expected buyers to purchase approximately the same amount of gasoline after the tax increase. If so, this would mean that the city's total tax revenue from gasoline purchases

would now be 1 million times 40 cents, or $400,000. However, after the tax increase, the city discovered that total tax revenue actually decreased (to less than $300,000). It turned out that their assumption about the inelastic nature of gasoline was wrong. After the tax increase, many buyers decided to purchase gasoline in neighboring Virginia and Maryland and far fewer buyers bought gasoline in Washington, D.C. In other words, whereas gasoline in the entire United States market may be inelastic, gasoline in the Washington, D.C., area alone is elastic. Several months after the tax increase, Mayor Barry and his council rescinded the 10 cent tax increase.

3. Question how the variables are defined. Economists Card and Krueger conducted what is now a well-known study about the effects of a minimum wage increase in New Jersey. New Jersey, several decades ago, had increased its minimum wage by $1. Card and Krueger had noticed that within a brief period of time following the increase, employment in New Jersey had gone up, despite the higher wage. Card and Krueger concluded that an increase in minimum wage increases employment and decreases unemployment. But when other economists questioned this study, they found that Card and Krueger had used a definition for "employment" that was questionable. Card and Krueger defined "employment" as the number of people, full-time as well as part-time, employed. After the minimum wage increased, many businesses, in order to cut costs and compensate for the higher wage, decided to increase their hiring of part-time workers at the expense of hiring full-time workers. The following example illustrates the flaw in the definition Card and Krueger used. When 500 full-time workers are employed, they work a combined 20,000 hours (500 times 40 hours). When 300 full-time and 300 part-time workers are employed, they work a combined 12,000 (300 times 40) plus 6,000 (300 times 20), or a total of 18,000 hours. Even though Card and Krueger's "employment" increased (from 500 to 600 workers), the total number of hours worked decreased (from 20,000 hours to 18,000 hours). If Card and Krueger had defined employment as the total number of hours worked, they would have concluded that an increase in the minimum wage decreases employment.

For a video explanation of the importance of properly defining economic variables, please watch:

YouTube Video

Another example of how defining a variable can lead to incorrect conclusions involves the definition of Gross Domestic Product. Gross Domestic Product is defined as the sum total of a country's production of final goods and services. Because of the inclusion of only final goods and services, most products included in GDP are consumption goods. Intermediate goods are excluded. These are typically goods exchanged between businesses and include the flour sold by the miller to the baker, and the screws and

machinery parts sold by the parts factory to the car manufacturer or furniture maker. The sale of intermediate goods, spare parts, and raw materials is an important component of our economy, and provides millions of people with jobs. However, this economic activity is ignored in the definition of GDP. To conclude that a country's total economic activity is made up of mostly consumption is, therefore, false. It is true that GDP is mostly consumption. However, a country's total economic activity is more than the items included in GDP. Thus, when economists and politicians claim that in order to grow our economy, we should primarily focus on stimulating consumption, they are committing a fallacy based on an incorrect application of the definition of an economic variable.

A few more examples of varying definitions of important economic variables include the poverty rate and the infant mortality rate. Regarding the poverty rate, the United States considers a family of four poor when it earns less than approximately $25,000. Other countries (especially less developed countries) consider a family of four poor when it earns less than $2 per day ($4,000 per year). Some people claim that the health system in the United States is inferior to that of other countries. One variable they point at is the infant mortality rate. However, different countries use different definitions to measure this. The United States includes all babies regardless of the length of the pregnancy or regardless of whether it is born prematurely. Some Western European countries don't include babies if the pregnancy is short or if the baby is born prematurely (Wall Street Journal, "Single Payer's Misleading Statistics" by Scott W. Atlas, December 17, 2018). It becomes difficult to compare statistics between countries when definitions differ so much.

4. Question the validity of the statement. A statement's validity often breaks down because of two common fallacies. These fallacies are the fallacy of cause and effect, and the fallacy of composition. The latter is also called the "fallacy of what you cannot see", or the "broken window fallacy". We touched on this fallacy in our last unit (see also Henry Hazlitt's *Economics In One Lesson*, Chapter 2).

People suffer from the fallacy of cause and effect when they conclude that just because event A occurs before event B, that A must have caused B. Event A could have caused B, but it is incorrect to automatically conclude that A causes B just because A precedes B. For example, European economists have observed growing technology during the past several decades. They have also observed growing average unemployment rates in most European countries during the past decades. Many economists have therefore concluded that growing technology causes greater unemployment. The fallacy is that they are omitting other variables, which may have caused the increase in unemployment. Perhaps increases in tax rates, or increases in protectionist measures, regulations, generous welfare programs, etc., contributed to the rise in unemployment.

People suffer from the fallacy of composition when they conclude that just because something is good for one group or industry, then it must be good for the entire country. Henry Hazlitt's Broken Window Fallacy illustrates that when a boy breaks a baker's window, it doesn't stimulate the economy. Hazlitt admits that the glazier (window repair person) gains a job, just like construction companies gain jobs from natural disasters, such as hurricanes and floods. However, the baker loses money, because he has to spend $250 to repair the window. He subsequently cannot buy a $250 suit from the tailor (this is foregone economic activity that you cannot see when the baker has to repair the window). Analogously, citizens struck by a hurricane (or their insurance companies) now have less money to spend on goods and services they would have otherwise bought (for example, vacations, a new car, etc.) had they not needed to repair their houses. Hazlitt reminds us that one of the keys to economic thinking is to study the effects of

economic action on all groups (the glazier, the baker, and the tailor), and not just one group (the glazier).

5. Question the statistics. Be careful when analyzing statistics. Let's look at the following example. A business earns a profit of $100 in year 1, and a profit of $120 in year 2. It reports to the media that its profits increased 20% (a $20 increase as a percentage of the $100 first year profit). In year 3, profit declines again to $100, and the business reports a decrease in profit of 16.7% (a $20 decrease as a percentage of the $120 profit in year 2). Looking at the percentage changes, it appears that the business is better off in year 3 compared to year 1 (a 20% increase and a 16.7% decrease). However, in looking at the absolute dollar changes, we know that the profit is the same in year 3 compared to year 1. Statistics can be deceiving if incorrect formulas are used or the wrong calculations are made. In the above example, a better method of calculating the percentage change for this business is to apply the so-called arc formula. This formula takes the change in the profit divided by the average of the two years' profits. In the above example, using this formula, the percentage change is $20 (the change) divided by $110 (the average of $100 and $120), or 18.18%. Notice that the percentage change is the same whether the profit increased (year 1) or decreased (year 3).

Another example of deceiving statistics arises when looking at changes in income inequality. Let's say that in 1985 the richest 20% of the income earners in our country earned 49% of the total income, and that the poorest 20% earned 5%. Let's say that we noticed that the numbers for the this year changed to 50% and 4%, respectively. Can we conclude that the rich have gotten richer and the poor have gotten poorer? Looking at the percentage earnings only, this is a correct conclusion. However, looking at real dollar earnings, or standard of living, the conclusion may be different. The reason for this is that in this year, the total income of the country is bigger than in 1985. For example if the country's total real income in 1985 is $100 billion (hypothetically), and the total real income in the current year is $200 billion, then the poor are making $5 billion (5% times $100 billion) in 1985, and $8 billion (4% times $200 billion) this year. In absolute real dollars, the poor have gotten richer, not poorer.

Some economists are concerned that average wages of middle class households have stagnated because they notice that statistically average wages have not increased much. Be careful with statistics though. It is possible that average wages declined because many high earning persons retired (baby boomers) and are being replaced by young, low earning workers. For example, if workers A, B, and C make $80, $70, and $30 per hour respectively, then the average wage is $60 ($180/3). If worker A retires and is replaced with a young person earning $20 per hour, then the average wage drops to $40 ($120/3). Even if workers B and C received significant raises, the average wage may have gone down. For example, if workers B and C now earn $85 and $45 respectively, and the incoming worker earns $20, then the average wage is $50 per hour ($150/3). This illustrates a situation where significant economic growth has increased existing workers wages, but the average wage has dropped. Everyone should be happy with this progress even if average wages have decreased.

Statistical conclusions based on short-term outcomes may be correct, but long-term effects need to be considered as well. If the United States Federal Reserve restricts the money supply today, and within the next six months, the nation's unemployment rate increases, people may conclude that a tightening of the money supply causes a rise in unemployment. However, the unemployment rate may fall after one or two years. When the Federal Reserve restricted the money supply in the early 1980s, interest rates rose in the beginning because of a shortage of bank reserves. However, in the long run, as a result of the tightening of the money supply, inflation decreased, and interest rates fell. Unemployment significantly fell

thereafter. The converse can occur as well. If a country's central bank significantly increases the money supply, unemployment will fall in the short run, but rise in the long run (because of higher inflation).

6. Think like an economist. Thinking like an economist means doing everything described in 1 through 5 above. Furthermore, economists use marginal benefit and marginal cost analysis. For example, does it make sense to eliminate all pollution in our society? It would be far too costly to eliminate every single instance of air, water, or noise pollution. However, the marginal benefit may equal the marginal cost (the optimum point) when we eliminate, say, 50% of the existing pollution.

When giving the solution to a problem, consider alternative solutions, pros and cons, pluses and minuses. It is not enough to support an economic program just because it adds benefit to our society. We also have to ask if the program is the best alternative. In other words, does it add the most benefit? The United States Social Security program has undoubtedly benefited many people, including the elderly, widows, disabled, and orphans. However, to ask whether we should support this program, we must also ask if this program is the best program. Can another program (for example, a privatized program or a reformed government-controlled program) deliver even more benefits? In another example, when the government bailed out Chrysler in the 1980s, it prevented Chrysler from laying off thousands of people, and it appeared to be a success. The real question, however, is not whether the government bailout was beneficial, but what would have happened if the government had not spent this money and how many alternate jobs this would have created. Could this have made the economy even better off?

Proper economic thinkers know to analyze the effects of a policy not just for one group, but for all groups (a technology improvement usually eliminates some jobs, but overall it creates jobs). And they know to consider not just the short run, but also the long run (restricting money supply growth may increase unemployment in the short run, but decrease unemployment in the long run).

Economic thinkers know to use common sense. Does the conclusion of a study violate the general principles of economics? If the minimum wage increases and employment increases, does this make sense? After considering the law of demand, it does not. If we do observe an increase in employment in the real world after a minimum wage increase, what is the reason? Were the definitions of the variables applied properly? Were the assumptions correct? Was the minimum wage below the market wage before and after the increase (in which case, an increase in the minimum wage does not change the actual wage – see Unit 2)? Furthermore, economic thinkers do well to be open-minded and non-judgmental. Look at all the numbers from an unbiased perspective and consider that anything is possible, regardless of any political agendas you may support, and regardless of what the majority of the population believes (the majority is not always correct).

Andrew Bernstein quotes Ayn Rand (pictured) in *The Capitalist Manifesto* (Bernstein A., 2005, P. 196): “The virtue of rationality means the recognition and acceptance of reason as one’s only source of knowledge, one’s only judge of values and one’s guide to action.” Bernstein

continues: “This means that in every aspect of one’s life – in education, in career, in love, in finances and friendships – one must conduct oneself in accordance with as rigorous a process of logical thought as one can conscientiously muster.” (Bernstein A., 2005, P. 196). Think critically!

See: Bernstein, A. (2005). *The Capitalist Manifesto*. Lanham, Maryland: University Press of America, Inc.
See: Hazlitt, H. (1979). *Economics In One Lesson*. New York, New York: Crown Publishing.

Introduction

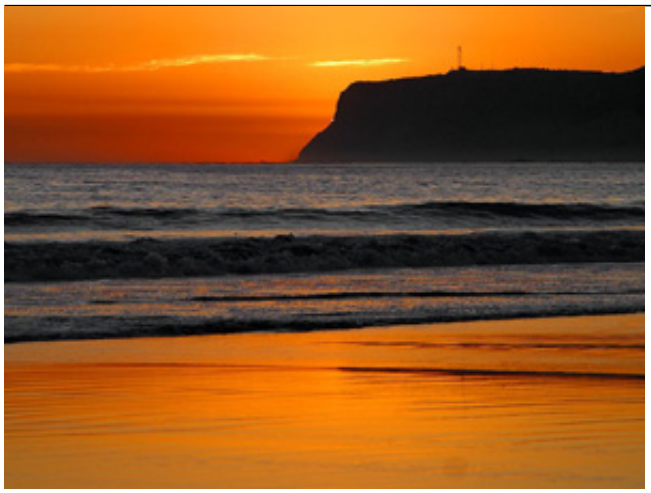
What's in This Chapter?

Why do prices of houses, cars, gasoline, and food fluctuate? What explains increases and decreases in interest rates? Why do prices of stocks and bonds change almost every second? Why does one gas station charge more than an other? Why are teachers' and nurses' salaries so much lower than those of television celebrities, famous athletes and corporate CEOs? Why is it less expensive to visit some foreign countries after their foreign exchange rates decrease in value?

In a free market economy, the answer to all of these questions is: "It is because of changes in supply and demand." When the demand for a product increases, then its equilibrium price increases, and vice versa. When the supply increases, then the price decreases, and vice versa.

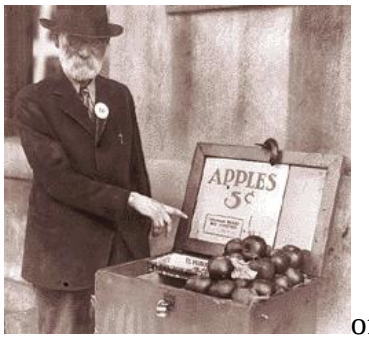
The mechanism of changing prices in a free market economy is powerful. When buyers want more of a product, and can afford it, they communicate this by buying more of the product. This increases the product's price. The higher price gives producers an incentive (and the financial ability) to make more of the product. The subsequent greater supply satisfies the greater need. The greater supply eventually also brings the price back down for most products (assuming the cost of production doesn't change). Overall satisfaction and the nation's wealth increase because buyers and sellers communicate to each other and satisfy each others' needs.

The free market system described above has many advantages and has contributed to high standards of living in many industrialized nations. It has some disadvantages, as well, as we will discuss in this unit.



Section 1: The Law of Demand

Price and Quantity Changes



The law of demand states that buyers of a good will purchase more of the good if its price is lower, and vice versa.
This assumes that no other economic changes take place. If the price of apples decreases from $1.79 per pound to $1.59 per pound, consumers will buy more apples.

Ceteris Paribus

The law of demand assumes that no other changes take place. This assumption is called "*ceteris paribus*." If we don't make this assumption, then we may notice that the price of apples decreases while *fewer* apples are purchased. One explanation for this may be that the price of oranges, a substitute product, has decreased more than the price of apples, so that consumers will substitute oranges for apples. Does this violate the law of demand?

The answer is no. The law of demand assumes that no other changes take place, so we assume that the price of oranges stays the same. If we had not changed anything else (*ceteris paribus*), then we would have noticed an *increase* in the quantity purchased of apples as a result of a decrease in its price, and this conforms to the law of demand.

Substitution and Income Effects

There are two primary reasons why people purchase more of a product as its price decreases. One is the "substitution effect." The substitution effect states that as the price of a product decreases, it becomes cheaper than competing products (assuming that prices of the other products don't decrease). Consumers will substitute the cheaper product for the more expensive product, and vice versa. For example, if the price of apple juice decreases, then "*ceteris paribus*," people will purchase more apple juice instead of, for example, orange juice.

The other effect is the "income effect." The income effect states that as the price of a product decreases, buyers will have more income available to purchase more products, and vice versa. For example, if someone purchases 10 mobile phone applications each month at $2.00 each, this buyer's total monthly

expenditure on these apps is $20.00. If the price of the apps falls to $1.25, the total expenditure drops to $12.50. This means that this buyer now has $7.50 more income compared to when the price of the apps was $2.00. In essence, this buyer's real income has increased. This allows the buyer to purchase more apps (law of demand).

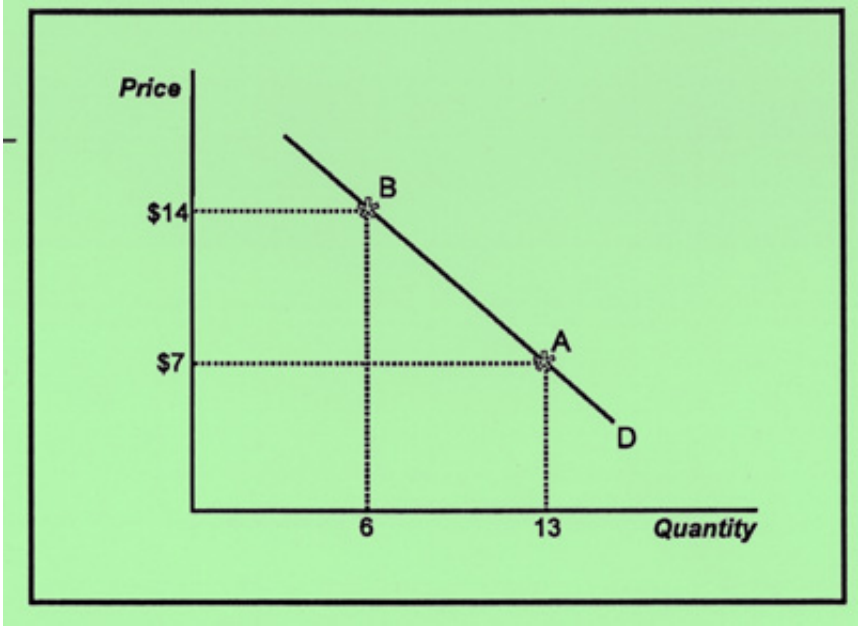
Section 2: The Demand Curve

Graphing the Demand Curve

We can graph demand data in a diagram. The two variables we consider are the price of the product (P) and the amount of the product purchased during a certain period of time (Q). Economists measure the price of the product on the vertical axis and the quantity on the horizontal one.

A demand schedule and a corresponding demand curve represent the buyer's **willingness** and **ability** to purchase the product. For demand to exist, the buyer cannot merely desire the product, but (s)he must also be able to afford it.

In the diagram below, two points are plotted for a hypothetical product. At a price of $7 per product, 13 units are sold. At a price of $14 per product, only 6 units are sold. Other points can be plotted and a line or curve can be connected through these points to arrive at the demand curve. A demand curve usually extends from the upper left to the lower right. It is "downward sloping."



The above diagram shows that on demand curve D, consumers buy 13 units at a price of $7 (point A) and 6 units at a price of $14 (point B).

For a video explanation of how to graph a demand curve, please watch:

YouTube Video

Demand, Utils, Total Utility, and Marginal Utility

The willingness of a buyer to purchase a product depends on the value the buyer expects to receive from purchasing the product relative to the price. Economists call the value or satisfaction a buyer receives

from a product **utility**. **Marginal utility** is the additional value a buyer receives from purchasing one additional product. Typically, a buyer's marginal utility decreases as the person consumes more of a product. For example, if you visit the grocery store to purchase oranges, the marginal utility of each orange decreases, as you purchase more oranges. Let's assume that you really like oranges, you don't have any oranges at home, and that you haven't had eaten one for a while. As you enter the store, the first orange looks very appealing (get it?) to you. Let's say for comparison purposes that this first orange is worth 100 utils to you. A util is an imaginary measure of satisfaction. Because satisfaction differs per person, no one really knows how much a util is. However, we use utils for comparison purposes. For example, we know that if you have already bought the first orange, then the second orange by itself does not provide as much utility (satisfaction) as the first orange. If you already have two oranges, then the third orange does not provide as much utility as the first or the second orange. Analogously, if you were to buy a car, owning a car provides you with considerably more utility if you don't already have one, compared to owning a second car if you already own a car. This illustrates the Law of Diminishing Marginal Utility.

The Law of Diminishing Marginal Utility

The Law of Diminishing Marginal Utility states that the more you have of a product, the less satisfaction you receive from buying additional products. Certain exceptions apply. Beer and other substances, which create certain (un)desired effects after not one, but several servings, may be subject to the law of increasing marginal utility (at least up to a certain point).

Let's look at an example of the law of diminishing marginal utility and how it determines your demand for a product. Let's say that you have the following marginal utility values when you buy gasoline:

Quantity of Gasoline (in Gallons) Purchased Per Month	Marginal (Additional) Utility
1	350 utils
2	250 utils
3	200 utils
4	190 utils
5	185 utils
6	170 utils
7	163 utils
8	159 utils
9	155 utils
10	151 utils
11	147 utils
12	143 utils
13	141 utils
14	139 utils
15	137 utils
16	133 utils

The above table illustrates that if you don't have any gasoline, and you are offered to buy your first gallon, then your satisfaction from using this gallon of gasoline is 350 utils. If you already own one gallon, and you are offered a second, your utility increases by 250 utils, and so forth. So how will you

decide how many gallons of gasoline to purchase? The answer to this question depends on the value you attach to what you have to **give up** to purchase the gasoline (the price of gasoline). This relates to your **affordability** to purchase the product.

Let's assume, for our example here, that the price of gasoline is $5 per gallon. This is the cost to you and what you have to give up. Money has utility, just like products do. Let's assume that $5 is worth 150 utils to you, and let's assume that this remains constant even as you spend your money throughout the month (realistically, as you have less money at the end of the month, the marginal utility of your money increases. But, in our example, for simplicity, we will assume that your money has constant marginal utility).

Using the marginal utility values in the above table, and knowing that $5 (our hypothetical price of gasoline) is worth 150 utils to you, how many gallons of gasoline will you choose to purchase?

Answer: 10 gallons.

Explanation: When you buy your first gallon, you gain 350 utils in gasoline satisfaction. You give up 150 utils because one gallon of gasoline costs $5 (equal to 150 utils). On balance you gain 200 utils, so you decide to buy your first gallon of gasoline. Will you decide to buy your second gallon? You gain 250 gasoline utils, while you give up 150 money utils. You will decide to buy your second gallon. You go through the same process through the tenth gallon. The tenth gallon only gives you 151 utils, while you give up 150 utils. It may not seem much, but you are still gaining one util in addition to the utils from the first nine gallons. Will you decide to buy your eleventh gallon? It gives you 147 utils in additional gasoline utility, while it costs you 150 money utils. If you were to buy your eleventh gallon, you would lose 3 utils. Clearly, you would not do this, and you would buy ten gallons, but not eleven.

What happens if the price of gasoline decreases to $4.50? Let's assume that $4.50 is worth 135 utils to you. Applying the analysis above, you conclude that you will purchase 15 gallons of gasoline, as this will maximize your satisfaction.

The same can be done for any other price. Below is a table that indicates these value preferences. This table also represents your individual demand curve for gasoline.

Your Own Individual Demand Curve

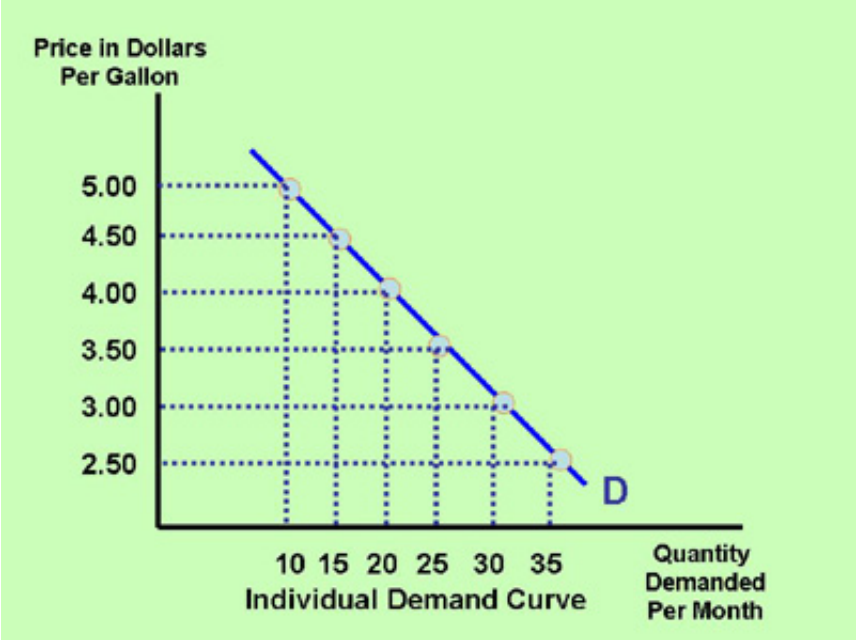
The graph in the previous paragraph shows the **market** demand for one product. Market demand is the total demand for a product by all consumers. Total demand is the sum of all **individual** buyers' demand.

In the next table we look at **one** individual buyer's demand curve for gasoline.

Price per Gallon	Total Number of Gallons Purchased Per Month (Quantity Demanded)
$5.00	10
$4.50	15
$4.00	20
$3.50	25

$3.00	30
$2.50	35

A graph of this buyer's demand schedule for gasoline looks like this:

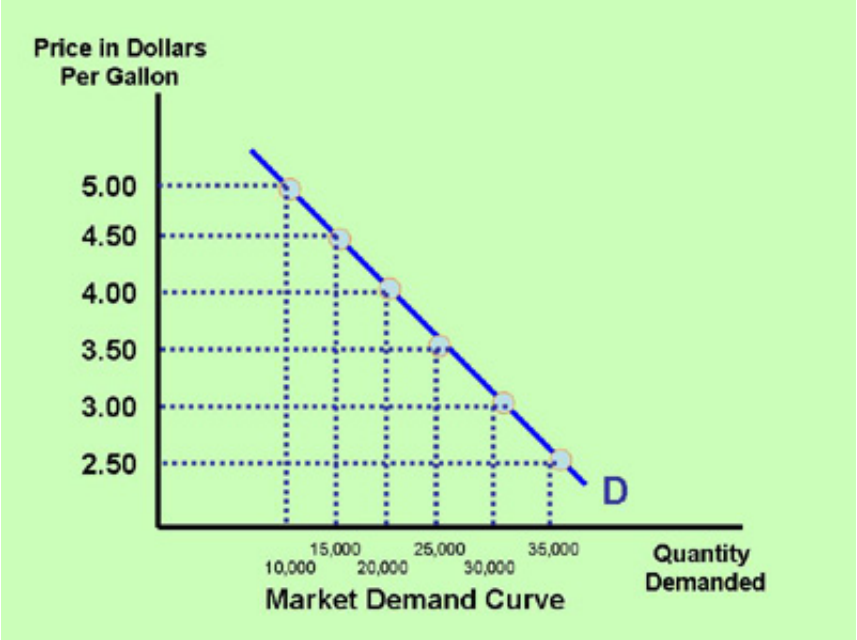


The Market Demand Curve

To arrive at the market demand curve we add every individual buyer's demand schedule. For example, if the market for gasoline consists of 1,000 buyers, then the market demand schedule looks like as follows (for simplicity, we assume that every buyer's demand schedule is identical to the individual in the previous table; the numbers in the following table are multiplied by 1,000 relative to the previous table because there are 1,000 buyers):

Price per Gallon	Total Number of Gallons Purchased Per Month (Quantity Demanded)
$5.00	10,000
$4.50	15,000
$4.00	20,000
$3.50	25,000
$3.00	30,000
$2.50	35,000

Based on the numbers in the table above, the graph of the market demand schedule for gasoline looks like this:


Price in Dollars
Per Gallon
5.00
4.50
4.00
3.50
3.00
2.50
D
10,000
15,000
20,000
25,000
30,000
35,000
Quantity
Demanded
Market Demand Curve

Section 3: The Law of Supply

Price and Quantity Changes

The law of supply states that, *ceteris paribus*, producers offer more of a product at higher than at lower prices. If the product price is high, the supplier can make greater profits by selling more (assuming the cost of production is constant and there is sufficient demand). A video game, for which the demand is high and therefore the price as well, will be supplied at greater quantities because the higher price makes firms willing and able to supply more.

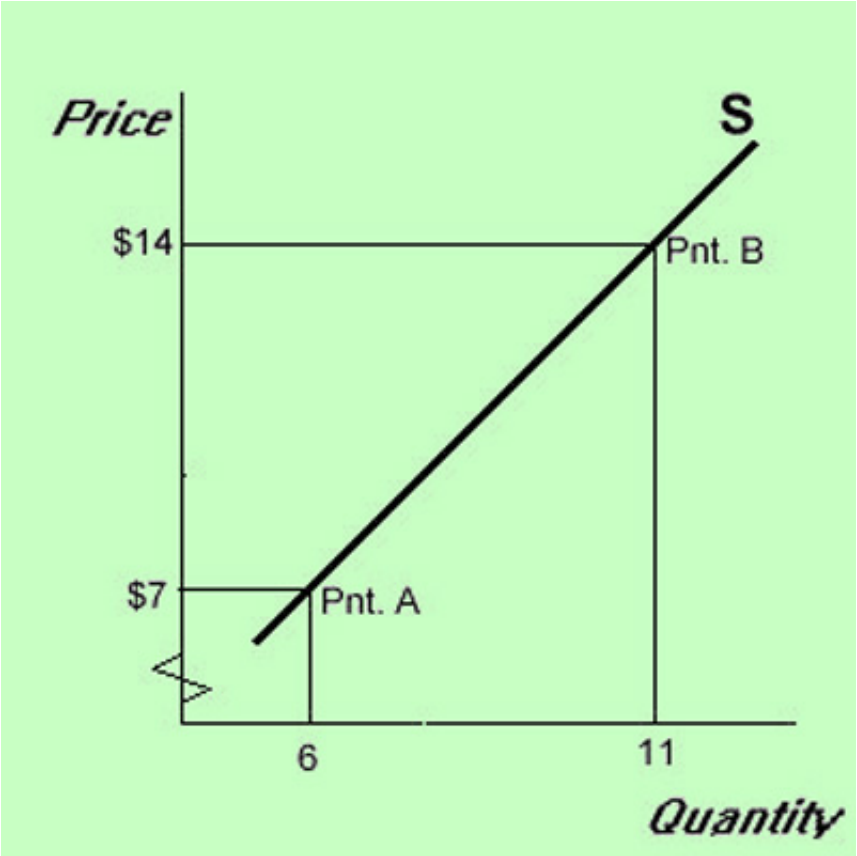
Income and Substitution Effects

When firms can get a higher price for their product, and they are still able to sell approximately the same amount, their income or revenue increases. This is the income effect of changing prices. The other effect is the "substitution effect." The supplier's substitution effect states that as the market price of a product increases, other competing products, ceteris paribus, will become less attractive to produce. Suppliers will substitute the higher priced product for the less expensive product (and vice versa). If the market price for Grover, the Sesame Street stuffed animal, increases in price, and Big Bird does not increase in price, then suppliers will want to make more Grovers. They are more attractive and more profitable to make compared to the Big Bird stuffed animals.

Section 4: The Supply Curve

Graphing the Supply Curve

A supply curve slopes upward from the bottom left to the upper right of the diagram. At higher prices, firms are willing and able to sell more than at lower prices. We say that there is a direct relationship between price and quantity supplied.



The above diagram shows that on supply curve S, suppliers supply 6 units of this product when the price is $7 (point A) and 11 units when the price is $14 (point B).

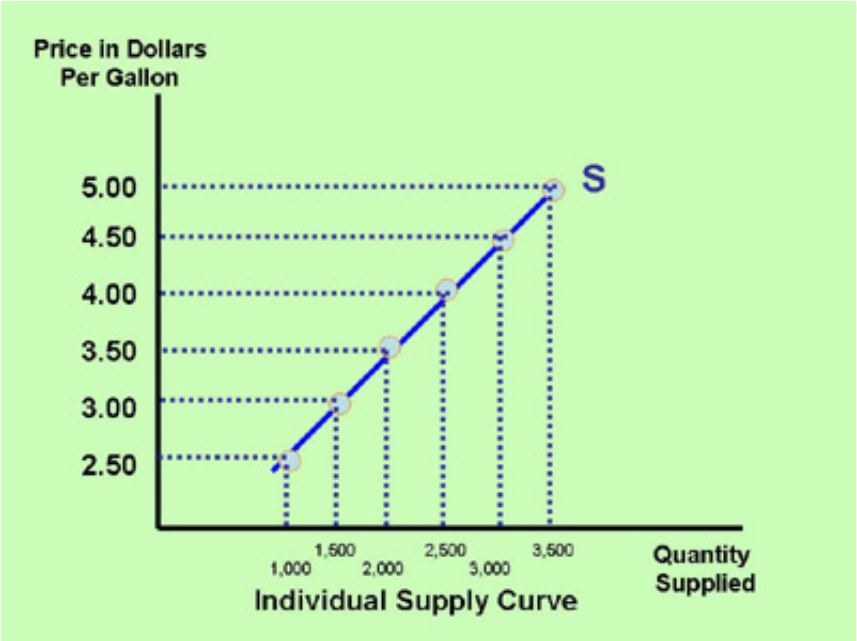
An Individual Firm's Supply Curve for Gasoline

Below is an example of a hypothetical supplier's supply schedule for gasoline. The supplier is willing and able to sell the quantities at the respective prices.

Price per Gallon	Total Number of Gallons Supplied Per Month (Quantity Supplied)
$5.00	3,500
$4.50	3,000
$4.00	2,500
$3.50	2,000
$3.00	1,500

$2.50	1,000

A graph of this individual supplier's demand schedule for gasoline looks like this:

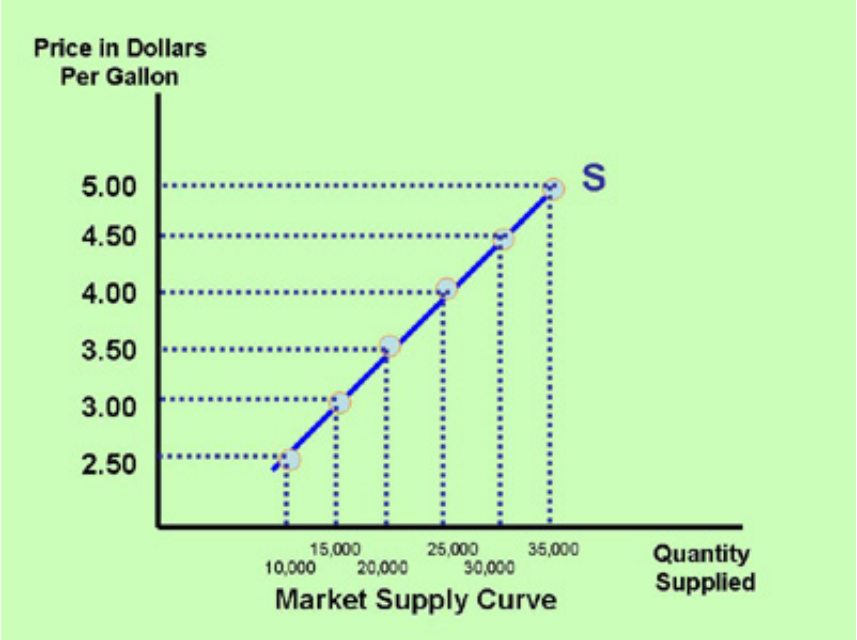


The Market Supply Curve for Gasoline

A supply curve for the entire market of this product is simply the sum of every individual supplier's supply schedule. For example, if the market for gasoline consists of 10 suppliers, then the market supply schedule looks as follows (for simplicity, we assume that every supplier's supply schedule is identical to the individual supplier in the previous paragraph; compared to the table above the numbers in the quantity column are multiplied by 10 because there are 10 suppliers):

Price per Gallon	Total Number of Gallons Purchased Per Month (Quantity Demanded)
$5.00	35,000
$4.50	30,000
$4.00	25,0000
$3.50	20,000
$3.00	15,000
$2.50	10,000

Based on the numbers in the table above, the graph of the market supply schedule for gasoline looks like this:



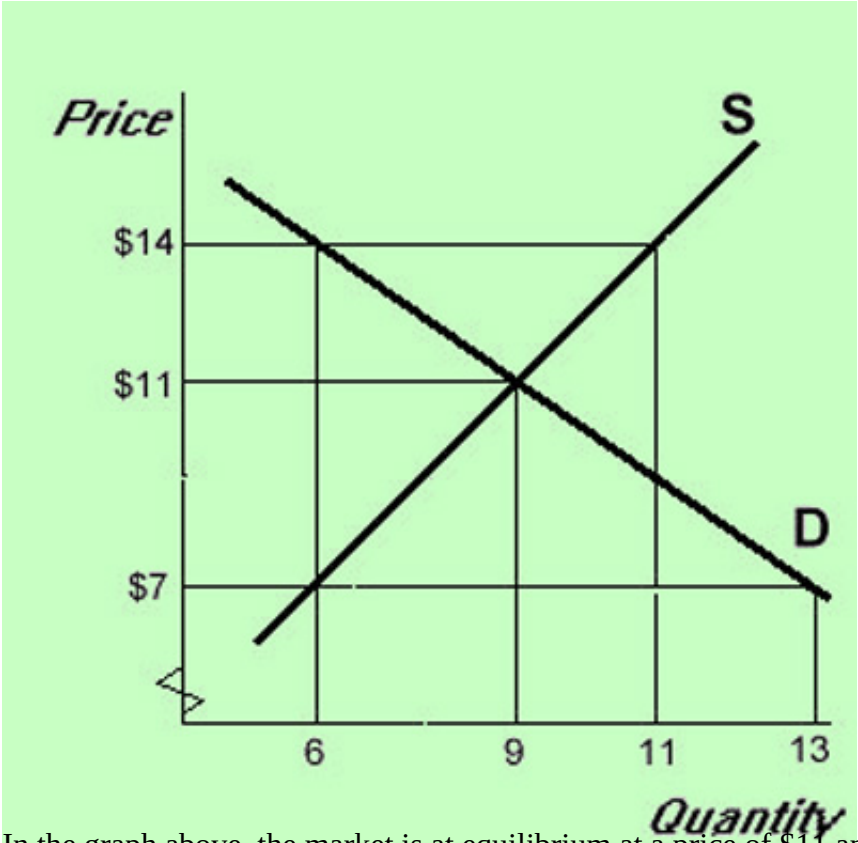
For a video explanation of how to graph a supply curve, please watch:

YouTube Video

Section 5: Equilibrium Price and Quantity

The Market Price and Quantity

In a free and competitive market without government price controls, the equilibrium, or market, price and quantity occur at the point at which the supply and demand curves intersect. At this price, consumers are willing and able to buy the same amount that businesses are willing and able to sell. If the price is below this equilibrium intersection point, a shortage results. If the price is above the point, a surplus results.



In the graph above, the market is at equilibrium at a price of $11 and a quantity of 9. If the price were set at $7, a **shortage** of 7 products results. At $7 the quantity demanded is 13 (from $7 go straight over to the demand curve) and the quantity supplied is 6 (from $7 go straight over to the supply curve). Similarly, if the price were set at $14, a **surplus** of 5 units (11 minus 6) results.

For a video explanation of the equilibrium price and quantity, please watch:

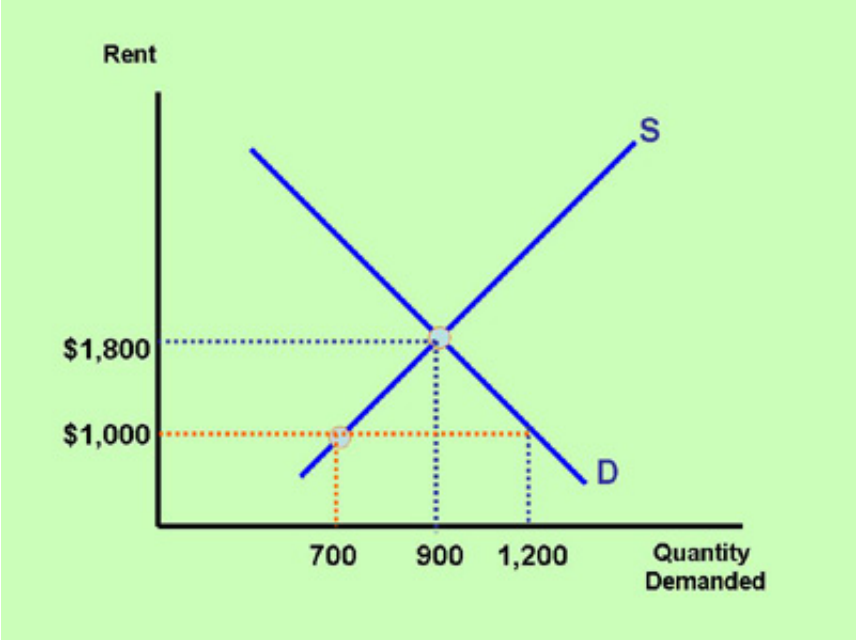
YouTube Video

Below are some supply and demand applications, in which we study what happens when the government, instead of the free market, determines the price.

The Case of Rent Control

Rent control is an example of a price set **below** the equilibrium point. This is called a **price ceiling**. In the

graph below, the equilibrium (market) price of a rental unit is $1,800 per month. The city government wants the rental units priced at no more than $1,000 per month, so that more tenants can afford to live in the city. The lower-than-equilibrium rent causes the quantity supplied of rental units to decrease to 700 units, because suppliers have less incentive to build and own rental units at the lower price. The quantity demanded increases to 1,200, because the lower price encourages more buyers. This results in a shortage of 500 rental units (1,200 minus 700).



In addition to the shortage, there are other consequences of the government's price ceiling. Because of the increased quantity demanded landlords have less incentive to provide an excellent product, and because of the lower rent they have less rental income to maintain the rental properties. This usually leads to a deterioration of the rental units. Due to the shortage of rental units in the inner city, the demand for properties not subject to rent controls increases. This increases the price of non-rent-controlled properties.

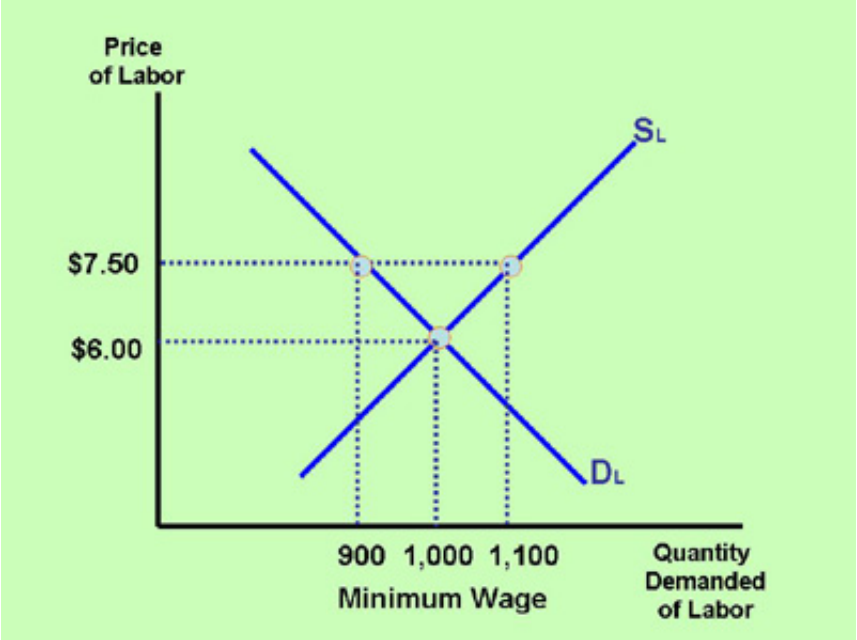
Rent control also makes discrimination more likely. Hopefully, landlords don't discriminate when they accept tenants. However, when landlords have a waiting list of people applying for the lower-rent units, landlords who want to discriminate can more easily do so. At market prices, this is less likely to be the case. 

As rents are higher, there are far fewer waiting lists, and landlords are more likely to accept tenants based on their ability to pay, rather than on their race, ethnic origin, and lifestyle. Despite these disadvantages, rent controls are still in existence in various big cities around the industrialized world. Politicians often focus on the short-term social benefits of helping the

poor, but are not always aware of the long-term economic disadvantages. Furthermore, they receive pressure from tenants, who ask for lower rent and more-affordable housing. Politicians are tempted to oblige tenants' wishes, because there are far more tenants who vote than landlords.

The Case of the Minimum Wage

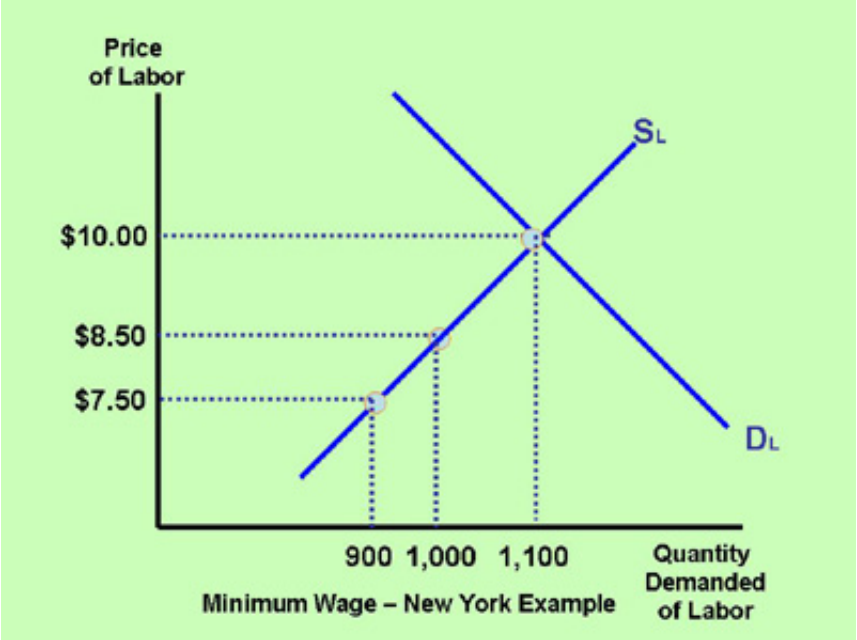
The minimum wage is an example of a price set **above** the equilibrium point. This is called a **price floor**. In the graph below, the equilibrium price of labor (the market wage) is $6.00 per hour. The government determines that it wants firms to hire workers at a minimum of $7.50, so that workers can earn more money per hour and better afford their daily expenditures. The higher-than-equilibrium wage causes the quantity supplied of labor to increase to 1,100 workers, because workers have more incentive to work at a higher wage. The quantity demanded of labor decreases to 900 workers, because the higher wage discourages firms from hiring workers. This results in a surplus of workers (unemployment) of 200 workers (1,100 minus 900).



Minimum wage is a hotly debated topic. The graph above predicts that an increase in the minimum wage causes unemployment. Some studies, however, claim that an increase in the minimum wage has no significant effect on unemployment. Both studies can be correct, depending on the market conditions. Below is an example of a case study in which the minimum wage increases, but there is no effect on employment or unemployment.

The Case when the Market Wage is above the Minimum Wage

Let's say that the equilibrium (market) wage in the New York metropolitan area for a certain type of worker is $10.00 per hour (see graph below). If the state government of New York raises the minimum wage from $7.50 to $8.50 (hypothetical example), the minimum wage will still be below the market wage. Therefore, there is no effect of an increase in the minimum wage on employment.



The Case when the Market Wage is below the Minimum Wage

If in another state the equilibrium (market) wage is $4.50 per hour, and the state government increases the minimum wage to $6.50 per hour, then businesses are required to pay many workers more per hour compared to what they were paying at the market wage. This will increase the incomes of workers who are able to keep their jobs. And it will lead to unemployment of workers (especially full-time workers), because the higher wage decreases the quantity demanded of labor and increases the quantity supplied.

Critically Analyzing Minimum Wage Studies

As you can see, the effect of an increase in the minimum wage differs, depending on whether the market wage is above or below the minimum wage. Another reason for discrepancies in studies on the minimum wage is that employment definitions vary. Economists Card and Krueger concluded in their study on the minimum wage that after the minimum wage increased in New Jersey, employment actually rose. The measure of employment they used was "the number of jobs held by people." However, another measure of employment, which they did not use, is "the number of hours worked by people." Using the latter definition, employment decreased. To illustrate this difference, consider the following example.

Let's say that as a result of an increase in the minimum wage, the number of full-time jobs decreases by 400, and the number of part-time jobs increases by 500. This can be expected as businesses, faced with a higher wage, decide to replace full-time workers with part-time workers in order to save money on benefits and reduce the total hours worked. Assuming that full-time workers work a 40-hour week, and part-time workers work a 20-hour week, the total number of hours worked declines by 16,000 (400 workers times 40) hours, and increases by 10,000 (500 times 20) hours. On balance, the number of hours worked decreases by 6,000. However, the total number of jobs increases by 100. As you can see, measuring employment by the total number of jobs (this is how our nation's unemployment rate is calculated and this is the definition Card and Krueger used - see Unit 1, section 7 on critical thinking) can be deceiving and can lead to bad government policy.

For a video explanation of how the minimum wage affects employment, please watch:

YouTube Video

Section 6: Demand Determinants

Reasons for a Shift in the Demand Curve

Demand can increase or decrease. In this case, the demand curve shifts to the right or to the left, respectively. The following are reasons:

1. A change in buyers' real incomes or wealth.
When buyers' incomes change, we distinguish between two products: normal products and inferior products.

The demand for a normal product increases if buyers experience an increase in real incomes or wealth. If buyers' real incomes increase, they can afford to purchase more electronic devices, clothes, food, and other products. Consequently, the demand for these products increases.

However, some products may experience a decrease in demand as buyers' real incomes increase. These products are called **inferior products**. A person who is forced to eat macaroni and cheese each day on a minimal budget may choose to buy steak when her/his income increases. This means that the demand for macaroni and cheese decreases as this buyer's income increases. In this case, macaroni and cheese is considered an inferior product, and steak is considered a **normal product**. Another example of an inferior product is public transportation. Typically, as buyers' incomes increase, the demand for public transportation decreases (and vice versa). The term "inferior" in economics is a bit of a misnomer because it does not mean that the quality of the product is inferior (the quality of the macaroni and cheese may be perfectly fine). It merely refers to the product's demand changes as a result of buyers' income changes.

2. Buyers' tastes and preferences.
As a product becomes more fashionable or useful, its demand increases. Big screen televisions, smart phones, electric vehicles, organic food, online products, and virtual reality games have all gained in popularity and have experienced increases in demand. As some products gain in popularity, others lose. The demand for the less popular products decreases.

3. The prices of related products or services.

Consider the market for potato chips. The demand for it will go down (assuming no other changes) if the

price of a related good, for example, pretzels, decreases. Potato chips and pretzels are so-called substitutes. If the price of a substitute decreases, then the demand for the other product decreases (and vice versa). A related good can also be a complementary product. This is a product consumed not in place of, but along with, another product. A decrease in the price of potato chips increases the demand for potato chip dip. If the price of a complementary product decreases, the demand for the other product increases (and vice versa).

4. Buyers' expectations of the product's future price or the product's future availability.

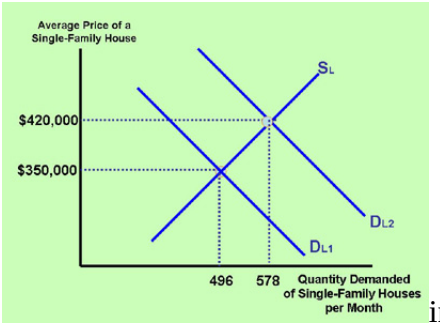
If people believe that toilet paper will become more expensive, or if people expect there to be a shortage in the near future, more people will buy the product now (and vice versa). This increases current demand, and shifts the demand curve to the right. This will have the eventual effect of actually increasing the real price in the short run (an increase in demand increases the price). It is a self-fulfilling expectation, a common phenomenon in economics.

5. Buyers' expectations of their future income and wealth.
When buyers expect their income or wealth to increase, they will increase their demand for normal products and decrease their demand for inferior products, and vice versa. Many people anticipate their future increased (or decreased) incomes by changing their consumption habits now.

6. The number of buyers (population).
If the population of buyers of a certain product increases, we experience an increase in the demand for that product. With the aging of the Baby Boomers we can anticipate a rise in the demand for products that senior citizens typically purchase (insurance, health care, travel, nursing care). If we experience another baby boom in the future, the demand for baby products will increase again.

Section 7: The Effect of a Change in Demand on Equilibrium Price and Quantity

An Increase in Demand

Demand changes for any of the six reasons listed 

in the previous section.

When the demand curve shifts to the right **demand** increases. The market price increases, as does the equilibrium quantity (in the short run).

A Decrease in Demand

When the demand curve shifts to the left, equilibrium price and quantity decrease (in the short run).

Video Explanation

For a video explanation of how a change in buyers' incomes changes the demand (and the equilibrium price and quantity) for a normal good, please visit:

YouTube Video

Section 8: Supply Determinants

Reasons for a Shift in the Supply Curve

Supply can increase or decrease. In this case, the supply curve shifts to the right or to the left respectively. The following are reasons:

1. An advance in technology.
An advance in the technology of making the product will lower the cost of producing it. This means that the firm increases its profits, and it has more incentive to increase its supply.

2. A change in the price of an input used to make the product.
When the price of an input, such as labor, raw materials, machinery, or land, decreases, the firm makes more profit per product and is willing and able to increase the supply of the product (and vice versa).

3. A change in taxes, subsidies, or regulations.
Taxing or imposing additional regulations on the manufacturing of a product lowers the supply, because the total cost of making the product increases. A subsidy, a government grant to a business or individual, or a reduction in regulations increases supply. Public schools, community colleges, and public universities receive subsidies from local and state governments. These additional funds allow schools to supply more courses and hire more teachers and professors than would be the case if they did not receive government funds.

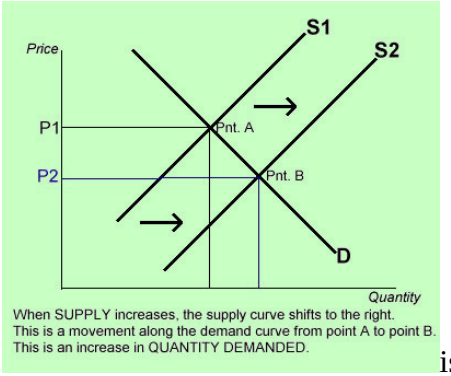
4. The number of suppliers.
When more firms decide to enter the market, the supply of the product increases (and vice versa). In some industries, the number of suppliers is controlled by industry agencies, which require licenses, permits, diplomas, etc. The American Medical Association sets strict requirements regarding the entry of doctors into the industry. This safeguards a certain level of quality and protects consumers, but also restricts the number of suppliers, and keeps doctors' prices higher than otherwise would be the case. These changes shift the supply curve (see next section). A shift in the supply curve is called a change in supply (as opposed to a change in quantity supplied).

If a natural disaster (like an earthquake, a flood or a hurricane) occurs, it takes away production capacity. This decreases supply.

Section 9: The Effect of a Change in Supply on Equilibrium Price and Quantity

An Increase in Supply

Supply changes for any of the four reasons listed in the previous section.



When SUPPLY increases, the supply curve shifts to the right.
This is a movement along the demand curve from point A to point B.
This is an increase in QUANTITY DEMANDED.

An increase in **supply** is illustrated by a rightward (or downward) shift of the supply curve. This decreases the price and increases the quantity sold.

A Decrease in Supply

A decrease in **supply** is illustrated by a leftward (or upward) shift of the supply curve. This increases the price and decreases the quantity sold.

Section 10: The Effect of Changes in Both Demand and Supply on Equilibrium Price and Quantity

A Summary of how Demand and Supply Changes Affect Prices and Quantities

The following summarizes the important relationships between changes in demand and supply and their corresponding equilibrium prices and equilibrium quantities changes. These are changes that take place in the short-term (usually within several months). In the long run (one year or longer), most products (especially manufactured goods subject to a fair amount of competition) will experience further price and quantity changes. Long run price changes are discussed in more detail in a later section in this unit. When we refer to "equilibrium price" it represents the price or market price, meaning the price that the grocery store, department store, gas station, etc. charges in a free market. When we mention "equilibrium quantity", it represents quantity or the amount of a certain product bought and sold in a store or where ever goods and services are sold.

When Demand Increases ==> Price Increases and Quantity Increases
When Demand Decreases ==> Price Decreases and Quantity Decreases
When Supply Increases ==> Price Decreases and Quantity Increases
When Supply Decreases ==> Price Increases and Quantity Decreases

A Simultaneous Increase in Demand and Supply

So we know that an increase in demand increases equilibrium price and quantity (and vice versa), and an increase in supply decreases equilibrium price and increases quantity (and vice versa). What happens if both demand and supply change at the same time?

Let's analyze the following examples.

Example 1
Problem: Suppose that consumers' incomes have gone up, and that an advance in technology has lowered the cost of making computers. Assuming that a computer is a normal good, what will happen to the equilibrium price and quantity of computers as a result of these two simultaneous changes?
Solution: An increase in consumers' incomes increases the demand for computers. This increases the equilibrium price and equilibrium quantity. An advance in technology increases the supply. This decreases the equilibrium price and increases the equilibrium quantity. Combining these two effects, the equilibrium quantity increases because the equilibrium quantity increases in both instances. The equilibrium price increased and then decreased, so on balance, it will either increase, decrease, or stay the same, depending on the size of the shifts in the curves. If demand increases more than supply, then the price increases, and vice versa. If we don't know the magnitude of the shifts, we say that the price is indeterminate.

In summary:
Consumer Incomes ? ?Demand ? ? Price ? and Quantity ?
Advance in Technology ? Supply ? ? Price ? and Quantity ?

Combined Effect = Price change unknown (indeterminate) and Quantity increases

Example 2
Problem: Buyers expect prices of jewelry to increase in the near future, and at the same time, the government decides to tax the production of jewelry. What effect does this have on the market price and output of jewelry?

Solution: Current demand for jewelry increases because buyers expect the price to increase in the future. This increases the equilibrium price and the equilibrium quantity. Supply of jewelry decreases because the increased tax makes it less attractive for firms to supply the product. This increases the price of jewelry and decreases the quantity bought/sold. The combined effect is that the price of jewelry increases, and the equilibrium quantity change is indeterminate. Note that when both demand and supply shift, one variable (price or quantity) experiences a definite change, and the other is indeterminate (unless you know the magnitude of the shifts). When only one curve shifts, both equilibrium price and quantity experience a definite change.

In summary:
Expected Future Price ? ? Demand ? ? Price ? and Quantity ?
Production tax ? ? Supply ? ? Price ? and Quantity ?

Combined Effect = Price increases and Quantity change unknown (indeterminate)

Video Explanations
For video explanations of how changes in both demand and supply affect the equilibrium price and quantity of a product, please watch the following:

YouTube Video

YouTube Video

YouTube Video

YouTube Video

The labor market is a special case of supply and demand. The demand for labor is the businesses' willingness and ability to hire workers. The supply of labor is the workers' willingness and ability to work at certain wage rates.

For a labor market application of supply and demand changes and their effects on the equilibrium price of labor (the wage rate) and the equilibrium quantity (the number of workers hired), watch:

YouTube Video

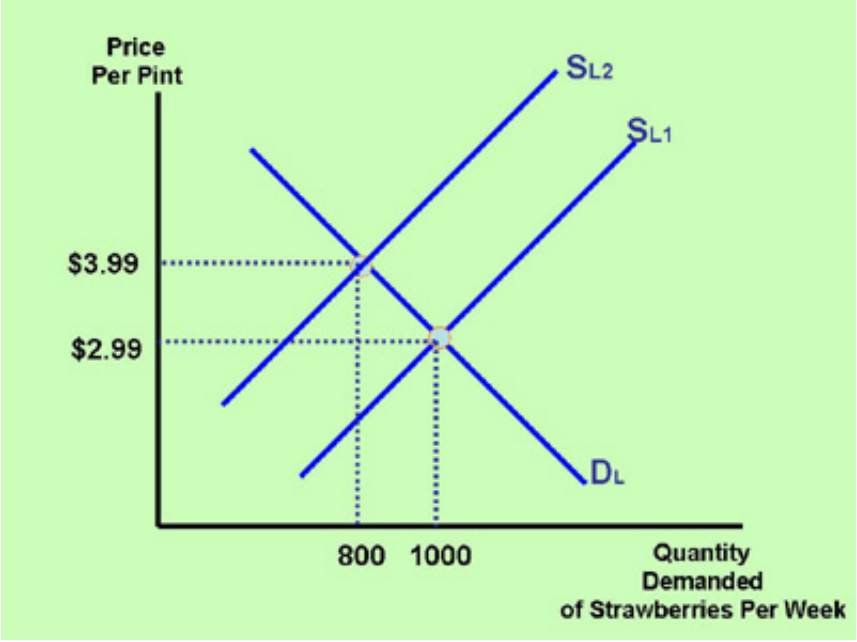
Section 11: Demand versus Quantity Demanded and Supply versus Quantity Supplied

The Difference Between Demand and Quantity Demanded

We learned in an earlier section that as the price of a product increases, the amount purchased by buyers decreases, and vice versa. This illustrates the law of demand. In a more recent section, we noticed that as demand increases, the price of a product increases. When you look at these two statements together, it may appear confusing and contradictory. However, the two statements are both valid. It is merely a matter of what causes what; in other words, which is the cause and which is the effect? To understand the difference more clearly, we need to study the difference between **demand** and **quantity demanded**.

Quantity Demanded

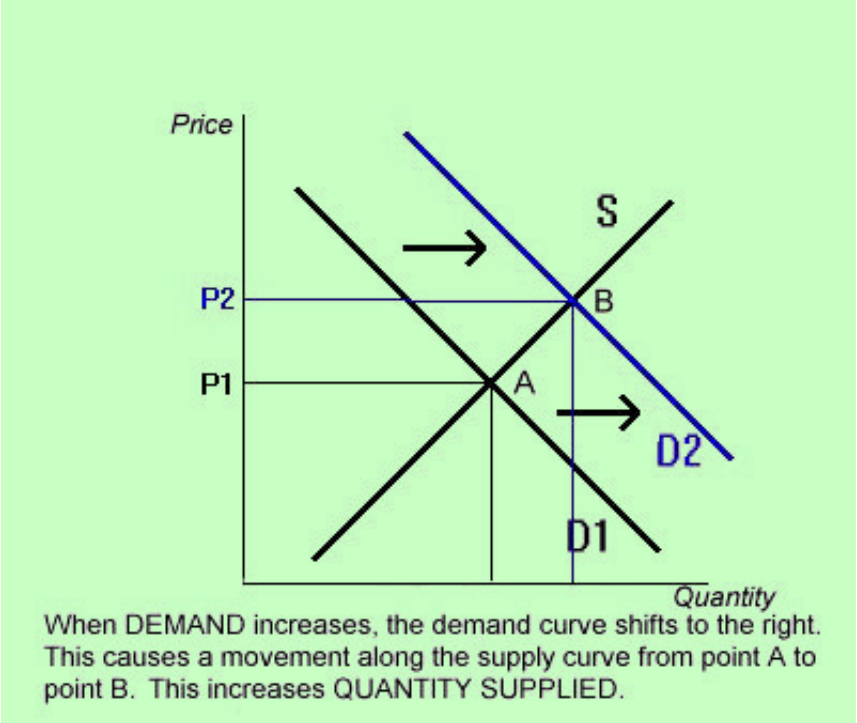
If the market price of a product decreases, then the **quantity demanded** increases, and vice versa. For example, when the price of strawberries decreases (when they are in season and the supply is higher - see graph below), then more people will purchases strawberries (the quantity demanded increases). A quantity demanded change is illustrated in a graph by a movement **along** the demand curve. In the graph below we are moving along the demand curve from the first intersection point (Q = 800 and P = $3.99) to the second intersection point (Q = 1,000 and P = $2.99).



Demand

When one or more of the six demand determinants listed in Section 6 changes, then **demand** changes. For example, when buyers' incomes increase, the **demand** (not quantity demanded) for a normal product increases. Or when the price of a substitute product decreases, then the demand for the product in question decreases. Or when the number of buyers increases, the demand increases, and the price of the product increases. An increase in demand is illustrated in a graph by a **rightward shift** in the demand curve.

The following graph illustrates an increase in **demand**:



When DEMAND increases, the demand curve shifts to the right. This causes a movement along the supply curve from point A to point B. This increases QUANTITY SUPPLIED.

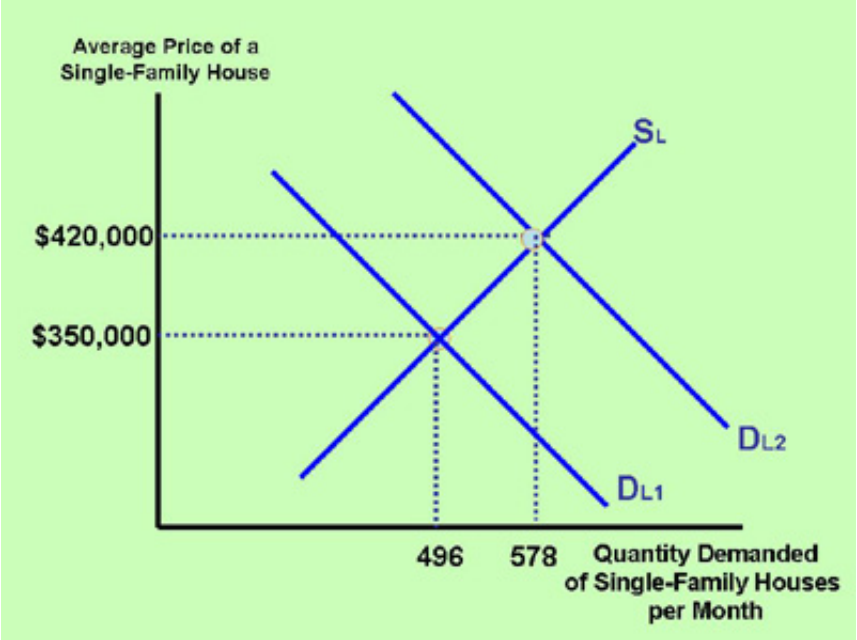
In the graph above, **demand** increases as D1 shifts to D2. **Quantity supplied** increases in the above case as the equilibrium point shifts along the supply curve from point A to point B.

The Difference Between Supply and Quantity Supplied

The distinction between **supply** and **quantity supplied** is similar to the difference between demand and quantity demanded.

Quantity Supplied

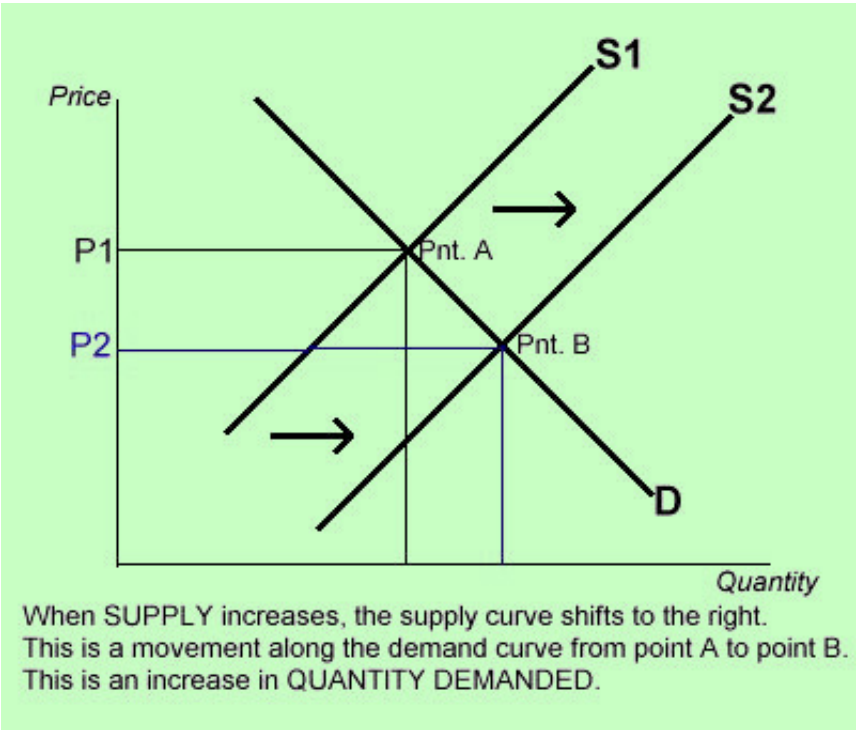
If the market price of a product increases, then the **quantity supplied** increases, and vice versa. For example, when housing prices increase (when the demand for houses has been strong), then more people will want to sell their house (quantity supplied increases). A quantity supplied change is illustrated in a graph by a movement **along** the supply curve. In the graph below we are moving along the supply curve from the first intersection point (Q = 496 and P = $350,000) to the second intersection point (Q = 578 and P = $420,000).



Supply

When one or more of the four supply determinants listed in Section 8 changes, then **supply** changes. For example, when technology advances, or the cost of production decreases, **supply** increases. An increase in supply is illustrated in a graph by a **rightward shift** in the supply curve.

The following graph illustrates an increase in **supply** and an increase in **quantity demanded**.



The above diagram illustrates that supply increases as S1 shifts to S2, and quantity demanded increases as the equilibrium point shifts along the demand curve from point A to point B.

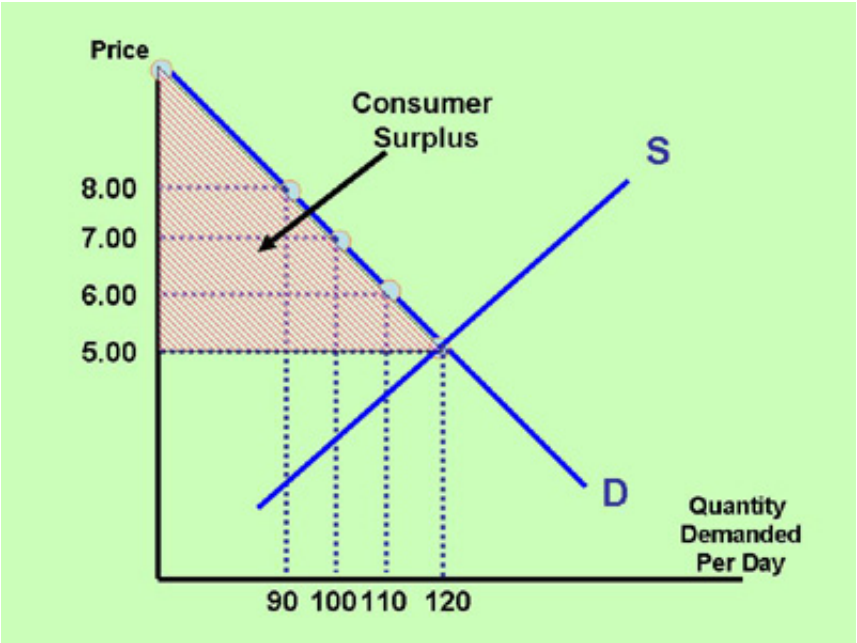
For a video explanation of the difference between demand and quantity demanded and supply and quantity supplied, please watch:

YouTube Video

Section 12: Consumer Surplus and Producer Surplus

Consumer Surplus

In the graph below, the supply and demand curves intersect at an equilibrium price of $5 and an equilibrium quantity of 120 products. If the price had been $6, buyers would have purchased 110 products. If the price had been $7, buyers would have purchased 100 products. If the price had been $8, buyers would have purchased 90 products, and so forth. This means that quite a few buyers would have been willing and able to pay more for the product than they are actually paying at the equilibrium price of $5. At the equilibrium price of $5 everyone pays that price, including the buyers who would have been willing to pay a higher price. The difference between how much consumers value a product and how much they actually pay for it at the equilibrium price is called **consumer surplus**. The consumer surplus in the graph below is illustrated by the shaded triangle.



For a video explanation of consumer surplus, and how consumer surplus increases when demand and supply simultaneously increase, please watch:

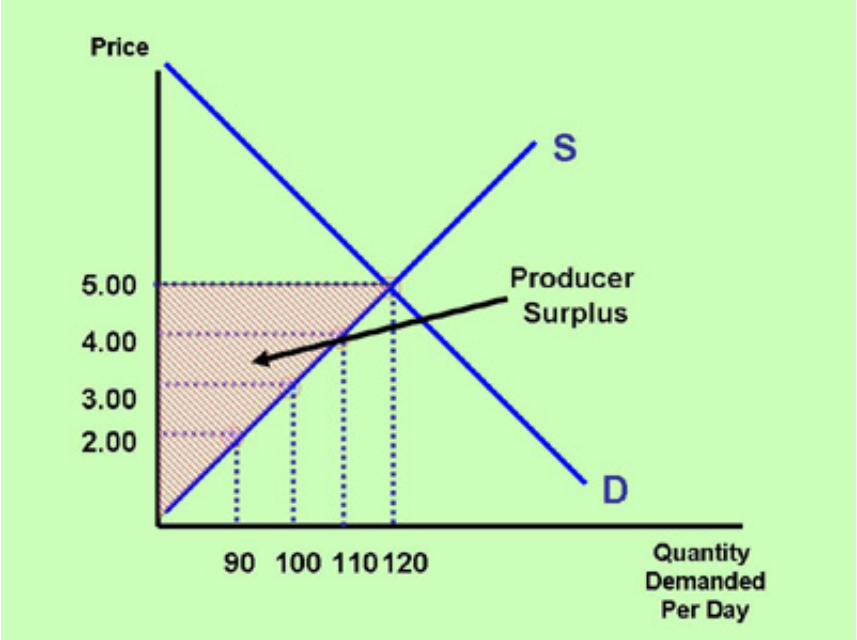
YouTube Video

Producer Surplus

Just like there is consumer surplus, there is producer surplus. Producer surplus is the difference between the minimum price at which producers would have been willing to produce the product and how much they are actually receiving at the equilibrium price. The producer surplus in the graph below is illustrated by the shaded triangle.

The total additional benefit to society of trading this product is the sum of consumer surplus and producer surplus. Can you figure out what happens to consumer surplus and producer surplus if both demand and

supply increase (both curves shift to the right)?



Because the terms are so similar, it is easy to confuse a regular surplus, and a consumer or producer surplus.

A regular surplus (of a product) happens when businesses are charging a price that is higher than the equilibrium price. This happens when the price charged is above the equilibrium price (above the intersection of the supply and demand curves). For example, if a product's equilibrium price is $5 but a business is charging $6 (perhaps because of a government mandate), then there will be a surplus of products (businesses are producing more than what consumers are buying).

When we discuss consumer surplus, the price charged by businesses is the equilibrium price (it is not higher than the equilibrium). Consumer surplus is the concept that consumers benefit and gain value from buying a product at the equilibrium price. So let's say that the equilibrium price of a product is $5. If 80 people would have been willing to pay $6 for the product (because they value the product a lot) then the consumer surplus of these 80 people is $1 each (or $80 total). They are valuing the product at $6, but they are paying the equilibrium price of $5 per product.

The concept of producer surplus is similar to that of consumer surplus, except that it applies to producers who sell the product instead of consumers.

For a video explanation of producer surplus, please watch:

YouTube Video

Section 13: Price Changes in the Short Run and in the Long Run

Categories of Products

Prices of some categories of goods increase in the long run as demand rises, while others do not. Here we distinguish between products that are in **limited supply**, such as land, labor, raw materials, and sports and performance event tickets, and **manufactured** products, or ones that are in nearly unlimited supply in the long run. The latter category of products includes products such as grocery items, clothes, cars, and electronic products.

Products in Limited Supply

In the long run, prices of products that are in limited supply fluctuate much more with changes in demand than products that are in abundant supply. Examples of limited supply goods and services include land, labor, natural resources such as oil, gas and minerals, tickets to major sporting events (the World Series, the Superbowl, or the World Cup Soccer final), and products supplied by a monopoly.

If, for example, the demand for land in a certain area rises because of increased population and increased housing activity, the price of the land will increase. Because the supply of land is limited, the price of the land can remain high for a long period of time as long as the demand remains high.

Products supplied by a monopoly are limited because the firm may be the sole owner of a resource, or the firm may have a patent, a license, or other government approval to be the only supplier. The limited supply will cause the price of the product or service to be high and remain high in the long run if the demand is high.

Manufactured Products

Prices of products in abundant supply, or so-called manufactured products (except those produced by a monopoly), generally do not remain high in the long run. For example, let's take a look at the price of cheese. When the demand for cheese increases, the price increases in the short run. A higher price of cheese means that profits for the suppliers will be higher, assuming that the cost of production remains constant. If the profits to produce and sell cheese exceed the average level of profits in other industries, more entrepreneurs (more cheese suppliers) will enter the industry. This increases supply and brings the price back down in the long run. Thus, in the long run the price will settle at a level where profits are normal or average and not excessive.

Prices of most manufactured products (in a competitive market) are set such that they just cover the cost of production, plus a fair (non-excessive) allowance for a profit.

Section 14: The Free Market System and Externalities

The Free Market

In a free market economy, prices of goods and services, wages, interest rates, and foreign exchange values are determined by supply and demand. There is no interference from a government in the form of price controls, labor laws, or other regulations affecting the market price of the product. A free market is economically efficient (from a production and cost point of view) and generally leads to high standards of living.

In a free market system there is an important role for the government. The government does not interfere with prices, but it has a significant role to play in the areas of protecting private property, providing essential services such as infrastructure (roads, highways, etc.), providing oversight of key industries, providing a legal system and defending the country. So in a free market system, the role of the government is limited, but important. The following are specific advantages of a free market system.

Advantages of a Free Market System

1. Products are priced at their true worth.
The most important advantage of a free market system is that products are priced at their true "worth." The product's true worth is based on how much buyers and sellers value the product. This is reflected in the demand and supply of the product (and not on a government-determined price). When consumers value a product highly, then the demand for this product is high and consequently, the price of the product will be relatively high. The high price then gives businesses the incentive to produce the product (because profits will be high) and the consumers' demand will be satisfied. On the other hand, if a government sets a product's price at an artificially low level, then businesses will make no profit and have little incentive to produce the product, even if consumers really want the product.

In order to survive in the market place, producers look for the lowest cost and most efficient means to produce. A free market system therefore encourages efficient production.

In a free market system, prices of resources are determined just like prices of products. Why do some celebrities earn very high wages? The answer is that the demand for their services is very high and the supply of their services (their talent) is relatively low. You may not like that some people earn this much. However, the high demand increases the equilibrium price (wage). In response, the high price (wage) encourages some people to excel and satisfy the consumers' demand. This responsiveness in the price system is what maximizes total economic value in society.

2. There are greater incentives to work and there is a higher standard of living.
A free market with relatively low taxation encourages people to work hard and innovate. This profit incentive provides competition and entrepreneurship. Entrepreneurship leads to creation of jobs and production of products, which raise people's standards of living. Countries that have limited government interference in the free market have shown to be the most productive. The standard of living in politically and economically free, or mostly free, countries is the highest in the world, and poverty measured in absolute standard of living is the lowest.

3. There is greater freedom.
A free market allows people the freedom to choose their occupation and the products they can afford to buy. Countries that encourage free markets while discouraging economic and social discrimination usually allow for greater degrees of income mobility. People have opportunities and the freedom to improve their economic positions through innovation and hard work. Even poor immigrants who come to the country with nothing but their own courage and determination often succeed and work their way up the economic ladder.

Some claim that poor people in a free market system are not free because they cannot afford many of the luxuries that high income people have. Bear in mind though that as free market economies evolve, many products that were at first not affordable to the poor are now cheaper and affordable. Twenty years ago computers and mobile phones were too expensive for most people. Now just about every household has multiple computers and phones. New products are expensive at first because businesses have to recover millions and sometimes billions of dollars in research and development costs. Wealthy people buying these products when prices are high allow businesses to earn profits and to continue to sell and improve these products. Eventually prices decrease and they become affordable to many.

Disadvantages of a Free Market System

There are several disadvantages of a free market system.

1. There is greater income inequality.
This is listed as a disadvantage but, depending on your current or expected income or personal philosophy, you may see it as an advantage. In a free market system, a significant degree of income inequality is inevitable because workers get rewarded based on their productivity and different people have different productive capacities. Most people like some but not too much income inequality. Governments can narrow income inequalities by imposing higher tax rates on wealthier households, and/or by providing subsidies and government handouts to lower-income households. If products are still too expensive for some and are essential for survival (food, housing, health care and medicine), governments can provide vouchers or subsidies or impose price floors and ceilings (scroll down in this section for more details about price controls). Significant government redistribution of incomes may help some people, but reduce economic inefficiency and often have harmful unintended consequences in the long run (see one of the paragraphs below for an explanation of this).

2. There are externalities.
Externalities are benefits or costs that are generated apart from the benefits or costs related to the trade itself. An externality can be positive or negative. An example of a negative externality is pollution caused by a factory. If a factory pollutes, the polluted area and its residents will suffer. This imposes a cost on the residents, even though the residents may not be direct parties to the trade of the product produced by the factory. Since this cost is not reflected in the price of the product, governments often impose pollution fees or taxes. These funds can then be used to clean up the polluted area or subsidize the expense associated with the pollution cost.

Examples of positive externalities are health care services, education and training. When doctors, hospitals and community health organizations provide services (for example, inoculations) to keep people healthy, it also benefits people who are not using the health services. When fewer people get sick,

especially if they are contagious, fewer other people get sick, too. In other words, even people not purchasing health services benefit from health services. Consequently, governments feel justified to collect taxes from everyone (since everyone benefits) in order to subsidize health care services for all.

Education and training benefit society in general, as relatives, friends, and businesses share in the benefits from the increased knowledge of the trained individual (assuming this person interacts with these members of society).

Most economists agree that government intervention in order to correct externalities is justified.

3. There are greater incentives for corruption and illegal activities.
Because free markets lead to higher standards of living and higher incomes, the financial rewards for cheating and breaking the law (if the person or business is not caught) are also greater. For example, if a bank knows that by breaking the law and deceiving its customers it can earn an additional $500 million this year, the temptation for a bank to engage in this kind of behavior is great. Similarly, if financial rewards for athletes are significant, it encourages more athletes to cheat. In an economic system in which high incomes and high rewards don't exist (usually a non-free market system), these temptations are less prevalent (even though many citizens in less free and less-developed countries now engage in cyber crimes in order to steal money from people and businesses in wealthier countries).

Illegal and unethical behavior harms the efficient operations of a free market. Proponents of free markets support governments who punish this type of behavior via a strong and honest legal system.

Public Goods and the Free Rider Problem

Public goods are goods and services provided by the government without a direct charge to the user of the good. Examples of public goods are public education, public transportation, public roads, bridges, highways, defense, a legal system, and police and fire protection. In general, it is difficult or undesirable for these goods to be provided by private businesses. Defense, for example, has to be provided by a government because it is difficult to charge individuals for this service. Thus, the private sector may under-allocate resources relative to our needs in the case of public goods.

Typical of publicly provided goods and services is that some people contribute very little or nothing to the revenue (taxes) that the government collects. This means that they get to use the good or service for free, without any cost. This is called the **free rider** problem. Even for people who contribute taxes, their marginal cost of using the public good or service is less than their marginal benefit and therefore there tends to be over-consumption of this good or service.

Let's take a look at public transportation, for example. If public transportation were to charge each user the actual cost of the service, it may charge, for example, $4 per ride. People will use the service as long as the benefit of each ride exceeds the marginal cost of each ride ($4). However, if the government decides that the cost of public transportation will be borne by society and not by each individual user, the following will happen. Each ride still costs the government $4. If there are 200 riders, the total cost to the government is $800. Let's say that there are 8,000 taxpayers contributing to the funds to pay for public transportation. This means that each taxpayer contributes an average of $0.10 to pay for public transportation.

If we increase the number of riders from 200 to 201, the total cost to the government increases by $4. As the cost is borne by 8,000 taxpayers, the marginal cost for each tax-paying citizen is only $0.10. For most riders the marginal benefit of using public transportation is greater than $0.10, so the tendency is for users to over-consume this product, as long as the government continues to not charge for individual use of the public transportation. This free rider phenomenon is typical of all publicly provided goods, and is a disadvantage because it leads to over-consumption and inefficiency. For this reason, most economists support private production, as long as individuals can be charged for the service separately. Defense, police, and fire protection, by nature, must be publicly provided. Banking, insurance, and retirement plan services, for example, can be privately provided. Many of these services are, indeed, provided by the private sector. However, some are not. Some economists would like to see government unemployment insurance programs (Unemployment Compensation), government banking insurance programs (the Federal Insurance Deposit Corporation), public health care programs, and government retirement systems (Social Security) be replaced by private companies. Even the provision of roads and highways can, in the future, be provided by private companies, as new and less-expensive computer scanning equipment becomes available.

Free Market Interferences

When a government interferes with the workings of the free market, inefficiencies in the market occur in the form of shortages, surpluses, misallocations of resources, malinvestments, and business losses. Government interferences in the area of prices, wages, interest rates, profits, etc. may benefit some groups or individuals. However, from a macroeconomic and efficiency (productivity) point of view, these actions are usually harmful, especially in the long run.

Price Ceilings

A price ceiling is a price below the free market price. Let's say a product's equilibrium price is $10 and the government requires manufacturers to sell the product for $8. Consumers prefer buying the product at this lower price. However, producers, faced with lower revenue, will have much less incentive to make the product. Some may produce the product with cheaper ingredients and at a lower quality to try to bring the cost down to less than $8. Other manufacturers will stop producing the product. A shortage of the product likely results.

Price Floors

A price floor is a price above the free market price. Sometimes governments require the price of a product or resource (for example, labor) to be higher than the market price (or wage). Governments do this to help suppliers. If the market price is $10, and the government establishes it at $14, then producers have an incentive to produce more. They will experience higher profits per product. However, the higher price turns away consumers. Consequently, less of the product will be sold in the market, and surpluses result.

The government's purpose for interfering with market prices (for example, setting a minimum wage) is to remedy social problems, such as poverty and homelessness. Economic evidence shows that this interference is usually accompanied by other, sometimes more severe, problems in the long run.

Rent Control

In the case of rent control in large cities, the government requires landlords to keep the rent of their apartments and houses below the free market level. The result is that it becomes unprofitable for many landlords to invest in property or build additional properties. The rent that the government allows is not worth the landlord's expenses and investments. Furthermore, it is more attractive for builders and landlords to invest in areas in which there is no rent control. Consequently, the supply of properties in the rent-controlled area decreases and shortages occur. The tenants who rent at the government-controlled price may feel fortunate at first. However, the property will suffer from poor maintenance because the landlords have no incentive to invest money in it and because there is a long waiting list of tenants. Rent control also prevents thousands of people from acquiring anything at all because the artificially low rent discourages potential builders from building additional dwellings.

Correcting Income Inequalities

The government reduces income inequalities by imposing high taxes on the wealthy and providing government handouts to the poor. By doing this, the government runs the risk of taking away incentives for workers to be productive. If a productive worker and a non-productive worker receive the same rewards (after taxes and government handouts), why work hard?

Taxation

Given that some functions of government are essential to the effective operation of our economy, it is essential that government collects at least some taxes. It also seems fair that high-income earners contribute more to the government than low-income earners. However, a government is wise to ensure that more-productive workers are rewarded appropriately for their efforts. If a government redistributes incomes too much by levying high rates of taxation, people lose the incentive to innovate, produce, work

hard, and create jobs. Too much redistribution of incomes leads to a decrease in employment and a decrease in a country's standard of living, as has been evident in the failing economies of past and current communist nations.

Crony Capitalism

When a bank fails, should a government bail it out in order to avoid job losses? When an economy struggles, should a government increase its spending or increase the money supply in order to stop the economy from stagnating? Many people support these types of government actions and believe that they are part of capitalism. However, these are examples of "crony capitalism". Pure capitalism needs businesses to fail if they are inefficient or mismanaged. Government bailouts and other types or corporate welfare may save some jobs in the short run, but hurt productivity, employment, and the overall standard of living in the long run because rewarding inefficient businesses encourages them to continue to be inefficient. Bailouts and increased government spending also raise taxes and national debts, and therefore hurt efficient businesses who then may not be able to hire as many workers as they otherwise would have.

Introduction

What's in This Chapter?

Gross Domestic Product measures how many final goods and services a country or region produces. The measure has its flaws, but nevertheless does a reasonably good job indicating how much a country's economic activity changes from quarter to quarter and from year to year.

If production increases, it is usually an indication that the economy is doing well and that unemployment is decreasing and incomes are rising. Knowing GDP is important to a country, because it can provide a signal that its policies are effective (if GDP is increasing) or not effective (if GDP is decreasing). Households, businesses, investors and foreign countries also study GDP in order to make better decisions and plan for the future.

This unit also discusses the difference between real GDP and nominal GDP. Nominal GDP data includes production quantities and price changes. However, real GDP is the more meaningful statistic for policy-making decisions because it adjusts for price fluctuations and targets production (quantity) changes only.

Does real GDP measure happiness or standard of living? It helps if a country is productive and employment is high. However, a high GDP doesn't mean that everyone in the country is happy. Other factors beyond production play a role. The last section in this unit touches on "Gross National Happiness" and focuses on the relationship between GDP growth and quality of living.

Section 1: Gross Domestic Product

The Definition of Gross Domestic Product

Gross Domestic Product is defined as the value of all final goods and services produced in a country or area during a certain period of time. A final product is one that is sold in its final form (for example, a loaf of bread). 

It is not a smaller part (for example, flour to make bread) of another product. To illustrate how GDP is computed, let's look at a simple, hypothetical country that produces only two products: yogurt and economics textbooks. Five thousand yogurt cups are produced and sold at $1 per cup in a certain year. And one hundred economics textbooks are produced and sold at $80 per book, that same year.

Problem: What is the country's GDP in the above example?
Solution: Both products are final products, so both products are included in the calculation of GDP. The value of the yogurt is $5,000 (5,000 times $1) and the value of the textbooks is $8,000 (100 times $80). Adding the two values together gives us a nominal GDP of $13,000.
Problem: Let's say that the next year, the quantities produced remain constant, but the prices double. Yogurt now sells for $2, and textbooks for $160 (some textbooks are actually this expensive, ah!). How will nominal GDP change?
Solution: The value of the yogurt cups is 5,000 times $2, or $10,000. The value of the textbooks is 100 times $160, or $16,000. Adding the two values together gives us a nominal GDP of $26,000. It might appear that our economy improved one hundred percent; GDP is twice as high! Can we say that the economy is growing? The answer is no. The increase results from an increase in prices, and not from an increase in production. For that reason, we say that *nominal* GDP (production times prices) has doubled, but *real* GDP (GDP keeping prices constant) stays the same.

Real GDP is a more meaningful statistic for a country because it measures the actual quantity of final goods and services a country produces. See also section 3 in this unit for more examples of the difference between nominal and real GDP.

What is Included and What is Excluded in the Calculation of GDP?
The following products are included in the calculation of GDP:

All legally produced final goods and services produced for purchase by consumers, businesses, the government, and other countries, as well as changes in business inventories, artistic works, and research and development, are included in the calculation of Gross Domestic Product. Final products are those that are consumed or used in their final stage. For example, a car is a final product. The opposite of a final product is an intermediate product. A tire bought by Chrysler used in the production of its cars and trucks is an intermediate good. The ultimate purchase of the tire is not as a tire, but as part of a final product (the car). On the other hand, if a consumer buys a tire to replace a tire on an existing car, then the tire is considered a final product and it is included in GDP.

The following products are **excluded** in the calculation of GDP:
1. Intermediate products.

The argument for not including intermediate goods is that if they were included, they would be counted more than one time in the calculation of GDP - once as part of the final good, and once as the intermediate good.  If intermediate goods were included, a tire would be counted at the moment it was sold by the tire company to Chrysler, and also when it was sold by Chrysler to the buyer for final consumption.

2. Used products.

Any good produced in another year, even though it is sold in the current one, is not included. For instance, a used car produced and sold in 2009, but resold today, is not included in today's GDP because the actual production did not take place in this year. The commission of the used car dealer, however, is included, because that is a productive service provided this year. So if a used car sells this year for $5,000 and of that amount $800 is commission (profit), then the $800 is included in this year's GDP and the remaining $4,200 is not. Another example of a good that can be sold in one year but produced in a previous year is an inventory item. If Ford produces a car this year, but does not sell it until next year, it is included in this year's GDP, and not in next year's GDP. However, the Ford car dealer's commission from the sale of the car is included in next year's GDP.

3. Financial transactions.

Any transaction not directly representing production is excluded. Examples are financial transactions such as the purchase of stocks, bonds, mortgage securities and credit default swaps. The commission a stockbroker earns on the sale of financial instruments **is** included in GDP, so if a stock broker sells $10,000 in stocks this year and charges $200 in commissions (fees), then the $200 is included in this year's GDP, but the $10,000 is not. Government expenditures on welfare and other transfer programs are excluded, as well.

4. Non-reported transactions.

Products, which are difficult to measure, or which are illegal, are excluded. Examples are do-it-yourself household activities, services not reported as income to the government, prostitution, illegal drug trade, and other so-called underground market activities. An interesting discussion is whether marijuana produced and sold in states in which it is legal is included in GDP. At the moment, any marijuana (and more potent drugs) sold in the United States is illegal according to federal (national) law. Therefore, marijuana production is not included in our country's GDP. However, it is included in the GSP (Gross State Product) of the states in which it is legal.

5. Barter trade.

Barter trade occurs when people exchange products for other products without payment of money. Examples are barbers exchanging haircuts for legal advise with their lawyers or hotel chains exchanging hotel services for airline tickets with airline firms. Some barter trade (especially between large firms) is included, but only if the firms report their economic activities to the government.

Video Explanation
For a video explanation of what is included and not included in Gross Domestic Product, please watch the following:

YouTube Video

The Components of GDP

The following spending components are included in GDP:

1. Consumption (C).

Final goods and services bought by households are called Consumption (C). Examples of typical consumption goods and services include cars, computers, smart phones, food, haircuts, banking services, and college courses.

2. Gross private domestic investment (I).

Final goods and services bought by businesses are called Gross Private Domestic Investment (I). Examples include computers purchased by businesses, forklifts, trucks, business supplies, and buildings. The investment category also includes purchases of new residential homes and changes in business inventories.

3. Government expenditures (G).

Final products purchased by the government are called government expenditures (G). Examples include weapons, airplanes, construction materials for building roads and highways, spending on schools, and government office supplies.

4. Net exports (X).

When other countries purchase our final products, they are called Net Exports (X). The components C, I, and G include the consumption of domestically, as well as foreign-produced products. Because Gross Domestic Product measures only production of domestically produced products, net exports must subtract foreign-produced products. Therefore, net exports equals exports minus imports.

The table below from the Bureau of Economic Analysis (http://www.bea.gov) shows the breakdown into the components of United States nominal GDP for selected years since 2008 (annualized and seasonally adjusted in billions of dollars). Consumption of final goods and services is the biggest component of the United States economy at nearly 70% of total GDP. Net exports of final goods and services (exports minus imports) is a negative number because the United States imports more than it exports.

United States GDP Component		Total Amount 2008 (billions)	Total Amount 2012 (billions)	Total Amount 2016 (billions)		Tot Am 201 (bil
Entire GDP (nominal, seasonally adjusted)		$14,150.8	$15,539.6	$19,031.58		$21
Consumption (C)		$10,047.0	$10,584.9	$13,081.80		$14
Gross Private Domestic Investment (I)		$2,056.1	$2,441.8	$3,070.2		$3,
Government Expenditures (all levels) on Final Goods and Services (G)		$2,798.1	$2,935.2	$3,347.1		$3,
Net Exports of Goods and Services (X)		-$705.7	-$412.1	-$468.2		-$6

Source: Bureau of Economic Analysis (https://www.bea.gov/sites/default/files/2021-12/gdp3q21_3rd.pdf)

Is Two-thirds of Our Economy Consumption?

The table above indicates that more than two-thirds of our final production is consumption. This makes many economists conclude that consumption primarily drives the economy, and that if we primarily stimulate consumption in our economy, then production, employment, and earnings will increase, as well. Even though consumption is a very important part of overall spending, this conclusion is deceiving. The definition of GDP includes final products. But this is merely a definition. In the real world, many other products, in particular intermediate products (auto parts, equipment, machine parts, nuts, bolts, etc.), are produced. These products also contribute to a significant amount of production, employment, and earnings.

The economist George Reisman agrees. In his book, *Capitalism*, he argues that all intermediate goods and all capital goods should be included in the calculation of GDP in order to accurately reflect the importance of all production in our economy. Too much emphasis is placed upon consumer products in the calculation of GDP. Because of the over-emphasis on consumption in our economy, our government has adopted policies that favor consumption (for example, tax policies that favor people who borrow money) and discourage savings (for example, the taxing of interest from savings). However, increased borrowing leads to long run problems, and lower savings lead to fewer funds available for investments to purchase and produce capital goods. As the production possibilities model in our Unit 1 shows, the fewer capital goods we have, the less capacity we have to produce products (both capital and consumer) in the future. This will actually lead to a decrease in our long-term economic growth and a relative increase in unemployment and poverty.

Reisman suggests that we adopt a measure called "Gross National Revenue." This would include the production of all products, including intermediate products, to more accurately reflect economic activities in the actual economy. This would hopefully lead to better government policies that emphasize production and not short run consumption.

Section 2: GDP and Per Capita GDP around the World

Per Capita GDP

Per capita GDP is the value of gross domestic product per individual of a country. If nominal GDP is $23.2 trillion (the approximate 2021 GDP of the United States), and its population is 334 million (the approximate 2021 U.S. population), then 2021 per capita GDP is $69,461 ($23.2 trillion divided by 334 million).

For a video explanation of how per capita GDP is calculated, please watch:

YouTube Video

Below is a table with nominal and per capita GDP of selected countries. The United States. the European Union, and China are ranked at the top in total (nominal) GDP in the latest available year. Countries such as Macau, Luxembourg, and Liechtenstein topped the list in per capita GDP. According to the world bank, the United States per capita GDP was ranked 8th of all countries in the world. African countries such as Burundi, Congo, Somalia, and Zimbabwe had the lowest per capita GDP at approximately $400 - $600 per person per year. For a full and updated list of GDP and per capita GDP amounts for every country in the world, visit www.worldbank.org

Country/Area	Latest Reported * Gross Domestic Product in Purchasing Power Parity in Billions of U.S. dollars	Latest Reported* Estimated Per Capita GDP
World (Gross World Product)	84,680	10,910
United States	20,940	63,414
Brazil	1,444	6,797
Canada	1,644	43,258
China	14,722	10,435
Cuba	107	9,478
European Union	15,292	34,150
Hong Kong	347	46,324
India	2,660	1,928
Japan	5,058	40,194
Monaco	7.7	190,513
Netherlan	914	52,397

Country/Area	Latest Reported * Gross Domestic Product in Purchasing Power Parity in Billions of U.S. dollars	Latest Reported* Estimated Per Capita GDP
ds		
Qatar	144	50,124
South Korea	1,638	31,632

*Latest reported is 2020 for most industrialized countries and 2018 or 2019 for most other countries.

Sources: https://www.cia.gov/library/publications/the-world-factbook/
and https://www.worldbank.og

Section 3: Real versus Nominal Gross Domestic Product

Nominal Gross Domestic Product

Nominal GDP is GDP using current quantities and current dollars. It is calculated by multiplying the number of products by their **current** prices. An increase in nominal GDP does not necessarily represent an increase in production. If prices double from one year to another and production remains the same, nominal GDP will double.

Real Gross Domestic Product

Real GDP is GDP using current quantities and so-called **constant** dollars. It is calculated by multiplying the number of products by constant prices from a base year. For example, we can select the year 2000 as the "base year," and calculate real GDP in other years by using prices from the year 2000. Real GDP, thus, only measures the changes in the volume of production. This is a better indicator of economic activity and economic health.

Example Problem:  Let's suppose that a very small country makes only two commodities: pizzas and smart phones. The country bakes 200 pizzas at $10 each in year 1. In that same year, it manufactures 100 smart phones at $50 each.

In year 2, the country makes 190 pizzas and 110 smart phones at respective prices of $12 and $60 each.

 Using year 1 as the base year for calculating real GDP, what are nominal and real GDP for each year?

The solution is given in the table below:

Production and Prices	Year 1 Nominal GDP	Year 2 Nominal GDP	Year 1 Real GDP Using Year 1 Prices	Year 2 Real GDP Using Year 1 Prices
200 pizzas at $10 each (year 1)	$2,000 plus		$2,000 plus	
100 smart phones at $50 each (year 1)	$5,000 equals:		$5,000 equals:	

	$7,000		$7,000	
190 pizzas at $12 each (year 2)		$2,280 plus		$1,900 (190 times $10) plus
110 smart phones at $60 each (year 2)		$6,600 equals:		$5,500 (110 times $50) equals:
		$8,880		$7,400

The above table shows that nominal GDP rises from $7,000 in year 1 to $8,880 in year 2. Real GDP also rises, but not by as much (because of the adjustment for price increases). It is $7,000 in year 1, and rises to $7,400 in year 2.

Video Explanation
For a video explanation of how to calculate real and nominal Gross Domestic Product, please watch the following:

YouTube Video

The Fisher Formula

For several years now, the U.S. government has used a different way to calculate real GDP. Instead of using a certain base year for calculation of real GDP of all years, a so-called "Fisher formula" that incorporates price and quantity weights from two adjacent years or quarters, is used. These annual or quarterly changes are "chained" (multiplied) together to form time series of quantity and price indexes. For more information, click here for Bureau of Economic Analysis GDP calculations and explanations: (http://www.bea.gov). For our purposes, the idea or concept of the difference between nominal and real GDP is the same whether you use base years or chained weights.

As of 2012, the United States government also added research and development and artistic works to the GDP. This has resulted in higher numbers for GDP for this year. All previous years were also adjusted to reflect this change (see table below).

United States Nominal and Real GDP Throughout the Years

The table below shows United States Bureau of Economic Analysis selected annual nominal and real GDP data for the United States from 1930 through 2021, in chained year 2012 dollars rounded to the nearest whole dollar amount (in billions). Both nominal and real GDP in the United States have grown considerably over the decades. Due to the housing/financial crash in 2008, real GDP fell from 2008 to 2009, but grew almost every year since then. GDP is expected to rise considerably in 2021 after taking a pandemic dip in 2020.

Year	United States Gross Domestic Product in billions of current dollars (nominal GDP)	United States Gross Domestic Product in billions of chained 2009 dollars (real GDP using

		2012 prices)
1930	92	1,015
1940	103	1,330
1950	300	2,383
1960	543	3,232
1970	1,075	4,936
1980	2,862	6,814
1990	5,979	9,313
2000	10,289	13,261
2001	10,625	13,281
2002	10,980	13,559
2003	11,512	14,146
2004	12,277	14,610
2005	13,095	15,067
2006	13,857	15,457
2007	14,480	15,761
2008	14,720	15,328
2009	14,417	15,356
2010	14,958	15,751
2011	15,533	16.004
2012	16,239	16,239
2013	16,691	16,664
2014	17,427	17,112
2015	18,120	17,456
2016	18,624	17,784
2017	19,495	18,224
2018	20,658	18,665
2019	21,452	19,121
2020	20,940	18,767
2021	23,190	19,479

Source: www.bea.gov.

Section 4: Per Capita Gross State Product

Per Capita Production of the Fifty U.S. States and the District of Columbia

A state's yearly production is measured by its Gross State Product (GSP).

The following table includes a ranking by per capita Gross State Product (measured in dollars) of each of the fifty states and the District of Columbia. This calculation uses current prices. Therefore, states with relatively high prices tend to have higher GSPs. The cost of living (the price level) in states such as Alaska, Connecticut, Massachusetts, California, and New York is relatively high. They may be productive in their own right; however, the high price level inflates their GSP relative to states with lower prices.

The District of Columbia is ranked first, primarily because of its government presence, combined with its relatively small population. Alaska has both a high cost of living and a relatively small population. Delaware's high ranking is primarily because of its strong corporate presence and its favorable tax laws. North Dakota increased its GSP the most out of all states primarily because of the increase in jobs and incomes related to its shale oil production (fracking).

State or area and rank in 2006	2006 GSP per capita	2007 GSP per capita	2010 GSP per capita	2014 GSP per capita	2016 GSP per capita	Latest available per capita GSP (2019)
1 District of Columbia	124,363	126,512	174,500	159,386	160,643	200,277
2 Massachusetts	46,721	47,218	58,108	63,005	65,281	86,942
3 Connecticut	50,332	52,096	64,833	64,676	63,636	81,055
4 California	41,663	42,580	51,914	54,462	59,117	80,563
5 Washington	37,666	40,479	52,403	55,298	57,727	80,170
6 Delaware	59,288	56,680	69,667	60,551	64,054	78,468
7 Alaska	43,748	44,962	65,143	66,160	63,317	76,220
8 North Dakota	34,446	34,792	47,714	65,225	64,136	75,321
9 New York	46,617	48,706	57,423	64,818	64,810	73,463
10 New Jersey	44,885	45,222	56,477	56,405	56,565	73,451
11 Maryland	39,161	39,592	51,724	53,759	56,070	71,838
12 Illinois	39,514	39,651	50,328	52,827	54,404	71,727
13 Colorado	41,798	40,963	51,940	52,214	52,567	68,828
14 Minnesota	41,295	41,475	50,396	52,801	54,414	68,427
15 Virginia	41,702	41,689	53,463	51,338	51,643	65,824
16 Hawaii	38,083	39,034	49,214	49,686	51,819	69,593
17 Wyoming	39,130	40,271	63,667	64,309	60,004	68,757
18 New Hampshire	39,616	37,477	47,385	49,951	51,411	66,069
19 Nebraska	36,441	37,182	49,778	52,724	53,949	66,737
20 Texas	36,920	37,890	45,940	54,433	53,129	66,149
				51,329		

21 Oregon	37,633	38,461	44,447		51,066	60,558
22 Iowa	35,662	35,871	49,067	49,075	51,912	62,493
23 Pennsylvania	34,828	35,189	45,323	47,637	50,665	64,412
24 North Carolina	36,489	37,133	42,884	44,281	44,511	56,862
25 Rhode Island	36,292	36,706	45,000	47,901	47,739	60,830
26 South Dakota	35,842	35,619	49,875	46,688	47,808	61,104
27 Nevada	39,813	40,384	47,222	42,539	43,557	58,570
28 Wisconsin	35,390	34,907	44,105	46,665	47,833	60,425
29 Georgia	35,362	35,344	41,711	43,131	45,140	58,896
30 Ohio	34,609	34,008	42,035	45,887	47,633	60,464
31 Kansas	34,242	34,753	44,310	45,765	46,217	60,310
32 Indiana	34,058	32,773	41,169	43,861	45,977	56,702
33 Tennessee	34,321	33,784	39,730	42,115	43,688	56,451
34 Vermont	34,472	34,225	44,000	43,354	43,984	56,525
35 Florida	33,718	33,512	40,106	38,690	39,506	51,745
36 Michigan	33,468	32,918	37,616	42,110	43,665	54,928
37 Missouri	33,297	32,590	41,117	42,854	43,004	54,879
38 Arizona	33,441	33,578	40,828	38,743	38,985	51,179
39 Louisiana	32,923	34,537	47,467	46,448	44,451	57,445
40 Utah	32,357	32,484	41,750	43,555	44,893	49,892
41 New Mexico	31,986	31,030	35,952	40,081	41,559	50,022
42 Alabama	30,896	29,611	36,333	37,593	37,402	47,735
43 Maine	30,305	30,324	40,923	38,327	38,956	50,915
44 Kentucky	29,842	30,401	37,535	38,938	38,950	48,697
45 Oklahoma	29,697	29,545	42,237	41,871	44,356	52,409
46 South Carolina	29,642	28,913	35,717	36,125	37,075	48,547
47 Idaho	29,545	29,908	34,250	35,235	36,056	46,043
48 Montana	27,942	28,237	37,200	38,539	39,763	49,540
49 Arkansas	27,875	27,823	40,828	37,334	36,524	44,808
50 West Virginia	24,748	24,960	35,053	36,769	36,244	43,806
51 Mississippi	24,062	24,458	32,967	31,551	32,102	40,464

Source: Bureau of Economic Analysis

Section 5: Calculation of Gross Domestic Product Using the Expenditure and Income Approaches, and Net Domestic Product

The Two Approaches to Calculating GDP

There are two ways to calculate GDP: the expenditure approach, and the income approach. Each method results, if done accurately, in the same GDP amount each year. The expenditure approach is based on what we spend on final goods and services. The income approach is based on how much money we earn through the various forms of income.

The Expenditure Approach to Calculating GDP

Goods and services are purchased by four different groups of buyers: consumers, businesses, state and local governments, and foreign countries. Therefore, GDP can be calculated by summing these four components:

Consumption (C) + Investment (I) + Government Expenditures (G) + Net Exports (X).

Examples of **Consumption** expenditures include spending by households on final products, such as clothing, televisions, dishwashers, computers, education, banking services, smart phones, cars, and food.

Investment represents purchases by businesses, such as machines, equipment, company-owned buses, forklifts, trucks, supplies, and buildings. It also includes inventory changes.

Some goods may have been produced, but not sold (remember that GDP measures production, not sales). Investment in economic terminology does **not** mean the purchases of financial products, such as stocks and bonds. Stock and bond trades are merely transfers of ownership and do not directly represent production.

Government Expenditures are expenses by the government on items such as construction materials for roads and highways, supplies, tanks, weapons, school buildings, and stadiums. Expenditures on welfare programs are **not** included, because these expenditures do not represent production.

Net Exports are exports (products foreign countries buy from us) minus imports (goods we buy from other countries). Since 1983, United States imports have exceeded exports. Thus, for United States GDP, Net Exports is a negative number (see also the table in Section 1 of this unit).

The Income Approach to Calculating GDP

Gross Domestic Product can also be computed by adding everyone's reported earnings. If you spend $5 on a smart phone app, part of that money compensates the people who helped produce the app, some of it goes to the distributor, some of it may go to advertising, and some is left as a profit for investors. Allowing for indirect taxes (for example, sales tax) and depreciation, we conclude that computing GDP using the income approach gives us the same value as computing GDP using the expenditure approach.

The income approach adds these six categories to arrive at Gross Domestic Product:

wages and salaries (w) +
interest (i) +
rent (r) +
corporate profits (p) +
indirect business taxes (ibt) +
capital consumption allowance (cca = depreciation)

Net Domestic Product

Net Domestic Product is gross domestic production minus the value of depreciation. It measures total production of final products minus what we lose each year due to obsolescence or the wearing out of machines and buildings. Thus, it is a measure of the **net** addition to our country's wealth.

Similarly, net private domestic investment is gross private domestic investment minus depreciation. If a country produces more capital goods relative to ones that become obsolete or worn out, then it experiences an addition to its capital stock. If businesses produce exactly enough machinery to just replace the worn out or obsolete capital goods, then the country's capital stock stays the same. If the country wants to experience economic growth, it can do so by increasing its capital stock. In Unit 1 we discussed that one of two ways to shift the production possibilities curve out is to increase resources, such as capital goods (the other way is to advance technology). One way to encourage increases in capital goods is to encourage more savings in the economy. This frees up funds in the financial markets, which allows businesses to borrow funds for investments in capital goods, as well as investments in technology and research.

Video Explanations

For a video explanation of how to calculate Gross Domestic Product using the expenditure approach, please watch the following:

YouTube Video

For a video explanation of how to calculate Gross Domestic Product using the income approach, please

watch the following:

YouTube Video

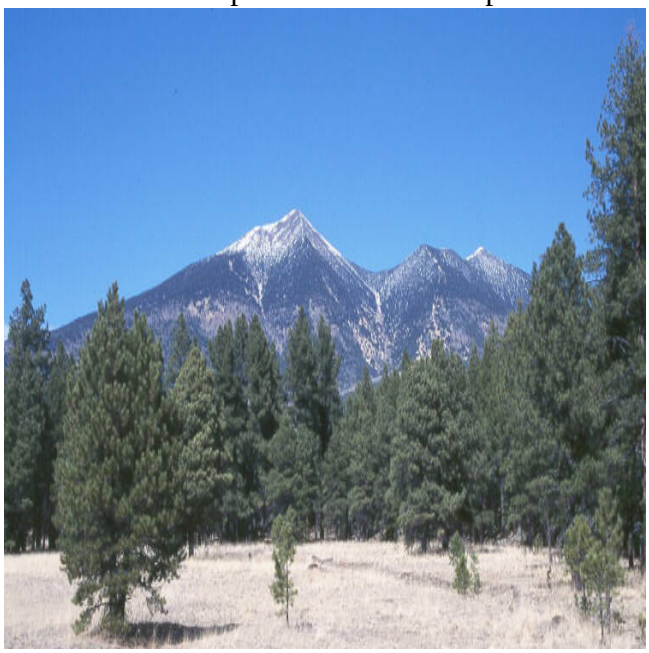
Section 6: Interpretation of Gross Domestic Product

Real Gross Domestic Measures Production of Final Products

Real Gross Domestic Product measures the inflation-adjusted total or aggregate production of final products produced in a country during a period of time. The higher real GDP, the more productive the country is during that year. The more the country produces, the more goods and services its people enjoy for consumption and production. This usually means that the country has achieved a higher standard of living. There are a few instances, however, where a higher real GDP does not necessarily mean greater happiness or a greater standard of living. These instances include environmental concerns and issues related to lack of leisure time.

Environmental Concerns

If increased production is accompanied by greater amounts of pollution, then there is a trade-off. Environmentalists focus on this relationship, and claim that increased pollution and the depletion of



natural resources lowers people's standard of living. Environmentalists, therefore, support halting economic growth in order to preserve the environment, natural resources, and wildlife.
An alternative philosophy is that even though economic growth may lead to environmental damage in the short-term, it leads to a greater standard of living and, therefore, more resources to fight pollution, in the long term.

Pro-growth advocates argue that economic growth allows us to find solutions to environmental and social problems. Technological advances in the development of alternative resources, the production of cleaner products (hybrid cars, computers that allow online communications, faxes, etc.), and the development of technology that conserves resources lessen environmental problems over time.

There is recent evidence that in industrialized countries, economic progress is best

 stimulated through freedom of competition and maximum opportunities for rewards to those who produce and contribute to technological advances. Certain government functions and regulations are essential for economic progress. However, in general, less government interference, fewer laws, and lower taxation, in the long run, have led to a more-prosperous economy and an improved environment.

On some issues such as global warming and the damage to rain forests, however, the jury is still out regarding how much climate change is caused by human activities and how much slowing economic growth will make a difference. In addition, the issue is complicated as serious effects from climate change may not be evident for many decades or centuries.

The Environmental Kuznets Curve

Simon Kuznets (1901 - 1985) was an economist who is best known for his initiative to more systematically collect data to estimate a country's National Income around the time of the Great Depression (which then lead to the calculation of Gross National Product and the now widely used Gross Domestic Product). His "Kuznets Curve" illustrates the relationship between a country's rising national income over time (as it experiences economic growth) and its income inequality. Kuznets claimed that as a country grows, it first experiences rising income inequality, and then falling income inequality. He came up with a similar curve for a country's rising income and environmental degradation. The environmental Kuznets curve illustrates that as a country's income grows over time, at first the environment deteriorates, and then improves. Most environmental scientists will agree with Kuznets that we have seen a decrease of some harmful particles (for example, sulfur dioxide, nitrogen oxide, lead, etc.) in industrialized countries over time. However, other emissions (for example, greenhouse gases) have increased over time, and in general, the use of energy, land and other resources has significantly increased over time in developing countries.

Leisure Time and Stress

Does a higher GDP lead to more stress and a lower standard of living, because workers work more and enjoy less leisure time? Is there a direct relationship between increased production and increased work hours?

Contrary to the popular belief that people work more now than ever before, the past several decades have seen considerable **increases** in the average worker's leisure time. This has been accompanied by **rising** real incomes and GDP. An explanation for this is that as an economy becomes more productive,

businesses can **afford** to pay workers higher salaries.  Therefore, people can afford to cut back on their hours, enjoy more leisure time, and still earn enough to pay for all of their necessities and a few luxuries. Two effects discussed in Unit 2 are at work here: the income effect and the substitution effect.

The substitution effect makes working for a higher hourly salary more attractive relative to enjoying leisure time. This makes people work more hours.

The income effect gives people more income when they earn higher hourly wages. This allows them to work fewer hours and still pay their bills.

For the average worker in industrialized countries, the workweek has shortened. This is evidenced by the considerable growth in leisure time-related industries. In general, therefore, as a country's real GDP increases, so does leisure time enjoyed by the average citizen. This means that most people's income effects outweigh their substitution effects. This leads to a decrease in the average number of hours worked per person. For more information about the average workweek and actual statistics from the Bureau of Labor Statistics, visit https://data.bls.gov/pdq/SurveyOutputServlet?request_action=wh&graph_name=CE_cesbref2

Even though most people's income effects are greater than their substitution effects, not everyone chooses to enjoy more leisure time. Some individuals, tempted by financial rewards, choose to work many hours each week. These individuals' substitution effects are greater than their income effects.

Gross National Happiness

In 2011, the United Nations adopted a resolution for its member countries to measure happiness instead of just production. The U.N. was motivated by the Himalayan country Bhutan's use of a measure called

"Gross National Happiness". It attempts to measure happiness based on values such as equality, health, job satisfaction, and family integrity, among other things. Bhutan's government surveys its people to ask them about these values (note that Bhutan has also been accused of using this concept as a propaganda tool to cover up government corruption, discrimination and other human rights abuses).

The United Nation's World Happiness Report is based on data from 156 countries in the areas of income, healthy (including emotional) well being, social support, freedom, trust and generosity (including trust in the government). The United Nation's 2021 Happiness Index ranked Finland as the happiest country in the world, followed by Denmark, Switzerland, Iceland, The Netherlands, Norway, Sweden, Luxembourg, New Zealand, and Austria. The United States was ranked 19th. Zimbabwe and Afghanistan came in last (source: http://worldhappiness.report/). Some people have criticized the data in the report because of the subjective nature of its measurement categories.

Introduction

What's in This Chapter?

Now that we know what GDP is and how it is measured, we are ready to analyze GDP changes. Studying business fluctuations teaches us that during most years in politically stable, mixed or capitalist economies, real GDP rises. Advances in technology, low rates of inflation and real interest rates, reasonably low taxes and regulations that encourage hard work and innovation, a solid financial and monetary system, and a peaceful world, all contribute to long-term economic growth.

This unit will look at reasons why real GDP decreases at times. In addition, we will take an in-depth look at the causes of the Great Depression and the 2008/2009 recession.

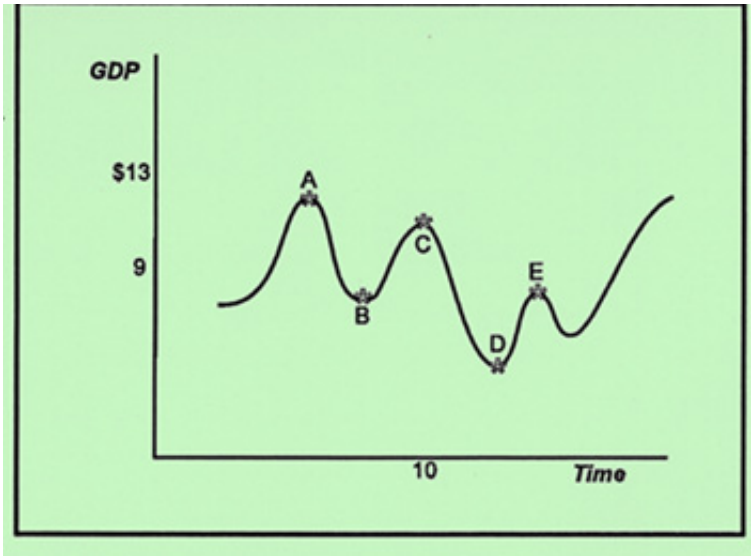
Later in the unit we will discuss what economists mean by "full employment". Keynesian economists believe that the economy cannot perform better than a rate of between 5 and 6% unemployment. Some economists question this though. During the 1980s and 1990s, in the United States, unemployment was frequently close to, and sometimes even below, 4% (it is today as well). At the same time, inflation rates remained low. This suggests that an economy can grow at a rapid pace, without causing inflation. John Maynard Keynes predicted that if unemployment drops below 5% in an expanding economy, it would cause inflation. However, while prices generally rise at a faster pace in an expanding economy, we will learn in a later unit that inflation is a long-run phenomenon that is caused by an increasing money supply, not a rapidly expanding economy.

At the end of this unit, we will take a closer look at unemployment rates in countries around the world and in the various states of the United States, and we will study unemployment rates of various demographic and ethnic groups in the United States.

Section 1: Business Fluctuations

Recessions, Expansions, Peaks, and Troughs

Business fluctuations are increases and decreases in economic activity, as measured by increases and decreases in real GDP. A **recession** (or **contraction**) is defined as a decrease in real GDP of at least two consecutive quarters (6 months). An **expansion** is any period of time during which real GDP is increasing. One full business fluctuation consists of one recession and one expansion. The height of an expansion (points A, C, and E in the graph below) is called the **peak**. The lowest phase of a fluctuation is the **trough** (points B and D in the graph below).



A typical economy experiences continuous increases and decreases in economic activity. From point A to B, GDP is falling, and we are experiencing a recession if the decline is at least two consecutive quarters. From B to C, activity picks up, and there is an expansion. From C to D, the recession appears more severe, and we may even speak of a depression. A recession in the United States lasts on average approximately 1 year. An expansion usually lasts on average more than 5 years.

Business Fluctuations in the United States

Below is a table with nominal and real quarterly GDP changes, starting with the first quarter of 1979 (seasonally adjusted rates). For the "Chained" changes (real GDP) a base year is chosen to keep prices constant.

Year and Quarter	Chained (real GDP) Percent Change
1979q1	0.8
1979q2	0.4

1979q3	2.9
1979q4	1.2
1980q1	1.3
1980q2	-7.8
1980q3	-0.7
1980q4	7.6
1981q1	8.4
1981q2	-3.1
1981q3	4.9
1981q4	-4.9
1982q1	-6.4
1982q2	2.2
1982q3	-1.5
1982q4	0.4
1983q1	5.0
1983q2	9.3
1983q3	8.1
1983q4	8.4
1984q1	8.1
1984q2	7.1
1984q3	3.9
1984q4	3.3

1985q1	3.8
1985q2	3.5
1985q3	6.4
1985q4	3.1
1986q1	3.9
1986q2	1.6
1986q3	3.9
1986q4	2.0
1987q1	2.7
1987q2	4.5
1987q3	3.7
1987q4	7.2
1988q1	2.0
1988q2	5.2
1988q3	2.1
1988q4	5.4
1989q1	4.1
1989q2	2.6
1989q3	2.9
1989q4	1.0
1990q1	4.7
1990q2	1.0

1990q3	0.0
1990q4	-3.5
1991q1	-1.9
1991q2	2.7
1991q3	1.7
1991q4	1.6
1992q1	4.5
1992q2	4.3
1992q3	4.2
1992q4	4.5
1993q1	0.7
1993q2	2.6
1993q3	2.1
1993q4	5.4
1994q1	4.0
1994q2	5.6
1994q3	2.3
1994q4	4.3
1995q1	1.1
1995q2	0.9
1995q3	3.3
1995q4	3.0

1996q1	2.9
1996q2	6.7
1996q3	3.4
1996q4	4.8
1997q1	3.1
1997q2	6.1
1997q3	5.1
1997q4	3.1
1998q1	3.8
1998q2	3.6
1998q3	5.4
1998q4	7.1
1999q1	3.6
1999q2	3.2
1999q3	5.2
1999q4	7.4
2000q1	1.1
2000q2	8.0
2000q3	0.3
2000q4	2.4
2001q1	-1.3
2001q2	2.6

2001q3	-1.1
2001q4	1.4
2002q1	3.5
2002q2	2.2
2002q3	2.1
2002q4	0.1
2003q1	1.6
2003q2	3.2
2003q3	6.9
2003q4	3.6
2004q1	2.8
2004q2	2.9
2004q3	3.0
2004q4	3.5
2005q1	4.1
2005q2	1.7
2005q3	3.1
2005q4	2.1
2006q1	5.4
2006q2	1.2
2006q3	0.4
2006q4	3.2

2007q1	0.2
2007q2	3.1
2007q3	2.7
2007q4	2.5
2008q1	-2.3
2008q2	2.1
2008q3	-2.1
2008q4	-8.4
2009q1	-4.4
2009q2	-0.6
2009q3	1.5
2009q4	4.5
2010q1	1.5
2010q2	3.7
2010q3	3.0
2010q4	2.0
2011q1	-1.0
2011q2	2.9
2011q3	-0.1
2011q4	4.7
2012q1	2.3
2012q2	1.6
2012q3	2.5
2012q4	0.1
2013q1	3.6
2013q2	0.5
2013q3	3.2
2013q4	3.2

2014q1	-1.1
2014q2	5.5
2014q3	5.0
2014q4	2.3
2015q1	3.2
2015q2	3.0
2015q3	1.3
2015q4	0.1
2016q1	2.0
2016q2	1.9
2016q3	2.2
2016q4	2.0
2017q1	2.3
2017q2	2.2
2017q3	3.2
2017q4	3.5
2018q1	2.5
2018q2	3.5
2018q3	2.9
2018q4	1.1
2019q1	2.4
2019q2	3.2
2019q3	2.8
2019q4	1.9
2020q1	-5.1
2020q2	-31.2
2020q3	+33.8
2020q4	4.5
2021q1	6.3
2021q2	6.7
2021q3	2.3

Source: Bureau of Economic Analysis, 2021.

The table above shows that the expansion that began in 1982 lasted through the second quarter of 1990. The recession of 1990 lasted through the first quarter of 1991. Unemployment rose to 7.8% during this recession. We experienced some stagnation immediately preceding and following the September 11 terrorist attack in 2001. However, the economy (real GDP) did not decline for two *consecutive* quarters, so according to the official definition, we did not experience a recession in 2001. The next expansion began in 1991, and lasted through the second quarter of 2008. The recession associated with the housing crisis began in the third quarter of 2008. Real GDP continued to decline in the first two quarters of 2009 and pushed unemployment levels in some parts of the country past 10%, the highest since 1982. From 2009 until 2019 real GDP increased during most quarters and this resulted in a gradually declining and historically very low unemployment rate in 2019. The pandemic lowered real GDP significantly through the second quarter of 2020 and increased United States unemployment to more than 10% that summer. As the economy recovered starting in the third quarter of 2020, the unemployment rate eventually came down to a healthy 4.2% in November of 2021.

Models about the Causes of Fluctuations

What causes recessions? Are they a natural phenomenon, or can they be prevented? Many explanations have been given as to why business fluctuations occur.

John Maynard Keynes, whose theories are discussed in more detail in Unit 5, argued that production does not always equal consumer demand. When demand is not high enough, businesses face increasing inventories. Businesses then decrease production, and lay off workers. As unemployment increases and incomes decrease, consumption spending decreases even more. Businesses then further decrease production, and the cycle continues. Keynes expressed fears that without government intervention, a recession could easily turn into a depression.

Classical economists disagree with Keynes's explanation of what causes business fluctuations. They don't believe that recessions are caused by overproduction and a lack of consumer demand. They believe that production in the long run automatically leads to employment and sufficient real earnings for workers and entrepreneurs. In other words, sufficient supply leads to sufficient demand in the long run. If there is a surplus or shortage of products or jobs in the short run, the market corrects this by allowing wages, prices, and interest rates to fluctuate. Lower wages decreases firms' cost of production, thus helping them to become more profitable in the long run. Lower prices give buyers the incentive to increase their quantity demanded. Lower interest rates lower firms' cost of borrowing funds. As the rate decreases, businesses will regain the incentive to borrow and invest in new technology and capital. Classical economists believe that fluctuations are normal dynamic phenomena and that the market helps to turn recessions into expansions by itself in the long run.

Keynes believed that government intervention is necessary during inflationary and recessionary times. Classical economists (and related schools) believe that government intervention is harmful to the economy in the long run. For example, since the government took control of the banking system in 1913

(establishment of the Federal Reserve System), it has had a history of increasing the country's money supply consistently almost every year. An increase in the money supply, as we will see in a later unit, equates to inflation, and is harmful to the economy in the long run. High inflation raises interest rates, which lowers borrowing and investments. This eventually decreases wages, purchasing power, and the demand for goods and services. During inflationary times, businesses are faced with lower real rates of return on investments and economic uncertainty regarding real prices, wages, profits and investments.

According to classical economists, regulations and economic rules are important components of a well-functioning free market economy. However, excessive government regulations, such as excessive consumer laws, labor laws that discourage productivity, costly and non-essential safety requirements, product restrictions, costly pollution control measures, and protectionist policies (trade restrictions, such as tariffs and quotas) can contribute to economic slowdowns. Minimum wage and other labor laws are meant to protect workers and usually serve a sound social purpose. However, if a business's costs increase without a productivity increase, then the business may lose money and it may be forced to downsize, go bankrupt, or move abroad. Anti-trust laws may also harm businesses if they punish innovation and add costs to business operations (this is discussed in Microeconomics). According to classical economists, government policies that contribute to increased business expenses and economic inefficiencies may eventually lead to recessions and increases in unemployment.

The Recession of 2008/2009

Video Explanations

For a video explanation of the causes of the 2008/2009 recession, please watch the following:

YouTube Video

There has been extensive debate about what caused the most recent recession. Some economists argue that deregulation in the financial services industry encouraged corporations to take excessive risks which led to numerous bankruptcies when the housing market declined. Others claim that the regulations in place were adequate, but that there was insufficient enforcement and supervision by regulatory agencies such as the Federal Deposit Insurance Corporation, the Federal Reserve, the Securities and Exchange Commission and the Commodity Futures Trading Commission.

It has always been an American dream to own your house. It has become one of the core values in American culture. During the long economic expansion that began in the early 1990s and lasted through early 2008, economic activity was robust, real GDP increased considerably, incomes rose and unemployment declined to historic lows. People that owned a home saw their home values rise sharply. Many real estate speculators (investors) found a quick way to large fortunes and bought houses aggressively. Families that didn't own a home yet wanted to get in on the act, too. With the help of government laws, many households found a way to finance a home, even if they couldn't afford one. Government-supported mortgage companies such as Freddie Mac and Fannie Mae were given mandates by government officials to encourage households to fulfill their American dream. Laws were passed that encouraged low-income families to buy a house. Even people without a job qualified for a mortgage. Many mortgages had favorable conditions (low interest rates), but usually only during the first few years of the loan. Banks and other financial institutions saw a way to make considerable profits by issuing large numbers of mortgages to home buyers. Each loan, after all, brought in revenue from fees, commissions

and interest income. Many banks didn't hold on to the loans they had issued. Banks bundled the thousands of mortgages into mortgage securities and sold them as investment pieces (similar to mutual funds) to investors who were told that these mortgages were low risk (highly rated). The Federal Reserve fed this economic expansion of rising mortgage debt by increasing the money supply considerably.

When in 2007 more and more households defaulted on their mortgages (many households didn't have enough income to afford their mortgages, and some had mortgages that had low monthly payments during the first several years, but much higher payments later), housing prices began to decline and the housing bubble burst.

Millions of homeowners defaulted on their mortgages, forcing mortgage lenders to foreclose on the homeowners and take back possession of their properties. Financial institutions and other investors who had purchased mortgage securities saw the value of these assets decline drastically. Mortgage security investments worth billions became almost worthless within weeks. Insurance companies such as AIG had insured many mortgage security instruments (called credit default swaps). In the case of a security default, AIG would pay the owner of the financial instrument if it defaulted. With foreclosures and defaults rampant in 2008 and 2009, AIG suffered hundreds of billions of dollars in losses. The government decided that AIG, along with other large financial institutions, was too big too fail and provided bailout funds funded by taxpayer dollars or borrowed money. Many corporations were criticized for paying their managers and CEOs extravagant bonuses and compensation while the company was losing money and regular employees were laid off. To make things worse, fraudulent investment operations, such as Bernard Madoff's Ponzi scheme, came to light and forced investors to lose billions of dollars.

As a result of the financial crisis and the housing market collapse, the financial markets (stocks) crashed, confidence in the economy deteriorated, and spending (especially on larger purchases such as cars and luxury items) declined drastically. Real GDP decreased and unemployment increased.

So What Went Wrong?

The crisis resulted from a combination of factors. Many parties in the private sector (households and businesses) acted irresponsibly by taking on too many risks. Households should not borrow when they cannot afford to pay back a loan, and businesses should not lend when the borrower has insufficient funds to pay back the loan. When bundled mortgage securities were traded to investors, rating agencies should have more carefully assessed the risk of these financial instruments. Government agencies should have more carefully supervised financial institutions and prevented them from making overly risky loans. The Federal Reserve should have limited the growth of the money supply that fueled the artificial boom. Congress should not have encouraged mortgage companies and banks to make loans to households that could not afford these sizable loans. It sounds like a noble gesture to allow everyone to enjoy a big house and live the American dream; however, these government actions actually artificially drove up housing demand, exacerbated speculation in the real estate market, and made housing prices eventually and ironically non-affordable for many. Many families became homeless and lived in so-called tent cities. The opposite (homelessness and foreclosures) of what the government intended (home ownership and the American dream) happened. As we will see throughout our text, well meaning and seemingly noble government actions frequently lead to adverse results.

What Can We Learn?

Businesses are learning that short-term profit motives don't usually pay off. Businesses need to make decisions that will help them survive in the long run. This means making solid and sound investments that carry a reasonable risk. And it may mean forgoing short-run profits in order to avoid overly high risks so as to survive in the long run. Households are learning that borrowing is okay as long as they can pay off the loan; borrowing is not okay when there is insufficient expected future income. Many households are also learning about the virtues of saving. Recently, the savings rate in the United States increased from .2% to nearly 5%. A higher savings rate may slow economic spending and business activity somewhat in the short run, but will pay great dividends for our economy in the long run. Many homeless families currently regret that they didn't save more during the time that they had a job and a home. If they had saved significantly instead of going into deeper and deeper debt (from purchases of expensive electronics, vacations, cars, overly expensive houses, etc.), they would have weathered the economic crisis much better and probably prevented their foreclosure.

The government is learning that it needs to more effectively oversee the financial services industry. There are rules in traffic and there are rules in the business world and they are necessary to ensure a smooth flow. But the rules need to be strictly and effectively enforced by the government agencies in charge (Federal Reserve, SEC, FDIC, CFTC, Office of the Comptroller of the Currency and the Office of Thrift Supervision). Because of the non-profit nature of government, many government departments operate inefficiently and ineffectively.

After the crash, the U.S. federal government (and governments around the world) spent trillions of dollars bailing out companies and stimulating the economy. Congressional spending has given the U.S. a national debt that keeps breaking record highs. This is worrisome because it will inevitably lead to forced cutbacks in future government spending and/or higher future taxes and a subsequent slowdown in future economic activity. In addition, the U.S. Federal Reserve has injected hundreds of billions of dollars in the financial markets in order to provide liquidity. These injections equate to large increases in the money supply and causes inflation (both in consumer product prices and asset (stocks, bonds, houses, etc.) prices). We will look at the relationship between money supply increases and inflation in Units 7 and 9.

Excessive and irresponsible borrowing and lending by the private sector (in the stock market) were the primary causes of the Great Depression of the 1930s. Excessive and irresponsible borrowing and lending by the private sector (in the real estate market) were the primary causes of the 2008/2009 economic crisis. Will excessive borrowing (student loans, government borrowing, etc.) and excessive monetary expansion by governments around the world burst the next bubble?

The Pandemic Recession

The pandemic has drastically altered the economic landscape. Many industries, including the hospitality, restaurant, entertainment, travel, brick and mortar retail stores, and oil and gas, and education, have suffered big losses. Other industries, such as online sales (Amazon, Instacart, Door Dash, etc.) , technology (Netflix, Zoom, social media companies, etc.), hardware and lumber, have benefited. On balance, the economy has suffered and nations' unemployment rates increased during 2020. Governments stimulated their economies by increasing spending and handing out generous unemployment

compensation packages. This helps people in the short run, but will harm economies in the long run by adding to their national debts. Central banks have injected large amounts of money to keep interest rates low and to help prevent stock market crashes. This also helps the economy in the short run, but will harm the economy in the long run by increasing inflation.

The hope is that the pandemic can be contained through effective treatments and vaccinations. If the pandemic continues for a long time, the harmful economic effects will linger, especially for industries where social distancing is difficult (restaurants, travel, entertainment, etc).

Section 2: The Great Depression of the 1930s

Before the 1920s

During the latter part of the 19th century and very early 20th century, various industrialized countries around the world enjoyed mostly free market economies. Government involvement was limited to essential functions, such as the provision of a legal system, national defense, the provision of infrastructure (roads, highways, railways, etc.), education, and police and fire protection. Regulations, even though they were on the rise, were relatively modest and tax rates were low (the United States did not have an income tax before 1913).

The Roaring '20s

Except for a modest recession in the early 1920s, this decade experienced economic prosperity and low unemployment. Important innovations (radio, television, automobiles, assembly lines, washing machines, airplanes, electric razors, instant cameras, refrigerators, etc.) and technologies helped propel the economies of industrialized countries. Business profits and stock prices reached record highs. Andrew Bernstein in his book, *The Capitalist Manifesto* points out that, due to new technologies, business profits rose by 387% between 1921 and 1929 (Bernstein A., 2005, P. 377). Industrial production more than doubled, and stock prices of U.S.-traded firms rose by 385% during this same time. Bernstein claims that contrary to common belief, stock prices increased in line with economic conditions. However, politicians and Federal Reserve officials made announcements that they would pressure banks to restrict loans to investors buying stock on margin (Bernstein A., 2005, P. 378). Bernstein continues: "Starting in February of 1928 and continuing throughout 1929, the Fed continued to raise the interest rate for the borrowings of member banks .... The Fed fixated on ways to curb otherwise perfectly legitimate stock gains." So Bernstein concludes that no stock market correction was necessary in 1929 and stock prices did not need to fall so drastically.

Events Leading up to the Great Depression

But falling stock prices by themselves don't necessarily need to harm the general economy. The main reason why Wall Street affected "Main Street" (the non-financial economy) so much in 1929 is that so many people had borrowed money to purchase stocks. The Federal Reserve of the United States was

created in 1913. Despite being on the gold standard, the Fed increased the money supply considerably during most of the years in this decade. This supplied funds that allowed people to borrow money (for example, to purchase stocks).

Some people borrowed 90% (the legal limit at the time) of the funds needed to purchase their stocks. So people who purchased $5,000 worth of stocks could borrow $4,500 while putting in only $500 of their own money. When the market crashed many stocks lost at least half of their value. In the example above people who owned $2,500 worth of stocks after the crash owed the bank $4,500 while losing their own equity of $500. Many people had to sell all of their stock holdings (further depressing stock prices) and still could not pay back their loans. This put many people and many banks in financial hardship and led to a chain effect of banks and eventually regular businesses going bankrupt.

The above set of circumstances is very similar to the recent housing crisis of 2008/2009. However, instead of borrowing money to take advantage of the appreciation of stocks, people invested in houses and real estate during the 1990s and early 2000s. Irresponsible borrowing and irresponsible lending was the key cause of both of these serious downturns. If people had invested in these assets (stocks during the 1920s and real estate before 2008) without excessive borrowing, then any drop in the prices of these assets would have had no chain effect on the economy. When people buy stocks with their own money, and the price of the stocks goes down, most people will hold on to their stocks in the knowledge that prices will rebound. Banks are unaffected as little to no money was borrowed, and no one goes bankrupt.

After the stock market crash of 1929, even people without stock market investments felt the pain because the multitude of bankruptcies caused overall economic confidence to erode and regular businesses (construction companies, car companies, etc.) to fail. In addition, because of bank failures, many people lost their life's savings because most banks did not offer deposit insurance. The official unemployment rate skyrocketed to 25% in the United States, thousands became homeless and hundreds committed suicide.

Government actions made things even worse when politicians passed productivity stifling labor laws, enacted protectionism (imposition of import tariffs and quotas) and increased taxes. In addition, the Federal Reserve in the United States increased interest rates and allowed the money supply to contract to dangerously low levels.

Some economists believe that the Great Depression was caused by the free market and that more government involvement in the economy was necessary to avoid the severe economic downfall of the 1930s. Classical and neo-classical economists, on the other hand, believe that the increase in government involvement in the economy in the 1920s and immediately after the stock market crash harmed the economy significantly. The easy lending policies by the Federal Reserve in the 1920s is said to have created and enabled the borrowing bubble in the stock market that, after it burst, affected main street (jobs, unemployment) in an adverse way. According to Andrew Bernstein: "Today it is certain that the growing preponderance of professional economists agree on two broad points: it was government intervention in some form - not the free market - that initiated the crash and, similarly it was statism that exacerbated the depression, causing it to last for an agonizing decade, even into the 1940s." (Bernstein A.,

2005, P. 379).

See: Bernstein, A. (2005). *The Capitalist Manifesto*. Lanham, Maryland: University Press of America, Inc., and Milton Friedman in https://www.youtube.com/watch?v=ObiIp8TKaLs.

For a video explanation of the causes and consequences of the Great Depression of the 1930s, please watch:

YouTube Video

Section 3: The Unemployment Rate

The Unemployment Survey

The unemployment rate is one of the nation's most important measures of economic health. Some people think that the unemployment rate is measured by counting the number of persons who claim unemployment compensation under state or federal government programs.

However, many persons are unemployed, yet are not eligible for unemployment compensation, or their unemployment compensation has run out. Therefore, the unemployment rate is published based on a government survey, called the Current Population Survey.

There are approximately 60,000 representative American households in the sample for this survey. The survey sample may not seem very large, but government statisticians consider the survey a reliable indicator of unemployment in the United States.

The Accuracy of the Unemployment Rate

According to the official definition, a person is considered **unemployed** if (s)he is without a job, is currently available to work, and has actively looked for work in the prior four weeks.

Hidden unemployment exists when someone is out of work, wants a job, but has given up looking because (s)he has become discouraged. A person who has lost her/his job, but is not looking for another one, is not counted in the unemployment statistics. This makes some people question the accuracy of the unemployment rate. Some economists have questioned the accuracy of the unemployment rate for other reasons as well.

Underemployment exists when a person accepts a job (s)he does not really want or for which (s)he is overqualified. Should someone with a law degree who can only find a job as a clerk be counted as unemployed or underemployed? Should a person who wants to work full-time but can only find something part-time be counted as partially unemployed? According to the current definition, these

workers are counted as fully employed. On the other hand, there are people who claim to be unemployed, but are in actuality employed in the underground economy. These include people working illegally (drugs, prostitution), and those who do productive work, but do not report this income (for example, a handy person who fixes a friend's basement).

For more information about how the government determines the number of persons employed and unemployed in our economy, click HERE.

Unemployment in the United States

Below is a table with United States unemployment data from 1933 to the present. The percentages are all taken from the June rate of each year, unless otherwise noted. As you can see, unemployment was high during the 1930s and early 1940s. A few years later, it reached an all-time low, during the height of World War II, primarily due to the military mobilization of a large part of the United States labor force. During the late 1950s and early 1960s, the rate increased again. The late 1960s were relatively healthy economic times. Then in the 1970s, the economy experienced "stagflation," which means that our economy suffered from increasing unemployment (stagnation) and increasing inflation. This culminated in post-World War II record unemployment rates in the double digits in the early 1980s. At this point, the Federal Reserve changed its monetary policy, committed to lower inflation, and improved the economy. From the early 1980s through 2007, the inflation rate has been relatively low, and subsequently, the unemployment rate was reasonably low during this period.

The recession that began in 2008 caused the unemployment rate to rise significantly through 2009. But it soon recovered and fell to a low of 3.5% in November of 2019. Because of the pandemic it rose again to more than 10% in 2020. Recently it has decreased to 4.2% (November, 2021), an historically low number.

Year (June data, unless otherwise noted)	United States Unemployment Rate	
1933	24.9	
1934	21.7	
1935	20.1	
1936	16.9	
1937	14.3	
1938	19.0	
1939	17.2	
1940	14.6	
1941	9.9	
1942	4.7	

1943	1.9	
1944	1.2	
1945	1.9	
1946	3.9	
1947	3.9	
1948	3.6	
1949	6.2	
1950	5.4	
1951	3.2	
1952	3.0	
1953	2.5	
1954	5.6	
1955	4.2	
1956	4.3	
1957	4.3	
1958	7.3	
1959	5.0	
1960	5.4	
1961	6.9	
1962	5.5	
1963	5.6	
1964	5.2	
1965	4.6	
1966	3.8	
1967	3.9	
1968	3.7	
1969	3.5	
1970	4.9	
1971	5.9	
1972	5.7	
1973	4.9	
1974	5.4	
1975	8.8	

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2021.

Unemployment Rates around the World

The table below shows unemployment rates of selected countries around the world. Note that some less-developed countries do not keep accurate statistics. In addition, some countries (for example, Cuba) use a different definition to measure unemployment, which makes comparisons difficult.

Country/Area	Unemployment Rate (2007 -2008)	Unemployment Rate (2009-2011)	
United States	5.6	9.2	
Afghanistan	40.0	NA	
Brazil	9.8	6.5	
Canada	5.9	7.4	
China	4.0	4.1	
Cuba	1.9	1.6	
European Union	8.5	9.3	
Germany	4.2	5.1	
Hong Kong	4.2	4.0	
India	7.2	9.4	
Japan	4.0	4.9	
Netherlands	4.1	5.4	
Qatar	0.7	0.5	
Russia	5.9 plus underemployment	7.6	
South Africa	24.9	29.8	

Source: selected countries' census data

Section 4: Types of Unemployment and the Definition and Significance of Full Employment

The Four Types of Unemployment

Four commonly distinguished forms of unemployment are:

1. Frictional unemployment.
Frictionally unemployed people are in between jobs or are students who just completed school and are looking for a job. This form of unemployment is usually short-lived in nature.

2. Structural unemployment.
The structurally unemployed are people who are laid off and looking for work because technology advances or other structural changes in production (for example, companies moving abroad) took away their jobs. The horse-and-buggy drivers of the early 1900s lost their jobs after the automobile became popular and affordable.

Many American steel, auto, electronics, and textile workers lost their jobs and became structurally unemployed due to foreign competition and American companies locating abroad (outsourcing). This form of unemployment (especially those due to technology advances) is usually permanent in nature. Even though these specific jobs may be gone forever, people unemployed for structural reasons can frequently find work in other industries after receiving training and acquiring other skills.

3. Cyclical unemployment.

Cyclically unemployed people are laid off due to a decline in the demand for their product; they are also looking for a job. During recessions, the demand for cars and houses and other durable products decreases. Workers in these industries lose their jobs until demand increases again. This form of unemployment is usually temporary in nature.

4. Seasonal unemployment.
Seasonally unemployed people are out of work and looking for a job during the off-season. Examples

include ice cream vendors during the winter, school teachers during the summer (they are considered unemployed only if they are looking for a job during this time), and ski-lift operators during the summer.

Video Explanation
For a video explanation and examples of the four types of unemployment, please visit:

YouTube Video

Full Employment and the Natural Rate of Unemployment

Government economists define full employment, or the so-called natural rate of unemployment (also referred to as the Non-Accelerating Inflation Rate of Unemployment, or NAIRU), as a situation when all unemployment is structural and frictional. During healthy economic times, there are many jobs available, and cyclical and seasonal unemployment can reasonably be expected to be zero or close to zero percent.

Generally, frictional and structural unemployment cannot be expected to equal zero at any time. Whether in good or bad economic times, there are always some people in between jobs (frictional unemployment), and there are always technology changes and companies changing locations (structural unemployment).

The Organization for Economic Cooperation and Development (OECD) estimates that the full employment rate for the United States occurs when unemployment is between 5% and 6%. This portion of the labor force is frictionally and structurally unemployed. In actuality, this estimate varies based upon the country, the time period, and politicians' economic beliefs.

The definition of full employment is important because governments use this rate to determine how much they should stimulate the economy and how much they should be concerned about inflation. Keynesian economists believe that if the unemployment rate falls below the natural rate of unemployment, the economy is likely to generate inflation. If the unemployment rate increases to well above the rate, the country suffers from stagnation, and Keynesians recommend a stimulation of the economy by the government.

Classical Economic Beliefs about the Natural Rate of Unemployment and Inflation

Classical economists disagree with the concept of full employment and the idea that low rates of unemployment can trigger inflation. They claim that unemployment can be low without causing inflation. Classical economists believe that inflation is caused by persistent increases in the nation's money supply and that robust economic growth rates and low rates of unemployment are unrelated to inflation.

Classical Economic Beliefs about Decreasing Structural Unemployment

Classical economists believe that most structural unemployment can be avoided. If people plan ahead and acquire new, more highly demanded skills while they still have a job, they can more quickly start a new job when they lose their current one. A teacher may lose her/his job as a lecturer if new technology, such as online instruction, replaces standard classroom instruction. Knowing this, teachers are wise to keep up with these technologies while they still have a job, and thus make a quicker transition into a new field.

Workers in all industries face these challenges as technology changes rapidly. Reluctance to acquire new training and learn new skills frequently leads to structural unemployment. Government unemployment compensation programs and other social programs make it easier and financially less urgent for some people not to look for a job during a certain period of time. For this reason, countries with more-generous social welfare programs usually experience higher structural unemployment rates.

Section 5: Unemployment Rates by States and Demographic Groups

Unemployment Rates by State

Unemployment rates in the United States vary quite a bit by state. Below is a table with 2011 - 2019 unemployment rates of selected states (most of the states not listed have unemployment rates close to the average national unemployment rate). The table shows that in 2019 Vermont, Utah, and North Dakota had the lowest unemployment rates (South Carolina, not listed, joined this group in 2019 with an unemployment rate of 2.4%). The highest rates were in West Virginia (not listed), the District of Columbia, Mississippi (not listed), and Alaska. From 2011 - 2019 most states experienced a decrease in unemployment. From 2018 to 2019, only four states experienced an increase in unemployment (Hawaii, Maine, Minnesota, and Wyoming). Unemployment rates in most states increased in 2020 due to the pandemic and then recovered (decreased) in 2021.

State/Region	Unemployment Rate (2011, seasonally adjusted)	Unemployment Rate (2012, seasonally adjusted)	Unemployment Rate (2015, seasonally adjusted)	Unemployment Rate (2018, seasonally adjusted)	Unemployment Rate (2019, seasonally adjusted)
United States	9.1	7.7	5.5	3.7	3.5
Alaska	7.4	6.8	6.7	7.3	6.1
California	11.7	9.8	6.3	4.3	3.9
Delaware	8.0	6.7	4.5	4.3	3.8
Florida	10.6	8.1	5.6	3.9	3.1
Hawaii	6.0	5.3	4.1	2.1	2.6
Iowa	6.0	4.9	3.8	2.8	2.6
Kansas	6.6	5.4	4.3	3.4	3.

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Maine	7.7	7.2	4.7	2.7	2.8
Maryland	6.8	6.6	5.3	4.3	3.6
Massachusetts	7.6	6.6	4.7	3.5	2.9
Michigan	10.3	8.9	5.4	4.7	4.0
Minnesota	6.6	5.7	3.7	3.2	3.3
Montana	7.3	5.8	4.0	4.1	3.4
Nebraska	4.1	3.7	2.5	2.8	3.1
Nevada	12.1	10.8	7.1	4.9	4.0
New Hampshire	6.9	5.6	3.8	2.6	2.6
New Mexico	4.0	6.2	6.2	5.6	4.8
New York	7.9	8.3	5.7	4.6	4.0
North Dakota	3.2	3.1	3.1	2.6	2.5
Oklahoma	5.3	5.2	4.1	4.0	3.4
Pennsylvania	7.4	7.8	5.3	4.8	4.3
Rhode Island	10.9	10.4	6.1	4.5	3.5
South Dakota	4.8	4.4	3.6	3.4	3.1
Texas	8.0	6.2	4.2	4.0	3.4
Utah	7.3	5.1	3.4	3.1	2.4
Vermont	5.4	5.2	3.6	2.8	2.3
Virginia	6.0	5.6	4.8	3.4	2.6
Wisconsin	7.4	6.7	4.4	3.2	3.3
Wyoming	6.0	5.1	4.1	2.9	3.7
District of Columbia	10.5	8.9	7.5	5.6	5.

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Source: U.S. Department of Labor, Bureau of Labor Statistics, 2019.

Unemployment Rates by Group

Unemployment rates in the United States vary significantly by group. Below is a table with 2008, 2012, 2016. and 2020 unemployment rates by selected demographic groups. The table shows that residents of Asian descent have the lowest unemployment rate, and Black or of African American descent, the highest. Among all groups, teenagers have the highest unemployment rates. Even though after 2014 rates have decreased for all demographic groups, a particular concern is the still high teenage unemployment rate among Black or African American descent residents. The overall rate for all Black or African American labor force participants was 11.4% in 2020 (during the pandemic), an improvement from 2012 when it was 15.8%. Regarding education levels, it is clear that the likelihood for unemployment decreases among people with more advanced degrees.

Demographic Group	Unemployment Rate (Percentage), 2008	Unemployment Rate (Percentage), 2012	Unemployment Rate (Percentage), 2016	
Total United States	5.0	7.7	4.9	
All Women and Men 16 - 19 Years of Age	19.2	24.4	15.7	
All Women 16 - 19 Years of Age	-	-	14.3	
All Men 16 - 19 Years of Age	-	-	17.1	
Men, 25 - 54 Years	5.1	8.2	4.0	
Women, 25 - 54 Years	4.7	7.6	4.3	
Black or African	9.5	15.8	8.4	

American, 16 years and Older				
Black or African American, 16 - 19 years of Age	-	41.3	26.7	
Caucasian or White, 16 Years and Older	5.0	7.9	4.3	
Hispanic or Latino, 16 Years and Older	7.7	11.5	5.9	
Asian, 16 Years and Older	NA	7.0	3.6	
Less than a High School Diploma, 25 Years and Older	8.8	14.1	7.4	
High School Graduates, 25 Years and Older	5.2	9.4	5.2	
Associates Degree, 25 Years and Older	4.3	6.8	3.6	
Bachelor's Degree, 25 Years and Older	2.4	4.3	2.7	

Source: Bureau of Labor Statistics. For more information, visit http://www.bls.gov/cps/demographics.htm

Introduction

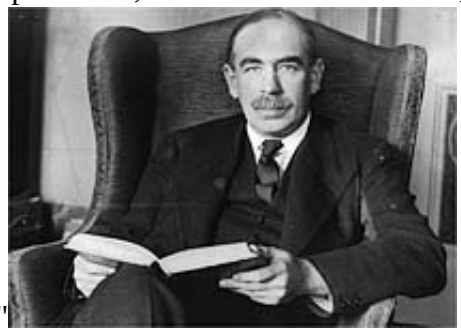
What's in This Chapter?

The theories of John Maynard Keynes became increasingly popular as the problems of the Great Depression of the 1930s worsened. The economy was experiencing a significant downward spiral, and people were desperate for a solution. Keynes supported active government involvement primarily in the form of increased government spending, and an expansive monetary policy by the Federal Reserve System.

Classical economists disagreed with this approach. They believed that government involvement had already significantly increased during the 1920s and early 1930s, especially in the areas of monetary policy, anti-trust and labor law regulations, and international tariffs and quotas. They blamed the severity of the Great Depression on errant government policies before and during the Great Depression. Their solution was less government involvement, less government spending, lower taxes, fewer regulations, and more reliance on free market conditions. According to classical economists, allowing free market forces to correct the problems of the 1930s would mean struggles in the short run but a stronger and healthier economy in the long run. Keynes cared more about immediate problems and stimulating the short run as he responded: "in the long run, we are all dead".

Section 1: Keynes versus the Classicists

Keynesian Economics

This unit describes the Keynesian economic model. Keynes's model was the most influential in economics in the twentieth century. It became widely accepted after the Great Depression, and was almost universally accepted from the 1950s through the late 1970s. Even some conservative economists and republicans, such as President Nixon, acknowledged during this time that "we are all Keynesians now."  Keynes (pictured) was born in Cambridge, England in 1883. He earned a mathematics degree from King's College in 1905, worked for the British Treasury, then became a teacher, a prominent journalist, and a lecturer. In 1925 he married Russian ballet dancer Lydia Lopokova. He was made a Lord in 1942. Keynes passed in 1946.

The General Theory of Employment, Interest and Money, published in 1936, was his most influential work. His ideas created the groundwork for subsequent well-known Keynesian economists such as James Tobin, Paul Samuelson, John Kenneth Galbraith, Robert Solow, Charles Schultze, Alan Blinder, Walter Heller, and Arthur Okun.

Because of the influence of Keynes, the United States government passed the Employment Act of 1946. Other industrialized countries around the world passed similar acts. It pronounced that it was the government's responsibility to achieve full employment, stimulate the economy if necessary, and keep the price level stable. Sections 2 through 4 of this unit elaborate on Keynes's model.

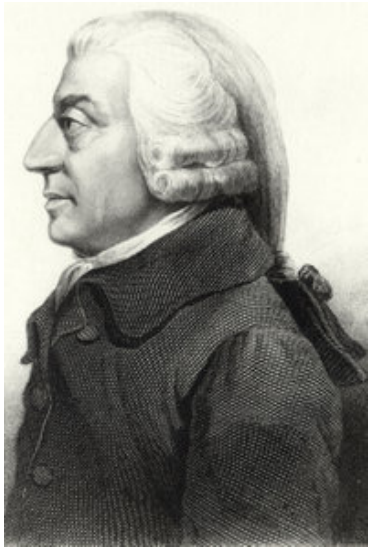
Since the 1980s, the Keynesian model has come under increasing scrutiny. Section 5 of this unit presents a critical analysis of the Keynesian model and a discussion of classical economic theories and why classical economists believe that limited government involvement in the economy is best for the country.

Classical Economics

The classical economic model is based on Adam Smith's famous book, The *Wealth of Nations,* first published in 1776 (the official title is "An Inquiry Into the Nature and Causes of the Wealth of Nations").

The theories of Adam Smith (pictured) form the foundation for economic schools of thought, such as classical economics, the neo-classical and Austrian Schools of thought, monetarism, and rational expectations. In today's political climate, the libertarian party is most in line with Smith's theories of free

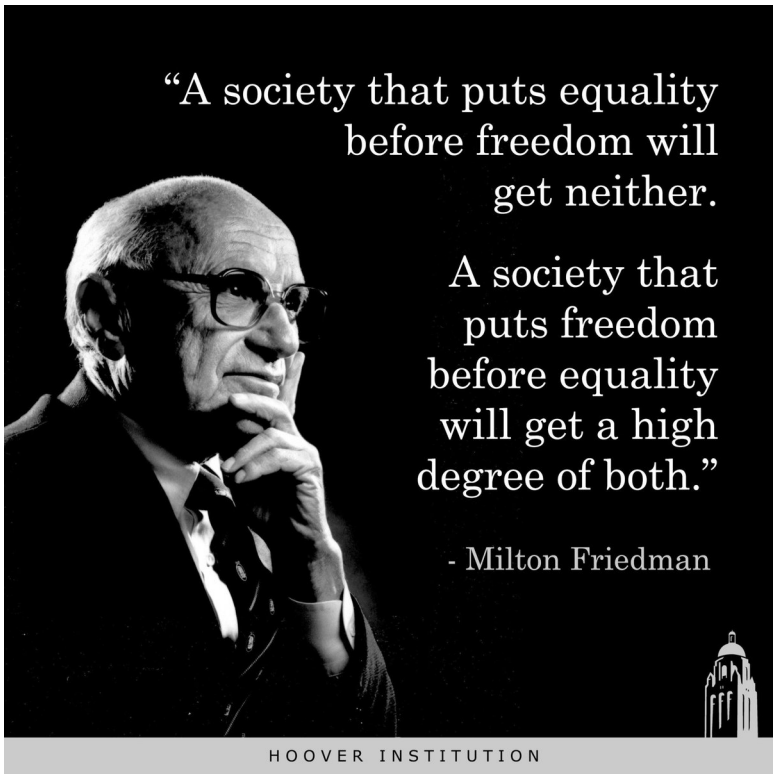
markets or mostly free markets. In general, all of these models support the following:



1. Correction of economic problems by the market.
Market forces (changing prices, wages, interest rates, and economic competition) correct economic problems without government intervention.

2. Limited role of the government.
The role of the government should be limited to only the essential functions: defending the country, providing a legal system, protecting individuals' and businesses' properties, and providing certain public goods, such as roads, highways, and sewage systems.

Other influential classical economists include David Ricardo (1772 - 1823), Thomas Malthus (1766 - 1834), and John Stuart Mill (1806 - 1873). Neo-classical economics and the Austrian School are closely associated with classical economics and strongly support a laissez-faire, or free market, economy. Important neo-classical economists include William Stanley Jevons (1835 - 1882), Carl Menger (1840 - 1921), and Leon Walras (1834 - 1910). Famous Austrian School economists include Ludwig Von Mises (1881 - 1973), Eugen Von Bohm-Bawerk (1851 - 1914), Friedrich Hayek (1899 - 1992), and Henry Hazlitt (1894 - 1993). Another advocate of laissez-faire and individual freedom was the outstanding American monetarist and Nobel prize winner Milton Friedman (1912 - 2006).



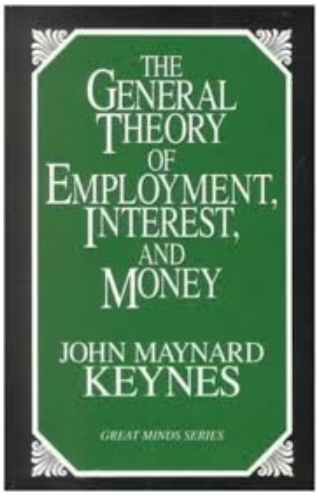
For a video explanation of the differences between the Keynesian and Classical schools of thought, please watch:

YouTube Video

Section 2: The Keynesian Model

Keynes's General Theory

John Maynard Keynes wrote *A Treatise on Money* (1930) and his most famous work, *The General Theory of Employment, Interest and Money* (1936), around the time of the Great Depression. During the Great Depression, many economists and politicians looked for answers to solve the disturbing output declines and unemployment increases. His economic views led our government to pass the Employment Act of 1946, which established the Council of Economic Advisers and made the federal government responsible to intervene in the economy when necessary.



Before Keynes

The classical economists, whose thoughts were widely accepted in Western economies before the 1920s, and whose theories have recently gained support again, believed that economic downturns can best be solved by leaving the economy alone and letting private market forces correct the problems. A self-correcting mechanism (Adam Smith's "invisible hand") is in place, which allows for only minimal government involvement in the economy. The classical economists base their conclusions on assumptions that in a free market, wages, prices, and interest rates are flexible and adjust according to demand and supply of products, labor and other resources, and money in circulation.

The 1930s

As the economic problems grew more serious during the 1930s, interventionist economic theories gained more acceptance. Big businesses and their "robber baron" business leaders began to be seen as the cause of all economic evil. People started to look toward the government for answers. Keynes's theories provided precisely the fuel that activist-minded economists and philosophers of that time needed to propose government intervention as the solution to economic problems.

Sticky Wages and Prices

According to Keynes, overproduction and under-consumption are the main causes of any economic

downturn. If businesses overproduce during one period of time, they experience surpluses and will cut back on their production during the next period. Cutbacks in production are accompanied by layoffs and declining earnings. Keynes did not believe that wages, prices, and interest rates adjust quickly enough in response to declining conditions. He argued that because of unions and increasingly large monopoly-like firms, wages and prices do not fall much when demand decreases. According to Keynes, prices and wages are "sticky" and do not provide sufficient corrections to bring the economy back to full employment.

Government Intervention

During economic downturns, consumer incomes decrease. These decreasing earnings result in less consumer spending. Firms find themselves with surpluses, and they subsequently produce less. This leads to further layoffs and lower incomes. This leads to even less consumer spending. This snowball effect eventually puts the economy into a bad tailspin and perhaps even an economic depression. Keynes stated that the only way to stop the ball from rolling is for the government to intervene by artificially creating demand and raising people's earnings. This can be done by initiating or expanding public works, increasing welfare handouts, or increasing general government spending.

Deficit Spending and Money Supply Increases

Keynes encouraged government politicians to run deficits during recessions (by increasing government spending and/or lowering taxes) or to print money in order to finance these additional expenditures. If the government runs a deficit, it borrows money mainly from domestic and foreign investors by issuing Treasury securities. Treasury securities are loans people make to the government in exchange for interest and payback of the principal at a later time (see also Unit 8). According to Keynes, when government spending increases and/or taxes decrease, the total demand for goods and services in the economy rises, which increases GDP in the short run.

If the government chooses to print additional money during a recession, the money supply increases and interest rates decline in the short run. When interest rates decline, borrowing rises. Subsequently, spending rises, and GDP increases. The printing of additional money is done in the United States through the Federal Reserve System and its central banks.

Government Intervention During Expansions

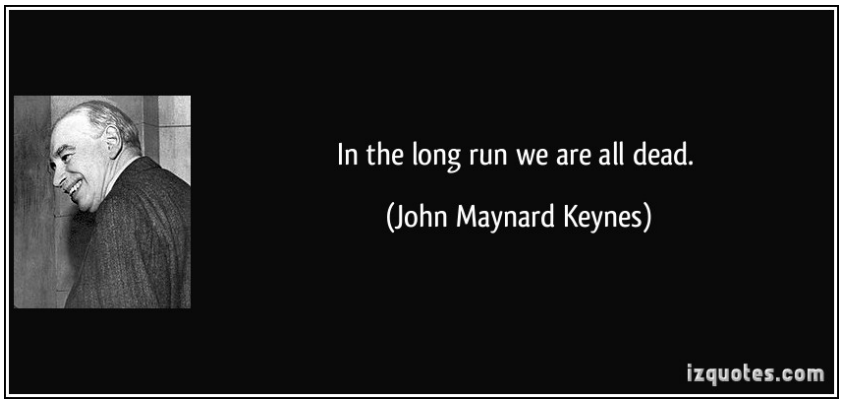
Even though Keynes's theories focus on recessions and depressions, he also mentioned that if during an expansion an economy is growing too fast, it will cause inflation. In this case, Keynes recommends for the government to do the opposite: decrease government spending, raise taxes, and decrease the money supply. This, according to Keynes, slows down the economy and prevents inflation by decreasing total aggregate demand.

Short Run versus Long Run

Classical economists predict that if the economy experiences problems, prices and wages adjust in the long run. If a recession decreases business profits, businesses lower their wages until profits increase again. If a recession decreases demand, businesses lower their prices until buyers buy again. If businesses and households are not borrowing enough, banks and other financial companies lower their interest rates.

Classical economists predict that the economy always achieves full employment in the long run. They believe that as long as there is enough production, businesses will pay enough wages and earn enough profits. This generates purchasing power and enough demand to purchase all products that are supplied and put just the right amount of people to work to create full employment.

Because of sticky prices and wages, Keynes did not believe that decreases in demand lead to lower prices and wages. Instead of lowering wages and prices, according to Keynes, businesses choose to lay off workers. This increases unemployment. Keynes admitted that in the long run, unemployment may perhaps lower wages and allow businesses to hire more workers. However, Keynes wanted short-run solutions. He stated: "In the long run we are all dead." According to Keynes, help is needed immediately, and the government can provide it quickly in the form of active spending, taxation policies, and active monetary policy.



Section 3: Consumption and the Keynesian Multiplier

The Keynesian model is based on the belief that demand drives the economy and that a shortfall in demand causes recessions and depressions. According to Keynes, if we can find ways to stimulate consumption and other forms of spending, we will solve the problem.

The Marginal Propensity to Consume (MPC)

Keynes discussed the **M**arginal **P**ropensity to **C**onsume (MPC). The MPC indicates how much of any additional earnings a person consumes. If the government increases spending by $1,000, and if the recipients of the $1,000 decide to spend $800 to purchase goods (let's say, a used car), then the marginal propensity to consume is 800/1,000, or .8, or 80%.

The Multiplier and the Significance of the Multiplier

This additional spending of $800 turns into **additional** income for the person who sold the product (the used car). If this person's MPC is also 80%, then spending (for instance, on a television) increases by 80% of $800 or $640. This creates income for the person who sold the television. This person spends her/his MPC of the $640 on goods, and so forth. If the MPC is 80% for everyone in this economy, then the total amount of **additional** spending in the entire economy is: $1,000 (the initial government spending) + $800 (on the used car) + $640 (on the television) + ... = $5,000.

This mathematical sum ($1,000 +$800 + $640 + ...) is 5 times $1,000, or $5,000. The factor 5 in this equation is called "the multiplier." The $1,000 is the increase in government spending and is called the "initial spending." The $5,000 is the increase in total spending in the economy.

The significance of the multiplier, according to Keynes, is that an initial amount of government spending ($1,000 in the above example) can create a total amount of spending in the economy equal to a multiple (5 in the above example) times the initial amount. Keynes argued that this additional spending is needed to increase the "equilibrium national income" (for our purposes, we can think of this as GDP). During a recession, or a recessionary gap, as Keynes called it, an increase in government spending will result in additional rounds of spending and income necessary to eventually reach full employment.

Thus, the equation for computing the total spending change in the economy is

The multiplier * the change in initial spending = change in the economy's total spending (GDP)

In the above example:
5 * $1,000 = $5,000

Keynes's formula for the multiplier is:

Multiplier = 1/(1-MPC). In the above example: Multiplier = 1/(1-.8) = 1/(.2) = 5. A greater MPC leads to a larger multiplier.

The Marginal Propensity to Save (MPS)

The counterpart to Keynes's Marginal Propensity to Consume is the Marginal Propensity to Save (MPS). Savings is defined as income not consumed. If a person receives additional income of $100 and of that (s)he consumes $80, her/his savings must be $20. The MPC in this example is .80, or 80% and the MPS is .20, or 20%. The MPC and the MPS always add up to 100%, or 1. Furthermore, the MPS = 1 - MPC, so that the multiplier can also be written as

Multiplier = 1 / MPS.

Examples of How Changes in Government Spending Affect GDP

Example 1
Problem: Let's say that we are experiencing a recession and the government increases spending by $25 billion. Let's also assume that the MPC equals .75. By how much will equilibrium national income (GDP) increase?

Solution: Because the MPC equals .75, the multiplier equals 4:
Multiplier = 1 / (1 minus .75) = 1 / .25 = 4.
To get the increase in GDP, we multiply the multiplier by the increase in government spending:
Change in GDP = 4 * $25 billion = $100 billion.
This means that if GDP was, for example, $800 billion before the change, it will be $900 billion after the change.

Recessionary Gap

Example 2
Problem: Let's say that we are experiencing a **recessionary gap** of $500 billion. A recessionary gap is how much GDP needs to increase from the current GDP in order to achieve full employment. Also assume that the MPC equals .90. How much will the government have to increase spending in order to close the recessionary gap?

Solution: We know that the increase in government spending times the multiplier equals the increase in GDP.
Remember that the change in government spending x the multiplier = the change in GDP.
The MPC is .9, so the multiplier is 10 (1 divided by 1 minus .9, or: 1 / (1-.9)).
So: the change in government spending * 10 = $500 billion.
So: the change in government spending = $500 / 10 = $50 billion.

In other words, if the government increases spending by $50 billion, and the multiplier is 10, then GDP will increase by $500 billion. Since we need to add $500 billion to GDP to achieve full employment, we will have closed the recessionary gap.

Inflationary (Expansionary) Gap

Example 3
Problem: Let's say that we are experiencing an **inflationary (expansionary) gap** of $200 billion. An inflationary gap is how much GDP needs to decrease from the current GDP in in order to eliminate inflation due to a GDP that is too high. Also assume that the MPC equals .80.

Solution: The change in government spending * the multiplier = the change in GDP. The multiplier is 1 / (1-.8) = 5.
So: the change in government spending * 5 = -$200 billion.
So: the change in government spending =-$200 / 5 = -$40 billion.
In other words, if the government decreases spending by $40 billion, and the multiplier is 5, then GDP will decrease by $200 billion. Since we need to lower GDP by $200 billion to achieve full employment without inflation, we will have closed the inflationary gap.

Video Explanation
For a video explanation and examples of how changes in government spending (and taxation) affect total spending in the economy, please visit:

YouTube Video

Section 4: The Tax Multiplier and the Balanced Budget Multiplier

How a Change in Taxes Affects GDP

If an increase in government spending leads to an **increase** in total spending and GDP, then an increase in taxes must lead to a **decrease** in total spending and GDP, and vice versa. When the government raises taxes, private spending decreases. Keynes noted, however, that the decrease in overall spending from a tax increase is not as large as the increase in overall spending from the same amount of a government spending increase. The reason for this is that people save a portion of their additional income (tax refund) whereas the government spends all of its money. The example in the next paragraph illustrates this.

The Tax Multiplier

Let's say that taxes increase by $1,000. Therefore, people's after-tax income (income available for consumption or savings) decreases by $1,000. If the MPC is 80%, then people would have only consumed $800 of this $1,000. Thus, total spending throughout the economy decreases by 5 (the multiplier) times $800 = $4,000. This $4,000 is 4 times the change in taxes.

Mathematically, we can prove that the tax multiplier is the negative of the spending multiplier minus 1. In the above example, the regular spending multiplier from the previous section is 5 and, therefore, the tax multiplier is -4. Thus,

The tax multiplier = - (the regular multiplier - 1)

In the above example:
The tax multiplier = - (5 - 1) = -4

The following applications provide further explanations of this concept.

Examples of How a Change in Taxes Affects GDP

Example 1
Problem: Let's say that we are experiencing a recession and the government decreases taxes by $25 billion. Let's also assume that the MPC equals .75. By how much will GDP increase?

Solution: Because the MPC equals .75, the regular (spending) multiplier equals 4, and the tax multiplier equals -3.
The spending multiplier = 1 / (1 minus .75) = 1 / .25 = 4. The tax multiplier equals 4 minus 1 with a negative sign: -(4 - 1) = -3.

To get the increase in GDP, we multiply the multiplier by the decrease in taxes:
Change in GDP = -3 * -$25 billion = +$75 billion.
This means that if GDP was $800 billion before the change, it will be $875 billion after the change.

Recessionary Gap

Example 2
Problem: Let's say that we are experiencing a **recessionary gap** of $360 billion. A recessionary gap is how much GDP needs to increase from the current GDP in order to achieve full employment. Also assume that the MPC equals .90. How much will the government have to decrease taxes in order to close the recessionary gap?

Solution: We know that the decrease in taxes times the tax multiplier equals the increase in GDP. The MPC is .9, so the regular multiplier is 1 / (1 - .9) = 10.
That means that the tax multiplier is -(10 - 1) = -9.
So: (the change in taxes) * (the tax multiplier) = the change in GDP.
So: (the change in taxes) * (-9) = $360 billion.
So: (the change in taxes) = $360 / (-9) = -$40 billion.
In other words, if the government decreases taxes by $40 billion, and the tax multiplier is -9, then GDP will increase by $360 billion. Since we need to add $360 billion to GDP to achieve full employment, we will have closed the recessionary gap.

Inflationary Gap

Example 3
Problem: Let's say that we are experiencing an **inflationary gap** of $200 billion. An inflationary gap is how much GDP needs to decrease from the current GDP in order to achieve full employment without causing inflation. Also assume that the MPC equals .80.

Solution: The change in taxes * the tax multiplier = the change in GDP.
The regular multiplier is 5 (calculation: 1 / (1 - .8), so the tax multiplier is -4.
So: (the change in taxes) * (-4) = -$200 billion.
So: (the change in taxes) = (-$200) / (-4)= +$50 billion.
In other words, if the government increases taxes by $50 billion, and the tax multiplier is -4, then GDP will decrease by $200 billion. Since we need to lower GDP by $200 billion to achieve full employment without inflation, we will have closed the inflationary gap.

The Balanced Budget Multiplier

When the government increases spending by a certain amount and it increases taxes by the same amount, then GDP will increase by that amount. The following example illustrates this.

Example 4
Problem: Let's say the government increases spending by $1,000 and also increases taxes by $1,000, and the MPC equals .8. By how much will GDP change?

Solution: The multiplier equals 5 and so the tax multiplier equals -4. Therefore, GDP will increase by $5,000 from the $1,000 additional government spending (5 times $1,000). And GDP will decrease by $4,000 from the additional $1,000 in taxes (-4 times $1,000). Thus, on balance, equilibrium income (GDP) will increase by $1,000 ($5,000 minus $4,000).

Therefore, when the government spends $1,000 and imposes taxes of $1,000, it balances its budget, while increasing equilibrium GDP by $1,000.

Thus, when the government changes spending and taxes by the same amount, then equilibrium income (GDP) changes by 1 times this amount. We say that

The balanced budget multiplier = 1.

The **balanced budget multiplier** implies that if the government increases spending and taxation by the same amount, then equilibrium national income (GDP) rises by this amount.

This balanced budget stimulation is possible, according to Keynes, because when the government receives $1,000, it spends it all. On the other hand, when private citizens receive $1,000, they spend only a fraction of it (in the above example, they spend 80%). They save the other fraction. Because savings, according to Keynes, is a "leakage" from the economy, the economy "loses" 20% in stimulation if private citizens spend it, compared to no loss (no savings) if the government spends it.

Do you agree with Keynes that it is possible to stimulate the economy by, for example, $1 trillion, simply by raising government spending and taxes by $1 trillion?

For a video explanation of additional examples involving the Keynesian multiplier, please watch:

YouTube Video

Section 5: Critical Analysis of the Keynesian Model and the Importance of Savings to Increase Investment Spending

Demand Side Economics

Keynes's model is a "demand-side" model. Keynes believes that as long as there is enough demand, production (supply) will be sufficient and full employment will result. In order to increase demand, Keynes emphasized that the government needs to increase its spending. The government can obtain funds from three sources for this additional spending:

1. Printing more money
2. Incurring a deficit (borrowing from the public)
3. Increasing taxes

The Effect of Printing More Money

One of the ways a government can obtain more money for additional government spending is to print more money. The Federal Reserve supplies additional money to the public primarily through Open Market Operations; this is discussed in Unit 9. Printing more money is inflationary. It may be true that initially some people feel wealthier because they are the recipients of the additional government money. These people can increase their spending relative to what it was before. Increasing the money supply (printing money) also lowers interest rates in the short run. This stimulates the economy in the short run because lower interest rates leads to more borrowing and more spending. However, as soon as inflation takes effect, interest rates rise and people will be harmed by rising prices. In the long run (after the inflation takes effect, and subsequently, interest rates rise), the decrease in purchasing power and the accompanying decrease in demand offsets the initial increase in demand. The harmful effects of inflation in the long run will cancel out or more likely outweigh the positive short-run effects of the government spending and money supply increase.

The Effect of Incurring a Deficit

Instead of the Federal Reserve printing more money, the government can borrow the money. By issuing Treasury bills, notes, and bonds (all called Treasury securities), the government obtains money for additional spending. When the government borrows money from the public in this way, money is merely transferred from the private sector (households and businesses) to the public sector (the government).

Government borrowing by itself is not inflationary, but it does increase the national debt and increases interest rates by decreasing the availability of funds in private financial markets. It also raises future tax liabilities. Critics of the Keynesian model believe that in the long run, the negative effects of government borrowing outweigh the positive short-run effects. They point to the economy of Greece to show the disastrous economic effects of too much government borrowing.

The Effect of Increasing Taxes

During recessions, Keynes did not recommend an increase in taxes. However, Keynes did mention that if

you want to balance your budget, you can increase government spending and increase taxes by the same amount and still stimulate the economy (see Section 4). He admitted that if taxes increase, then private spending decreases. But, according to Keynes, the increase in total spending from a government spending increase is greater than the decrease in total spending from a tax increase. Keynes stated that when taxes increase, people would have saved a portion of the taxed income, had they been allowed to keep it. According to Keynes, this savings constitutes a "leakage" from the economy.

Keynes's critics, however, believe that savings generates funds available for borrowers in the financial markets, and eventually becomes another form of spending. Therefore, it is not a leakage.

The Role of Savings

Consumer and business saving is essential to allow firms to add to production capacities and create additional wealth. 

When people save, it frees up funds, which businesses can use (borrow) to purchase capital goods. Additional capital goods beyond what is needed to replace worn out and obsolete machines allows for greater productivity. This enables businesses to pay higher real wages and create greater purchasing power for consumers.

If people don't save, and they spend all their earnings on consumption, there will be far fewer funds to purchase capital goods. All the money is spent on cars, food, microwave ovens, clothes, etc. Businesses will find themselves with fewer and fewer production capacity and eventually with significantly less production. Less production means fewer jobs, less purchasing power and real demand, and a regressing economy. Without savings, the economy loses capacity to produce.

Say's Law

Jean Baptiste Say was a classical economist who believed that any creation of wealth, production, and jobs must be initiated at the production side, not the demand side. Only when entrepreneurs and workers become more industrious and productive is additional real purchasing power created. This important conclusion is currently known as **Say's Law**. Say, a French economist, stated that any supply creates its own demand.

To see Say's Law in a different context, imagine an "economy" with no initial economic activity (like on the reality television show "Survivor"). There is no production, so there can be no purchasing power or

demand. No government spending or other artificial stimulation of demand can change this situation and magically create demand if there is no production and no goods exist. Production must occur first, and then - from the fruits of the laborers' work and earnings - demand follows.

Supply Side Economics

Supply or production creates wealth by combining labor with technology, along with the Earth's abundant resources. If no money exists initially, the first products can be bartered to create economic activity. Eventually, a medium of exchange (for example, rocks, or gold and silver) can be produced to facilitate trade. Once a medium of exchange (money) exists, people can save their earnings. They can start their own businesses or invest in existing businesses, so that even more production can occur. Additional production creates additional jobs, which creates additional purchasing power and subsequent spending. The additional spending provides businesses with more funds, which, if reinvested, leads to still more production and increased purchasing power.

In conclusion, Keynes supported increases in government spending, consumption and other spending in order to stimulate economic activity. Jean Baptiste Say and other classical economists place more emphasis on production and savings. This may not stimulate the economy right now, but it allows households to be financially sound in the long run and it frees up capital for businesses to invest in capital goods and thus increase their productivity. As a reward for being productive, people's consumption and overall greater wealth increase in the long run. This consumption increase then is made possible by the economy's increased production efforts, and not by artificial stimulation of the economy by the government.

Section 6: Aggregate Demand and Aggregate Supply

The Aggregate Demand Curve

In Unit 2, we learned that a demand curve illustrates the relationship between quantity demanded and the price of **one** product. In this unit, we discuss **Aggregate** demand. Aggregate demand represents the quantity demanded of **all** products in a certain country or area at different price levels.

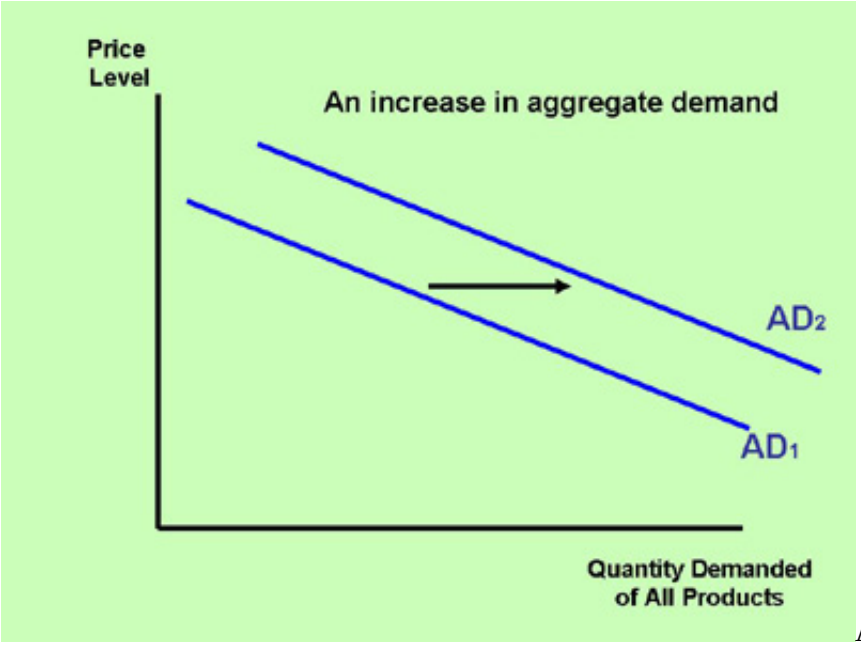
The aggregate demand curve is downward sloping, just like one product's demand curve. It slopes downward because of the substitution effect and because of the income effect. The substitution effect states that as the price of a product decreases, it becomes cheaper than competing products, *ceteris paribus*, and consumers will substitute the cheaper product for the more-expensive product, and vice versa. In the case of the aggregate demand curve, we consider all domestic products, so the substitution effect only applies to the substitution of domestic products for foreign products. In other words, when domestic products become cheaper, buyers purchase more of these products and they purchase fewer of the relatively more-expensive foreign products. If we were to consider a "world demand" curve, the substitution effect would not apply (until we start production on other planets!).

The income effect states that as the price of a product decreases, buyers will have more income available to purchase more products, and vice versa. In the case of the aggregate demand curve, if the average price level of all products decreases, buyers will have more discretionary income available. For example, if all buyers purchase 1 million products per week at an average price of $4, then the buyers' total expenditure equals $4 million. If the average price level falls to $3, the total expenditure if everyone buys the same number of products now equals $3 million. This means that buyers now have $1 million more to spend on other products. In essence, buyers' real incomes have increased.

Below is a graph of a typical aggregate demand curve.

A Shift in the Aggregate Demand Curve

The aggregate demand curve can shift for various reasons. A shift to the right illustrates an increase in aggregate demand (see adjacent graph).



A shift to the left illustrates a decrease in aggregate demand. The components of aggregate demand include Consumption (C), Gross Private Domestic Investment (I), Government Spending (G) and Net Exports (X). Anything affecting these components will shift the curve.

Buyers' wealth, incomes, the level of taxes, and subsidies all affect Consumption. For example, an increase in wealth and incomes increases aggregate demand. This shifts the curve to the right.

Interest rates, expected interest rates and expected rates of return (profits) affect Gross Private Domestic Investment. For example, if interest rates decrease, the cost of borrowing decreases. This increases firms' incentives to borrow and invest. This increases aggregate demand.

Government spending is for the most part autonomous. This means that it is not dependent on a particular variable. The government can decide to increase spending on the military or domestic programs. This increases aggregate demand.

Net Exports is dependent on the quality of the country's goods, the relative prices of foreign versus domestic products and exchange rates, and the purchasing power of other economies. If the quality of products improves or if domestic prices decrease, then the foreign demand for products increases. This increases aggregate demand.

The Aggregate Supply Curve

In Unit 2, we learned that a supply curve illustrates the relationship between quantity supplied and the price of **one** product. **Aggregate** supply represents the quantity supplied of **all** products in a certain country or area at different price levels.

A typical aggregate supply curve is upward sloping, just like one product's supply curve. It slopes upward because of the substitution effect and because of the income effect.

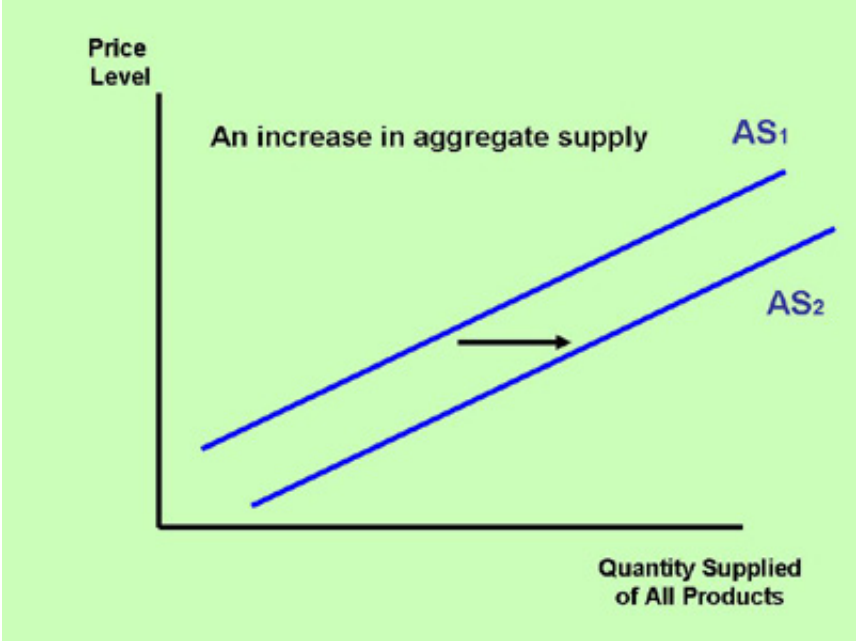
The supplier's substitution effect states that as the market price of a product increases, other competing products, *ceteris paribus*, will become less attractive to produce, and suppliers will substitute the higher-priced product for the less-expensive product (and vice versa). In the case of the aggregate supply curve, we consider all domestic products, so the substitution effect only applies to the substitution of the production of domestic products in place of the production of foreign products. In other words, when domestic products can be sold at a higher real price, suppliers will have more incentive to produce domestic products versus foreign products (*ceteris paribus*). If we were to consider a world supply curve, the substitution effect would not apply.

The supplier's income effect states that as the real market price of a product increases, a supplier will earn more income (make a greater profit), so that the supplier has more incentive and greater means to increase production (and vice versa). For example, if all suppliers sell 1 million products per week at an average price of $7, then the suppliers' total revenue equals $7 million. If the average price level rises to $8, the total revenue for selling the same number of products now equals $8 million. Assuming no change in the cost of production, this increases suppliers' income and their incentives and abilities to produce.

Below is a graph of a typical aggregate supply curve.

A Shift in the Aggregate Supply Curve

The aggregate supply curve can shift for various reasons. A shift to the right illustrates an increase in

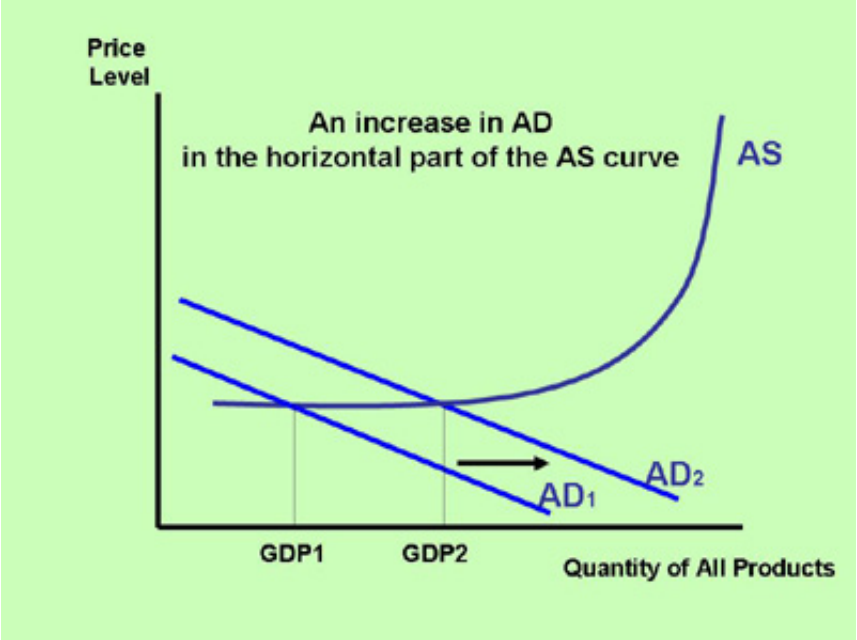


aggregate supply (see adjacent graph). A shift to the left illustrates a decrease in aggregate supply.

When input prices (wages, prices of raw materials, interest payments, rent, etc.) decrease, or technology advances, or taxes decrease, or subsidies increase, or regulations loosen, then it becomes more attractive to produce, and aggregate supply increases (and vice versa). Unpredictable events, such as weather emergencies, war, and political instability decrease aggregate supply and shift the aggregate supply curve to the left.

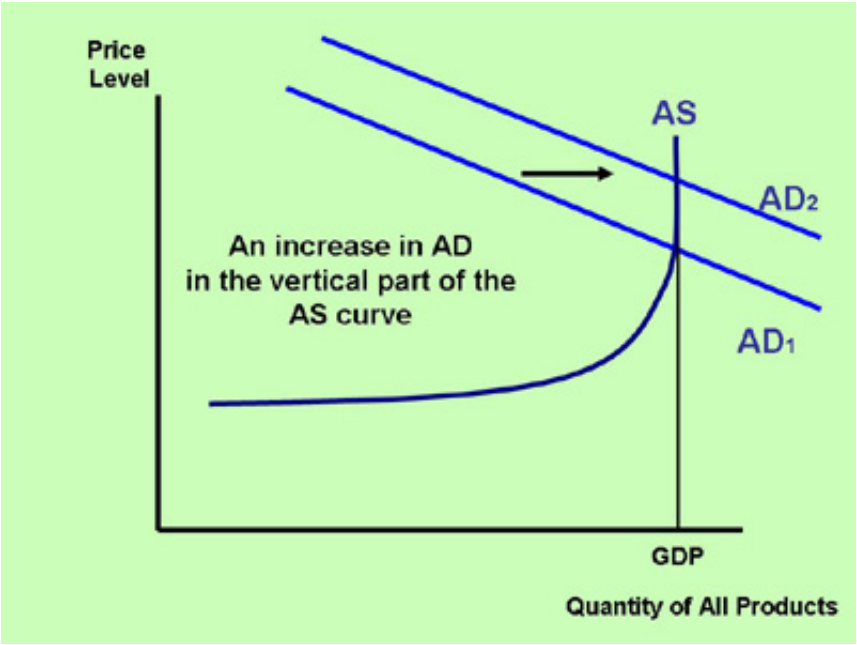
Keynesian Economics and the Horizontal Part of the Aggregate Supply Curve

The economy is at equilibrium (no product shortages or surpluses) at the point where aggregate demand (AD) and aggregate supply (AS) intersect. For example, if the economy's aggregate demand schedule is AD1 and its aggregate supply schedule is AS, then the economy experiences an equilibrium GDP level equal to GDP1 (see graph below). GDP1 is at a relatively low level, which means that there is a recessionary gap and significant unemployment. Note that for low levels of GDP, the aggregate supply curve in the Keynesian model is horizontal. In this case, if aggregate demand increases to AD2, then the equilibrium increases to GDP2, **without** an increase in the price level.



Keynesian Economics and the Vertical Part of the Aggregate Supply Curve

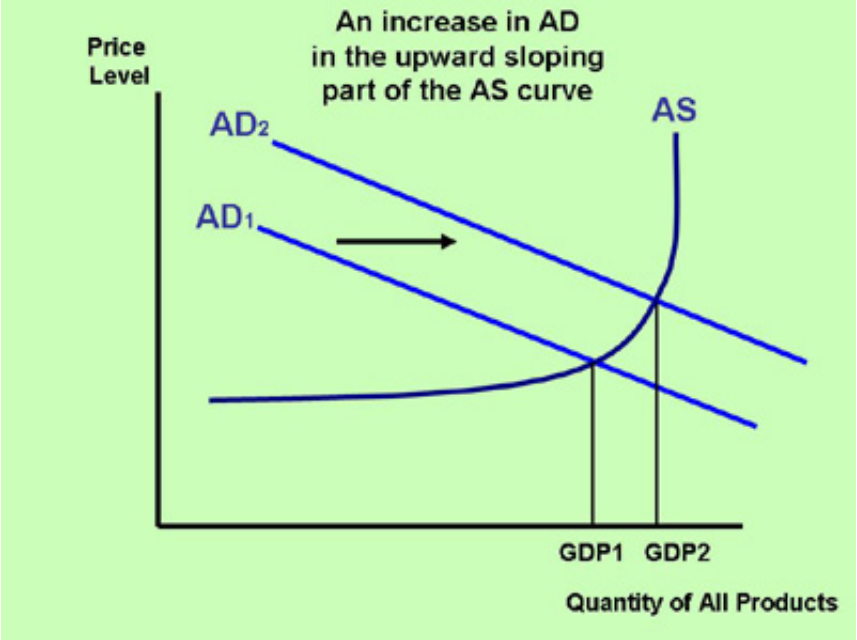
In the graph below, if the economy's aggregate demand schedule is AD1 and its aggregate supply schedule is AS, then the economy experiences an equilibrium level equal to GDP. This GDP is at a high level, which means that there is full employment. Note that for high levels of GDP, the aggregate supply curve in the Keynesian model is vertical. The economy experiences an inflationary gap if aggregate demand increases to AD2. The price level rises **without** an increase in real GDP.



Keynesian Economics and the Upward Sloping Portion of the Aggregate Supply Curve

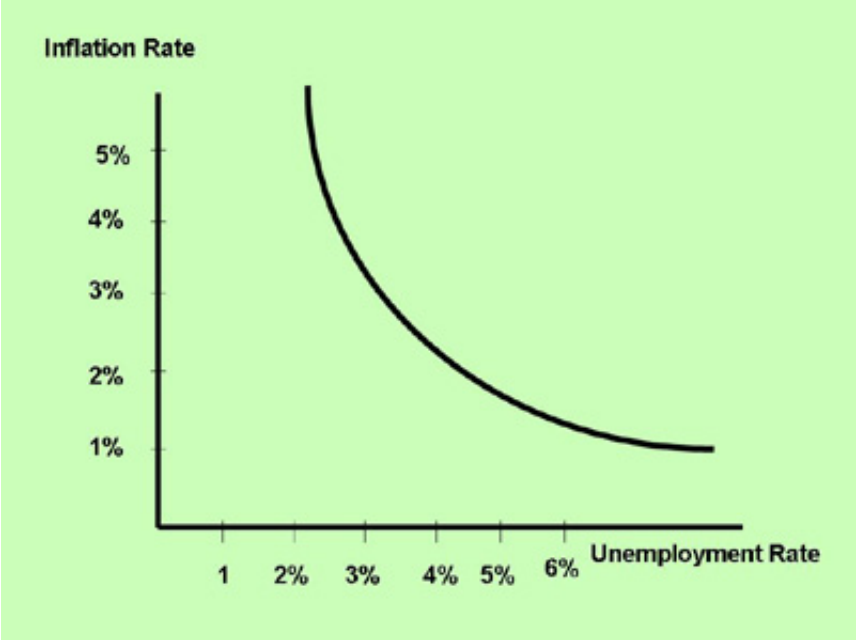
In the graph below, if the economy's aggregate demand schedule is AD1 and its aggregate supply

schedule is AS, then the economy experiences an equilibrium level equal to GDP1. The aggregate supply curve at this level of GDP is upward sloping. If aggregate demand increases to AD2, equilibrium GDP increases, as does the price level. This means that there is a trade-off between an increase in GDP (good news) and an increase in inflation (bad news).



Keynesian Economics and the Phillips Curve

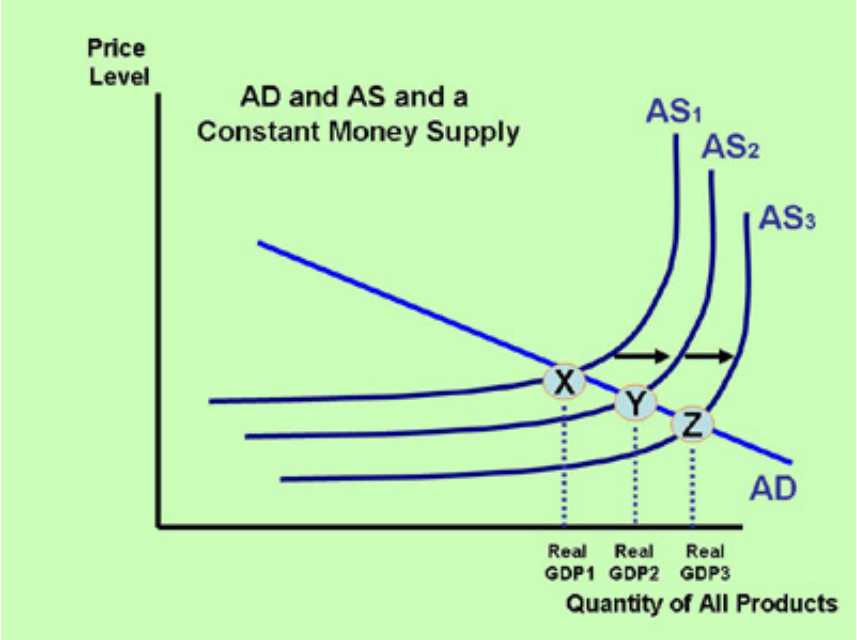
According to the Keynesian model, when the AD curve shifts in the upward sloping part of the AS curve (see graph above), we observe a growing economy and a rising price level. Typically, when the economy grows, unemployment decreases. Therefore, in the upward sloping part of the AS curve, we observe decreasing unemployment and increasing inflation. This inverse relationship between unemployment and inflation is illustrated by the so-called "Phillips curve." The Phillips curve (see graph below) is named after economist A.W.H. Phillips, who published a study in 1958, which observed the inverse relationship between wage inflation and unemployment in the United Kingdom from 1861 to 1957.



Classical Economics and the Key to Economic Growth

Classical economists believe that the Keynesian model focuses too much on the short run and not enough on the long run. In the short run, classical economists acknowledge that an increase in aggregate demand increases equilibrium GDP. However, if the increase in aggregate demand is triggered by artificial increases in government spending via increases in the money supply or increases in the nation's national debt, then in the long run, inflation and interest rates increases. Higher inflation and higher interest rates lead to decreases in aggregate demand, particularly in the private sector. So while active fiscal and monetary policy may increase aggregate demand in the short run, they lead to decreases in aggregate demand in the long run.

The key to economic growth, according to classical economists, is aggregate supply growth. An offspring of the classical economic school, the Austrian school, believes that the economy can grow and increase its production capacities while keeping the money supply constant. In Unit 1, we learned that economic growth is caused by advances in technology and increases in resources. As the economy grows, aggregate supply increases. In the graph below, this is illustrated by shifts in the aggregate supply curves from AS1 to AS2, and AS2 to AS3. The equilibrium GDP moves from point X to Y and from Y to Z. The price level decreases, because the money supply is constant and production increases (see also Unit 7 for a more detailed explanation of this relationship). **Nominal** GDP and nominal incomes remain constant, because the money supply is constant. However, **real** GDP increases because production increases and buyers' purchasing power increases due to the falling prices. Because of the constant money supply, the aggregate demand curve does not shift. However, quantity demanded increases because of the falling price level and higher real incomes.



Video Explanation

For a video explanation of how to apply the Aggregate Demand and Aggregate Supply curves to the Keynesian and Classical Economics theories, please visit:

YouTube Video

Introduction

What's in This Chapter?

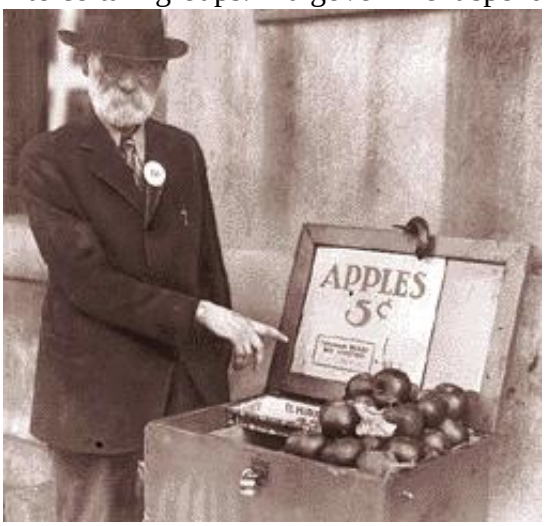
Governments conduct fiscal policy and monetary policy in an attempt to stimulate or fine-tune the economy. In democratic countries fiscal policy is decided by elected politicians. In most countries monetary policy is decided by the country's central bank.

The nation's fiscal policy in the United States is in the hands of the President and Congress. It is the subject of this unit's discussion. Monetary policy, the other main economic policy affecting the economy, conducted by the Federal Reserve System in the United States and central banks around the world, will be discussed in detail in Unit 9.

On a national scale, in the United States, Congress and the White House decide how much money to spend on the various government programs. They also decide how much to tax people, and if and how much money to borrow. The fifty states, Washington, D.C., and the various counties and municipalities have their own expenses and sources of revenue. Government spending and taxation policies have an important effect on the nation's employment, incomes, economic productivity, and economic growth. This unit discusses fiscal policy according to Keynesian and classical economists.

Section 1: Fiscal Policy

Definition of Fiscal Policy

Fiscal policy is a government's attempt to change economic activity by changing government expenditures, taxation and borrowing, and lending policies. A government can choose to change spending on highways, defense, education, public works, and social programs. A government can change tax rates, tax systems, and taxation to certain groups. If a government spends more than it receives in tax revenue, it borrows the difference. 

Keynesian Economics and Fiscal Policy

The two policies that governments can use to influence the economy are fiscal policy and monetary policy. Fiscal policy is covered in this unit. Monetary policy is covered in Unit 9. Keynes supported both active fiscal and monetary policies, but believed that fiscal policy is more effective. According to Keynes, governments should primarily increase spending when the economy experiences a recessionary gap. He stated that governments can also lower taxes to stimulate the economy, but he preferred increases in government spending because governments spend all of their money whereas citizens may save part of their tax cuts. Conversely, governments should decrease spending and/or raise taxes when the economy experiences an inflationary gap. Many politicians, influenced by Keynes's encouragement to run deficits to stimulate the economy, support active fiscal policy. Since Keynesian economics first became popular in the 1930s, government spending has increased significantly. Politicians often cater to special interest groups, because it translates into more votes and possible campaign donations. Consequently, government spending often increases even during expansions.

Classical Economics and Fiscal Policy

Classical economists and supporters of classical schools of thought (for example, neo-classical and Austrian economists), disagree with Keynesian fiscal policy. According to classical economists, efforts to change the demand side of the economy may benefit an economy in the short run, but causes harm in the long run. Increases in government spending lead to increases in the money supply, or increases in a nation's debt, or increases in taxation. Increases in the money supply equate to inflation. Increases in interest rates (interest rates increase when inflation increases) lead to decreases in borrowing and

decreases in private spending. And increases in taxation lead to decreases in private consumption and savings.

Keynes argued that a rapidly growing economy during times of full employment causes inflation. Classical economists disagree. They believe that increases in the money supply equate to inflation, and long-term increases in the price level are impossible without increases in the money supply. Classical economists, and in particular monetarists, believe that inflation can be slowed or avoided by decreasing the rate of growth in the money supply. Classical economists acknowledge that active fiscal policy can benefit the economy in the short run, but they do not believe that active fiscal policy is beneficial to the economy in the long run.

According to the classical school, proper long run fiscal policy is when the government creates an economic environment in which private properties are well-protected, and households and businesses have maximum incentive to produce and innovate. Government spending should be limited to essential functions such as providing a sound national defense system, a judicial system, fire and police protection, infrastructure, a sound educational system, transportation and a small and efficient administrative system. Taxes should be relatively low and regulations reasonable and limited.

Fiscal Policy Lags

In addition to the long-run disadvantages of active fiscal policy mentioned in the previous paragraph, neo-classical economists and monetarists believe that lags in the economy hamper the effectiveness of government policy. There are three lags: the **information lag**, the **policy lag,** and the **impact lag**.

The information lag is the period of time it takes to gather the information to determine whether we are having a recession. For example, if in March of this year the economy starts to slow down, economists may not receive accurate data to determine the slowdown until June of this year.

The policy lag is the period of time from when the recession information is received to when politicians come to a decision to take action. If the information about the slowdown is received in June, it may be January of the following year before politicians decide on a fiscal policy (increase government spending and/or decrease taxes).

The impact lag is the period of time from when politicians have taken action to when the impact of the action is actually felt in the economy. If politicians took action in January, the impact may not be felt until April or May.

The three lags combined means that it may take approximately 13 or 14 months from the beginning of the slowdown until fiscal policy takes effect. At that time, the economy may have already begun an expansion on its own, and the policy may be counter-effective. This is another reason why classical, neo-classical, and monetarist economists support limited government involvement in the economy.

Section 2: Discretionary Fiscal Policy and Automatic Stabilizers

Discretionary Fiscal Policy

Discretionary fiscal policy represents changes in government spending and taxation that need specific approval from Congress and the President. Examples include increases in spending on roads, bridges, stadiums, and other public works. Because discretionary fiscal policy is subject to the lags discussed in the last section, its effectiveness is often criticized. Automatic stabilizers, on the other hand, do not need government approval and take effect immediately.

Automatic Stabilizers

Automatic stabilizers are changes in government spending and taxation that do **not** need **approval** by Congress or the President. Automatic stabilizers are expense and taxation items that are part of existing economic programs.

Examples of automatic stabilizers include

1. Unemployment compensation.
When the economy turns down, the government's expense on unemployment compensation automatically increases as more people lose their jobs. According to Keynesians, this increase in government spending prevents the economy from a more severe slowdown compared to what would occur if no unemployment compensation existed.

2. Subsidies to farmers.
When the economy turns down and farmers struggle, the government's expenses on farmer subsidies automatically increase. According to Keynesians, this increase in government spending stimulates the economy.

3. A progressive tax system.
Most industrialized countries' tax systems are set up to tax higher-income individuals and corporations at higher rates. If the economy slows down, incomes decrease, and people pay less money in taxes. This decrease in tax (compared to a system without progressive taxes) puts more money in people's pockets and stimulates private spending.

Active Government Policy and Crowding Out

Keynes strongly supported automatic stabilizers. The advantage of automatic stabilizers is that they do not suffer from the three lags mentioned in the previous section. Some economists, however, still question the effectiveness of automatic stabilizers, or any active fiscal policy, for that matter. Anytime government spending increases, the funds have to come from somewhere. Government borrowing during recessionary gaps typically increases. Increased borrowing leads to something economists call **crowding out**. Crowding out is when government borrowing "crowds out" (replaces) funds that otherwise could be used by the private sector. The more the government borrows from the private sector, the fewer funds are available in the private sector for investments, research and development, etc.

Keynesians suggest that instead of borrowing the money, the government can increase its money supply and, thus, generate funds for the additional spending. However, classical economists believe that increasing the money supply equates to inflation. According to the classical school, either method (borrowing from the public, or increasing the money supply), will have long-run disadvantages. Classical economists believe that active fiscal and monetary policies do more harm to the economy in the long run compared to the benefits they produce in the short run.

Section 3: United States Federal Government Expenditures

Federal Government Expenditures

Federal government expenditures skyrocketed and tax revenues declined in 2020 due to the pandemic. The federal deficit (the difference between its spending and its revenue) now exceeds $3 trillion. This is the largest deficit as a percentage of GDP since World War I. During the 2020 pandemic federal spending on unemployment compensation, small business loans and grants, general purpose fiscal assistance, the Coronavirus Relief Fund, and the Public Health and Social Services Emergency Fund increased significantly. In addition, Medicare and Medicaid spending increased considerably due to expansions approved in 2019.
Federal government expenditures in selected years from 1940 through 2020 are included in the table below. The table shows that in nominal terms, the size of the federal government in 2020 is almost 700 times greater than in 1940. After adjusting for inflation, the size of the government is more than 37 times greater than in 1940. Since 1940, Social Security, Medicare, Medicaid, unemployment and welfare programs, defense, and interest on the debt have experienced the largest increases.

Federal Government Spending Category	1940	1950	1960	1970	1980	1990	2000	2007	2009	2011	2013	2015	2017
National Defense	1.6	13.7	48.13	81.69	134	299.3	294.4	551.0	661.0	705.6	660	590	599
Social Security	.03	.78	11.60	30.27	118.5	248.6	409.4	586.2	683.0	730.8	818	857	945
Income Security (Unemployment, Housing, food stamps, Federal Retirement, Welfare Spending, etc.)	1.5	4.1	7.38	15.65	86.5	147.0	253.7	366.0	533.2	597.4	564	509	503
Medicare	0	0	0	6.21	32.1	98.1	197.1	375.4	431.1	485.6	511	546	597
Health (Medicaid, Research, OSHA, etc.)	.06	.27	.80	5.91	23.2	57.7	154.5	266.4	334.3	372.5	372	482	533
Total Net Interest on the Debt	.9	4.8	6.95	14.38	52.5	184.2	222.9	237.1	186.9	230.0	223	223	263
Education and training	1.9	.24	.97	8.63	31.8	38.8	53.8	91.7	79.7	101.2	85	122	14

												4	
Veterans' benefits and services	.57	8.8	5.44	8.68	21.2	29.1	47.1	72.8	95.4	127.2	140	160	177
Transportation	.39	.97	4.13	7.01	21.3	29.5	46.9	72.9	84.3	93.0	94	90	94
Agriculture and farm subsidies	.37	2.05	2.62	5.17	8.84	12	36.5	17.7	22.2	20.6	27	19	19
Administration of justice	.08	.19	.37	.96	4.58	10	28.5	41.2	51.5	56.1	61	52	58
Natural Resources and Environment	1	1.3	1.56	3.07	13.9	17.1	25.0	31.8	35.6	45.5	38	36	38
General science, space, and technology	0	.06	.60	4.51	5.83	14.4	18.6	25.6	29.4	29.5	31	29	30
International affairs	.05	4.67	2.99	4.33	12.7	13.8	17.2	28.5	37.5	45.6	57	49	46
General government	.27	.99	1.18	2.32	13.03	10.7	13.0	17.5	22.0	25.5	30	21	24
Community and regional development	.29	.03	.22	2.39	11.3	8.5	10.6	29.6	27.7	23.8	38	21	25
Commerce and housing credit	.55	1.0	1.62	2.11	9.4	67	2.0	5.1	291.5	-12.6	18	-38	-26
Energy	.09	.33	.46	1.0	10.2	3.3	-.76	-.86	4.7	12.2	15	7	4
Total*	9.5	42.56	92.2	195.6	590.9	1253.1	1789.2	2728.9	3,517.7	3,603.1	3,685	3,688	3,982

* The total does not add to the sum of numbers in the categories listed, because there are several

other small categories of spending not included in this table. Visit https://www.whitehouse.gov/omb/historical-tables (table 3.2) for more details.

The Top Six Federal Government Expenditures

Because of the generous unemployment compensation payments in 2020 by our federal government, Income Security (unemployment and welfare spending including non-Social Security retirement and disability spending, unemployment compensation, housing assistance, food and nutrition assistance and other income security) more than doubled to $1,264 billion. It was the single largest federal government spending item in 2020.

During most recent years, Social Security and Defense have been the largest government expenditures for the United States federal government. They are second and third largest in 2020. Because of the heavy war involvement and concern for national security issues, defense spending is high. Social Security expenses have increased significantly and will further increase because the "Baby Boomers" reached full retirement age in 2011 and more will be retiring within the next several years. For information about the United States Social Security program, please click HERE.

Medicare, the federal government health assistance program for persons 65 and older, is the fourth-largest federal government expense at $776 billion in the 2020 budget. Further increases are on the horizon because of the increase in the elderly population.

Medicaid, federal government health assistance to the poor, and other health-related programs have more than doubled since the year 2000. It is the fifth-largest federal spending item at $748 billion.

Net interest on the debt, the amount of money that the government pays households and businesses for borrowing from them minus the amount of interest that the federal government receives, is the sixth-largest federal government expenditure. It fell in 2020 because of increases in interest received from trust funds and generally lower interest rates. Because of ever rising deficits, the net interest for the United States government is currently nearly $350 billion and expected to rise to $524 billion by 2026.

The Growth of the United States Government

Below is a table, which shows the changes in United States government expenditures (outlays) as a percentage of GDP during selected years. The last column shows the growth in the United States federal debt as a percentage of GDP.

The amount of federal government spending as a percentage of our total economy (GDP) has risen significantly since the 1930s. During the last several decades, the percentage has been in the low- to mid-20s.

The United States total federal debt as a percentage of nominal GDP has risen steadily and significantly during the past several decades. It is currently well above 100%. A rising national debt will pose increasing financial burdens on future generations.

Year	Federal Government Outlays as a Percent of nominal GDP	Gross Federal Debt as a Percentage of GDP
1935	9.2	N/A
1940	9.8	52.4
1950	15.6	94.1
1960	17.8	56.1
1970	19.3	37.6
1980	21.7	33.3
1990	21.8	55.9
2000	18.4	57.8
2007	19.6	64.2
2008	20.7	65.5
2009	25.0	91.7
2010	23.8	96.7
2011	23.5	99.1
2012	23.7	100.0
2013	21.9	102.0
2014	20.1	103.0
2015	20.5	104.1
2016	20.7	104.5
2017	20.7	105.0
2018	20.2	106.1
2019	21.1	108.0
2020	28.2	127.0

Sources: www.bea.gov (nominal GDP) and www.usdebtclock.org (national debt)

Section 4: United States Federal Government Revenues

Federal Government Taxes

Government expenditures are financed for the most part by government taxes. Below is a table that includes the most important United States federal government taxes and other receipts. The figures are in billions of United States dollars.

	Revenue Source	2000	2007	2008	2009	2011	2013	2014	2016	2018	2019	
	Individual income taxes	1,004.5	1,168.8	1,145.7	953.0	1,091.5	1,234	1,395	1,546	1,684	1,698	
	Social insurance and retirement receipts	652.9	873.4	900.2	899.2	818.8	951	1,023	1,115	1,171	1,242	
	Corporate income taxes	207.3	342.1	304.3	146.8	181.1	288	321	300	205	216	
	Excise and Transportation taxes	68.9	57.1	67.3	66.3	72.4	85	93	95	95	99	
	Other (estate and gift taxes, customs duties	92.0	98.8	106.7	91.4	139.7	154	189	212	176	182	

	and fees, Federal Reserve Deposits, etc.)											
	Total receipts	2,025.5	2,540.1	2,524.3	2,156.7	2,303.5	2,712	3,021	3,368	3,330	3,438	

Source: White House Office of Management and Budget, Visit http://www.whitehouse.gov/omb/Historical-tables (table 2.1) for more details.

Individual income taxes and Social Security taxes are responsible for the majority of the federal government's tax receipts. After the 2008 recession, revenues declined considerably, but mostly rose again several years later due to a growing economy and increases in the Social Security retirement age.

Federal tax revenue for 2020 was $3,421 billion. Spending for 2020 (see previous section) was $6,550 billion. This means that the United States federal government deficit (receipts minus expenditures) in 2020 was $3,129 billion. This amount is very large is expected to pose financial problems for future generations.

Social Security Taxes and the Future of Social Security

Social Security or FICA (Federal Insurance Contribution Act) taxes for an individual equal $7.65 of every $100 earned. The Social Security portion of this tax (6.2%) is subject to maximum earnings of $147,000 in 2022. The Medicare portion of the FICA tax is 1.45% and 2.35% for high income earners. There is no maximum earnings limit on Medicare. All income is subject to the Medicare tax. Employers are required to match these percentages, so that the federal government receives 15.3% of each paycheck (up to the maximum earnings amount for the Social Security component) and more from higher earning households.

The Social Security program has some accumulated savings (the Trust Fund), but most of the program is a pay-as-you-go program. This means that the majority of the tax collected this year pays for benefits of this year's retirees. Because of the large number of Baby Boomers, who are currently retired or soon will be retired, the fund is insufficient to meet the demands in the future. To fix this problem, either the FICA tax needs to be raised, benefits need to be lowered, or the retirement age needs to be raised (this is already happening).

Due to the inefficiencies of the program and the lack of discipline on the part of the federal government to invest the money wisely, the idea of phasing in a privatized system has gained support. Privatization will allow each worker to invest all or a portion of the tax in her/his own retirement account. The government

can still require this retirement contribution. However, each person will have full control over her/his allocation. Most likely, the rate of return on individuals' investments will be higher than the Social Security rate of return. In addition, when an individual passes, her/his family and friends will receive the amount left in the estate. This is especially helpful for lower income individuals whose life expectancy is lower. Lower income individuals also start working earlier than higher income, higher educated individuals, so that in the current Social Security program lower income individuals contribute more years, but receive benefits fewer years. This increases our income/wealth inequality.

A privatization program may need to be phased in slowly. Concerns about this plan include the volatility of the stock and bond markets, transition costs to switch from a public to a private system, and the fear that some people are not knowledgeable enough to invest their own funds. To mitigate this, our middle and high schools could offer more thorough curricula in financial planning.

For more information about Social Security taxes and benefits, visit http://www.ssa.gov.

The United States Tax System

The United States individual income tax system is a progressive tax system. This means that households with higher incomes pay a higher percentage in tax. Because of the tax reform passed in December of 2017, the tax brackets for individuals and married couples have changed (see tables below).

For persons filing "single", the marginal tax rates are as follows:

New Rate	Current Income Bracket	Old Rate	Old (2017) Income Bracket
10%	Up to $10,275	10%	Up to $9,525
12%	$10,275-$41,775	15%	$9,525-$38,700
22%	$41,775 -$89,075	25%	$38,700-$93,700
24%	$89,075– $170,050	28%	$93,700-$195,450
32%	$170,050-$215,950	33%	$195,450-$424,950
35%	$215,950 -$539,900	35%	$424,950-$426,700
37%	$539,900+	39.6%	$426,700+

In the new system, an individual who earns, for example, $100,000 is in the 24% marginal tax bracket. This means that for every additional dollar earned over $100,000 (and up to $170,050), this person pays $24 in federal income tax for every $100 dollars earned. Note that this person still only pays 10% over the first $10,275 earned; 12% of the amount in the next bracket, 22% of the amount in the next bracket, etc. Therefore the average tax paid for this person will be less than 24% (see video at the bottom of this page for a sample calculation).

For married couples filing jointly, the marginal tax rates are as follows:

New Rate	Current Income Bracket	Old Rate	Old (2017) Income Bracket
10%	Up to $20,550	10%	Up to $19,050
12%	$20,550-$83,550	15%	$19,050-$77,400

22%	$83,550-$178,150	25%	$77,400-$156,150
24%	$178,150-$340,100	28%	$156,150-$237,950
32%	$340,100-$431,900	33%	$237,950-$424,950
35%	$4431,900-$647,850	35%	$424,950-$480,050
37%	$647,850 +	39.6%	$480,050+

Source: Internal Revenue Service (www.irs.gov)

For most tax payers the marginal tax rate is lower in the new tax system. In addition, there is a higher standard deduction ($12,950 for single filers and $25,900 for joint filers in 2022). However, there are fewer deductions for persons who itemize. For example, the limit on deducting state and local taxes is $10,000 (these include state and local income, sales, real estate, or property taxes). Mortgage interest deductions are limited to the interest on the first $750,000 of mortgage debt. In addition, interest on home equity loans will not be deductible (even those taken out before December 31, 2017). The marginal tax rate on long-term capital gains (earnings from selling stocks, bonds and other financial assets) continues to range from 0% to 20% (0, 15, or 20%, depending on your income). High-income tax payers pay an additional 3.8% net investment tax. Short-term (one year or shorter) capital gains are taxed at regular individual income tax rates.

Two frequently discussed tax systems that have been offered as alternatives to the current individual income system are the **proportional** or **flat tax** system, and the **consumption tax** system.

The Flat Tax System

Under a flat tax system, everyone pays the same percentage tax. For example, if the tax rate is 20%, then a household earning $300,000 will pay 20% ($60,000) and a household earning $30,000 will also pay 20% ($6,000). Note that even though the rate is the same, the dollar amount of taxes paid by the higher-income household is higher. Most flat tax systems allow for tax exemptions of the lower-income households. For example, the plan could stipulate that anyone earning up to $25,000 does not pay any tax. This in effect will mean that a household paying $30,000 will pay 0% up to $25,000 and then 20% of the remaining $5,000. The total tax for this household then equals $1,000.

Flat tax systems are considered very simple, because they do not allow households to use deductions in order to lower their taxable income. In the current progressive income tax system, households are allowed

to deduct from their taxable income many expenses, including the interest on their mortgage, the interest on their home equity loans, certain medical expenses, certain professional expenses, charitable contributions, certain retirement contributions, and dependent care expenses.

A flat tax system will have a lower tax rate for most people, but will not allow deductions. For this reason, industries, such as the real estate industry and the private welfare industry, may not be happy with the flat tax system. Accountants, tax professionals and government tax auditors will also not be happy with a flat system, as the simplicity of the system makes many of their jobs unnecessary. Does this mean that unemployment will rise, as most of the accounting and tax preparation jobs will be eliminated? The answer is no. Just like throwing bricks through a window doesn't increase overall employment, complicating the tax system doesn't increase overall employment, either. Yes, a complicated tax system increases employment of accountants, tax professionals, and government tax auditors, as glaziers also will gain employment in an economy with many broken windows. However, the additional savings that households experience from not having to hire accountants, tax professionals, and not having to pay taxes to the government for the tax professionals will allow these households to increase their spending on other things. This is similar to the baker being able to buy a suit if his window is not broken (see Unit 1). Households may now be able to afford a hot tub in their backyard. This certainly sounds more fun than spending this amount of money to have your taxes prepared.

Another characteristic of the flat tax system is that the flat tax rate is lower than the highest marginal tax rate in the progressive system. This means that as your income increases, you will have more incentive to work harder and earn more income. This stimulates economic activity and creates jobs.

For a video explanation of the flat tax system, please watch:

YouTube Video

The Consumption Tax System

Under a consumption tax system, everyone will pay taxes on the goods and services they buy, instead of paying individual income taxes.

For example, when someone buys a $30,000 car, and the consumption tax is 20%, this person will pay $6,000 in taxes. This makes the price of the car effectively $36,000.

This may seem like a big price hike. However, households do not pay any income taxes anymore, so households' purchasing power stays approximately the same. In

other words, the real price of goods and services will remain the same, as households' after-tax incomes have increased proportionately.

Another advantage of the consumption tax is that it is more difficult to avoid taxes. Everyone that buys non-essential and legitimate (legal) products will pay taxes. This includes people who earn their money in the **underground** economy (drug dealers, prostitutes, and other workers not reporting their incomes). Most consumption tax plans allow for exemptions on certain products, such as essential foods, housing, and medical care. This means that lower-income households that spend the majority of their income on these items will, in effect, pay little or no tax. The advantage of a consumption tax system replacing an income tax system is that no one will have to complete an individual income tax return, because there is no individual income tax anymore. Taxes will be collected by businesses who submit the consumption tax to the federal government, just like they are submitting excise taxes to the federal and state governments and sales taxes to most state governments.

For a video explanation of the consumption tax system, please watch:

YouTube Video

The Burden of Tax

The table below shows the percentage of total federal tax dollars and total individual income tax dollars paid by the various income groups, categorized by the amount of their earnings. For example, the top 10% includes those households earning more than $138,031, and the bottom 50% are the households earning less than $39,275 per year. The top 10% of all income earners paid more than 70% of all federal individual income taxes. The bottom 50% paid less than 3%.

Income Group	Households Approximate Annually Earning:		Approximate Percentage Share of All Gross Income Earned	Approximate Percentage of Federal Individual Income Tax Paid
Top 1%	>$546,000	21	40	
Top 5%	>$284,000	36	60	
Top 10%	>$129,000	48	71	
Top 25%	>$100,000	69	87	
Top 50%	>$46,000	88	97	
Bottom 50%	<$46,000	12	3	

Source: National Taxpayers Union (http://www.ntu.org/foundation/page/who-pays-income-taxes), (latest available data)

Video Explanation
For a video explanation of a calculation of total tax amount paid and the average tax rate, please visit:

YouTube Video

Individual Income Tax System Top Rates

Individual income tax rates in the United States have fluctuated significantly over the years. Tax rates in other industrialized countries have undergone similar changes. Below is a brief historical account of the main changes in the United States.

In 1913, the beginning of the current income tax system in the United States, the individual tax rate was 1% on taxable income of $4,000 for married couples. The rate was 7% on incomes above $500,000.
During the first World War, the highest marginal rate was 77%. It came down to 25% following the war.
Income tax rates rose during the Great Depression. The top rate increased to 75% in 1939, and reached 91% during World War II.
In 1964, the top rate decreased to 70%.
In 1981, the top rate decreased to 50%.
In 1986, the top rate decreased to 28%. The bottom rate increased from 11% to 15%, and the system was simplified to two brackets (15 and 28%).
During the 1990s, the top rate rose to 39.6%.
In 2001, the top rate decreased to 35% and the bottom rate decreased to 10%.
In 2013, the top rate increased to 39.6%.
In December, 2017, the top rate was lowered to 37%.

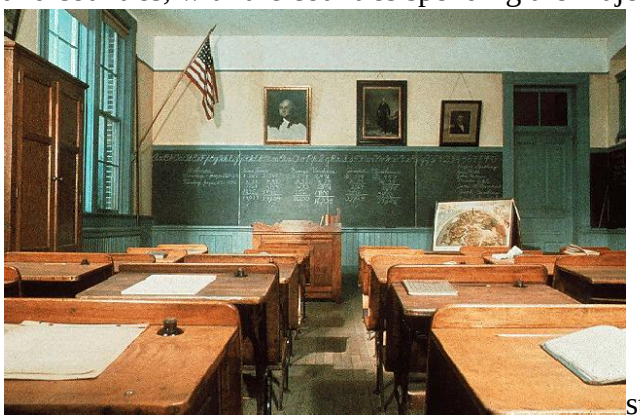
The Effect of a Tax Cut on the Rich and the Poor

Tax cuts are often controversial because of the effects they have on the different income groups in our society. The following story is an analogy about our tax system.

Section 5: State and Local Government Spending and Revenues

State Government Spending

Total expenditures for all 50 states in the United States was estimated to be $2.7 trillion in 2020. General expenditures by function rounded in billions of dollars are listed in the table below.

Welfare and education are the largest expenditures by state governments. The expense on education is shared by states and counties, with the counties spending the majority of their funds on county public schools, and the  states sharing the burden of financing post-secondary state education. The programs that experienced large increases in their budgets in recent years include education, welfare, hospitals, highways, government administration, and insurance trusts.

Public welfare expenditures include unemployment compensation payments, food stamps, school lunch subsidies, and other income maintenance programs.

Spending Item	2004 Spending in billions (rounded to the nearest bil	2007 Spending in billions (rounded to the nearest b	2011 Spending in billions (rounded to the nearest billion	2015 Spending in billions		2020 Spending in billions (rounded to the nearest billion)

	lion)	illion)	)	(rounded to the nearest billion)		
Education	429	515	592	638		756
Welfare Programs	339	393	497	609		793
Hospitals	40	48	66	76		104
Health	50	58	60	63		77
Hig	86	10	10	1		148

hways		3	9	21		
Police Protection	11	13	14	16		19
Correction Facilities	39	47	47	52		57
Natural Resources	19	22	22	22		30
Parks and Recreation	6	6	6	6		7
Government Administration	45	51	53	56		70
Interest on debt	33	41	47	45		44
Utilities	22	24	24	29		42
Liq	4	5	5	6		8

uor Stores Expenses						
Insurance Trusts	171	182	321	317		394
Other	112	127	140	136		143
Total*	1,406	1,635	2,003	2,192		2,695

Total amounts may differ from the sum of the individual items due to rounding

Source: U.S. Census Bureau, summary table https://www.census.gov/data/tables/2020/econ/state/historical-tables.html

State Government Revenues

Total revenue for all 50 states in the United States was $2.8 trillion in 2020. Tax revenue for many of our states increased during most years through 2020. Revenues by type of tax or source rounded in billions of dollars are listed in the table below.

Federal grants are the largest source of income for all states, followed by insurance trust revenue. Of the tax sources, general and selective sales taxes and individual income taxes provide the most money for most of the states. All states collect sales taxes, except Alaska, Delaware, Montana, New Hampshire and Oregon. California has the highest statewide sales tax ranging from 7.25 - 10.25% (it varies by city and county). In parts of the state of New York the combined state and county sales tax is 9%.

Current charges are fees collected for specific services provided by state governments. Examples include highway toll assessments, school receipts (lunches, athletic contests, tuition, etc.) and hospital fees.

General sales taxes are consumption taxes on general items such as food, clothing, electronics, furniture, etc. Selective sales taxes are consumption taxes similar to federal excise taxes. They are levied on products such as gasoline, tobacco, alcoholic beverages, and insurance premiums.

Revenue Item	2004 Revenue in billions (rounded to the nearest billion)	2007 Revenue in billions (rounded to the nearest billion)	2011 Revenue in billions (rounded to the nearest billion)	2015 Revenue in billions (rounded to the nearest billion)	2018 Revenue in billions (rounded to the nearest billion)	2020 Revenue in billions (rounded to the nearest billion)
Federal Government Grants to the States	394	430	594	605	687	846
General Sales	198	236	234	286	32	34

Tax					0	1
Selective Sales Tax	95	109	132	145	165	171
License Tax	40	47	52	52	57	59
Individual Income Tax	196	266	259	336	390	386
Corporate Income Tax	30	53	40	49	48	52
Utilities	13	17	15	15	14	13
Liquor Stores	5	6	7	8	9	10
Insurance Trusts	375	520	592	327	584	472
Other Taxes	31	38	40	44	48	49
Current Charges	115	141	181	201	235	245
Miscellaneous General Revenue	94	130	120	137	152	159
Total*	1,587	1,993	2,266	2,204	2,708	2,803

*The numbers may not add up to the total due to rounding.

Source: US Census Bureau, summary table https://www.census.gov/data/tables/2018/econ/state/historical-tables.html

Local Government Spending

Below is a table with a summary of total estimated 2021 local government (counties and cities) spending in the United States. The single largest spending component by counties is education (public schools and community colleges). The United States Census Bureau reports that average education spending per pupil in the United States was approximately $13,000. New York tops the list with approximately $25k spent per pupil. Other high spenders were the District of Columbia ($23k), Connecticut ($21k), and New Jersey ($20.5k). States with the lowest per student expenditures were Idaho with $8k and Utah with $7k. Of the 100 largest school systems in the United States, Maryland had 4 in the top 10 with regards to per pupil spending.

Source: https://www.usgovernmentspending.com/local_spending_2021USrn

Function	Total local U.S. government 2021 spending estimates in trillions of dollars
Pensions	0.1
Health Care	0.2

Education	0.8
Welfare	0.1
Protection	0.2
Other	0.8
Total	2.1

Local Government Revenues

Counties receive revenue from a variety of sources. States provide general funding to counties. In addition, counties collect taxes, including (in most counties, not all) property taxes, sales taxes, individual income taxes, motor vehicle taxes, real estate transfer taxes, cable television franchise taxes, and hotel/motel taxes. State law dictates the tax that counties are allowed to levy. The property tax is the single most important source of revenue for counties. Nearly half of the states allow their counties to collect sales taxes, which is the second most important source of revenue for many counties. Individual income taxes (usually between 1% and 4%) are collected by cities, villages, and municipalities in only 16 states. Only in Indiana and Maryland do counties collect individual income taxes.

Taxes	Total local U.S. government 2021 tax revenue estimates in trillions of dollars
Income	0.1
Social Insurance	0.1
Property (Ad Valorem)	0.8
Fees and Charges	0.3
Business and Other Revenue	0.3
Total	1.6

Source: https://www.usgovernmentspending.com/local_spending_2021USrn

Section 6: Public Choice Theory

Public Choice

In this unit, we have learned about fiscal policy and the expenditures and revenues of the various forms of government in the United States. The economic theory that studies the effectiveness of government (public) spending and taxation and the behavior of politicians and legislators is called public choice.

Public choice became popular after James Buchanan (pictured)  and Gordon Tullock from George Mason University published their *The Calculus of Consent* in 1962 and it received widespread public attention after James Buchanan won a Nobel Prize in 1986 for his public choice research.

Government Failures

Due to the influence of John Maynard Keynes, the focus had been on "market failures" and what the government could do to fix these. Public choice theorists pointed out that there are also "government failures." Politicians are no different from private sector participants in that they are motivated by their self-interest. Politicians' self-interest includes wanting to get re-elected during the upcoming elections and a need for power and recognition. When voters are satisfied, politicians generally will get re-elected. Voters are satisfied when their favorite programs are funded and when tax rates are relatively low. But many voters are not aware of specific funding and programs and laws, especially if they don't affect them. Some voters simply don't care about many laws and whom they vote for, because they believe that their one vote will not decide the election outcome.

Special Interest Groups

Special interest groups are groups that have a lot to gain or to lose if a certain law gets passed or doesn't get passed. For example, auto workers, trade unions, students, teachers, and senior citizens are special interest groups. These groups have an incentive to know and to vote for a certain law or government program, because it directly affects their incomes and their lives. For this reason, politicians cater to special interest groups, even if the action hurts the economy in general. For example, let's assume that a law (for example, the raising of tariffs and quotas) benefits 50,000 special interest group members (for example, workers in the auto industry). Let's say that if this law is passed, each member gains $2,000. Then the total benefit to society is $100 million. Let's also say that this law hurts consumers and exporters of U.S. products (because of protectionist retaliation by other countries), and the cost is $100 per person. Multiplied by 2 million affected citizens, the total cost to society is $200 million. Therefore, the total cost of $200 million outweighs the total benefit of $100 million. From a macroeconomic point of view, the

law should **not** get passed. However, politicians will likely support the law, because the general population is probably not aware of the law, whereas the special interest group is, and its members promise the politicians votes and financial incentives if the law gets passed.

The flat tax system, as discussed in one of the previous sections in this unit, is probably beneficial to the economy because of its simplicity and the cost savings to the public due the decreased need for accountants and government tax workers. However, the flat tax system will not likely ever be passed, because the current progressive and complicated system is full of exceptions, exemptions, and deductions favoring special interest groups. As mentioned, politicians benefit from catering to these special interest groups, and eliminating this characteristic from the tax system is not in the politician's best interest.

Politicians Favor the Short Run

A politician's term is usually four years, and elections for various positions are held every two years. This is a relatively short period of time. Subsequently, politicians, in their focus to get re-elected, will do what is best for the economy in the short run and not necessarily for the long run. A politician, who has a choice of building a road that lasts 25 years, but costs a lot (raise taxes now), or building a road that lasts 8 years (no need to raise taxes), will likely choose the latter. However, society will pay more, in the long run. Most politicians have little incentive to cut long-run costs because it is not their own money they are spending. They are spending other people's money.

Politicians Form Alliances

Politicians often work together with other politicians to pass projects that may not benefit the economy as a whole. A politician from Florida may support a costly catastrophe insurance bill and will ask politicians from the Midwest to support her/his measure, with the understanding that (s)he will support their bills to subsidize farmers from the Midwest. This "log rolling" or "vote trading" is common and leads to so called pork-barrel spending. This contributes to harmful and inflationary government spending and taxation.

The Capture Theory

The "capture theory" states that regulators are "captured" by certain laws and by the people affected by the laws. In order to become a regulator, the regulator has to be knowledgeable about the industry that (s)he regulates. The regulator, therefore, has most likely worked in the industry and still has a network of friends and acquaintances in the industry. Furthermore, the regulatory agency is often funded by sources from the industry or by Congress, which is influenced by these industries. Such interrelationships and conflicts of interest often lead to regulations and laws that are not in the best interest of the country.

The Nature of Non-Profit Offices and End-of-Year Spending

Government (and other non-profit) offices submit a budget each fiscal year. The amount of money allocated in each office's budget is often determined by the amount of funds spent in the previous year. Subsequently, if toward the end of a fiscal year not all the funds are expended, the members of the division will spend the funds, regardless of whether the money is spent wisely or not. This causes a tremendous waste in resources and a level of taxation that is much higher than necessary.

Video Explanation

For a video explanation of a sample multiple-choice question about Public Choice, please visit:

YouTube Video

Attempts to Correct Government Failures

Some economists have attempted to correct these "government failures." These attempts have focused on incorporating more competition between government divisions. For example, transferring some government services to local governments may help, because voters are more aware of what their county governments do and what taxes they levy. This allows voters to vote with "their feet." If they are not happy with the government services and taxes in their county, they will move to the next county if that county is more efficient and more effective. Rodney Fort and John Baden have suggested the creation of a "predatory bureau," which is rewarded by reducing the budgets of other agencies. Other economists have encouraged charging individual citizens for otherwise free government services. If people are charged for their services, they will be more motivated to critically evaluate the effectiveness and efficiency of the service.

Some economists have suggested to limit politicians to one term. This way they will be less likely to make decisions that favor the short run at the expense of long run economic health. In the current system elections are usually just around the corner and sitting politicians want the economy to look good so that they can increase their chances of getting re-elected. When politicians have a one term limit, they know that they will return to the "real world" after their term. This encourages them to make decisions that are better for the long run and best for the country as opposed to what is good for themselves (i.e. to get re-elected).

Introduction

What's in This Chapter?

Inflation is an important factor influencing a nation's economic health. Low or no inflation means more price stability and more affordable products, which is especially important for lower income households. It also means more certainty for people that their savings and investments retain their value, and more certainty for businesses that their investments will yield a positive return in the future. This increases incentives to invest and produce.

Low inflation increases consumer and business confidence in the future value of the currency. People, therefore, have more incentive to save. Greater savings leads to more available funds in the financial markets. This leads to lower interest rates, which encourages increased businesses expansions, investments, and innovations.

Low inflation relative to other countries' inflation rates, *ceteris paribus*, means lower prices in comparison to foreign goods. This makes our products more competitive and increases our exports.

So what is the secret to avoiding inflation? The answer: Keep the nation's money supply constant. Many people believe that in order to achieve economic growth, the money supply needs to increase. This is a misconception. With low or no inflation, reasonably low taxation, reasonable regulations, and a government that provides the essential services listed in the previous units, a constant money supply environment will lead to rising production. If the money supply remains constant and production increases, the nation's average price level falls. Contrary to popular belief, falling prices - especially if they are due to increasing aggregate supply - is a healthy economic condition. Even falling housing prices are beneficial as long as they are gradual and consistent and caused by advancements in technology and cost improvements. Some economist fear that banks will suffer when housing prices fall. However, as explained in more detail in this unit, banks faced with consistently falling housing prices will be profitable and healthy as long as they have responsible lending practices (require a down payment and structure their loans so that the loan amount decreases each year).

Falling prices is especially helpful for lower income households. When prices fall by, let's say, 2% each year, it may not be a big deal to a rich person, but it makes a big difference for people with fewer means. It also means that the average real value of all wages, including the minimum wage, increases by 2%.

When a nation's money supply remains constant relative to population growth, total **nominal** income will remain constant. However, increased production means lower prices, so **real** incomes, **real** wealth, and **real** profits increase. This unit elaborates on these ideas and shows that we can have an expanding economy with falling prices and continuing prosperity without artificial monetary stimulation.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Section 1: Inflation Rates Measures

Ways to Measure Inflation

Common indices to measure inflation include the Consumer Price Index (CPI), the Producer Price Index (PPI), and the GDP Price Deflator.

The Consumer Price Index (CPI)

The most common measure of inflation is the CPI, or Consumer Price Index. This figure is a weighted average of price increases of a typical basket of **consumer** products. The term "weighted" means that price increases of products that are bought in large quantities increase the CPI more than products that are not consumed as commonly. If the price of a commonly purchased product, such as a movie theater ticket, increases, it will have a greater impact on the CPI than if the price of an infrequently purchased product, such as a bag of salt, increases.

The CPI also takes into account the price of the product. For example, a 10% increase in the price of a car affects buyers more than a 10% increase in the price of a pack of bubblegum.

Government accountants at the Bureau of Labor Statistics include the following categories in the representative "market basket" of consumer products for CPI calculation purposes: housing (41%), transportation (17%), food and beverages (16%), medical care (6%), recreation (6%), apparel (4%), and other (4%).

Please click HERE (then click on CPI tables) for a link to a web page from the Bureau of Labor Statistics. This link contains information on CPI changes from 1913 until the present. Let's say that, for example, we want to calculate inflation between January of 1985 and January of 1986. We notice from the table that the CPI index number for January of 1985 is 105.5. The CPI for January of 1986 is 109.6. To calculate the consumer price inflation rate between these two dates, we take

The difference in the index values/ the index value of the first year
In the above example:
(109.6 minus 105.5) / 105.5 =
4.1 / 105.5 =
.0388 or 3.89%.

Another way to find inflation rates between various years is to Internet search for "inflation calculator" and insert the appropriate years in the boxes. For example, you can find an excellent one at http://data.bls.gov/cgi-bin/cpicalc.pl. Using this site, we notice that $100 in January of 1975 has the same purchasing power as about $517 in 2021. In other words, prices on average are more than 5 times higher since 1975 in the United States.

The Producer Price Index

The Producer Price Index (PPI) is also a weighted index. It measures price changes of intermediate and

final products that **businesses** buy.

Please click HERE (then click on PPI tables) for a link to a Bureau of Labor Statistics web page with information and data on the PPI. The BLS site also contains information about what is included in the PPI, how it is calculated, and time series data. Click HERE for the latest PPI changes.

The GDP Price Deflator

The GDP deflator measures price changes of **all** final goods and services. It is defined as nominal GDP divided by real GDP. For example, if nominal GDP is $10,000, and real GDP is $9,500, then the GDP price deflator is $10,000 divided by $9,500, or 1.05.

GDP deflator = nominal GDP / real GDP
In the above example:
GDP deflator = $10,000 / $9,500 =
1.05

A GDP deflator of 1.05 means that prices of all final goods and services during this year increased by .05 (1.05 minus 1). Expressed as a percentage increase, we multiply the decimal by 100 and obtain a GDP deflator value of 5% (100 times .05).

Problems with Inflation Measures

Calculating the numbers for the various inflation measures is not an exact science. The CPI and the PPI are based on a fixed basket of goods and services. But how do you compare a price increase of a product that did not exist several years ago? Driverless cars and drones are relatively recent innovations. Furthermore, how do you evaluate a product's price increase if the quality of the product has changed? Today's smart phones are different and can do much more than phones from a decade ago.

As prices change, buyers' quantities purchased change. When gasoline prices increase, buyers may change to more fuel efficient cars (smaller cars, or hybrids, or electric cars) or public transportation. The index in the latter year will be overstated if the quantities purchased (in the basket to compute the index) from a previous year are used.

In August, 2002, the United States government started using the Chained Consumer Price Index. This index corrects for these consumer adjustments. You can find a link at https://www.bls.gov/cpi/additional-resources/chained-cpi.htm.

Section 2: The Cause of Inflation

Money Demand and Supply

In the long run, the value of money, like the price of any good, is determined by the demand and supply of money in circulation. The following example illustrates this concept.

Problem: Let's say that the nation's money supply is $1,000 and that during a short, fixed period of time, buyers spend all of this $1,000. Let's assume that production during this period is 10 units. What will be the average price per unit if all 10 units are purchased during this period?

Solution: The average, equilibrium price will be $100 per unit. If the price is $100 and all 10 units are purchased, then total spending will equal the amount of money in circulation (for simplicity, we will assume that savings are zero). At a higher price, surpluses occur, because buyers don't have enough money to buy all 10 units. At a lower price, shortages of the product occur. Surpluses and shortages in the long run are not stable. They are corrected through price changes (see also Unit 2). A surplus will make the price come down. A shortage will drive the price up. At equilibrium, the price is stable, unless demand or supply change.

Problem: If the government increases the quantity of money in circulation (the money supply) by $200, then the total amount of available spending during this period of time will increase to $1,200. What will be the average price per unit?

Solution: Assuming no increase in production, the price level will rise to $120 per unit. This equates to an inflation rate of 20%. Assuming a production increase to 11 units, the average price per unit will be 1,200/11 = $109. This equates to an inflation rate of 9% relative to the initial level of $100 (or 8.6%, using the arc formula). As long as the money supply increases by a larger percentage than production, the price level will rise.

Video Explanation
For a video explanation of how increases in the money supply and inflation are related, please visit:

YouTube Video

Does an Increase in the Money Supply Stimulate Production?

Many economists and politicians believe that a greater quantity of money in circulation is necessary to stimulate production or to keep up with economic growth. The following example illustrates that this is not the case and that production can increase without an increase in the money supply.

What Stimulates Production Increases?

A business that advances its technology and improves its production processes lowers its cost of production and increases its profits.

An increase in production without an increase in the money supply will lower prices.

 If in year one, the money supply is $1,000 and production is 100, then average prices equal $100. If in year 2, the money supply remains constant at $1,000 and production increases to 11 products, then the average price per unit is $90.90. Critics argue that in the case of a constant money supply, the total revenue of the producers remains the same ($100 times 10 products is the same as $90.90 times 11 products).

So do the producers really benefit from the technology and production improvement?

When looking at nominal terms, total revenue remains constant, so the answer is no. However, when looking at real terms, the answer is yes. The lower average price level increases the purchasing power of the total revenue. Revenue of $1,000 can buy more if average prices are $90.90 than if average prices are $100. Rising purchasing power (real incomes) is the key to a rising standard of living, not rising nominal incomes caused by inflation.

Short Run versus Long Run

Let's assume that the government increases the money supply by printing additional money. This additional money allows the federal government to increase its spending, for example on roads and highways. This benefits all road and highway construction workers. Their incomes will increase. Also, interest rates may decrease in the short run, as there is more money circulating in our banking system. These two effects stimulate the economy in the short run. However, what happens in the long run, and how are other groups in society affected? The increase in the money supply will decrease the value of money and lower the purchasing power of all other economic groups. Higher prices on goods and services will make people demand fewer goods and services, and will offset any earlier benefits from the road and highway workers' increased purchasing power. Inflation also causes uncertainty, mal-investments (investments in non-productive assets, such as gold, silver, antiques, etc.), and higher long-run interest rates, which discourages production and harms the economy in the long run.

Monetary Policy in the United States

The Federal Reserve has injected large amounts of money into our banking system and into our economy. This may temporarily stimulate the economy. However, when the economy expands again and lending picks up, the money supply will be considerably larger. The concern is that this will create high rates of inflation. Wealthy households may be able to afford rising consumer prices, but rising prices is especially harmful to lower income households who can ill afford even a 2 or 3% increase.

Inflation is not always fully reflected in the CPI or PPI, because inflation includes price increases of assets such as stocks, bonds, cryptocurrencies, land, houses, and other real estate. Considerable increases in the money supply will lead to increases in the prices of these assets. Owners of these assets like that the value of their assets increases and this can provide temporary boosts in economic spending and production. But buyers of these assets don't like the high prices and fast rising asset prices also often lead to bubbles that burst (a sudden drop in the price). This causes serious long term economic problems. as evidenced by the housing bubble that burst in 2008.

Hyperinflation

If the nation's money supply is not stable (too much money in circulation), and the value of money decreases (inflation), then people will be more likely to spend it more quickly. If, for example, prices double every week, people will spend their paychecks immediately. If they hold on to their money until the end of the week, prices will be twice as high. This quicker turnover of the money supply equates to an increase in velocity (see a more detailed explanation of this concept in Unit 9) and makes it feel like there is even more money in circulation than there already is. The combination of too much money in circulation and increased velocity often leads to what is called **hyperinflation** (an extremely high rate of inflation) .

Fortunately, the United States has not experienced hyperinflation. The best known example of hyperinflation is 1923 Germany, when prices doubled every two days and a loaf of bread cost millions of Deutsche Marks. People literally used wheelbarrows to carry money on their way to the bakery. Other examples of countries that experienced hyperinflation include Yugoslavia (1993), Hungary (1945), Chile (1972 - 1974), and Argentina (1989). Recently, Venezuela suffered from hyperinflation with annual inflation rates in excess of a million percent.

Recent Inflation

Recently, prices of goods and services have increased significantly in most countries. In the United States inflation, as measured by the CPI, was 6.2% in 2021. Despite statements by some politicians that this is likely to be temporary, it appears that inflation is here to stay for a while and likely to get worse. Short term pandemic stimulation of the economy by most governments around the world means that we will suffer in the long run. The United States money supply, as measured by M1, increased from $4 trillion in February of 2020 to more than $16 trillion just 3 months later! Even after the economy recovered strongly in the third quarter of 2020, The Federal Reserve and central banks around the world continued to increase the money supply.

Supply Chain Problems?

Some people blame supply chain problems and worker shortages for the rise in prices. However, whereas

a few industries struggled with production issues, overall real GDP increased in 2021, so mathematically it is impossible for overall prices to increase because of supply issues.

The excessive increase in the money supply by central banks around the world is yet another example of government action that benefits the economy in the short run, but is very harmful in the long run. The harm especially hits the poor very hard because higher prices is a serious disadvantage for people with low incomes. A 6% increase in prices may not be a big deal for wealthy households, but it is a big deal for low income households living from paycheck to paycheck.

Income Inequality Gap Widens

Inflation also equates to asset (stocks, real estate, etc.) price increases. Owners of these assets are for the most part wealthy households and they benefit by accumulating assets that increase in (nominal) value (caused by increases in the money supply). This means that our government is actively contributing to a much wider gap in income inequality than what a regular free market would create.

Section 3: Harmful Effects of Inflation

Long Run Consequences of Inflation

In addition to higher consumer prices which especially harms lower income households, inflation has the following harmful macroeconomic consequences:

1. Higher interest rates.

Inflation leads to higher interest rates in the long run. Initially when the government increases the money supply, the increased availability of money lowers interest rates. However, the higher equilibrium prices and lower value of the money due to the increased money supply leads banks and other financial institutions to raise rates in order to compensate for the loss of the purchasing power of their funds. Higher long-term rates discourage business borrowing, which leads to less investment in capital goods and technology.

2. Lower exports.

Higher prices of goods mean that other countries will find it less attractive to purchase our goods. This will lead to a decline in exports and lower production and higher unemployment in our country.

3. Lower savings.

Inflation encourages consumption instead of saving. Higher prices induce people to purchase more products now, before they become more expensive. They discourage people from saving, because money saved for future use will have less value. Savings are needed to increase funds in the financial markets. This allows businesses to borrow money for investments in capital goods and technology. Increases in technology and capital goods create long-run economic growth. Inflation leads to increased consumption, which discourages savings and slows down economic growth.

4. Mal-investments.

Inflation leads to mal-investments. When prices rise, the value of certain investments increases faster than others. For example, prices of existing houses, land, gold, silver, other precious metals, and antiques increase with higher rates of inflation. More money is invested in these assets than other, more-productive

assets during increasing inflation.  However, these assets are **existing** assets, and investing in these assets does not increase our nation's wealth and does not increase employment. Instead of funds flowing into ventures that produce additional wealth, it is invested in assets that do not add to the country's productive capacity. Investing in productive and new business ventures is risky, because of fluctuating inflation. An investor who plans to invest $2 million in a new business expects a certain rate of return. If inflation is, for example, 12%, then the rate of return must be at least this, lest the investor lose real income. If the investor is concerned that (s)he cannot return at least 12% on the investment, (s)he will not start the new business.

In addition, while existing property owners may enjoy the increase in the value of their assets, current buyers of property suffer. Current buyers pay for inflated land, houses, and other commodities. Some workers who could afford to purchase a house ten or fifteen years ago can no longer do so.

5. Inefficient government spending.

When the government finances its expenditures through the use of newly printed money, it acquires these funds by simply collecting the profits the Federal Reserve System makes from the additionally printed money. Experience shows that funds acquired for free are not as carefully and efficiently spent as funds acquired through greater sacrifice. When the government acquires funds by raising taxes, there is a certain degree of accountability. When the government acquires funds through newly printed money, there is no accountability, until citizens become aware of the real cause of inflation.

6. Tax increases.

Higher prices lead to increases in taxes. Nominal (not real) incomes rise along with inflation and push income earners into higher percentage tax brackets. Even though purchasing power does not increase, a person pays a bigger chunk of her/his income to the government. Property taxes on houses, land, and other real estate, increase, as well. If the government adjusts the brackets along with the rate of inflation, then tax rates will stay the same; however, many times the government does not adjust the brackets, or does not adjust them fully. This will then lead to higher tax rates.

Why Do Governments Create Inflation?

With all the disadvantages of inflation, why do governments (more specifically, central banks, or in the United States, the Federal Reserve), continue to print money and cause inflation? There are several explanations for this. Printing money gives governments free access to funds. The Federal Reserve prints billions of dollars each year and passes this on to the general government which uses the money for its various spending items. In addition, printing money can stimulate the economy in the short run because an increase in the money supply lowers interest rates in the short run. In our age of instant gratification many people (especially politicians, as elections occur frequently) value short run benefits over long term ones.

Another advantage (for the government) of inflation is that inflation raises nominal wages and pushes people into higher tax brackets if brackets are not fully indexed (see harmful effect 6 above). Higher taxes means more tax revenue for the government (and people won't blame politicians for the higher taxes if they don't understand the cause of inflation).

Finally, inflation is beneficial if you have borrowed money because borrowers get to pay back their loans in deflated dollars. The biggest borrowers in most economies are governments, so governments have a vested interest in continuing to cause inflation. The opposite is true for people that save (mostly private citizens that save and people that try to build up a pension). Inflation causes a decrease in the value of savings in the future and therefore harms many private citizens. Financial markets are also harmed (see harmful effect 3 above) as a decrease in savings causes fewer funds to be available in the financial markets (i.e. less money for research and development, business expansions, etc.).

Section 4: Are Falling Prices Harmful?

Effects of a Constant Money Supply

If no additional money is printed, the nominal value of spending in our economy remains constant (assuming no leakage of money to other countries and assuming a constant velocity (see Unit 9) of money). The only long-run variable that then affects the price level is the total (aggregate) real supply of products. Thus, if supply increases, prices decrease.

In the short run, it is possible that cost factors, such as the price of imported oil, or other raw materials, cause prices to increase. However, experience teaches us that these factors fluctuate in the short run only. It is unlikely that the prices of these resources experience sustained increases, especially if the countries in which these resources are produced keep their money supply constant. In fact, it is mathematically impossible for the overall price level in the world to increase if all countries keep their money supply constant. If the demand for one product increases, the price of this product can increase over time. However, given a constant money supply, this means that the demand for other products will have to decrease. Thus, the overall price level must remain constant. Only a decrease in aggregate supply can increase the overall price level in a constant money supply economy. A decrease in real aggregate supply is highly unlikely in free market economies that have experienced average real GDP growth rates of at least 2 - 3% for many decades now.

Given our significant increases in productivity and aggregate supply, if the money supply had remained constant during the past decades, prices would have fallen. Instead, due to increases in the money supply, most industrialized countries have experienced increasing prices.

Concerns about Falling Prices

There is concern about falling prices, because of the association of falling prices with economic depressions. Indeed, falling prices due to a stagnating economy are a bad symptom. However, falling prices are a sign of a strong economy if they fall due to **production increases.** Even if prices fall when **demand decreases** it is a necessary thing, because falling prices in a contracting economy will serve as corrections to an eventually improving economy.

Advances in technology and lower costs of production enable businesses to lower prices. This allows everyone to benefit, because real incomes and purchasing power increase. Lower prices do not mean lower profits for businesses. The overall decrease in the price level occurs because businesses innovate, experience advanced technologies, and face lower costs of production.

Some economists are concerned that falling prices and expectations of falling prices in the future slow down current spending. They point at the housing market and notice that in 2008 and 2009 many people postponed their purchase of a house in the anticipation that the price would decrease in the future. This can indeed be a concern, especially if the drop in prices is temporary. However, if prices decrease steadily (as they will do in a constant money supply system), this phenomenon will disappear as people realize that they do not want to wait forever to buy something that they want and need. Computers and other high-tech products, such as smart phones, tablets, and large screen televisions, have fallen in price for a

prolonged period of time now. These industries have not suffered in sales.

Video Explanation
For a video explanation of the effects of falling prices on the economy, please visit:

YouTube Video

Falling Prices and Increases in the Standard of Living

Andrew Bernstein in *The Capitalist Manifesto* (Bernstein A., 2005, p.105) describes (with credit to T.S. Ashton, Henry and Rodney Dale, and Paul Johnson) how in the late eighteenth century and beyond many prices declined as a result of innovations and technology advances.

"The results of such innovations were stupendous. In 1765, half a million pounds of cotton had been spun, all by machine. In 1785, the powerful Watt and Boulton steam engines were first applied to spinning by rollers, and in the 1790s steam power was used to drive the mules. Production increased to the point that by 1812 the supply of cotton yarn was so enormous that its price had dropped to a mere 10 percent of what it had been previously.

By the early 1860s the price of cotton cloth ... was less than 1 percent of what it had been in 1784, when the industry was already mechanized. There is no previous instance in world history of the price of the product in potentially universal demand coming down so fast. As a result, hundreds of millions of people all over the world, were able to dress comfortably and cleanly at last."

See: Bernstein, A. (2005). *The Capitalist Manifesto*. Lanham, Maryland: University Press of America, Inc.

Falling Prices and the Housing Market

Are falling prices in the housing market harmful? Experts warn us about this kind of "deflation" and the harm it would cause to our economy. They refer to the Great Depression and Japan as examples of the harmful effects of deflation. Most experts believe that falling prices are harmful.

Let's apply basic demand and supply theory to analyze the consequences of falling prices.

Prices fall either as a result of decreasing aggregate demand or increasing aggregate supply. A decrease in aggregate demand is a sign that the economy is not doing well, and it is a symptom of other underlying, structural problems. In this scenario, falling prices are necessary and beneficial to help the economy in its recovery. As prices fall and businesses do some belt-tightening, buyers can afford to purchase more products, and this will increase quantity demanded of goods and services and employment.

Prices can also fall as a result of increasing aggregate supply (because of technology advances, etc.). As aggregate supply increases, ceteris paribus (all else remaining constant, including our money supply), the average price level falls. Here prices fall not because the economy is doing poorly, but because our advancing technology and improving work habits create more products, thus lowering the price level.

In the latter case, prices only fall if a nation's central banking system doesn't increase its money supply, or doesn't increase it very much. If, for example, the money supply increases by 6%, and our aggregate supply increases by 2%, then, ceteris paribus, prices will rise. If the money supply remains constant and aggregate supply increases, then prices fall.

Does the Fed have to increase our money supply in order to stimulate our economy and increase aggregate supply? Some people, including most Federal Reserve Board governors, believe this to be true. And it is true that in the short run, increases in the money supply can increase spending and production, and stimulate the economy. However, in the long run, higher prices of goods and services as well as asset bubbles that burst cause significant economic problems.

Aggregate supply (overall production) increases because businesses are naturally innovative and will look for better ways to produce in order to reduce costs and increase profits, regardless of money supply increases. Let's study this in more detail.

In a constant money supply economy, by definition and by mathematical necessity, the average *nominal* (dollar value) amount of business profits remains the same. However, *real* (the purchasing power of) profits increase (due to falling prices).

In the short run, a business that develops a cost-saving production technology will experience increased production, lower costs and therefore higher nominal and real profits. In the long run, in a constant money supply economy, the competition copies the cost-saving technology and aggregate production increases significantly. This lowers prices so that nominal profits of all firms decrease and approach the pre-innovation amount. However (and this is the key), because of lower prices, *real* profits of all firms increase.

The following is a numerical example in a simplified economy that proves this. Assume a money supply of $100 and twenty firms that produce an aggregate supply of a total of 20 products (each firm produces one product). Consequently, the average price level is $5 (natural equilibrium). If five innovative producers double their production, aggregate supply increases to 25, and the average price level falls to $4. The innovative producers' revenue increases from $5 to $8. Depending on the cost of the innovation, their profits increase as well. It is highly likely that their real profits increase because the average price level in the economy is falling (from $5 to $4). In the long run, if competing firms copy the innovation, the innovate firms still benefit. Aggregate supply increases to 40 (production of all producers doubles), so the average price level falls to $2.50. Each producer's revenue averages $5 (same as before the innovation), but $5 now buys twice as many products because average prices are cut in half. In a constant money supply economy, everyone's nominal revenue remains constant, but real revenue doubles.

People forget that wealth depends on *real* income and not nominal income. If I tell you that I'll happily accept working for a $1 annual salary, you would declare me insane. But if in this economy a house is priced at a quarter and a car at a nickel, then a salary of one dollar doesn't look so bad.

Given our natural tendencies and incentives to innovate and increase production (on average at least 2 – 3% each year), prices should be falling. Falling prices will also mean significantly lower prices of real estate, including houses. And, unlike what you read in many newspapers and journals, this is a good thing (as long as they fall consistently and continuously).

Falling prices in a market where prices go up and down all the time are harmful (temporarily). However, falling prices in a housing market are not harmful to the economy as long as prices fall continuously. Look at the computer market. Prices of computers (and tablets, smart phones, etc.) have been falling for decades now, and the market for computers is as strong as ever. The conventional thought is that if buyers or potential buyers expect prices to fall in the future, they will wait to buy the product until the price is lower, say, in 6 months. But why is this not happening in the market for computers and other high tech products? The answer is that if prices fall consistently and continuously, the buyers' psychology changes. Since consumers know that prices are always falling, they will not wait for a lower price or else they will never buy anything. For the same reason, buyers of houses will not postpone their decision to buy a house if they know that prices of houses fall consistently.

Aren't falling prices in the housing market bad for banks? The answer is: no, as long as banks make responsible loans. A bank should ask for a sound down payment (for example, 10% or more) from the borrower, or a payment plan that makes sure that the borrower's equity (the difference between the value of the house and the outstanding balance of the loan) is always positive. For example, if prices fall 2% each year, and the borrower's contribution towards the loan principal is 3% each year, then the home owner's equity rises by 1%; the borrower is never “underwater” (this is when the value of the house is less than the value of the loan) and the bank is always covered. But this is common sense anyway, and these principles should be applied even in our current, mostly inflationary climate. It would have prevented the 2008/2009 housing crisis!

Inflation, even at low levels, is harmful to our macro economy. It increases interest rates, discourages savings, lowers our exports, lowers the value of our dollar relative to other currencies, and creates mal-investments because people invest in gold and other precious metals, antiques, existing real estate, etc. instead of productive endeavors instead of investing in new production. Inflation hurts consumers. An inflation rate of 3% is equivalent to putting an additional sales tax of 3% on all products. Sales taxes are especially harmful to the poor because sales taxes are regressive. Keeping the money supply constant and allowing prices to fall accomplishes the opposite; it helps every consumer and especially poor households. Forget having to raise our minimum wage. The real value of the minimum wage will increase each year due to falling prices.

Falling prices give people instant and continuous increases in their real incomes. Looking at computers again, the beautiful thing about falling prices in this industry is that nearly everyone can afford one now or at least use one (in schools, libraries, etc.). What an opportunity this creates for our society, especially many poor households, if we could make everything affordable like this.

But doesn't the Fed need to manipulate the economy in case of economic emergencies, as Keynes recommended? The Fed certainly loves this kind of control. But ask yourself what the reason is for the seeming necessity of this manipulation. Nearly all of our past economic emergencies were caused by borrowing bubbles and monetary excesses by central banks. In other words, they contribute to the economic emergency and then print more money to temporarily stimulate the economy and prevent the emergency from getting worse. But by doing so, it sets up the next (and possibly worse) financial crisis.

A constant money supply makes these bubbles impossible, and therefore, greatly diminishes if not eliminates the need for any central bank manipulation.

An increase in the money supply may help the economy in the short run (by increasing liquidity and lowering interest rates temporarily), but it invariably causes more problems in the long run (by increasing inflation and increasing interest rates). A drug addict feels good after artificial stimulation (taking drugs). But in the long run it will ruin the drug addict's life.

Doesn't it make sense to stick to the fundamentals in maintaining happiness in our personal lives? Eat well, exercise daily, learn skills, invest wisely, diversify, build sound relationships, be true, honest, etc. Our economy is no different. Instead of artificial and inflationary stimulation, we need fundamental and essential ingredients for a healthy economy: optimal opportunities and incentives for people to work hard, innovate and accumulate wealth (so no excessive taxes and regulations that discourage work), protection of private property, a sound, non-discriminating and honest legal system, and a constant money supply which promotes increases in, not nominal, but *real* incomes.

Section 5: The Gold Standard

Characteristics of a Gold Standard System

A gold standard is a system in which a certain fixed amount of a country's currency is legally exchangeable for gold. Because the ratio of gold to the money supply is fixed, the quantity of money can only grow as much as the supply of gold is growing. Because of the difficulty of mining and acquiring gold, gold supply growth is typically limited to 1 or 2% per year. If the government adheres to a pure gold standard, the money would grow by only 1 or 2%, as well.

Properly implementing a pure gold standard provides a better guarantee that inflation remains low or non-existent for many years to come. It is, therefore, a step in the right direction, compared to the system we currently have.

According to Andrew Bernstein (*The Capitalist Manifesto*, Bernstein A., 2005, p. 374):

"An international gold standard is mankind's primary protection against arbitrary expansion of the money supply by the politicians. Because gold is relatively rare in nature, and its mining generally involves laborious and expensive work, the money supply grows only gradually. The technological progress of free men leads to an increase in the supply of goods that generally exceeds the increase in the supply of gold."

George Reisman in *Capitalism* notes that "the result would be that prices would show a tendency to fall from year to year ...this is actually what happened in the nineteenth century, in the generation preceding the discovery of the California gold fields, and again, in the generation from 1873 to 1896, that is, during the Inventive Period." (*Capitalism*, Reisman, p. 107)

A gold standard has its disadvantages. We don't always have total control over the supply of gold in the world. Occasionally, the supply of gold varies by more than 1 or 2%. During these years, we may experience instability. Sometimes, countries manipulate the supply of gold to try to create unnatural swings in the price of gold.

We do not need a gold standard though. If a central bank is disciplined, on its own, to keep the money supply constant, we will accomplish the same if not better outcomes as being on a gold standard. And we wouldn't have the disadvantages of the occasional instability that accompanies a gold standard. The only fluctuations in the value of the money we will experience will be due to free market fluctuations in money demand and supply. However, they are generally short-lived in nature. In the long run, a constant money system will lead to steadily falling prices that are beneficial to the long term economic health of the country.

Benefits of a Constant Money Supply System

A constant (invariable) money supply system is one in which the central bank of a country holds the money supply constant at all times. This is desirable because it eliminates the disadvantages associated

with inflation. A constant money supply does not discourage spending or production. We do not need to increase our money supply in order to encourage production. Greater production takes place because people have a natural human tendency to work and produce in order to satisfy basic human needs (food and shelter) and to progress and better themselves. Increased production leads to increased purchasing power. Increased purchasing power leads to increased wealth, a more comfortable lifestyle, more leisure time, and a higher overall standard of living.

You may note that in some countries there is very little economic activity and no economic growth, and that some of these countries have a relatively constant money supply. Keep in mind that a constant money supply is a condition for improved economic health. Other conditions must be met, as well (protection of private property, elimination of corruption and discrimination, reduction in crime, etc.).

If these conditions are met, workers, entrepreneurs, and innovators always have incentives to innovate and become more productive. A constant money supply leads to lower prices and higher real wages. It helps create a healthy economic climate because people will have security about the value of their investments (money doesn't lose value; rather, it gains value) and have the greatest incentive to save and reinvest their funds in new capital goods. They need not worry about erosion of the value of their future profits. Instead, they can look forward to further increases in their purchasing power and their standard of living.

See: Bernstein, A. (2005). *The Capitalist Manifesto*. Lanham, Maryland: University Press of America, Inc.

See: Reisman, G. (1996). *Capitalism: A Treatise on Economics.* Ottawa, IL: Jameson Books.

Introduction

What's in This Chapter?

What is the relationship and what is the difference between a federal budget deficit and a national debt? This unit defines each concept, and describes the relationship between a country's deficit and its national debt.

The national debt has been the subject of many controversies in recent years. Due to the influence of John Maynard Keynes, countries became more comfortable running deficits during and after the Great Depression. Keynes recommended for governments to run deficits during recessions, and surpluses during expansions, but most countries' central governments have run deficits nearly every fiscal year, even during expansions. National debts in many countries have skyrocketed during the past several decades and are rising at alarming rates.

Some people are not concerned about debts and deficits; others are. How important is it for a government to balance its budget each year?

Section 1: The United States Federal Budget

Deficits and Surpluses

A government incurs a budget **deficit** when it spends more than it receives. For example, if a government spends $6,500 billion and it receives $3,500 billion from tax revenue and other sources, it incurs a deficit of $3,000 billion.

A government runs a budget **surplus** when it receives more than it spends. For example, if a government spends $3,700 billion and receives $3,800 billion in revenue, it runs a surplus of $100 billion.

For up-to-date statistics on recent United States deficits and surpluses, please click HERE (scroll down to "Budget"), and then click on the link for the budget figures.

A budget deficit is often confused with a nation's national debt. A deficit (or surplus) is a yearly figure, whereas a debt represents the accumulation of all past deficits (and surpluses). Debt trends are covered in Sections 2 and 3 of this unit.

Video Explanation
For a video explanation of deficit and debt calculations, please visit:

YouTube Video

The Clinton Surpluses

Since the 1930s, United States federal budget deficits have occurred much more frequently than budget surpluses. After World War II, only in 1969 and during the latter years (1998 through 2000) of the Clinton administration did the United States experience budget surpluses. Deficits turn into surpluses when either government spending decreases or government revenue increases, or both happen. During the Clinton administration, federal government spending increased, but at a modest pace. Because of strong economic growth, tax revenue increased more than spending increased, and subsequently, the United States government ran a budget surplus.

The Bubble that Burst
Central banks around the world increased their nations' money supply more than they should have, and this was mostly reflected in increasing asset prices (stocks, housing). These wealth gains stimulated the economy temporarily. However, the significant asset price increases also led to the housing bubble that burst in 2008 and eventually caused much economic hardship and record deficits.

The Recent Record Deficits
In the United States, increased government spending, primarily due to significant defense and homeland security spending, increased spending on Social Security, Medicare, and Medicaid, contributed to significant deficits. In addition, recently, due to significant pandemic spending, the United States incurred a deficit of more than $3,000 billion in 2020 and 2021.

Budget Deficits and Surpluses as a Percentage of Gross Domestic Product

Below is a table with data on United States budget deficits and surpluses in billions of dollars from 1980 through 2021. Deficits are expected to be a serious problem in the future as net interest payments on the debt will rise with growing deficits. Spending on defense and homeland security will remain high. An additional problem is that as more and more baby-boomers (the first ones reached full retirement age in 2011) elect to draw from Social Security and sign up for Medicare (or similar programs in other countries), they will further burden nations' national debts. The Obama administration expanded health care coverage for many uninsured. This also added significant expenses to our government's budget. Noticeable changes in this area are not likely to take place for several years.

Fiscal Year	Deficits (numbers with a minus sign) and Surpluses (numbers with a plus sign) in Billions of Dollars
1980	-74
1981	-79
1982	-128
1983	-208
1984	-185
1985	-212
1986	-221
1987	-150
1988	-155
1989	-153
1990	-221
1991	-269
1992	-290
1993	-255
1994	-203
1995	-163
1996	-107
1997	-22
1998	+69
1999	+126
2000	+236
2001	+128
2002	-158
2003	-378
2004	-413
2005	-318
2006	-248
2007	-161
2008	-459
2009	-1,413
2010	-1,295

2011	-1,300
2012	-1,087
2013	-973
2014	-485
2015	-438
2016	-585
2017	-665
2018	-833
2019	-1,091
2020	-3,132
2021	-2,770

Source: Office of Management and Budget. (http://www.whitehouse.gov/omb/budget/Historicals - table 1.1).

Section 2: The National Debt

National Debt Definition

The national debt is a government's sum of all deficits minus the sum of all surpluses from this and previous years. The more a government borrows each year, the more the national debt rises.

Example of a National Debt Calculation

If, hypothetically, a country is running a deficit in year 1 of $250 billion, in year 2 of $300 billion, in year 3 of $200 billion, and in year 4, a surplus of $100 billion, then (assuming no other deficits or surpluses) the country's total national debt is

$250 + $300 + $200 -$100 = $650 billion

United States National Debt Data

In the United States, at the beginning of the Reagan administration in 1980, the national debt was "only" $930 billion (see table below). It then grew to $2,600 billion by the end of his administration in 1988, an almost three-fold increase. It has continued to increase thereafter at a rapid pace during most years. Currently, in the United States, pandemic stimulus spending, the increasing burden of the Social Security program, rising costs of health and medical programs, defense-related spending, and rising interest payments on the national debt are putting a strain on the government's purse. This year the United States national debt will approach $30 trillion. For an up-to-the-minute account of our national debt, please click here: US National Debt Clock.

For a table with United States National Debt figures for selected years since 1945, see below. This table also includes the debt as a percentage of the size of our economy (as measured by nominal GDP). Before 2021, the percentage fluctuated from a World War II (1945) high of 116% to a post-World War II low of 33% (1980). By the end of 2021, the debt reached a very high 126%.

Year	Total National Debt (held by the public and the Federal Reserve, and foreign, state and local governments, rounded to the nearest billion dollar - December 31).	Nominal GDP (rounded to the nearest billion dollar)	National Debt as a Percentage of Nominal GDP (rounded to the nearest whole number)
1945	259	223	116
1950	257	294	87
1960	290	526	55

1970	389	1,039	37
1980	930	2,790	33
1985	1,946	4,220	46
1990	3,233	5,803	56
1995	4,974	7,398	67
2000	5,674	9,817	58
2001	5,807	10,128	57
2002	6,288	10,470	60
2003	6,783	10,961	62
2004	7,379	11,713	63
2005	7,933	12,455	63
2006	8,420	13,377	64
2007	9,008	14,029	64
2008	9,353	14,292	66
2009	12,816	13,974	92
2010	14,025	14,499	97
2011	15,053	15,076	100
2012	16,353	15,536	105
2013	17,440	16,768	104
2014	18,898	17,272	109
2015	19,336	18,036	107
2016	19,950	18,800	106
2017	20,615	19,500	106
2018	21,908	20,821	105
2019	23,164	21,695	107
2020	26,545	20,894	127
2021	29,338	23,202	126

National Debt Source: U.S. Treasury Department.
Nominal GDP Source: Bureau of Economic Analysis.

Interest on the Debt

When a country borrows money from its citizens and from foreign investors, it pays interest each year to them. The interest is similar to a finance charge you pay on a credit card balance if you don't pay it off at the end of the month. Below is a table with United States federal government total interest expenses in selected years (this figure does not include interest the federal government receives on its own investments). In some years, the total debt increases, while the total interest expense decreases, and vice versa. This is due to interest rate fluctuations. During years when market interest rates are lower, the government can finance its debt at more favorable conditions. Recently, interest rates have been relatively

low in the United States and other industrialized countries. This has allowed these governments to borrow at low rates and has allowed them to pay less interest than would have been the case at higher rates. With rising national debts, and likely higher interest rates in the future, the total interest expense is expected to rise considerably in future years.

Year	Total United States Interest Expense (on Treasury debt securities; rounded to the nearest billion dollar, as per fiscal year end)
1990	265
1995	332
2000	361
2001	359
2002	332
2003	318
2004	321
2005	352
2006	406
2007	430
2008	451
2009	383
2010	414
2011	454
2012	360
2013	416
2014	431
2015	402
2016	447
2017	459
2018	523
2019	575
2020	523
2021	562

Source: U.S. Treasury Department (http://www.treasurydirect.gov/govt/reports/ir/ir_expense.htm).

The Debt Ceiling (Limit)

The United States has an official Congressional limit on how much it can borrow. Because the federal government continues to borrow more and more each year, this limit has been reached and then raised by Congress many times. If the limit is reached and the government doesn't raise the limit, then parts of the government will need to be shut down and some government employees will not be able to get paid. Frequently the government doesn't raise the limit right away because politicians use the limit to negotiate their position on the budget. For example, some politicians will only raise the limit if Congress promises to significantly cut overall spending. Or other politicians will raise the limit only if Congress spends more money on their favorite items (climate, social programs, defense, etc.). After several weeks of

government shutdown, complaints by the public and government employees, and political negotiations, Congress then passes a higher debt limit and the debt will rises until another limit is reached. Thus far, Congress has raised the debt limit 78 times.

Section 3: Debts around the World

The Debt as a Percentage of Gross Domestic Product

Below is a table of the top 20 countries with the most national debt as a percentage of their nominal GDP.

Venezuela, Japan, and Sudan earn the dubious honor of taking the gold, silver, and bronze medal, respectively. The United States ranks 16th. On average, countries' national debt as a percentage of their GDP is showing a rising and alarming trend.

Country	Public Debt as a Percentage of nominal GDP * (2021)
1. Venezuela	304
2. Japan	257
3. Sudan	212
4. Greece	210
5, Eritrea	176
6. Suriname	157
7. Italy	157
8. Lebanon	154
9. Barbados	143

10. The Maldives	140
11. Cabo Verde	138
12. Belize	135
13. Portugal	131
14. Singapore	130
15. Bahrain	129
16. United States	126
17. Mozambique	125
18. Bhutan	123
19. Zambia	119
20. France	116

* Some data are estimates as not all countries have released final statistics for 2021.

Source: https://www.imf.org

Section 4: Deficit Financing

Financing Methods

Most governments finance their budget deficits through

1. Borrowing funds from the public.

In the United States and other industrialized countries, this is the method through which governments finance the lion's share of their deficit. Governments borrow funds from the public (households, businesses, and foreign investors) by issuing government bonds (long-term IOUs), notes (intermediate-term IOUs), and bills (short-term IOUs). These are nothing more than loans made by people or businesses to the government. You may have some government bonds of your own, and perhaps your pension fund or insurance company or financial institution has invested in government bonds. If so, you have loaned money to the government and are helping to finance the debt. This is not inflationary, because it constitutes a transfer of money from one economic group (households and businesses) to another (the government). However, it does decrease the availability of funds to the private sector. This is called "**crowding out.**" It leads to a decrease in private-sector spending and a decrease in private investments and economic growth. Crowding out usually raises interest rates beyond what they would be without government borrowing.

Video Explanation
For a video explanation of how governments borrow money, please visit:

YouTube Video

2. Federal Reserve System financing.

When securities (bonds, notes and bills) are initially issued by the United States Treasury (in order to finance the federal government's deficit), the public (households, businesses, foreign investors) buys them. Sometime later, the Federal Reserve buys these securities from the public. Thus, indirectly, the Fed buys securities from Treasury. This method of deficit financing is called Open Market Operations and is inflationary because the Fed pays for the securities with newly printed money. Nearly every day the Federal Reserve (the Fed) buys and sells billions of dollars in government bonds (and recently also mortgage backed securities) from the public. In Unit 9 we will learn that the Fed does this to inject funds into (or, if the Fed sells, withdraw from) the financial markets. This causes a change in the money supply. Mostly, the Fed **buys** securities from the public, and in this way, it indirectly finances government spending.

Section 5: Budget Philosophies

Three Budget Philosophies

Economists have varying opinions about how a government budget should be managed. The three most common budget philosophies are

1. The Annually Balanced Budget.

A government annually balances its budget when, within one fiscal year, expenditures equal revenues. Most states, counties, and municipalities in the United States are required by law to balance their budgets. The United States federal government is not required to balance its budget. Attempts have been made to pass a constitutional amendment to balance the federal government's budget. These attempts have failed primarily because of the Keynesian belief that the federal government needs to incur deficits in order to stimulate the economy during economic recessions.

Classical economists believe that governments should balance their budgets each year. Some economists would even like to go beyond merely balancing our budget. They propose that governments should incur surpluses and set aside funds "for a rainy day" during healthy economic times. If the economy experiences a downturn, the surplus money should be used to finance essential government programs, without having to raise taxes and without causing the disadvantages of deficits mentioned at the bottom of this section.

2. The Cyclically Balanced Budget.

A government cyclically balances its budget when, within the course of one business cycle, expenditures equal revenues. A business cycle consists of one expansion followed by a recession. Keynes proposed that the government should increase its expenditures and decrease its taxes during recessions in order to create jobs and provide people with more expendable money. Conversely, he recommended that a government should incur a surplus during economic expansions.

Critics of the cyclically balanced budget theory claim that politicians rarely manage to incur surpluses because it requires decreasing government spending or increasing taxes. In particular, politicians are reluctant to decrease spending, because taking away funds from programs and departments is not a popular thing to do.

3. Functional Finance.

Proponents of this theory believe that government budget deficits and national debts do not harm the economy. Full employment is the main objective, and if it is achieved, a national debt is a worthwhile sacrifice. Judging from the national debt data in Section 3, this appears to be the approach taken by administrations of industrialized countries. In the United States, federal budget surpluses have occurred only an average of one in twenty years during the past six decades.

For a video explanation of the three budget philosophies, please watch:

YouTube Video

Disadvantages of Debts and Deficits

While running deficits and incurring debts may have a stimulating effect on the economy in the short term, it has the following disadvantages in the long term:

1. Deficits cause higher real interest rates.
When the government incurs a deficit, it borrows money from the private sector. A decrease in private sector fund availability leads to fewer private sector investments and leads to higher interest rates as compared to a situation in which the government doesn't incur deficits.

2. Deficits, if financed by increases in the money supply, lead to higher inflation.
The Federal Reserve System, through Open Market Operations (see Unit 9) purchases bonds from the public with newly printed money. The public purchases these bonds from the United States Treasury. Indirectly, therefore, the Federal Reserve System finances the national debt. Putting newly printed money into circulation with the public is inflationary.

3. Deficits usually lead to higher taxes and/or lower government spending in the future.
Unless government spending decreases (which has proven to be a challenging task for any government), taxes will need to increase if in the future an attempt is made to pay down the national debt. Even if the national debt is never paid off, the increasing interest payments on the national debt cause government spending and taxes to be higher as compared to a situation with little or no national debt.

4. A large national debt can lead to a country's bankruptcy.
If a country's national debt rises to a point where it can no longer pay it creditors, the country will default on its bonds. This means that the country's bondholders will not get paid, or they will get paid only a fraction of the original value of the bonds. In addition, this country can no longer borrow money and is forced to implement austerity measures (lower government and/or raise taxes considerably). This is what happened to Greece after the 2008 recession. It caused its economy and its people significant economic hardship for many years.

Introduction

What's in This Chapter?

Is money, or the love of money, the root of all evil? Should we eliminate money? If we eliminate money, will all evil disappear? If the answer is no, then money must not be the root of all evil. If we eliminate money, what economic consequences will this have? What are the functions of money? These questions, among others, are answered in this unit.

Nearly every country or region in the world has a central bank. The most important roles of a central bank are to supervise a nation's banking system and to control its money supply. Sections 3 and 4 discuss the role of the central banks and the Federal Reserve (the Fed) System in the United States. The Federal Reserve is in charge of monetary policy in the United States. Its aim is to act independently from Congress and the White House. United States citizens do not elect Federal Reserve Board governors or central bank presidents. Governors are appointed by the President, and then approved by the Senate. The disadvantage is that the Fed governors are not directly accountable to the voters. The advantage is, however, that unlike politicians, Federal Reserve Board governors can act regardless of what may be the popular thing to do. They can, therefore, concentrate on long-run policies (they don't always do this though).

The Federal Open Market Committee (FOMC) is the day-to-day decision-making committee of the Federal Reserve System. Financial markets around the world closely follow every step the FOMC makes. In addition to controlling the money supply, it serves many other functions, as explained in this unit. During the two decades preceding the 2008/2009 economic crisis, consumer price inflation in the United States remained relatively low. However, housing prices rose significantly, in great part due to Federal Reserve injections of money into the economy. This led to much irresponsible borrowing, created a housing price bubble and led to the housing crisis and Great Recession of 2008/2009. After the crash, the Federal Reserve significantly increased the money supply and even started buying Mortgage Backed Securities (in addition to its usual purchases of federal government securities). Until recently, consumer price inflation has been low since the recession, but asset price inflation (prices of houses, stocks, and other financial investments) has been high again (just like before the crash). This may lead to another bubble that bursts, fueled again by the Federal Reserve's excessive printing of money.

Fractional reserve banking, the Federal Deposit Insurance Corporation, velocity and the quantity theory of money are discussed in the last sections of this unit.


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Section 1: Functions of Money

Is Money the Root of All Evil?

Is money (or the love of money) the root of all evil? Some people claim this to be true. Would people still commit crimes in an economy without money though? The answer is "yes". Some crimes involve no money (relationship abuse, control issues, power struggles, etc.). Or in the case of theft, people would steal things instead of money. Money probably makes it easier to commit crimes (it's easier to rob a bank than to steal 1,000 chickens from a farm), but most people would agree that even without money, it's human nature and not money itself that encourages some people to engage in evil acts.

An Economy without Money

Money has existed in many different forms throughout human history: salt, tobacco leaves, cigarettes, gold, and silver. Today it includes coins, paper bills, and electronic payments. Can an economy exist without money?

In a barter economy, goods and services are directly traded for other goods and services, and no money is used. It is possible for such an economy to exist. However, trading is inconvenient and time-consuming, because buyers and sellers face double coincidences of wants. Let's say that you are a sandal-maker and you would like to buy milk. In order to trade, you would need to find a person who not only sells milk, but also wants to buy sandals. Then if you find such a person, you will need to negotiate for a while how many bottles of milk equals one pair of sandals.

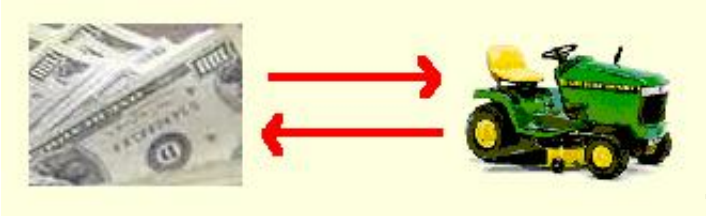
With money present,  you simply sell your sandals to anyone who wants sandals and receive money in exchange. Then with your money you find anyone who wants to sell you milk at the going equilibrium price. Money makes trading more convenient. More trading allows us to increase our specialization. Greater specialization increases our standard of living.

The Functions of Money

Money serves the following three important functions.

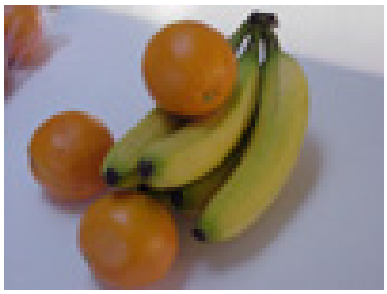
1. Medium of exchange.

Money allows you to exchange any product for money.



Then with this money you can buy any other product. Thus, money makes it easier, more convenient, and less time-consuming to trade.

2. Standard of value.

Without money, it is more difficult to reach an 

agreement regarding the terms of trade. How many oranges are worth one banana? A money system allows us to put values on the goods and services we buy and sell. If an orange sells for $1 in the grocery store and a banana for $.50, then 1 orange is worth 2 bananas.

3. Store of value.

By exchanging goods and services for money,  you can accumulate money and increase your wealth. If you are dairy farmer, you can sell your milk and butter each season for money, deposit it in a bank, and save it for future use.

Section 2: Money Supply Measures

Money in Circulation

In the United States, the Federal Reserve System and its twelve central banks are responsible for the circulation of money. In most other countries, a single central bank controls the amount of money in circulation. In Europe, the European System of Central Banks controls the money supply for the countries that belong to the European Union. In this unit, we will discuss the most common measures of our money supply, which include the Monetary Base, M-1, M-2, and M-3.

The Monetary Base

The **Monetary Base,** or so-called **high powered money,** consists of primarily two things: currency in the hands of the non-bank public and bank reserves. Bank reserves include physical and electronically recorded cash balances held by banks. Currency consists of banknotes (paper money) issued through the Federal Reserve, and coins minted by the United States Mint (part of the United States Treasury).

The monetary base is not the same as what economists refer to as the money supply. The monetary base includes funds held by banks. This money does not necessarily get spent on the purchases of goods and services (especially if the money does not get loaned out) and therefore does not necessarily affect economic activity. The money supply measures described in the next paragraphs more directly affect economic activity, because they include funds held by the public (households and non-bank businesses). There are three money supply measures; the first two are most commonly monitored and manipulated by the Federal Reserve for policy decision-making purposes.

Official United States Money Supply Measures

The three official money supply measures in the United States are

1. M-1.

M-1 includes all coins and currency in circulation with the public + money in checking or transactions accounts (demand deposits, NOW accounts, and other checkable deposits) + traveler's checks and money orders.

A characteristic of M-1 is that it includes money, which you can easily use to purchase goods and services. It, therefore, directly affects economic activity. Credit card payments and balances are **not** included in M-1. When you pay by credit card, you are borrowing money, and not actually paying for the item you purchased. The money from your transactions account that you use to pay your credit card balance (or part of it) at the end of each month **is** included in M-1. The amount of money in M-1 (seasonally adjusted) has increased quite a bit over the years. It was $140 billion in 1960 and in 2014 it was $2.6 trillion ($2,600 billion). In February 2020 it was approximately $4 trillion and, three months later, in June of 2020, it was more than $16 trillion. It is currently approaching $21 trillion. These are extreme increases in the money supply, which will lead to significant increases in prices of consumer

goods and services, stock prices, housing prices, cryptocurrency prices and other asset prices.

2. M-2.

M-2 includes everything in M-1 + savings deposits (amounts less than $100,000) + money market mutual funds + money market deposit accounts + other short-term money market investments. Government policy-makers have shifted their focus on M-2 instead of M-1 for monetary policy decision-making. The deregulation of the banking industry has made the components in M-2 more liquid, and more people use funds within M-2 to purchase goods and services. M-2 (seasonally adjusted) has increased considerably over the years. It was approximately $300 billion in 1960. In 2014 it was approximately $11,000 billion ($11 trillion) in November of 2018 it grew to $14,318 billion. In November 2021 it reached a record $21.5 trillion.

3. M-3.

M-3 includes everything in M-2 + Large Time Deposits + Repurchase Agreement (RPs) + Eurodollars + Institution-held Money Market Mutual Funds.

Large time deposits are savings accounts with more than $100,000 in each account. Repurchase agreements are forms of savings with collateral (using Treasury securities) backing the loan. Eurodollars are dollar-denominated savings in foreign banks. Institution-held money market mutual funds are savings accounts with a high interest rate held by financial institutions, retirement companies, and insurance companies. The additional forms of money in M-3 are less liquid (not easily exchanged for cash) than the forms of money in M-1 and M-2. M-3 statistics are not followed as closely by economists as M-1 and M-2. Consequently, the Federal Reserve has recently stopped publishing data on M-3.

For a video explanation of the three main money supply measures please watch:

YouTube Video

For the latest data on M-1 and M-2 for the past 24 months, please click HERE.

Section 3: The Banking System

The Federal Reserve System

The Federal Reserve (the Fed) System in the United States is a system of federal overseeing agencies, committees, and banks. The system was created in 1913, and its original purpose was for the Fed to be the

lender of last resort for banks that needed financial assistance. This is still an important function of the Fed. For example, when our stock markets decline considerably or our banks face bankruptcies, the Fed can intervene by making more than the usual amounts of funds available for banks. This allows for more borrowing and provides confidence to investors that the market dip will be short-lasting.

The Fed Board and the FOMC

The Federal Reserve Board of Governors is in charge of the United States Federal Reserve system. The board consists of seven "governors." These governors, formerly chaired by economists Alan Greenspan, Ben Bernanke, Janet Yellen, and currently lead by Jerome Powell. are appointed by the United States President and approved by the Senate for a period of 14 years. For an up-to-date list of all Federal Reserve Board members, please click HERE.

The Federal Open Market Committee (FOMC) is a twelve member committee in charge of monetary policy decisions in the United States . It consists of the seven board governors, as well as four rotating central bank presidents, plus the president of the central bank of New York. For more information about the FOMC, please click HERE.

Three committees advise the Federal Reserve Board: the Consumer Advisory Council, the Federal Advisory Council, and the Thrift Institutions Advisory Council. For information about these advisory committees, please click HERE.

The Federal Reserve Board, in conjunction with the Federal Open Market Committee, is tasked to act independently from Congress and the White House. The chairperson testifies before Congress, but decisions do not have to be approved by politicians. The Fed is semi-private because it is owned by its member banks who receive fixed dividends (6%) from stock in the Federal Reserve central banks.

To learn more about the Federal Reserve System, you can visit the Federal Reserve System website at http://www.federalreserve.gov .

The United States Central Banks

The United States banking system includes 12 Federal Reserve central banks and 24 branch banks. For a listing and map of these federal banks, please click HERE. The Federal Reserve oversees thousands of commercial banks, savings banks, and other financial institution in the United States.

Economists at the central banks are responsible for providing reserves to member banks, supervising member banks, clearing checks and gathering statistics, and doing research to help governments and businesses in their economic decision-making.

The European Central Bank

Next to the central banking system of the United States, the central bank of China (the People's Bank of China), the Bank of Japan (Nichigin), and the European Central Bank (ECB) are some of the most powerful government banks in the world.

The bank of Japan has been around since 1885 and is in charge of issuing new currency in Japan. The functions of the BOJ are similar to that of the Federal Reserve System in the United States.

The People's Bank of China is in charge of issuing currency and supervising private banks in China. The People's bank is controlled by China's ruling Communist Party.

The initial formation of the European Union led to 12 European countries agreeing on a single, common monetary policy, as well as a single currency (the euro) for these countries. Currently, 19 Euro Zone countries with a total population of approximately 350 million, use the euro. The euro is currently the second most used currency behind the U.S. dollar. In charge of the monetary policy for these countries, the European Central Bank, serves a role similar to that of the Federal Reserve in the United States. For a website link and more information about the ECB, please click HERE.

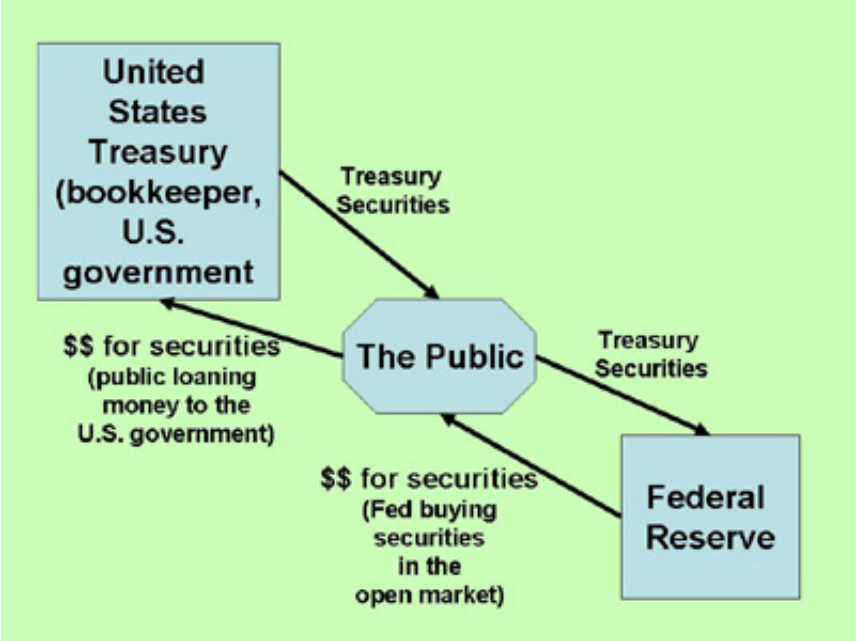
Section 4: Federal Reserve Tools to Change the Money Supply

Federal Reserve Tools to Affect the Money Supply

The Federal Reserve changes the bank reserves and the money supply of the United States by way of the following three tools.

1. Open Market Operations.
Open Market Operations is the most important and most frequently used of the three tools. Open Market Operations is the Fed's activity of buying and selling U.S. Treasury and federal agency securities. Securities include bonds, notes, and bills. All three are "IOUs," or proof that someone has lent money. These can be actual certificates or computer entries. The difference between the three securities is the maturity period (the number of years after which the lender agrees to pay back the loan). Bonds mature between 10 and 30 years; notes mature between 1 and 10 years; and bills mature within 1 year. Most of the time, the interest rate, which lenders receive, is higher on longer-term securities and bonds. This is because the longer maturity term carries a greater risk and a smaller chance that it will get paid back.

The United States Treasury, our federal (central) government's financial manager, issues the securities to help finance federal deficits. The Federal Reserve Banks then trade these bonds in order to change the economy's reserves (money supply). To put more money into circulation, the Fed buys securities from the public (see diagram below). Recently, the Fed has also purchased mortgage securities in order to prop up the financial markets as well as to affect the level of reserves. The public receives cash in exchange for the securities, which puts funds in circulation and increases the money supply. The reverse occurs when the Fed sells securities. This takes funds out of circulation and decreases the money supply. The ultimate effect of the transactions illustrated in the diagram is that the Fed "monetizes" U.S. government (and recently also private) borrowing and, thus, increases the money supply.



Video Explanation

For a video explanation of open market operations, please visit:

YouTube Video

2. Reserve Requirement Policy.

A bank's reserve requirement is the percentage of deposited money that the bank is required to keep as cash. For most large banks, the reserve requirement on transactions (checking) accounts is 10 percent. Smaller banks are required to only keep 3% or 0% (for very small banks). This means that a large bank must keep $10 in cash or in their account with their Fed bank for every $100 deposited by customers. The rest it can loan out.

When the Federal Reserve decreases the reserve requirement, it allows banks to make more loans. This increases the money supply. Changing the reserve requirement is a drastic measure, which affects billions of dollars in reserves. Consequently, the Federal Reserve rarely changes the reserve requirement percentage.

3. Discount Rate and Federal Funds Rate Policy.

The discount rate is the interest rate that a commercial bank must pay the Federal Reserve Bank when the commercial bank borrows money from the Federal Reserve Bank. The more money a commercial bank borrows, the more it can loan out to its customers. This increases the money supply. Conversely, the money supply decreases when the Federal Reserve increases the discount rate and the commercial banks borrow less from the Fed banks. The Fed banks make three types of loans to commercial banks: short-term, long-term and seasonal. The rates on the short-term loans are the lowest, and the long-term rates are usually higher. The seasonal loans carry an average rate of selected market rates. For more information about the discount rate, please click HERE.

In 1995 the Fed began targeting the Federal Funds rate. The federal funds rate is the interest rate that banks charge each other on overnight loans. The Fed uses this rate as a barometer of what the Fed thinks is the proper amount of reserves in the banking system in order to achieve the optimal growth rate for the country. For more information about the Federal Funds rate, please click here.

The Federal Reserve attempts to influence this rate by supplying more or fewer funds to the banking system. If the Federal Reserve supplies more funds to the banking system, the Federal Funds rate decreases. This increases the money supply and may stimulate the economy in the short run. Conversely, if the Federal Reserve decreases funds to the banking system, the Federal Funds rate most likely increases. This decreases the money supply and slows down the economy in the short run.

Section 5: Banks' Balance Sheets and Fractional Reserve Banking

A Bank's Balance Sheet

To understand banks' reserve requirements and fractional reserve banking, let's study a bank's balance sheet.

The table below includes entries for a hypothetical bank's assets and liabilities. Assets are investments and properties that a bank owns. Liabilities are what a bank owes. A typical bank may show the following entries on its balance sheet (the amounts depend, of course, on the size of the bank and its specific transactions).

Bank T			
Assets		**Liabilities**	
Vault Cash	$1 million	Equity	$2 million
Deposits with the Fed	$9 million	Checkable Deposits	$70 million
Mortgage Loans	$22 million		
Consumer Loans	$18 million		
Business Loans	$20 million		
U.S. Government Securities	$2 million		
Total Assets	$72 million	Total Liabilities	$72 million

For the above bank, total checkable deposits (money in transactions accounts) equals $70 million. If the bank's required reserves are 10% of all checkable deposits, then this bank must keep at least $7 million in cash or as deposits with the Fed. Its cash plus deposits with the Fed currently equal $10 million, so this bank can still loan out $3 million. This $3 million is called "excess reserves."

Fractional Reserve Banking

For our purposes, in order to understand fractional reserve banking, it is sufficient to consider a simplified balance sheet, which includes only total reserves and loans on the asset side, and checkable deposits (funds deposited by the bank's clients into their transaction accounts) on the liability side.

The following balance sheet shows a bank with $4,000 of deposits, $400 in total reserves, and $3,600 in loans.

Assets		**Liabilities**	
Total Reserves	$400	Checkable Deposits	$4,000
Loans	$3,600		

By law, a bank is required to keep a fraction of customers' deposits on hand in the form of cash (total reserves). This is called **fractional reserve banking**.

In the above example, the bank has $400 in total reserves. If the Federal Reserve requires the bank to

keep 10% of deposited money, then the bank is required to keep 10% of $4,000. Therefore, required reserves are $400. Because total reserves are $400, the bank cannot make any further loans. In other words, the bank's excess reserves are $0.

Our system of fractional reserve banking is built on the assumption that even on a bad day, on balance, customers typically do not withdraw more than 5 or 10% of deposits. Typically, on an average day, deposits cancel out against withdrawals. On good days, deposits exceed withdrawals.

A Run on the Bank

What would happen if, on balance, more than 10% of the bank's deposited amount is withdrawn on a certain day? Or, what if **all** of the bank's customers decided to withdraw all of their deposited funds at once (a run on the bank)? In this case, the bank will not have sufficient funds to meet the demand. This, of course is a serious problem for the bank, and usually requires intervention by the Federal Reserve System. The Fed can choose to loan the bank the needed reserves, if it believes that the problem is temporary and can be solved. Or it can suggest a merger with a larger, healthier bank, if it believes that the bank's problems are more structural and long-lived. In the worst case scenario, the bank will go bankrupt. In this case, account holders insured by the FDIC (see Section 7 of this unit) or a private deposit insurance company will receive their deposited funds up to a certain maximum amount ($250,000 per account for FDIC insured banks).

In the next section, we will learn how deposits of new money result in an increase in the nation's money supply. As we will see, the increase in the nation's money supply is a multiple of the initial new deposit. This is called the money creation process.

Section 6: The Process of Money Creation

Changes in the Nation's Money Supply

Let's assume that banks hold on to 20% of all deposits. This means that a new deposit of $1,000 will allow a bank to loan out $800. This $800 will be spent, then received by person B, and deposited into bank B. Bank B, in turn, can loan out 80%, or $640. Similarly, bank C can loan out 80% of $640, or $512. This process continues indefinitely. Thus, the initial $1,000 deposit has created demand deposits of an additional $800 plus $640 plus $512, etc. Mathematically, it can be proven that the total increase in the money supply amounts to $5,000 (5 times the initial deposit of $1,000).

In general, the following equation illustrates how a nation's total money supply changes:

Change in the nation's money supply = money multiplier * the initial deposit

The Money Multiplier

Similar to the multiplier in the Keynesian model, there is a multiplier in the money creation model. The formula for the money multiplier is

Money multiplier = 1 / required reserve ratio
(one divided by the required reserve ratio)

In the above example:
The initial deposit is $1,000.
The required reserve ratio is 20%.
So the money multiplier is 1 / 20% = 1 / .20 = 5.
So the change in the nation's money supply is 5 times $1,000 = $5,000.

The money multiplier process can be illustrated through the following changes in banks' balance sheets.

1. Bank A receives a (new) deposit of $1,000:

BANK A	
Assets	**Liabilities**
Bank Reserves $1,000	Demand Deposits $1,000
Loans $0	

2. Let's say that of this $1,000 in total reserves, the bank is required to keep 20%, or $200, and it can loan out the other 80%, or $800. Let's say the bank decides to do so the next day. Then it shows the following balance sheet:

BANK A			
Assets		**Liabilities**	
Bank Reserves	$200	Demand Deposits	$1,000
Loans	$800		

3. Let's say that the $800 loan is made to business Z, which spends the money on, for example, tickets to a baseball game. The baseball franchise deposits the revenue in its account with bank B:

BANK B			
Assets		**Liabilities**	
Bank Reserves	$800	Demand Deposits	$800
Loans	$0		

4. And after loaning 80% of its deposits, bank B's balance sheet the next day is

BANK B			
Assets		**Liabilities**	
Bank Reserves	$160	Demand Deposits	$800
Loans	$640		

5. Let's say that the $640 in loan money is accepted by business Y, which spends it on a trip to California through airline X. Airline X then deposits the $640 in its account with bank C, etc.

6. The total accumulation of money in the form of demand deposits (transaction accounts), an important component of M-1, equals $1,000 + $800 + $640 + $512 + ... = $5,000.

The multiplier in the above example, 1/required reserves, equals 1/.20, or 5. This number, as we concluded above, leads to an expansion of the nation's money supply that is equal to five times the change in the initial deposit. The factor 5 assumes that banks' reserve requirements are 20%. If the reserve requirement decreases, the money multiplier increases. If the reserve requirement increases, or if banks choose to hold onto more bank reserves on their own, the money multiplier decreases.

For large banks in the United States, required reserves are 10% of transaction account deposits. Some required reserve ratios are as low as 3%, or even 0%, depending on the nature of the account and the size of the bank. If the reserve requirement is 10%, and if banks are fully loaned up and customers spend their entire loan and deposit all their earnings, then the money multiplier equals

Money multiplier = 1 / 10% = 1 / .10 = 10.

Video Explanation
For a video explanation of the money multiplier and changes in the nation’s money supply, please visit:

YouTube Video

Section 7: The Significance of the Federal Deposit Insurance Corporation (FDIC)

The Role of the FDIC

The purpose of the FDIC is to insure depositors' funds. In the event that a bank is unable to satisfy customers' requests for withdrawals, the FDIC will pay customers up to a certain amount per account. Deposit insurance discourages customers from withdrawing all of their money if the customers suspect that the bank is in financial trouble. In the event that there is a so-called "run" on the bank, it will most likely lead to a bank's bankruptcy, because the bank has no more than about 10% of customers' deposits. The other approximately 90% it has loaned out.

It is possible that a bank is very solid, but that customers' perception is that the bank is in trouble. This perception could turn real if customers' reactions lead to storming the bank, especially if their money is not insured. The FDIC's strength is to guarantee people that their money is safe (up to a limit per account), so that a run can be prevented. If the bank is truly in trouble, the Federal Reserve usually intervenes by loaning reserves to the bank or attempting to find a more-solvent partner to merge with the troubled bank.

In the 1980s, the FDIC and its Savings and Loans counterpart, the FSLIC, ran into their own problems. Not only were Savings and Loans banks in financial trouble; the insurance company itself was in financial trouble. The government decided to intervene by merging the FDIC and the FSLIC and supplying it (and other overseeing agencies) with government funds to bail out insolvent banks.

Should Deposit Insurance be in the Hands of Private Companies?

Critics of the FDIC state that because it is non-profit, it does a poor job of overseeing and inspecting banks. Banks are getting away with making risky loans and sometimes even fraudulent loans without adequate knowledge by the FDIC. Most bank customers do not have any incentive to research a bank's practices, because they count on the FDIC and other government agencies to do this, and they know that their accounts are insured by the FDIC up to $250,000 per account.

Some economists claim that private insurance companies do a better job at overseeing banks, because they are for-profit, and if a bank engages in improper practices, it will hurt the insurance companies' bottom lines. In other words, private bank deposit insurance companies have greater incentives to do a more thorough job of evaluating bank loans and practices. An advantage to taxpayers is that private insurance companies are not subsidized by federal or state governments, unlike federal insurance agencies, such as the former FSLIC and the current FDIC. A disadvantage of private insurance companies is that during severe times of economic hardship, the insurance companies may not be solvent enough to sufficiently insure depositors.

Section 8: Velocity and the Quantity Theory of Money

Velocity

Velocity is defined as the average number of times a unit of the money supply (for example M-1) is used for certain economic transactions during a specified period of time. If a nation's money supply is $100 and its citizens spend $600 on final goods and services, then the average number of times the $100 was used to buy final goods and services during that year is 6.

Velocity Determinants

Velocity is determined by the following factors:

1. **The stability of the money.**
   If a nation's money supply is stable, consumers will spend money according to their needs, and businesses will invest money based on their future expected earnings. There is not much reason to believe that consumers and businesses will spend their money more quickly than the year before. However, if the nation's money supply is not stable (too much money in circulation), and the value of money decreases (inflation), then people will be more likely to spend it more quickly. If, for example, prices double every week, people will spend their paychecks almost immediately. If they hold on to their money until the end of the week, prices will be twice as high. This quicker turnover of the money supply equates to an increase in velocity and makes it feel like there is even more money in circulation than there already is. This combination of too much money in circulation and increased velocity often leads to what is called hyperinflation.
2. **Transportation and technology advances.**
   As it becomes easier to transfer and transport money, the money is more quickly available for re-spending. This increases velocity.
3. **People's ability to save.**
   When people save, as opposed to hoard, their money, funds become available to businesses and consumers via financial markets. This increases velocity and leads to greater economic activity. During an economic depression, many people lose faith in the banking system and resort to hoarding. This lowers the money supply and lowers velocity.

The Formula for Velocity

Velocity of final goods and services is defined as the number of times we use our money supply in order to purchase these goods and services during a period of time.

Therefore:

Velocity = Nominal GDP / Money Supply.
Or, abbreviated:
V = GDP / M

In Unit 3 we learned that GDP = P x Q (where P = the nation's average price level and Q = the quantity of final products produced), so:

V = P x Q / M
After cross-multiplying, we get:
P x Q = M x V

The Quantity Theory of Money

The above equation is the "Equation of Exchange." The right side (M x V) represents the volume of money exchanged to pay for the left side (P x Q), the volume of goods and services.

The equation implies that there is a direct relationship between changes in the money supply (M) and changes in a country's price level (P).

Experience in industrialized countries shows that velocity (V) is relatively constant from year to year. Real Gross Domestic Product (Q) increases by an average of 2 or 3% each year. Therefore, if the money supply (M) increases by more than 2 or 3% each year, then the price level (P) increases.

The following numerical examples illustrate the effect on the price level (P), given certain changes in the other variables.

Example 1
Let's assume that in year 1:
P = 5
Q = 20
M = 25
V = 4

Let's assume that in year 2:
Q = 21 (approximately 4.88% increase, using the arc formula. See Unit 3 of our Microeconomics text for an explanation of the arc formula to calculate percentage changes)
M = 27 (approximately 7.69% increase, using the arc formula)
V remains the same at 4.
Problem: What is the price level in year 2, and how much has the price level changed since year 1?

Solution: Using the equation of exchange for year 2:
P x 21 = 27 x 4
Solving for P:
P = (27 x 4) / 21
P = 108 / 21= 5.14
This means that P increased by approximately 2.76%, using the arc formula [(5.14 - 5) / 5.07)] from year 1 to year 2.

In the above example, the Fed increased the money supply from 25 to 27. Consequently, the price level rose from 5 to 5.14. If the Federal Reserve's goal is to maintain price stability (no change in the price level), and Q and V change in year 2 as indicated above, then the Fed should have increased the money supply to 26.25 (approximately 4.88% increase) instead of 27. At a price level of 26.25, the price level remains at 5:

Year 1: 5 x 20 = 25 x 4
Year 2: 5 x 21 = 26.25 x 4

Example 2
Let's assume that in year 1:
P = 8
Q = 30
M = 40
V = 6

Let's assume that in year 2:
Q = 30 (no change)
M = 40 (no change)
V = 5.5
Problem: What is the change in the price level?

Solution: Using the equation of exchange for year 2:
P x 30 = 40 x 5.5
Solving for P:
P = (40 x 5.5) / 30
P = 220 / 30 = 7.33
This means that P decreased by approximately 8.7%.
Example 2 illustrates that, *ceteris paribus*, if the Federal Reserve keeps the money supply constant, and velocity decreases, then prices fall.

Video Explanation
For a video explanation of velocity and the equation of exchange, please visit:

YouTube Video

Introduction

What's in This Chapter?

A pound of strawberries sells for $3 this week and $2.50 next week. A dollar exchanges for 100 Japanese yen one week and 102 Japanese yen the next week. Strawberries decrease in price when they are in season and the supply is greater. The dollar decreases in value when the demand for dollars relative to the yen decreases. In a free market system, currency values change the same way as conventional products like strawberries. Their prices are determined by supply and demand.

If a government keeps the value of its currency constant (fixed) relative to another country's currency, it is similar to a government keeping the price of strawberries fixed for a period of time. Shortages occur when the price is set below the free market price, and surpluses occur when the price is set above the equilibrium. A freely fluctuating exchange rate system is more effective and economically efficient than a government-controlled, fixed-exchange-rate system. In a freely fluctuating exchange rate system, there are no long-run shortages and surpluses, and there is no need for central bank intervention. The first part of Unit 10 elaborates on these concepts.

The second part of Unit 10 describes the balance of payments. This is an estimate of the currency flows from and to other countries. The balance of payments consists of the current account, the financial account and the capital account. The current account includes all the day-to-day inflows and outflows of money: money exchanged for imported cars, computers, food, consulting services, tourism, securities investment earnings, and gifts. The financial and the capital accounts include the inflows and outflows of money involving purchases of financial investments, such as real estate, stocks, bonds, and foreign currency. Misconceptions about the trade deficit are discussed in this section, as well.

Section 1: Foreign Currency Exchange Rates

Purchasing Foreign Currency

Most countries exchange many goods and services with other countries.

Usually, before a product can be purchased from a foreign country, the buyer needs to buy the foreign country's currency. For example, a United States business purchasing German cars must first buy euros before it can pay the German exporter for the cars.

The values of most currencies fluctuate on a daily basis. For example, 10 Moroccan dirham may exchange for $1 (US) today, while next month it could exchange for $1.10. For a quick way to find currency exchange values, type "currency converter" in the Google (or any other search engine) search field.

In addition to currencies supplied by central governments, there are also virtual currencies accumulated in online games. People who play games online (World of Warcraft, Second Life, etc.) may accumulate game money and exchange this (buy or sell) for conventional currencies.

Bitcoins and Other Cryptocurrencies

Cryptocurrencies are gaining in popularity, acceptance, and legality. An unknown Japanese business person created the Bitcoin virtual currency and its supply is entirely non-physical and based on cryptography and sophisticated mathematical formulas.

Bitcoins are used for a variety of online transactions and, while gaining acceptance in conventional trade, are especially popular in the underground economy. The value of one bitcoin has ranged from less than $100 (US) to more than $68,000. As with many other currencies, the value of the bitcoin is determined by traditional supply and demand forces. The greater uncertainty (relative to established physical currencies) of the Bitcoin's value makes it a risky currency to use. An advantage of paying for or accepting Bitcoins is that it is quick and cheap to transfer and therefore especially popular in international transactions. Other so-

called cryptocurrencies gaining popularity include Litecoin, Cardano, Polkadot, EOS, XRP, Tether, Bitcoin Cash, Ethereum, Dogecoin, Ripple, Dash, Binance Coin, Stellar Lumans, and Monero.

How Do Fluctuations in Exchange Rates Affect Imports and Exports?

Fluctuating exchange rates affect what an importing business pays for the foreign product. For instance, if the value of the Nigerian naira relative to the U.S. dollar falls, then Nigerian products purchased by American businesses become less expensive. The following example illustrates this.

Let's say that this month an American oil importing company purchases 100 barrels of Nigerian oil. The following amounts are given (hypothetical data):
Let's say that Nigeria sells its oil for 20,000 Nigerian naira per barrel.
Let's say that $1 exchanges for 350 Nigerian naira.
Therefore, one barrel sells for 20,000 divided by 350, or $57.14.
Therefore, 100 barrels of Nigerian oil costs the U.S. company 100 times $57.14, or $5,714

If next month the U.S. exchange rate becomes 400 naira per dollar, the following happens:
Assume that Nigeria still sells its oil for 20,000 Nigerian naira per barrel.
$1 now exchanges for 400 Nigerian naira.
Therefore, one barrel sells for 20,000 divided by 400, or $50.00.
Therefore, 100 barrels of Nigerian oil costs the U.S. company $5,000.
Compared to the month before, the U.S. importing company is paying less for the 100 barrels of oil.

The above shows that if the U.S. dollar increases in value (we receive more of their currency per dollar), then the price we pay for the foreign product decreases. If the U.S. dollar decreases in value, then the price we pay for foreign products increases.

The following is an example of a foreign country purchasing a product from the U.S.

Let's say that this month a Japanese software-importing company purchases 500 software licenses from an American company. The following amounts are given:
The U.S. company sells its software for $40 per software license.
Let's say that $1 exchanges for 120 Japanese yen.
Therefore, one software license costs the Japanese importer $40 times 120 Japanese yen, or 4,800 yen.
Therefore, 500 software licenses cost the Japanese company 500 times 4,800 yen, or 2.4 million yen.

If next month the U.S. exchange rate becomes 125 yen per dollar, the following happens:
The U.S. company still sells its software for $40 per software license.
$1 exchanges for 125 Japanese yen.
Therefore, one software license costs the Japanese importer $40 times 125 Japanese yen, or 5,000 yen.
Therefore, 500 software licenses cost the Japanese company 500 times 5,000 yen, or 2.5 million yen.
Compared to the month before, the Japanese company is paying more for the imported products.

The above shows that if the U.S. dollar increases in value (we receive more of their currency per dollar; they receive fewer of our currency per yen), then the price that foreign countries pay for a U.S. product

increases. If the U.S. dollar decreases in value, then the price a foreign country pays for U.S. products decreases.

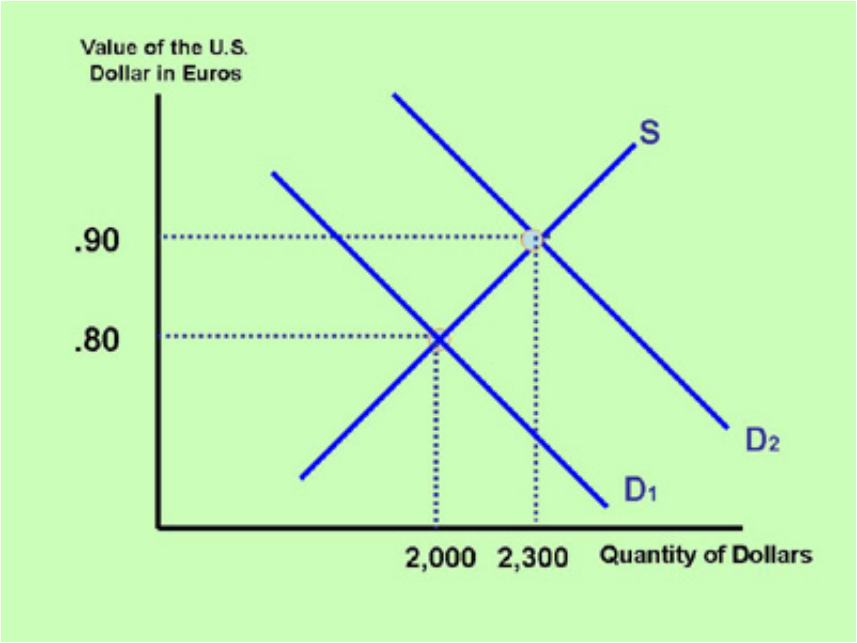
China's exchange rate policies have come into the news lately because its government has been accused of manipulating its value. The Chinese government has kept its currency, the yuan renminbi, artificially low in order to make its exports less expensive. As the above example illustrates, if a country's currency decreases in value, its products become less expensive to foreign countries. The United States and other countries have complained to the Chinese government and asked it to allow the yuan renminbi to fluctuate according to free market forces.

Exchange Rate Determinants

Exchange rates in free (flexible) markets fluctuate with changes in supply and demand for the currency. The main determinants of demand for and supply of a currency are a country's economic and political stability, its inflation rate, its real return on investments, and speculators' expectations of the future value of the currencies. For example, if a country experiences a low rate of inflation and economic stability, then individuals and companies from foreign countries will be more likely to invest in that country and purchase their products. This increases the demand for the country's currency and raises the value of its currency. A higher real return on investments also increases demand for a currency, as investors will purchase more of the country's stocks and bonds (or other investments) due to the higher rate of return.

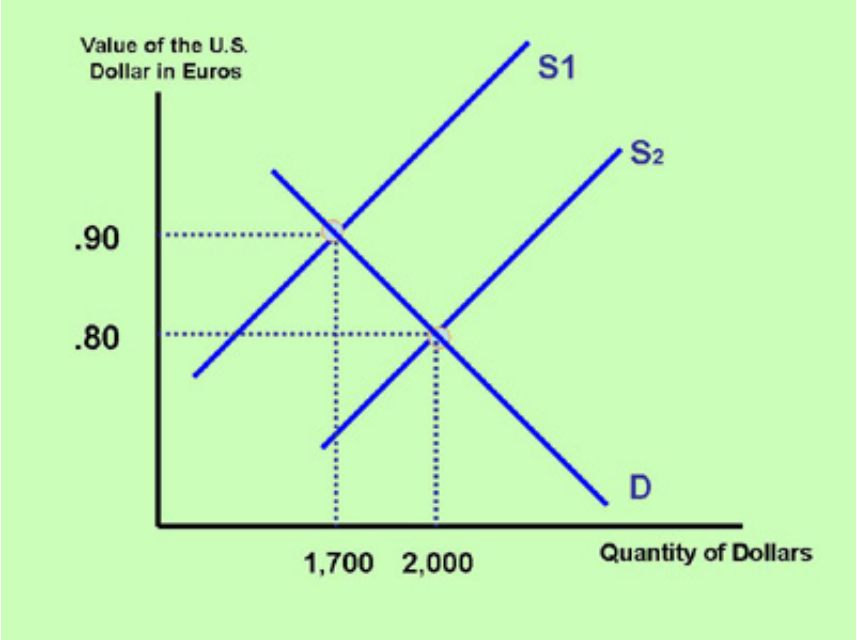
An Increase in the Demand for a Currency

An increase in the demand for a currency will increase its value, and vice versa. The graph below illustrates an increase in the demand for dollars relative to the euro. This leads to an increase in the value of the dollar relative to the Euro. The equilibrium value of the dollar increases from .80 Euros per dollar to .90 euros per dollar.



An Increase in the Supply of a Currency

An increase in supply of the currency will decrease the value of the currency, and vice versa. The graph below illustrates an increase in the supply of dollars relative to the Euro. This lowers the value of the dollar relative to the Euro. The equilibrium value of the dollar decreases from .90 Euros per dollar to .80 Euros per dollar.



Video Explanation

For a video explanation of foreign exchange rates and how changes in the rates affect prices of imports and exports, please visit:

YouTube Video

Section 2: Flexible versus Fixed Currency Exchange Rate Systems

Flexible Exchange Rate Systems

Most countries allow their currencies to fluctuate in value relative to foreign currencies. The currencies will fluctuate based on demand and supply forces, similar to demand and supply changes in the market for products. 

An increase in the demand for housing will increase the value (price) of houses. Similarly, an increase in the demand for the Australian dollar will increase the value (price) of the Australian dollar.

Depreciation and Appreciation

Depreciation and appreciation are changes in the values of currencies within a flexible exchange rate system.

If the supply of dollars increases, or the demand for foreign currencies increases relative to the demand for the dollar, then the value of the dollar falls. We say that the dollar depreciates.

If the demand for dollars worldwide increases, then the value of the dollar rises. We say that the dollar appreciates.

Section 3: The Balance of Payments

A Country's Inflows and Outflows of Funds

Countries that engage in international trade experience inflows and outflows of products, services, currency purchases, and investments. The accompanying flows of money used to pay for these transactions are recorded in an accounting system called the balance of payments. The balance of payments consists of two main accounts: the Current Account and the Financial and Capital Account.

The Current Account

The current account records international transactions that typically represent a transfer of goods and services (exports and imports listed in categories 1 and 2 below), as well as transactions that provide income from persons or investment accounts in the United States to citizens in foreign countries, or vice versa (categories 3 and 4 below). The Current Account consists of the following four categories:

1. The merchandise trade account
The merchandise trade account includes imports and exports of tangible products, such as cars, computers, clothes, and televisions. If a country imports more tangible products than it exports, it experiences a trade deficit. If it exports more tangible products than it imports, it experiences a trade surplus.
2. The services account
The services account includes flows of international money payments for services such as transportation, insurance, banking, consulting, and tourism.
3. The investment income account
The investment income account reflects United States investment earnings from foreign stocks, bonds, and real estate, minus foreigners' investment earnings from United States stocks, bonds, and real estate.
4. The transfer payments account
The transfer payments account includes gifts from American citizens to friends or relatives living abroad and vice versa. It also includes retirement payments (for example, a Social Security check) to a person living abroad, and vice versa.

The Financial and Capital Account

The Financial Account includes the first two categories listed below, whereas the Capital Account includes all transactions listed under item 3. The total dollar value in the Financial Account is generally far greater than that in the Capital Account. The two categories of the Financial Account are therefore far more significant than the Capital Account category.

1. U.S.-owned assets abroad
The U.S.-owned assets abroad account includes official reserve assets, government assets and private assets (gold, foreign currencies, foreign securities, positions in the IMF, U.S. credits and other long-term assets, direct foreign investments, and U.S. claims reported by U.S. banks).
2. Foreign-owned assets in the United States
The foreign-owned assets in the United States account includes foreign assets in the United States (securities, direct investments, U.S. currency, and U.S. liabilities reported by U.S. banks).
3. Capital transfers
The capital transfers account includes debt forgiveness, migrants' transfers (goods and financial assets accompanying migrants as they leave or enter the country), and transfers of titles to fixed assets and the transfer of funds to the sale or acquisition of fixed assets, gift and inheritance taxes, death duties, uninsured damage to fixed assets and legacies. It also includes the acquisition and disposal of non-produced and non-financial assets including sales and purchases of non-produced assets (rights to natural resources, sales and purchases of intangible assets, such as patents, copyrights, trademarks, franchises, and leases).

A Debtor Nation
A country is called a "debtor nation" if its current account is negative. The United States became a debtor nation in the early 1980s primarily because its merchandise trade (exports minus imports) account became negative. Unlike popular belief, as we will see in the next section, being a debtor nation is not *necessarily* a bad thing for the country's overall economy.

The Balance of The Sum of All Accounts is Zero

The balance of the sum of all accounts, including a statistical discrepancy, is zero. Given the size of the money flows and the difficulty in measuring the millions of international trade transactions, the discrepancy can be a substantial number. After taking the statistical discrepancies into account, the sum total of all accounts combined is zero.

Video Explanation
For an excellent explanation of the three components of the Balance of Payments and its meaning, please click below. Source: Investopedia (www.investopedia.com).

YouTube Video

Please click HERE for the latest Bureau of Economic Analysis statistics on the United States Balance of Payments (click on "International", then "Balance of Payments"). As an example, find a summary of a recent quarter below.

United States Balance of Payments, Quarterly, Seasonally Adjusted Data, Billions of Dollars

Current Account	
Exports of Goods	383
Imports of Goods	572
Merchandise Trade Balance (Trade Deficit)	-189
Exports of Services	182
Imports of Services	123
Services Trade Balance	+59
Investment Income Receipts, including compensation of employees	195
Investment Income Payments, including compensation of employees	142
Investment Income Balance	+53
Net Transfers of Government and Private Grants and Other Transfers	-34
Current Account Balance	*-113 (numbers may not add due to rounding)*
Capital Account	
Capital transfers (Net acquisition of financial assets)	7
Net acquisition and disposal of non-produced and non-financial assets	14
Capital Account Balance	*-7*
Financial Account	
Net U.S. borrowing (U.S.-owned assets abroad minus foreign-owned in the U.S.)	48
Statistical Discrepancy	-58
Balance of Payments	*0*

Source: United States Bureau of Economic Analysis
http://www.bea.gov/international/index.htm#bop (click on "U.S. International Transactions") and http://www.bea.gov/newsreleases/international/transactions/transnewsrelease.htm.

Section 4: Common Misconceptions Regarding the Balance of Payments

Common BOP Beliefs

Three common misconceptions regarding international trade and the balance of payments are:

Myth #1: A trade deficit is always bad.

A merchandise trade deficit means that a country's merchandise imports exceed its merchandise exports. There are two possible explanations for a trade deficit:

Situation 1. Country A is economically weak and has low productivity, and therefore, its exports are weak. Country A is **forced** to import, because its own productivity is low. It has a trade deficit by necessity, not by choice. This is not a good situation.

Situation 2. Country B is economically strong and has a great amount of purchasing power. Country B **voluntarily chooses** to import, because its purchasing power is high and its economy is strong. This country's trade deficit is actually a symptom of its strong economic health. This kind of trade deficit gives no reason for concern, and does not require changes in economic trade policy.

Myth #2. We should protect our domestic industries to improve our balance of payments.

If we protect our industries by imposing tariffs and quotas on foreign products, other countries will protect theirs. This will lower our exports. The result is a loss in specialization and a decrease in our standard of living.

According to the Austrian School economist, Henry Hazlitt, imports are additions to our country's wealth. If we are able to increase our goods and services from abroad, it increases our quantity of goods and wealth. Real goods are obtained in exchange for paper money. We have the purchasing power to do it, and can feel fortunate to enjoy goods that we either cannot produce, or cannot produce as efficiently.

Proponents of tariffs and quotas criticize countries that sell their goods to us at below-market prices. According to Hazlitt, the argument that these countries sell their goods cheap (dump) in order to obtain a monopoly position in that industry usually is of no concern in the long run. In the long run, the potentially high monopoly price will attract competition and will negate the effects of the monopoly forming. Low foreign prices should be welcomed, because they lower the general price level in our country and free up purchasing power for consumers to purchase other goods, including domestic ones.

Sometimes countries use protectionism (imposing tariffs, quotas, and other trade restrictions) to punish other countries' unfair trade practices. For example, the United States has accused China of violating intellectual property right laws. In addition, the United States is unhappy that China restricts international trade by, for example, requiring that U.S. companies form a partnership with a major Chinese company

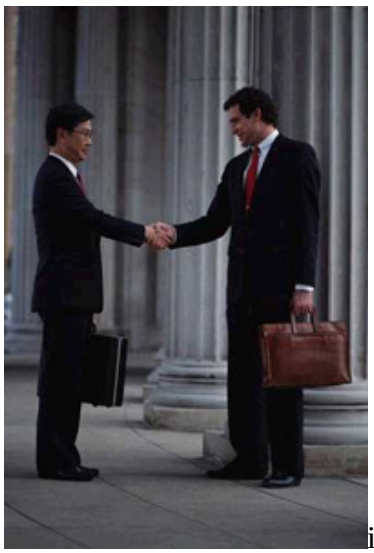
before they can invest in China. By punishing foreign countries (raising tariffs), the hope is that the foreign country will eliminate its unlawful and restrictive foreign trade practices. Thus far, China hasn't changed its practices yet and it appears that the Trump administration's protectionist policies have harmed U.S. economic growth.

Countries benefit the most and, in the long run, increase their standards of living if they engage in free and unrestricted international trade. Protectionism, on the other hand, leads to less specialization and less competition, and this leads to less efficiency and lower overall world-wide production.

Myth #3. We should discourage foreign investments into our country.

People believe that it is undesirable for foreign companies to purchase domestic real estate, businesses, stocks, bonds, etc. However, it is often a sign of a strong and stable economy, and it can be considered a compliment that foreign investors want to risk their savings in our economy. Furthermore, the additional capital provides funds for the expanded business operations, and results in greater employment. The argument that it would give foreign investors too much control over our economy is debatable, because most business owners are driven by economic motives and a desire to expand their wealth and not to upset any political or cultural balances. In this age of terrorism, countries do need to watch out for foreign investments motivated by political mal-intentions. If such investments do take place, it is the government's responsibility to immediately freeze and confiscate the foreign assets.

Economic Interdependence Strengthens Political Ties



Economic interdependence strengthens, not weakens, political ties. International trade may be the single most important deterrent to political and military conflict. Countries that have strong economic ties are unlikely to engage in serious conflict, because their economies have too much to lose if they go to war. Economists, therefore, encourage strong international economic ties and a free exchange of products and resources.

What About Sweatshops?

There has been much debate about factories in Third World countries that employ low wage workers for

production of goods meant for exports to industrialized countries. Critics point out that working conditions in these factories are poor and sometimes dangerous, and wages are insufficient to support minimal living conditions. Opponents of sweatshops support boycotting corporations that run these factories or that purchase their goods from these factories.

It is true that conditions at many so-called sweatshops are poor and employees are more prone to serious accidents. However, is boycotting these factories the answer? Many factories are owned and managed by local entrepreneurs who compete with other local companies as well as factories in other Third World countries. If these owners were to significantly improve the working conditions it would raise their costs considerably and they would need to raise their prices. This will price them out of the market if other local and foreign competitors don't improve their conditions. Therefore, it becomes a choice of going bankrupt or surviving and providing jobs at minimally (or less than minimally) acceptable working conditions. If the sweatshop goes bankrupt, unemployment will grow even higher than it already is. Laid-off sweatshop workers will then be forced to find other employment at local wages that are generally even less than at the sweatshop factory.

Critics of sweatshops will say that we need to force multinational companies to only purchase goods from factories with higher wages and good working conditions. For example, Nike has been criticized for running sweatshops in less developed countries. However, Phil Knight, one of the co-founders of Nike, wrote in his brilliant memoir "Shoe Dog", that when Nike became aware of the working conditions of some of the factories that manufactured Nike shoes (Nike doesn't own these factories - it merely places orders), it provided support to improve the conditions over time. It even encouraged some factories to significantly increase the workers' wages, but it was turned down by government officials who didn't want shoe workers to make more money than local doctors.

Another argument against raising poor countries' factory wages too much is that if wages improved significantly, then prices of the goods would increase, and multinationals may find it more beneficial to produce in their own (U.S., Europe, wealthier Asian countries, etc.) country. This would then also lead to the closing down of the less developed country factory.

Supporter of sweatshops point out that low wages and poor working conditions are part of a natural process of economic development. When a country with high unemployment and low wages begins the process of industrialization, it will struggle with poor conditions at first. The United States did so a little more than one century ago, Japan experienced this approximately 50 years ago, and many other currently well-off countries struggled at first. Sweatshops provide jobs to many people, contribute to economic growth and over time help raise wages and improve working conditions. Supporters of sweatshops believe that boycotting sweatshops will halt this economic development and permanently hurt workers in less developed countries.