ECONOMICS MADE SIMPLE(R)

By:

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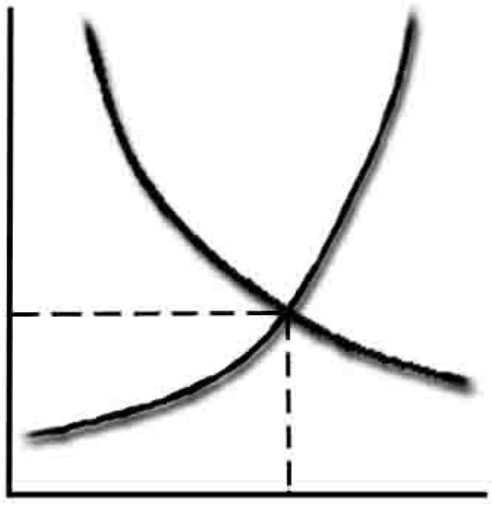


Introduction

For those who have ever taken a college level economics course, one of the most difficult obstacles to overcome is the technical language found in economics textbooks. Many students have trouble putting the information into useful language that they can understand and apply to economic concepts. The purpose of this supplement is to simplify the ideas in order to help the student break down the technical terms and concepts and put them into less complicated formats. It is not to be considered as a complete textbook for study of microeconomics. College level economics is being taught on a wider basis on the high school level as well. Unfortunately, many who teach at high schools do not have a thorough background in economics and may have difficulty simplifying the concepts for the high school student. This supplement will also provide insight for those who are dedicated to providing the best possible education for their students and the opportunity for presenting economics in a way that does not turn the student off and create the phobia of economics that is commonly found among those who were overwhelmed by the challenging concepts. Economics should be an exciting course, as it requires a great deal of analysis and evaluation to use the ideas in the real world. If some feel that economics is sterile and boring, it is likely that they actually just failed to gain a grasp of the subject or were taught by someone who was incapable of presenting the concepts in concrete and understandable ways.

The subject of economics is divided into macro- and microeconomics. Macroeconomics is 'the big picture' or the study of the whole economy. Microeconomics is the study of the individual business and its actions within the economy. Although economics can be studied in great depth and detail, this supplement will focus on the primary introductory concepts, for if one is hopeful of continuing on to intermediate and advanced ideas he must have a firm grasp of the fundamentals.

I hope you enjoy this book as a supplement or as a stand-alone resource for your studies. I wrote the Microeconomics portion over winter break and a couple years later I wrote the Macroeconomics portion. . .if anyone cares.

Thanks to Dr. Ballman and Dr. Conway from Augustana College in Rock Island, Illinois for making Economics fun for me back in the late 1970's and early 1980's. Go Augie!

Thanks also to Terrance Lee, a student of mine at Waubonsie Valley High School who decided that my book needed a little pizzazz and took it upon himself to fix up the graphs, add some formatting that was desperately lacking in my original version, and add an index.

Love to my wife Mary, and pat on the head for our cats Scooter, Dakota, and Spike. Meow.

And finally to Fehrion…wherever you are…

Contents

Economics at the introductory level can be broken down into a few basic components. Everything after that is basically expansion of these topics into more complex uses. If one does not understand the basics, it is indeed difficult to move on to the intermediate and advanced levels. The following is an outline for these basics.

INTRODUCTORY TOPICS

MICROECONOMICS

MACROECONOMICS

CHAPTER 1 Introduction to Economics

Economics has a few definitions. Most simply, it is the study of the way that we satisfy our wants and needs for goods and services. It has been called "the science of choice."

Economics - the study of behavior by individuals, businesses, and governments that are engaged in the production, exchange, distribution, and consumption of goods and services.

We live in a world of scarcity. There are no inexhaustible resources available to provide us with everything we desire. Therefore we must make decisions as how to best satisfy these desires. Consumers just want more of everything, businesses want more money and governments want to squeeze everything possible to do the best for their countries (at least that's the theory).

The Foundation of Economics

Economics is based on theories, laws, principles and models that are based on observations of human behavior. It is not a hard science such as math or science but is more so than sociology, for example. Let's first look at the basic observations of human behavior that make up the foundations for economic theories and laws.

The first observation is that mankind is acquisitive, that is to say people want to acquire things (at least in a market economy). In order to get things a person must have money, so we say that he is also **money searching**. The problem that one faces, though, is scarcity. As the Rolling Stones sang, "you can't always get what you want." Mankind has unlimited or insatiable desires for goods and services. The exception is that one can be satiated, or satisfy a want for a particular good. One may love Skittles candy but after a few bags in a short matter of time, he will be pretty stuffed and probably not want to see another bag of skittles for some time. However, for goods in general, wants are insatiable. The obstacle is “limited resources” so one must do the best he can with what he has.

The Economizing Problem – Society’s general wants are unlimited and insatiable, while economic resources are limited (scarcity).

This leads to two assumptions about mankind. People are rational and are **maximizers**. It is rational for a person to get the most benefit possible for the least cost. Exceptions to this idea are motivations that are beyond the realm of 'sensibility' such as extravagances or money spent on the basis of aesthetics, religious or political feelings.

In order to get the most for the least cost, people are maximizers. They seek to maximize **utility**. Utility is the satisfaction that one receives from a good or a service. Economists often use the term 'utils' to quantify the amount of satisfaction that one gets from a product. (I like to call it how many 'yahooies' you get from a product) To maximize utility, one will pay only that which he feels something is worth. Therefore, people often set up budgets to best use their money to satisfy their wants and needs.

Constraints

There are constraints put on us that make it difficult to choose and to get the maximum utility from goods and services. These constraints (besides scarcity) limit how much we can obtain. One is limited by his budget, and one's lifestyle affects this. Another constraint are the laws that affect what businesses can or can't do which in turn affects their decision-making process. Competition from others also limits people and businesses from getting everything they want. Another limit is the concept of **opportunity cost**. Since one must choose due to scarcity, that means one must give up something to get something else. The opportunity cost of buying a stereo could be the money you must give up for it but in economics we might say that one must give up a number of hours working for the stereo; hours that could have been used doing something else. The opportunity cost of doing well on a test would be sacrificing the viewing of your favorite television show the night before. Sometimes opportunity cost is referred to as the **real cost**, i.e. what one *really* gives up to get something else.

Two more constraints upon us are **the law of diminishing returns** and **the law of increasing costs**.

The Law of Diminishing Returns – As you add more inputs into the production of a product, eventually the additional output will diminish.

Suppose a machine is designed for three workers. If two people are operating the machine, the addition of the third worker will definitely add to the output of the machine. However, if you add a fourth worker, he will not add as much as the third worker. The addition of a fifth worker will probably yield even less as things start to get crowded around the machine. Eventually, production may even start to fall as the workers are simply getting in each others' way and thereby hindering production.

The Law of Increasing Costs – The more of a product that is produced, the more it costs to produce it.

The common response to the law of increasing costs is, "but I thought if you produce more you can lower the unit costs of a product. Isn't that why if you buy things in bulk, they are usually cheaper?" Yes, that is true, only up to a certain point, though. As one

dedicates more resources to the production of a certain good one must start to sacrifice the production of other goods. Remember opportunity, or real costs? So it is not just costs in pure dollars but also the costs of that which we give up.

Economic Methodology

Let's switch our attention now to the tools that economists use to analyze and hypothesize about human behavior. The first such tool is the convenient **ceteris paribus**. This means 'other things equal.' Without this, it would be next to impossible to analyze the economy. Ceteris paribus means that we eliminate outside influences so that we can focus on the particular item we wish to study. This is easy in theory and almost impossible in practice. For example, what affects one's purchasing decisions regarding a bag of M&M's? Obviously, there are a number of things that will determine one's behavior here. What an economist does is fix all factors except for what he wants to study so the economist can then focus on how many M&M's one will buy based solely on the price of the candy, rather than muddling the picture with how hungry someone is or how much income he has or whether he even likes M&M's. That is not to say these factors are ignored. They are merely set aside so that one thing at a time may be studied.

The next tool helps us study the effect of one variable on another. This tool is the **functional relation**. If 'a' is a function of 'b', this means that 'a' depends on what the situation is with 'b'. A function is written this way: D = f(Px). This means that 'D' (in this case, demand) is a function of 'Px' (in this case, the price of product 'x'). Simply stated, demand for product 'x' depends on its price. A functional relation can handle a number of variables when expressed as an **equation**.

An equation allows us to consider more than one factor at a time. An equation may be written this way: D = f(Px, income, tastes, Pz, expectations) which looks at many variables at once. But the equation does not tell one how demand is affected by these variables.

Another tool is the schedule**.** It is needed to establish functional relationships. It is a listing of hypothetical or empirical (real) data whose connection we want to investigate. The following is a schedule of the relation between the price of a product and the quantity that will be bought at those prices.

Price	Quantity
$1.00	200
$2.00	130
$3.00	75
$4.00	10

A graph is used to visually display the results found in a schedule. One should always follow the rules of graph making to insure that no mistakes are made. Two primary rules are to draw the graphs carefully to get things right and to always label the axes so that both you and the viewer know what you are talking about. After plotting points from the schedule, we usually play 'connect the dots' to fill in the missing information we assume would fit in. If there is no pattern however, this is difficult and will then normally tell us that there is no relation between the two variables. Ridiculous correlations are sometimes found but these can easily disproved. The following is a graph of the information found in the above schedule.

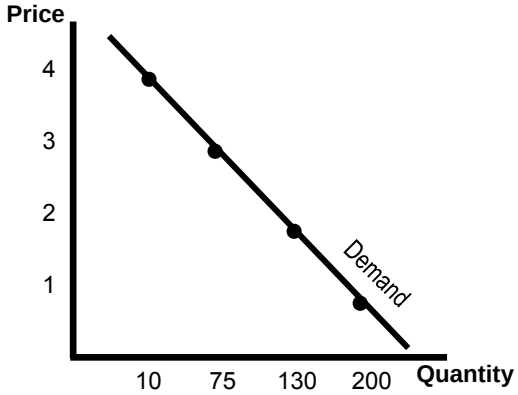


Figure 1.1

Once a curve is established, it must be labeled; in this case, it is demand.

A final concept often used early in economics is the idea of **specialization**. In order to get the most out of one's personal resources, it is important that the individual has a lot to exchange for what one desires. In traditional economies or in past times, people were fairly self-sufficient. Yet this requires a great deal of work to supply everything based solely on available resources. In a market economy we do what we are best at, or specialize, and then trade our surplus for those things we need or want. The individual works and uses his money to buy what he needs rather than producing everything for himself. In doing this, one can attain a higher level of living. Countries do the same based on the idea of **comparative advantage**.

Comparative Advantage – The idea that you specialize at what you are best at and then trade for other goods and services

Through comparative advantage, all can benefit, even if one is better at doing everything.

Absolute Advantage – The idea that you are better at producing a good than someone else.

That's all it is; absolute advantage is not used for much else. Comparative advantage is the useful concept that shows the advantages of specializing. Comparative advantage can be remembered by comparing two products and producing what one is relatively better at. Here is an example that shows this concept:


Example 1.1

Let's compare Japan and the United States in the production of VCR's and refrigerators (hypothetical data). Suppose Japan can produce a VCR in 3 hours and a refrigerator in 4 hours. The U.S.A. can produce a VCR in 7 hours and a refrigerator in 6 hours. Japan is faster than the U.S.A. in VCR's so it has *absolute advantage* in VCR's. It also has *absolute advantage* in refrigerators since it also produces them faster. To get one of each, Japan works 7 hours and for the U.S.A. to get one of each it must work 13 hours.

Number of Hours to Produce

	Japan	USA
VCR	3	7
Fridge	4	6
Total	7	13

Figure 1.2

Japan has the absolute advantage in both, but *cannot* have comparative advantage in both. Comparatively speaking, Japan is better at producing VCR's. It can produce a VCR more than twice as fast as the U.S. but is only 50% faster in producing refrigerators. As a result, Japan has the comparative advantage in VCR's and the U.S.A. has the comparative advantage in refrigerators. .So how can Japan benefit by trading with the United States?

If Japan specializes in VCR's, it can produce 2 of them in 6 hours. If the U.S.A. specializes in refrigerators, it can produce 2 of them in 12 hours. Now Japan can trade its extra VCR for the U.S.A.'s extra refrigerator. In doing this, both now have 1 of each item just like they could have by working alone, but both have saved 1 hour of work. So, through specialization, both now benefit. A person may be both a great lawyer and a great typist but will make much more money by doing lawyer work and hiring a typist, even if the typist does not have typing skills comparable to the lawyer's.

Economic Fallacies

A final topic in the introductory unit is to explain why economists are not always correct in their predictions. The obvious answer is that we are studying human

behavior, which is not always quite so predictable. Yet sometimes there are also problems in the thinking that is used to set up hypotheses.

One problem that occurs is a bias in thinking. Put a Republican up against a Democrat and you can come up with vastly different ideas. Sometimes these differences may just be in the use of descriptions, statistics and terms. The terms used by the media, 'pro-life' or 'anti-abortion' mean the same thing but can cause a difference in perception by the public of those being described.

Sometimes there are mistaken ways of thinking that are called economic fallacies. There are two of these but they go by a number of names, which can be very confusing. Actually, only one of these has a number of names. The first one is simply called the **fallacy of composition**, nothing else. This is the concept of focusing on an individual event and ignoring the resulting changes that occur due to this event.

Take OPEC, for example. The countries try to keep oil prices high by agreeing to limit production and export of crude oil. If a country were to cheat and sell a little extra, it could make some more money. The fallacy follows then by saying if one can benefit by cheating a little, then cannot all countries benefit as well? Yet it should be obvious that with a lot of extra oil on the market, prices will fall and nobody will be better off.

The second fallacy goes by many names. It is called **false syllogism**, **post hoc, ergo propter hoc fallacy**, the **after this, therefore because of this fallacy**, or the **cause and effect fallacy**. This is the fallacy of trying to prove a point while ignoring certain other factors that led up to the situation. This most often occurs when analyzing current economic problems. It's like pulling up a dandelion but forgetting about the root underground that actually is the foundation of the weed.

CHAPTER 2 Production Possibilities Curve

The PPC

One of the first graphs presented in microeconomics is the **production possibilities curve** or **PPC**, for short. It is presented and then lots of mumbo jumbo is presented about slopes and tangents, etc. This is fine if you are the sort of person who enjoys calculus but is very confusing for others. The PPC is very important early on because it demonstrates ideas that will continue to be used throughout the course and it embodies, all by itself, five major economic concepts.

Production Possibilities Curve – The curve that shows the different combinations of two products that can be produced with a specific set of resources. It shows *scarcity*, *choice*, *specialization*, *opportunity costs*, and *the law of increasing costs*.

The PPC requires a few assumptions and the use of ceteris paribus. To start, we assume that a society can produce two different goods; in this case we will say hand-woven baskets and chocolate chip cookies. Then we say that we have heterogeneous (different) factors of production (resources) of capital (machines) and land (natural resources) that are fixed (do not change). Our third factor is labor, which can be switched from basket weaving to baking cookies. If <u>all</u> of our workers weave baskets, we can produce 1000 baskets a day, and if <u>all</u> of our workers bake cookies, we can produce 500 dozen a day. If we have some workers weaving and some baking, we can produce some of each. If we randomly assign workers or if they are equally adept at producing either good, we would expect to have a straight line connecting our two extremes. In this case, it is called a production possibilities <u>line</u>. Here is how it looks graphically.

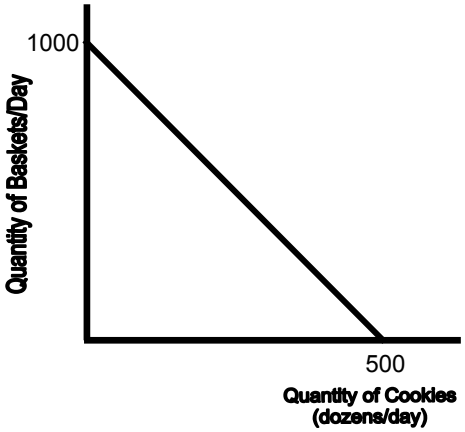


Figure 2.1

This line by itself shows three concepts. First is *scarcity* because only so many cookies or baskets can be made in a day, not an unlimited number. The second concept is *choice* because one must choose which combination of goods to produce. One cannot be on more than one point at a time on the curve. It should be noted that if one is on the line, there is not a point that is better than another; it is merely a matter of preference on the part of the society. However, if one is producing <u>inside</u> the curve, he is being inefficient, because given the available resources, more of a good could be produced without sacrificing any of the other good. The third concept demonstrated by this line is the concept of *opportunity cost*. If one is on the line, the only way he can get more cookies is to give up some baskets, so he is giving up something to get something else.

Specialization and the Law of Increasing Costs

As we have noted earlier, though, we can benefit by specializing. Now, we divide our laborers according to their best skills. Our best bakers will bake cookies and our best weavers will weave baskets. Before, with random assigning of work, we may have had people that didn't even know how to turn on a stove baking cookies, or a master chef may have been told to weave baskets. If we specialize, we can expand our production beyond the original limits of our line and we now have created a bowed out curve that is said to be concave (from the origin it forms something like a big 'cave').

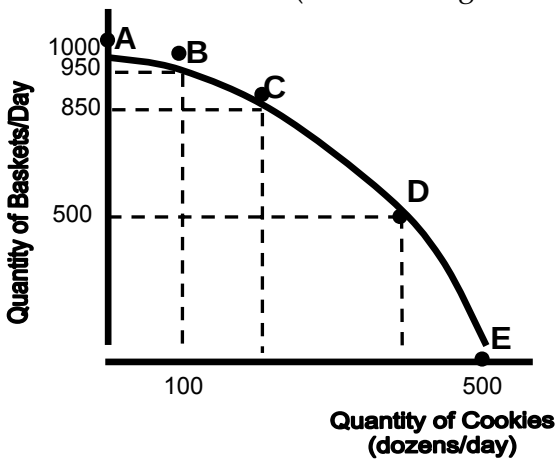


Figure 2.2

The bowed out curve now demonstrates the concept of specialization.

Now let's tackle the last idea of the law of increasing costs.


Example 2.1

Suppose we are producing 1000 baskets a day. If we want to add some cookies to our society, we must give take workers out of the basket weaving industry. When specializing, we will want to get rid of our worst basket weavers and take the best bakers. Initially this will be great; the rotten weavers weren't doing much anyway, so the loss of their resources will have little effect on the number of baskets produced. If we move from point 'A' to point 'B', we gain 100 dozen cookies and only give up 50 baskets. As we continue to add to our cookie output, we must sacrifice more baskets to get the same amount of cookies. To go from 'B' to 'C', a gain of another 100 dozen cookies, we must now give up 100 baskets. The reason is that we must now start sacrificing workers who are pretty good basket weavers. To go from 'D' to 'E', another gain of 100 dozen cookies, we have to give up 500 baskets. Our best basket weavers are asked to bake cookies, so it takes a lot of them to make just 100 dozen cookies, something at which they are not skilled. As we move along the curve, the cookies become 'more expensive' or cost more (in terms of baskets given up) to make more. The same holds true if one goes back up the curve. Baskets will be

'cheap' in terms of cookies given up but become progressively more expensive as even more cookies are sacrificed for more baskets. This shows the law of increasing costs as production increases.

The curve shows our limitations. If we are inside the curve, we are not reaching our full potential. Yet we cannot produce beyond the curve because the curve implies full use of our resources. The only way to produce beyond the curve is to have a change in our resources, which have been fixed. To create a new curve would require more workers, more or better machines, or technological changes. If the change only affects one of the goods, then only that axis will be affected. For the whole curve to shift, both goods must be affected by the changes.

CHAPTER 3 Supply and Demand

Demand

The concepts of supply and demand are fairly simple by themselves. There are a couple tricky spots which can cause disastrous results come test time if they are not carefully regarded. Let's start with demand.

Demand – The relation between the price and quantity of a good that shows for all (each and every, or various) prices the quantity that consumers are willing and able to buy.

A couple of points to make--by price, we may mean the price of goods (most often) but price may also refer to wages, rent, profits and interest rates as well. Also, if one is not willing or able to buy the good, he does not have a demand for the good. Finally, if one is willing and able to buy the product but cannot find the good (store is sold out, ran out of gas in the middle of nowhere, etc.) he is said to be an 'unsatisfied buyer.'

The first stumbling point regarding demand is the term **quantity demanded**. Quantity demanded is the amount desired at <u>one</u> price. At one price, what is the 'quantity' demanded? If price changes, then what is the new 'quantity' demanded? It has changed due to the new price. Yet <u>demand</u> has not changed because demand is the amount bought at <u>all</u> prices. We will return to this in a bit.

Law of Demand – For a 'normal' or 'superior' good, as the price of the good rises, the quantity demanded decreases.

The law of demand is an inverse relationship -- one goes up, the other goes down. This can be easily demonstrated at an auction. Early in the bidding, plenty of people may wish to buy a good. Yet as bidding raises the price, people drop out; fewer and fewer desire the good at the higher prices. Why does this happen? The foundation for the law of demand is the concept of diminishing marginal utility.

Remember, utility is the satisfaction one receives from a good. **Marginal** means the next or additional or last unit of a good. Recalling that a consumer's desire for a particular good may be satiated, we get the use of diminishing marginal utility.

Law of Diminishing Marginal Utility – The added satisfaction one gets from consuming more units of the same good decreases as one uses more of it.

A bag of Skittles will be very tasty, but the 20th bag within an hour will not provide nearly as much enjoyment, if any (especially if it gives you a stomach ache or worse!)

Applying this to demand, we see then that if another unit of a good does not give you as much satisfaction as the previous unit, you will not be willing to pay as much for that additional unit. As a matter of fact, the only way you will buy more is if the price is lowered.

Two other ways of looking at this are the income and substitution effects. The **income effect** says that as the price of a good rises, it causes your purchasing power to drop; in essence, your 'real' income is lowered so you can't afford it and you will buy less of the good. The **substitution effect** says that as price increases you will find substitutes for the product, which are cheaper and you will therefore buy less of the product when its price rises.

There are two exceptions to the law of demand. The first has the quite sophisticated name of **'snob appeal.'** This is where human behavior overrides common sense. There are some products which appeal to the very rich simply because they are more expensive. The higher the price, the more quantity demanded. The second exception is typically an 'inferior' or generic good that is called a **giffen good**. Let's suppose you are on a limited budget and have to buy a certain amount of generic products to get by. If prices rise across the board, you will be forced to buy even more generic products even though their prices have risen as well.

In graphing supply and demand curves and looking at the relation between price and quantity, we need a schedule of data to begin. The following is some hypothetical data we will use to create a demand curve.

Price	Quantity
$5.00	500
$4.00	600
$3.00	900
$2.00	1400
$1.00	2500

When graphing the data, place the price on the vertical axis and quantity on the horizontal axis. Plotting the points and filling in the gaps gives a downward sloping demand curve.

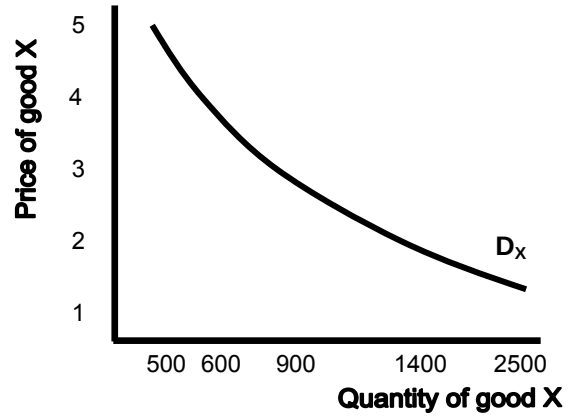


Figure 3.1

The whole curve is demand, while a point on the curve is quantity demanded.

Variables Affecting Demand

Now we move to what affects the demand curve. We have already established that price has an effect on how much is bought. There are a number of other factors to consider as well. An equation is set up to show these factors:

$D_x = f(P_x, P_z,$ *income*, *tastes*, *expectations of future prices*, *change in number of consumers in the market*).

The first variable, P_x, is the price of the product itself. This variable must be studied separately because it affects demand differently than the other variables. If the price of the product changes, you will move to a new point on the curve, or to a new placement on the demand schedule. It does not change demand. It is a change in quantity demanded. This is a critical point of information! The whole curve is demand. If the price changes, you are simply moving to a different spot on the demand curve. If the price rises, you move up the curve and the quantity demanded decreases. Demand did not decrease, quantity demanded decreased. Using the graph, if price changes from $4.00 to $2.00, the quantity demanded changes from 600 units to 1400 units. Demand is the same; we are just on a new point of that demand curve--a change in quantity demanded.

All the remaining variables will change demand. A change in demand means that at the same price, you will buy a different amount, which takes you off of the original curve. Once off of the curve, a new demand curve is created--a change in demand. The

curve moving to the right is an increase in demand. You are buying more than you were before at the same price. The curve shifting to the left is a decrease in demand. You are buying less than you were previously at the same price. It is very important to use left and right for decrease and increase (instead of up and down as the supply curve does not follow the ideas of up and down).

The first variable to look at here is the price of Z (P_z), or the price of related goods. Related goods fall into two categories: substitutes and complements. A **substitute** is a good that can replace the original good, such as Coca-Cola being a substitute for Pepsi. A **complement** is a good that goes together with the original good, such as hot dogs and hot dog buns.


Example 3.1

Let's make Coca-Cola the original P_x and Pepsi the substitute P_z. If the price of Pepsi goes up, you will then buy more of the original Coca-Cola. The P_x has not changed, but you are buying more than before. You have moved to a spot that is to the right of the original demand curve for Coca-Cola. This is a change in demand. In this case, it is an increase in demand for Coca-Cola with the curve shifting to the right. So if the price of Z increases and demand increases for X, one can be sure that X and Z are substitutes.

Now let's make hot dog buns X and hot dogs Z. If the price of hot dogs increases, you will buy fewer buns even though the price for buns (X) has not changed. You have moved to a spot that is to the left of the original demand curve for hot dog buns. This is a change in demand, a decrease in demand for hot dog buns with the curve shifting to the left. If the price of Z increases and demand for X decreases, then X and Z are complements.

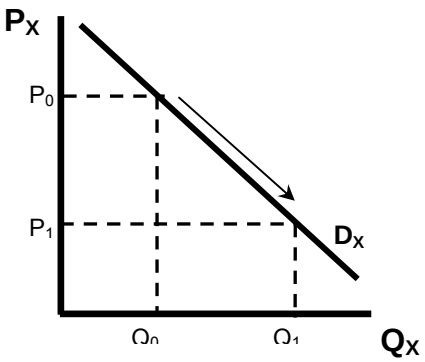
The next variable is income. For a normal good, if your income goes up, you will buy more of that good, even though the price has not changed. You move to a new quantity at the same price (to the right of the curve). This is a change (increase) in demand. A decrease in income would result in a decrease in demand with the curve shifting to the left.

Next is a change in your tastes. If you happen to eat a few too many Skittles and get sick, it is likely that you will stay away from them for quite a while. The price has not changed but you are not buying the same amount that you were previously. This is a decrease in demand. If you decide that you now like mushrooms on your pizza when previously you did not, you will buy more at the same price--an increase in demand.

A change in demand also occurs with what you expect to happen to prices in the future. If you hear that gas prices are going up next week, you will run out and fill up your tank before it happens. This is an increase in the demand for gas. The price has not changed (yet) and you are buying more. If you are planning to buy a new pair of Reebok pump basketball shoes tomorrow but then hear that there will be a sale next week, you will hold off on buying the shoes. Your demand for the shoes has decreased. The price has not changed (yet) and you are buying less.

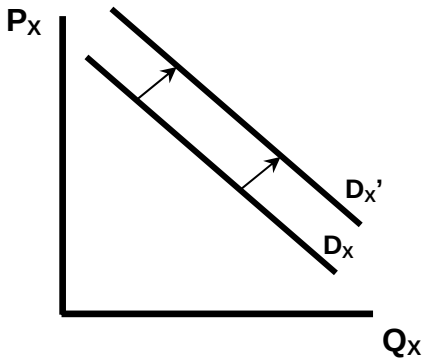
Finally, a change in the number of consumers in the market will change or shift demand. More consumers will buy more at the same price (increase in demand) and fewer consumers will buy less at the same price (decrease in demand).

Here's how the three changes look graphically.



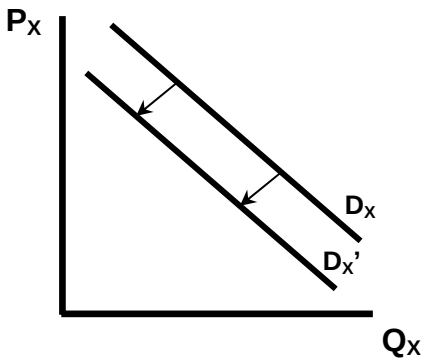
Change in Quantity Demanded
Move along the curve due only to change in P_X

Figure 3.2



Change in Demand
Increase – shift right

Figure 3.3



Change in Demand
Decrease – shift left

Figure 3.4

Supply

Supply – The relation between price and quantity of a good, which shows for all (each and every or various) prices the amount that producers are willing and able to bring to market.

The foundation for supply is the law of increasing costs.

The Law of Increasing Costs – As more of a good is produced, the cost of producing each unit will increase.

The only way that producers will bring more to market at a given time is if they get a higher price for the good. Therefore, the relation between price and quantity is a direct one and the supply curve is upward sloping.

As with demand, we speak of **quantity supplied** vs. supply. A change in quantity supplied is due to a change in the price of the good and one moves along the curve to a new point on the curve. A change in supply means that we are offering to sell a different amount than previously for the same price. This results in a shift of the curve to create a new curve--a change in the curve.

Variables Affecting Supply

The equation for supply is:

$S_x = f(P_x,$ *costs*, *technology*, *incidents beyond control of the producer*, *number of sellers competing*, *expectations*$)$

The first determinant of supply is the price of the product itself. If the price increases, the producer will bring more to market, moving up the curve for an increase in quantity supplied. A decrease in price will cause the producer to bring less to market for a decrease in quantity supplied.

The remaining determinants will cause a change in supply, or a shift in the curve. An increase in supply means that the producers will bring more to market at the same price. This puts one at a point to the right of the original curve and creates a new curve, so an increase in supply shifts the curve to the right, <u>not up!</u> A decrease in supply means producers will bring less to market at the same price. This puts one at a point to the left of the original curve and creates a new curve, so a decrease in supply moves the curve to the left, <u>not down!</u>

Costs affect how much a producer can make at different prices. If costs were to increase, a producer could not provide the same amount as before at a given price so the curve shifts to the left. Less can be provided at the same price. If costs were to decrease, more could be provided at the same price so the curve shifts to the right.

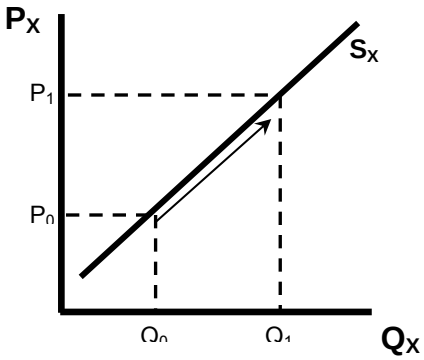
A new technology is similar to a decrease in costs. More of the good can now be provided at the same market price. This will shift the supply curve to the right.

There are many factors beyond the control of the supplier. Taxes imposed by the government would be treated as an increase in costs, which would cause supply to decrease. If there were a strike by the workers or a plant were to burn down, supply would decrease. Many other incidents beyond the control of the seller will affect supply, usually with fairly easily predictable results.

If more firms enter the market to produce a good, the supply will increase (shift right). If firms leave an industry, less will be produced and the supply curve will shift left.

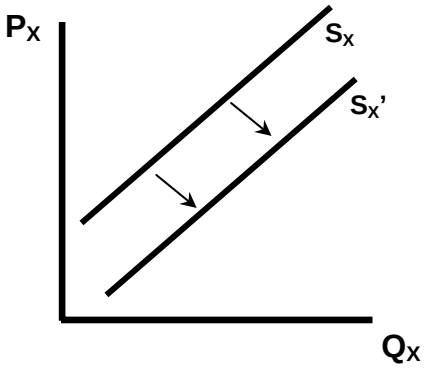
Finally, expectations of prices will change supply. If a producer expects the price of a good to rise in the future the firm may expand its production in order to take advantage of the upcoming price increase. On the other hand, a firm may withhold its supply until the prices actually do rise. This is not always easily predicted.

Here are three curves to demonstrate the changes in supply.



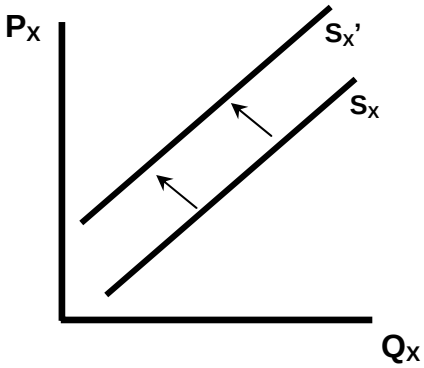
Change in Supply Demanded
Move along the curve due only to change in P_X

Figure 3.5



Change in Supply
Increase – shift right

Figure 3.6



Change in Supply
Decrease – shift left

Figure 3.7

Supply and Demand

Now we can put the two curves together on the same graph. It is obvious that supply and demand only intersect at one point. At this point, quantity supplied equals quantity demanded. Do not equate supply with demand because that would mean the entire curves are equal. At this price, it is said that we 'clear the market'. The consumers buy everything that is brought to market at this equilibrium price. According to the economist Adam Smith, this price is arrived at spontaneously, that is, on its own. This occurs, he said, through the means of an 'invisible hand' that guides the market towards the equilibrium price.

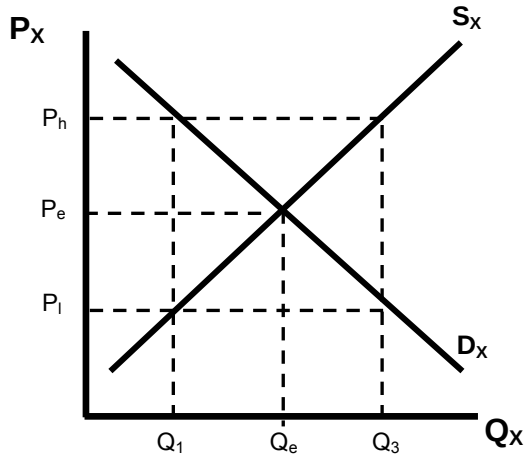


Figure 3.8

P_e is the equilibrium price and Q_e is the equilibrium quantity.

If we set a price above the equilibrium at P_h (high), the quantity now demanded is Q_1 while the quantity supplied is Q_2. We do not say that supply is greater than demand; we say that quantity supplied (Q_2) is greater than quantity demanded (Q_1). What can be confusing is that this situation may be referred to as **excess supply**. In this case the producers are willing to bring more to the market than the consumers want at that price. As a result, the product just sits on the shelf at the store and we have a **market surplus** or **glut**. The response of rational sellers is to compete to lower the price of the good in order to sell off the excess inventory and bring prices in line with the market.

If a low price is set, as at P_l, then the quantity demanded, Q_2, will be greater than the quantity supplied, Q_1. We do not say that demand is greater than supply, but we do have what is termed **excess demand** or a **shortage**. The low prices will cause buyers to compete and 'bid up the price' (like at an auction) until equilibrium is reached.

How do prices change if the market always tends toward equilibrium? This would result from a change in supply or demand. Let's suppose we are at the end of the season for clothes. New fashions will be coming out soon and people do not really want the old stuff. This is a change in demand due to a change in tastes. The demand curve will shift as the demand for old clothes decreases. We now have a new equilibrium as the quantity supplied decreases and price also falls.

An increase in supply would also force prices down. If a new huge diamond mine was discovered outside of South Africa, the supply of diamonds would increase, shifting the supply curve to the right. A new equilibrium would be reached with an increase in quantity demanded and a drop in price.

Here's how it looks graphically.

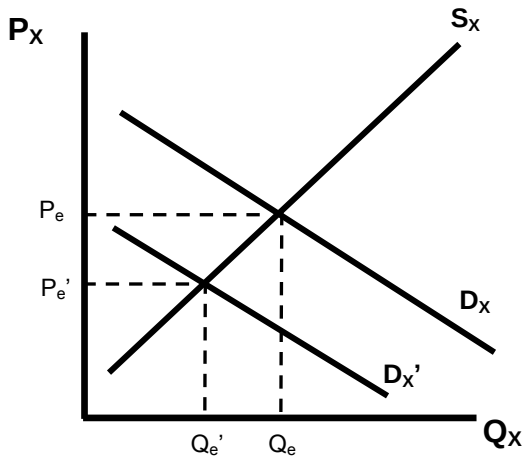


Figure 3.9

Decrease in demand for old clothes

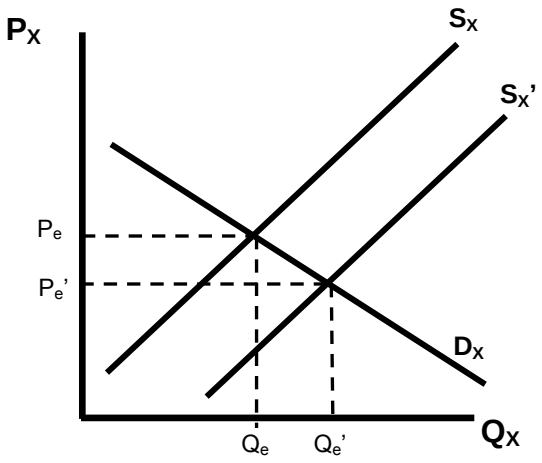


Figure 3.10

Increase in supply of diamonds

Both curves may also shift at the same time. Just be sure to draw the curves to understand what is happening. There is simply no substitute for analyzing a situation by drawing the graphs. For example, if supply were to increase and demand increased, what would happen? By drawing the graphs and locating the new equilibrium, one would see that the quantity would increase but the change in price would not be clear. Depending on how much the curves shifted, price may not change at all. Practice shifting the curves and determine what would happen to the equilibrium price and quantity.

Price Restrictions

Sometimes the government may impose price restrictions on a good or industry and create a situation where we will not be at the equilibrium price. These restrictions fall under the category of price ceilings or price floors. **Price ceilings** are best demonstrated by a **price freeze**, where prices are not allowed to rise above a set limit. Prices are kept artificially low. When it is said that a price ceiling is 'effective', that means that the ceiling is below what the market would reach on its own. It is effective if it does what the laws intended to accomplish, keeping the price from rising further. As we will see, effective does not necessarily mean it is good. A **price floor** may also go by the term of **price support**, or that which keeps the price artificially high.

To try to keep the two straight, try to think of the ceiling as something that you cannot get above. The ceiling keeps you from going higher if you could float up in the air like a helium balloon. A price floor is 'supported' above the actual price. No matter how you try, you cannot get under the floor.

A price ceiling keeps the prices low. With a price that is too low, the quantity demanded exceeds the quantity supplied and the result is a shortage. An example of a price ceiling is rent control. This is intended to provide 'affordable' housing for those with small incomes. Yet the low price will actually cause a shortage of housing as landlords will no longer be willing to rent apartments if they cannot get what they feel is a 'fair' price. Prohibition was a severe price ceiling. Alcohol was not legally available for any price. Consumers who still wanted alcohol could not get any. When this happened, black markets sprouted up all over the place. With a price ceiling, when one cannot get the product at the going price, they may be willing to pay a higher price for a good and there are always those who are willing to take the risks in order to provide the consumer with the product at a higher price. The supply that was missing legally is now taken over by the illegal market. Clearly, the government may step in to correct a wrong it sees and actually create a worse problem. With rent controls, rather than having cheaper housing, one may find no housing at all. With prohibition, rather than having no alcohol, crime increased in order to obtain alcohol and many died or suffered greatly by being poisoned by 'bad' alcohol produced by bootleggers.

A price floor or support may also cause problems. If the price is set artificially high, the quantity supplied is greater than the quantity demanded. This creates a surplus. An example of a price floor is the minimum wage law. It is designed to provide workers with an 'adequate' income. Yet with the price set high, the supply of workers exceeds the demand. Rather than pay the higher wages, employers just will not hire some workers, so rather than having <u>some</u> money, the workers will not get anything if they don't work. It may sound good to propose that anyone who gets a college education receive a salary of $50,000 a year upon graduation, but who would hire anyone for that much money just out of college? Price supports are common for farmers to guarantee a certain price for the goods that are produced. If the price on the market does not reach the support price, the government makes up the difference. The problem here is that our taxes pay to make up the difference and farmers will often overproduce since they are guaranteed the higher price.

CHAPTER 4 Elasticity of Supply and Demand

Elasticity

Another important question faces us concerning supply and demand. What shape are the curves? Are they 45° angles or what? The answer is in the concept of elasticity.

Elasticity – The concept of "how much" quantity changes due to a change in the price of a good.

Certain goods have certain tendencies that they follow. We will look at what factors affect the elasticity of demand and supply for a good but first, let's study the concept. Elasticity basically falls into two categories. A curve will either be elastic or inelastic. In actuality, the elasticity changes as we move along the curve. More on that later, also.

In general, an elastic curve is one where a change in price results in a big change in quantity. The elastic curve is a fairly flat curve. One of the easiest ways to remember this is by using the 'e' in the word elastic. Try to remember that the 'E' has lines extending out:  lastic. To be inelastic, a change in price has little effect on the quantity bought. An inelastic curve tends to be steep. Remember this by the tall letter "I" that starts the word  nelastic.

Elasticity Tests

There are three tests (really two--one can be split) to determine if a curve is elastic or inelastic. One is the relation between a price change and the change in total revenue resulting from the price change. The second looks at whether the % change in quantity is greater than the % change in price. The third is to calculate the elasticity coefficient of demand or supply.

Test 1: At its simplest level, if price goes one way and total revenue (sometimes referred to as "receipts" or "expenditures") goes the other way, the curve is elastic. If they go the same direction the curve is inelastic.

Elastic	Inelastic
$P_x \uparrow$ and $TR \downarrow$	$P_x \uparrow$ and $TR \uparrow$
$P_x \downarrow$ and $TR \uparrow$	$P_x \downarrow$ and $TR \downarrow$

In Figure 4.1, the price of x falls from \$1.50 to \$1.00 and the quantity rises from 6 to 11 units. To calculate total revenue we multiply 'p' by 'q'. Here, total revenue rises from \$9.50 to \$11.00. $P_x \downarrow$ and TR $\uparrow$ = Elastic. Total revenue rises because the gain in units sold makes up for the lower price.

In Figure 4.2, the price of x falls from \$1.50 to \$1.00 and the quantity rises from 7 to 8 units. The total revenue falls from \$10.50 to \$8.00. $P_x \downarrow$ and TR $\downarrow$ = Inelastic. Don't confuse price falling and quantity rising with the total revenue test.

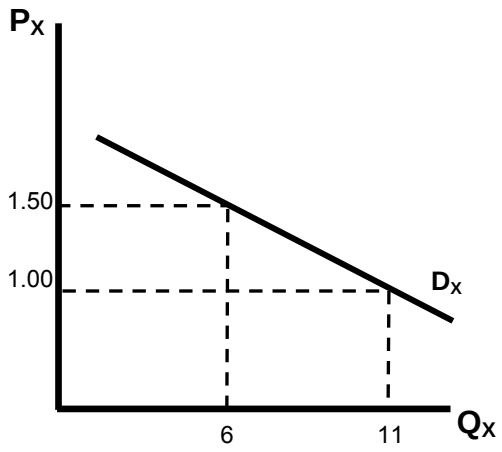


Figure 4.1

Demand is elastic

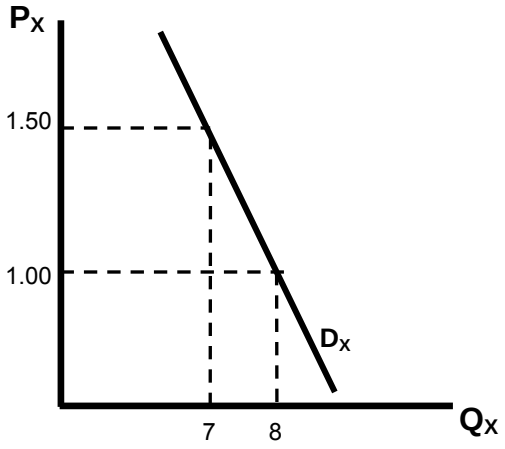


Figure 4.2

Demand is inelastic

Test 2: The second test is comparing the % change in price with the % change in quantity. One note is that we use absolute value in determining the % change to avoid confusion with negative numbers. If the % change in quantity is greater than the % change in price, the curve is elastic. So a 20% change in price that causes a 50% change in quantity is elastic. You can sometimes tell by looking at the curve (but that really isn't always precise). If you move more along the horizontal axis (quantity) than you do along the vertical axis (price) the curve is elastic.

If the % change in Q < the % change in P, the curve is inelastic. You will move relatively more along the vertical axis than the horizontal axis. A 50% change in price that causes a 10% change in quantity is inelastic.

Elastic	Inelastic
% change in Q_x > % change in P_x	% change in Q_x < % change in P_x

Test 3: The third way to determine elasticity is similar to the above but has some precise calculations. The formula for calculating the elasticity coefficient is (using absolute value) the % change in quantity divided by the % change in price. This will introduce some other types of elasticity.

$$\left| \frac{\% \Delta Q_x}{\% \Delta P_x} \right| = \text{elasticity coefficient} \qquad (\Delta \text{ means "change in"})$$

If the elasticity coefficient is:

> 1 then D_x is Elastic (% change in Q > % change in P)

< 1 then D_x is Inelastic (% change in Q < % change in P)

= 1 then D_x is Unit Elastic (or Constant or Unitary)
(% change in Q_x = % change in P_x)
(change in P = no change in total revenue)
(Demand curve is a rectangular hyperbola)
(Supply curve is a 45° line upsloping from the origin)

= 0 then D_x is Perfectly Inelastic (or Totally)
(change in Q = 0)
(curve is vertical and perpendicular to horizontal axis)

= ∞ then Dx is Perfectly Elastic (or Totally)
(this is when you will buy any amount at a given price and will buy nothing at any other price)
(change in P =0)
(curve is horizontal and perfectly flat)

Here are visual samples of each:

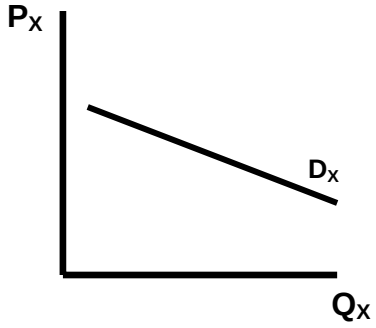


Figure 4.3
Elastic

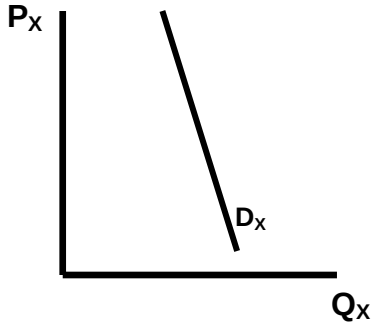


Figure 4.4
Inelastic

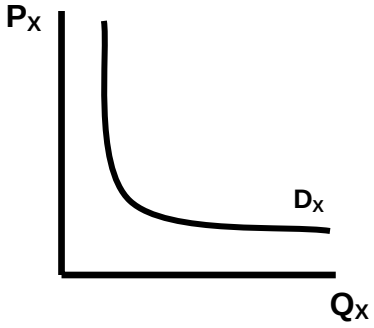


Figure 4.5
Unit elastic demand

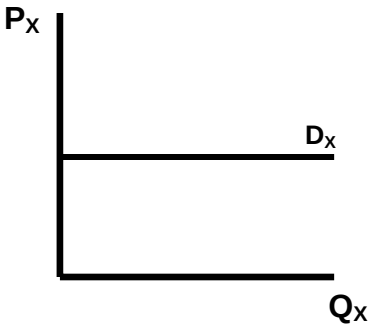


Figure 4.6

Perfectly elastic

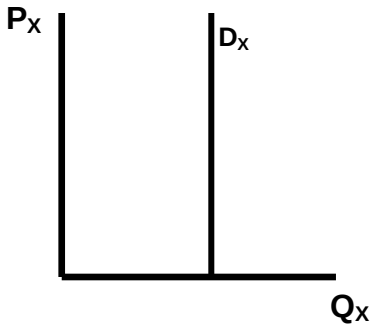


Figure 4.7

Perfectly inelastic

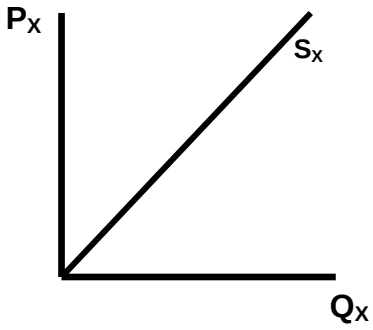


Figure 4.8

Unit elastic supply

Elasticity changes along the spectrum of the entire curve. Above and to the left of the midpoint of the entire curve the curve is elastic. At the midpoint, there is unitary elasticity. Below and to the right of the midpoint, the curve is inelastic.

Determinants of Elasticity of Demand

The determinants of elasticity of demand are: 1) whether the good is a necessity or luxury item, 2) whether there are many substitutes available for the good, 3) relative importance of good to your income, and 4) the amount of time one has to search for substitutes.

Necessities or needs tend to have an inelastic demand. If the price of milk drops, you won't go out and buy twenty gallons. On the other hand, if the price rises, you still need the product so you will buy close to the same amount that you did before the price increase. Luxury items or wants tend to be elastic. If a new car rises in price by $2,000 you will probably quickly drop out of the market for a new car.

Goods with many substitutes will be elastic. If the price rises for a good, you will forego that good and find a substitute instead. If a good has few or no substitutes, it will be inelastic. You will likely still buy the product despite the price increase.

If a good takes a big chunk of your income, it tends to be elastic. If a new car goes up in price, your budget cannot handle it and you will drop out of the market. If an item is trivial to your budget, it tends to be inelastic. If the price of a bag of skittles were to rise from 40¢ to 50¢, a 25% increase, you will probably still buy it.

Finally, the time you have to search for substitutes affects the elasticity of a good. More time, more subs, more elastic. Less time, less subs, less elastic.

Determinants of Elasticity of Supply

The two major factors affecting the elasticity of supply are factor mobility (the ability to switch the use of resources in production) and the amount of time one has to switch those resources. Time is the most important factor. For the immediate market period, supply is perfectly inelastic. For example, a baseball stadium has a set number of seats at any given price and cannot provide more even if people are willing to pay more for those seats. In the short run, the curve becomes more elastic. If the team knows it will make the playoffs, it can put up temporary seating in foul territory to accommodate more fans at a higher price (which is often done). In the long run, supply becomes even more elastic. If a team becomes greatly popular a new stadium may be built with more permanent seats to accommodate the additional fans coming to the ballpark.

When looking at changes in supply or demand and how quantity and price are affected, the best thing to do is to draw the curves and their shifts. Draw one with the situation as elastic and another inelastic. For example a tax on a good will shift the supply curve to the left. A tax on inelastic goods (for example, cigarettes) will be paid primarily by the consumer, because the consumer is willing to pay the higher price. A tax on elastic goods (for example, new cars) will be paid primarily by the producers because the consumer will not buy the product if prices rise very much.

CHAPTER 5 Cost and Productivity Curves

Now we turn our focus to the individual firm within the industry. What will determine how many workers a business will hire? How many units of a good will the business produce? No matter what type of business, the primary objective is to obtain as high a profit as possible. Market conditions and the type of business will have a great impact upon the decisions a firm makes.

Profit – Total Revenue (TR) minus Total Costs (TC)

Costs

Economic costs are any expenses paid out for resources such as raw materials, labor, etc. **Explicit costs** are actual $ payments for these resources. These are also referred to as **accounting costs. Implicit costs** are what are given up when using a resource when it could have been used elsewhere. If one is self-employed, the implicit cost of this is the salary that could have been earned working for someone else. This is quite similar to opportunity costs. **Fixed costs** are those that do not change (in the short run). Examples are insurance premiums, a mortgage on a building, etc. These are costs that must be paid even if a business does not produce anything. **Variable costs** are those that change depending on the level of production. Examples are labor costs, raw materials, electric bills, etc. **Total costs** are found by adding fixed costs to variable costs. **Marginal costs** are those incurred by adding more of an input resource. The marginal cost of adding another worker is the daily wages paid to the worker. **Average costs** are found by taking costs (fixed, variable or total) and dividing them by the output (quantity).

Profit

Accounting profits are those calculated by taking total revenue and subtracting explicit (accounting) costs. **Economic profits** or **pure profits** are found by taking total revenue and subtracting all costs, explicit and implicit. A **normal profit** is actually when a business breaks even (TR - TC = 0). This is called a normal profit because the business has enough 'extra' money to buy more resources and raw materials in order to keep producing. Sometimes this is also referred to as a **fair profit** because it seems fair that a business should at least be able to make enough money to stay in business. It is important to note that a normal profit is considered a cost of production. If it cannot cover this cost, it will go out of business. If it doesn't make enough money (normal profit) to buy more raw materials, it cannot continue producing.

Finally, there are a couple additional points about the short and long run. The short run is considered a period of time when at least one variable is fixed and cannot change such as a yearlong lease on a building. The long run is when you can adjust any factor of production. Therefore, there are no fixed costs in the long run.

Productivity Curves

We have previously established that people are maximizers, trying to get the most for the least cost, so let's first look at how to get the most out of our inputs and find the ideal point to maximize our production.

Productivity – the output provided by a resource.

To find the ideal level of hiring inputs, we must consider **total productivity, average productivity** and **marginal productivity**.

First we will look at a schedule that sets up the graphs. Let's assume that the plant size and number of machines are fixed. The only variable is the number of workers to hire.

Number of Workers (N)	Total Productivity (TP)	Average Productivity (AP) or (TP / N)	Marginal Productivity (ΔTP / ΔN) or (MP)
1	30	30	30
2	70	35	40
3	120	40	50
4	160	40	40
5	190	38	30
6	210	35	20
7	210	30	0
8	200	25	-10
9	180	20	-20

This demonstrates **increasing returns** and **diminishing returns**. When you first hire workers, they can be quite productive, getting the machines running and contributing a great deal of output. However, as more workers are added, they just start to get in each other's way, slow output down, and even eventually decrease total output. To look at the 'returns' we look at marginal productivity (MP). The first three workers

demonstrate increasing returns while the fourth worker and beyond show diminishing returns.

So how many workers should be hired? The answer is four. The ideal spot is where you are at your highest <u>average</u> productivity. Also, at this spot, marginal will intersect the average. You will not produce at the highest MP because at this point, the AP is still rising. It is possible for MP to be falling and AP to still be rising.

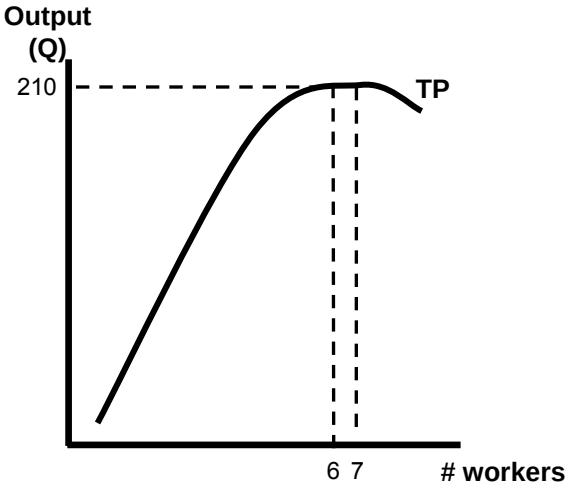


Figure 5.1

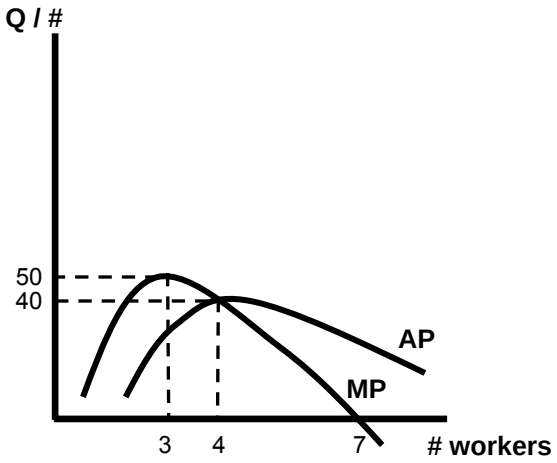


Figure 5.2

Example 5.1

Let's explain AP and MP in terms of your grade point average. Make your G.P.A. = AP. Then make your semester grades = MP. As long as your semester grades are higher than your G.P.A. you will want those grades because they will pull your G.P.A. up higher. Even if your semester grades drop next semester but are still higher than you G.P.A., you would consider that a good thing. If your semester grades fall below your G.P.A., you wouldn't want them. You would continue to accept semester grades that were above or at least equal to your G.P.A. Put back into MP and AP terms, if the <u>next</u> worker brings the average down, you should not hire that worker.

Here are some statements that would be useful to remember. They are taken from the curves.

if MP > 0 then TP is rising

if MP < 0 then TP is falling

if MP = 0 then TP is at its maximum output

if MP > AP then AP is rising

if MP < AP then AP is falling

if MP = AP then AP is at its maximum

Cost Curves

Now that we have found where we can 'get the most' from our inputs, we will look at getting them 'for the least', that is to say, our costs. If we are in the short run, we will have fixed costs. These costs remain the same regardless of the level of production. If our fixed costs (FC) were $1,000 / month, the graph would look like this.

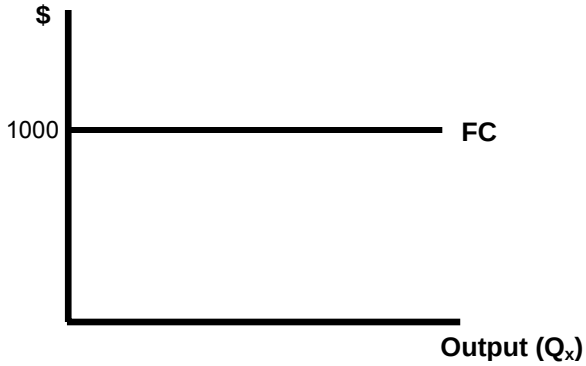


Figure 5.3

Fixed costs curve

Variable costs (VC) change with the level of production. They jump quickly at first due to start-up costs and then level off as we have increasing returns. Then, as we get less from our workers, the rate of increase climbs rapidly (the law of increasing costs). The curve looks like this.

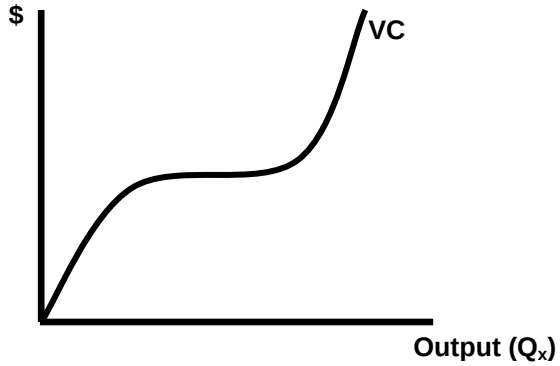


Figure 5.4

Variable costs curve

The total cost (TC) curve is the identical shape of the VC curve. It is found by adding FC to VC. Graphically, it is the same shape as the VC curve but starts on the vertical axis at the level of the FC curve.

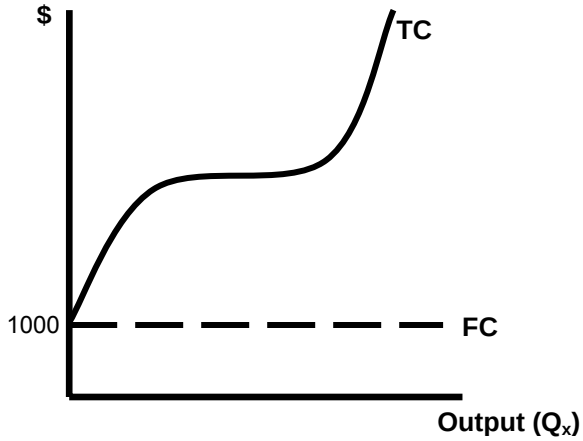


Figure 5.5

Total cost curve

Average fixed cost (AFC), average variable cost (AVC), and average total cost (ATC) curves are calculated by dividing the totals by the output at each level. Since fixed costs are the same at all levels of production, the AFC curve will continually drop as production increases. The AFC curve looks like this.

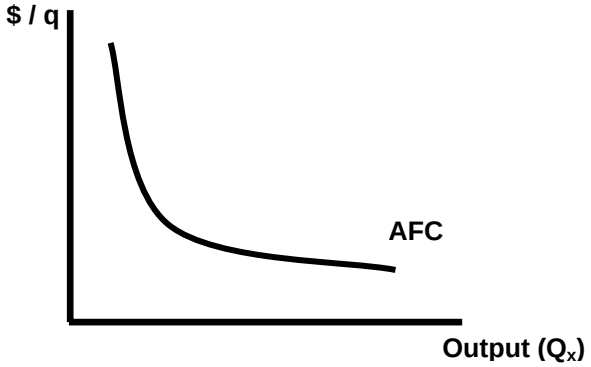


Figure 5.6

Average fixed costs curve

The average variable cost curve starts out high due to start up costs and then falls for a while and then rises as increasing costs kick in. The average total cost curve sits a little above the AVC curve with the distance between the two representing the average fixed costs. They look like this.

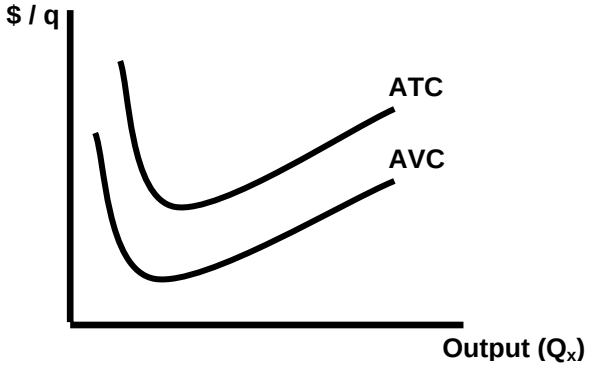


Figure 5.7

Average total cost and average variable cost curves

The marginal costs are the additional costs of producing another unit. It too, starts out high and then drops. As it drops, it is pulling down the average cost curves. Then it starts to rise due to increasing costs and then crosses the average cost curves. Once it does so, it starts to pull the average cost curves up. As MC become greater than AC, AC rises. Therefore, the MC curve intersects the AC curves at their lowest points.

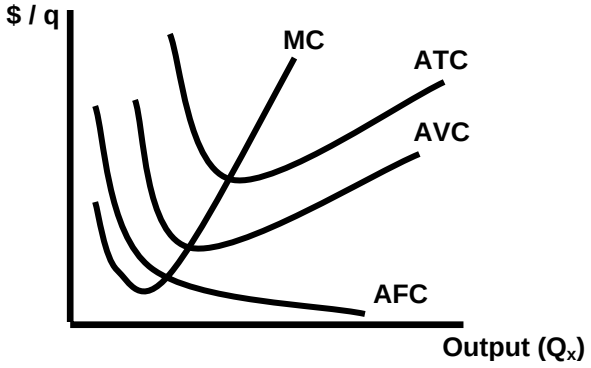


Figure 5.8

Marginal cost curve in relation to ATC, AVC, and AFC curves

MP and AP curves are mirror images of MC and AC curves. When marginal productivity is at its highest, marginal cost is at its lowest point. The same holds true for comparing average productivity and marginal productivity. At these points we are getting the most out of our inputs for the least cost.

One more note on marginal cost. It is not affected by changes in fixed costs. Marginal cost deals solely with the change in costs resulting from different production levels. It can be calculated correctly using either total cost or variable costs. Here's how it works.

Q_x	Fixed Costs	Variable Costs	MC	Total Costs	MC
0	1000	0		1000	
1	1000	200	200	1200	200
2	1000	300	100	1300	100
3	1000	500	200	1500	200
4	1000	800	300	1800	300
5	1000	1300	500	2300	500
6	1000	2000	700	3000	700

The marginal costs are the same when calculated by either VC or TC. So if you are only given total costs or only variable costs you can calculate MC either way.

Long Run

In the long run, there are no fixed costs, so there will only be one average cost curve, ATC. There are no AVC curves or AFC curves. Therefore, to tell quickly at a glance whether the situation is long run or short run, see which curves are shown on the graphs.

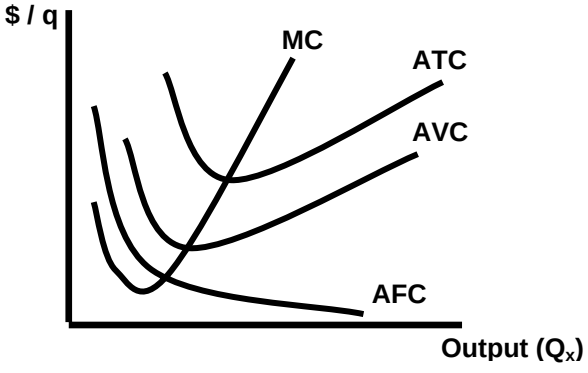


Figure 5.9
Short run

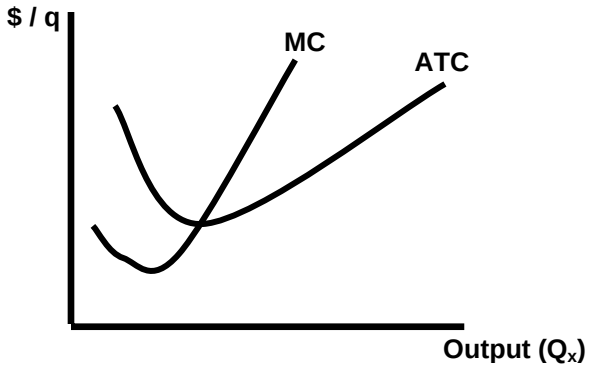


Figure 5.10
Long run

Finally, how is the long run average cost curve created? In the long run, a business may expand its production through additions or improvements on inputs that were fixed in the short run. Perhaps a producer may build a second or larger plant. When it does so it can reduce the average costs of production. So the AC curve shifts down and to the right. Further expansion may cause AC to fall even more. This is known as **economies of scale**; by scale, we mean size. This is similar to increasing returns. But increasing returns refers to the short run while economies of scale refer to the long run.

At a certain point, however, a firm may not be able to lower unit costs any further through expansion. More expansion beyond this point may even cause average costs to rise. This is known as **diseconomies of scale**, which is similar to diminishing returns. Diseconomies of scale refer to the long run while diminishing returns and increasing costs usually refer to the short run. Why does this happen? Usually, if a firm gets too big, departments lose touch with each other, communications are hampered and the management of the business becomes too complex. An example for this may be General Motors. The business got so large that it was difficult to manage efficiently. To solve the problem, GMC is broken down into divisions of Chevrolet, Pontiac, Oldsmobile, etc.

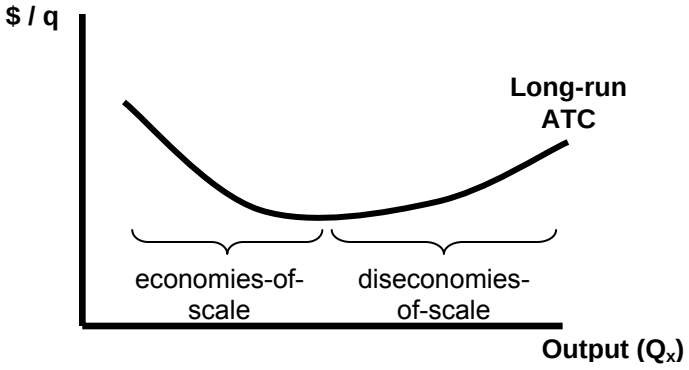


Figure 5.10

Long run ATC showing economies-of-scale and diseconomics-of-scale

CHAPTER 6 Perfect Competition

Now we are ready to move on to applying the previous concepts to different types of businesses. Market structure is divided into four types of industries: **perfect (pure) competition**, **monopoly**, **monopolistic competition** and **oligopoly**. The last three are sometimes referred to as 'imperfect' competition. Monopolistic competition and oligopoly are sometimes called 'real world' examples because they are the most realistic models due to the fact that perfect competition and monopolies rarely exist in a pure form. Yet it is necessary to understand these two first before the 'real world' models can be analyzed accurately. This unit will focus on the perfect competitor.

Perfect Competition

In perfect competition, there are a large number of firms. So large, in fact, that as far as production goes, we could say that each firm's production is merely a drop in the bucket. The bucket represents the industry and the drop is the individual firm. It is easy to get in or out of this type of business. The good produced is said to be 'standardized' or 'non-differentiated'. This simply means the product is the same no matter which producer is supplying the good. Take soybeans as an example. You don't see Farmer Bob advertising that his beans are better than Farmer Bill's beans. Agriculture is the closest example of perfect competition. All the goods are dumped together at granaries and then sold to the consumers. It doesn't matter which farmer supplied the beans. Here, as in all forms of business, the business owner is intent on maximizing his profit and the consumer is intent on maximizing his utility (getting the most satisfaction for the least cost). This all points to the critical assumption regarding perfect competitors; they are **price takers**.

A perfect competitor, by himself, can do nothing to affect the price. When he goes to sell his goods on the market, he must take the going price. Remember, he is a drop in the bucket. It would be impossible for him to charge a price higher than the market because no one would buy from him; there will be plenty of other suppliers selling their goods at the market price. It won't do him any good to sell the product cheaper, either, because since he is a drop in the bucket, he can sell everything he has to offer at the higher price. So why shortchange himself? In the short run, there will be one and only one price for the good and the producer can take it or leave it. The price will be determined by the intersection of the market or industry supply and demand curves.

Maximizing Profit

In determining the total revenue that a perfect competitor can receive, we will multiply price times quantity. Since price is constant, the total revenue curve is a straight upsloping line from the origin.

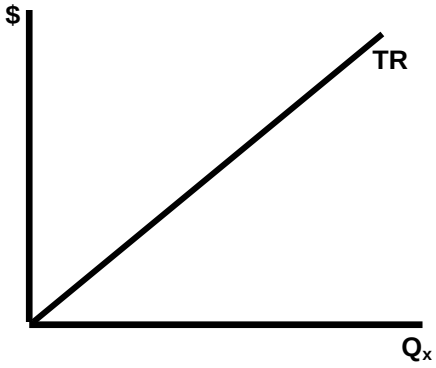


Figure 6.1

Total revenue curve

A quick and simple way to determine the amount to produce in order to achieve maximum profit is to compare total revenue with total cost. One would produce where TR exceeds TC by the greatest amount. This is achieved by overlaying the TR and TC curves.

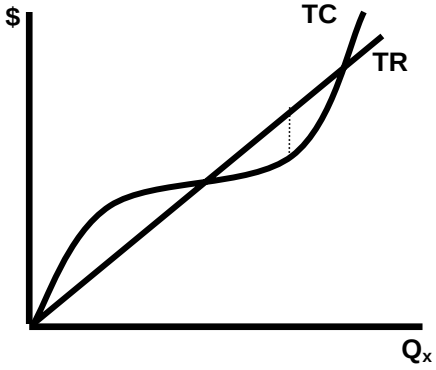


Figure 6.2

The dotted line denotes the quantity where TR-TC is maximized

The second approach to finding the maximum profit is by using the **marginal revenue = marginal cost** approach. Marginal revenue is the <u>added</u> revenue received from selling another unit. In the case of the perfect competitor, the added unit sold will bring whatever the price of the product was, since price is constant. Marginal revenue will be a perfectly elastic curve.

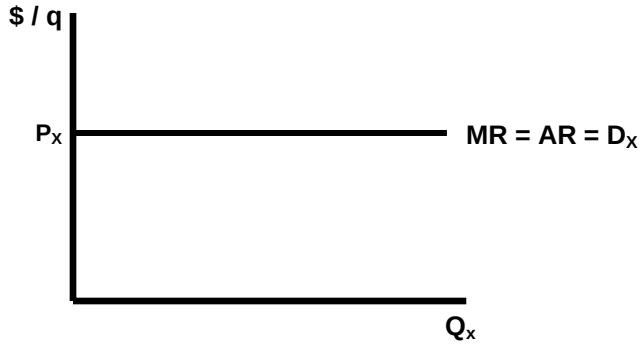


Figure 6.3

Note: For the perfect competitor, the MR curve is also the average revenue (AR) curve since 'on average' the firm is receiving revenue equal to the price (which doesn't change). It is also the demand curve because consumers can buy as little or as much as they want at the given price. This relationship will not hold true for other market structures and is unique to the perfect competitor.

A perfect competitor will produce at the quantity where MR = MC. Why is this the profit max? Let's put the two curves together and see.

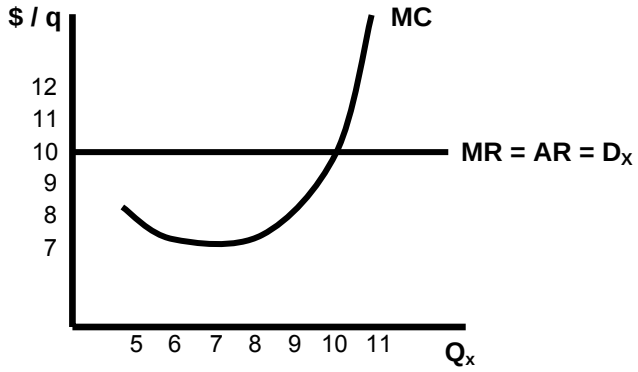


Figure 6.4

Let's suppose we are producing 8 units. The profit on that 8th unit is $2.00 since the price is $10.00 and it is costing $8.00 to produce that unit. But if you produce another unit, you can make another $1.00, since it is costing $9.00 and bringing in $10.00. If you make one more unit you will break-even on that unit but if you could produce fractions of a unit, you would produce right up to the point where MC = MR. If you produce an 11th unit, you would now lose a dollar, since that unit costs $11.00 to make and is only bringing in $10.00. It is where MC = MR that total revenue exceeds total cost by the greatest amount. Now let's add the average cost curves to determine how much profit a business will earn at that point.

Maximizing Profit

Once again, it is the industry that determines what the market price will be. This price then becomes the firm's MR = AR = P = D curve.

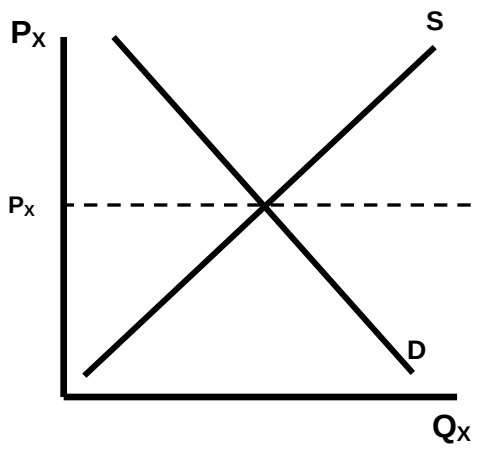


Figure 6.5
Market

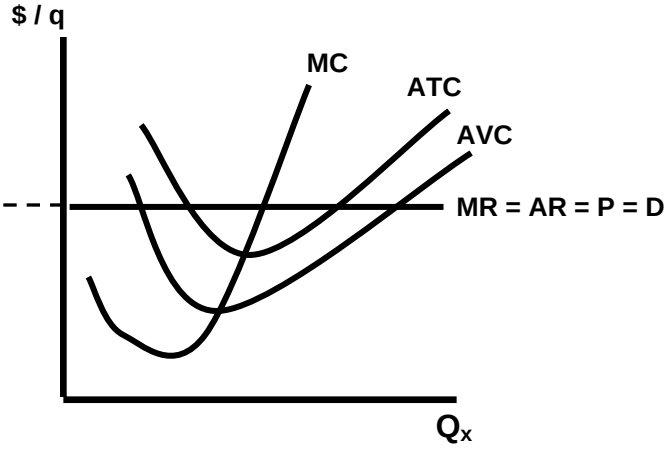


Figure 6.6
Firm

The key to finding the ideal production level that will maximize profits for any business is known as the **MC = MR** rule. It is the three-step procedure to determine quantity, price and profit for every type of market structure. This rule is the foundation for the vast majority of test questions and this theme is used throughout economics in various disguises (if you can unmask them).

MC=MR Rule

Step 1) To determine **Quantity**, go to where MC = MR and drop straight down to the horizontal axis for the quantity.
Step 2) To determine **Price**, at that quantity, go directly up to the average revenue curve.
Step 3) To determine **Profit** (or **Loss**), compare the average revenue curve (AR) and the average total cost curve (ATC).

For the perfect competitor, if the MR = MC point lies above the average total cost curve he will make a profit as in the above example. If it lies below the ATC curve, he will lose money. Does that mean he should shut down and not produce anything? No, not always. If he were to produce nothing, he would still lose his fixed costs that must be paid regardless of how much he produces. Remember, the distance between the ATC and the AVC curves is AFC. When AFC is multiplied by the quantity, we get total fixed cost. If your fixed costs are $1,000, it is better to produce something and lose $500 than to do nothing and lose $1,000. This is in the short run. If one sees that this would continue indefinitely, then he would shut down.

Now we come to a tricky point. It is said that if you **'cover your variable costs**' you will continue to produce. Let's say your FC are $1,000 and your VC are $300. If you take in $1,300 you will break-even (Figure 6.7). If you take in $1,000 you will lose $300 but that is better than shutting down and losing $1,000 (Figure 6.8). If you take in $301, you will lose $999 (Figure 6.9). Still, it is better to lose $999 than $1,000. If you take in $301, you are 'covering your variable costs'. If you lose more than $1,000 you will shut down since you will lose more than your fixed cost (Figure 6.10). In other words, think of 'covering' the graph below the MR curve. If it 'covers' the AVC curve where MC = MR, you will stay in business.

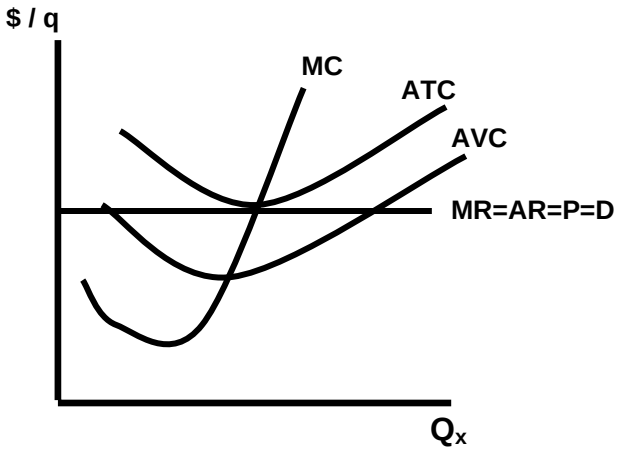


Figure 6.7
Break-even

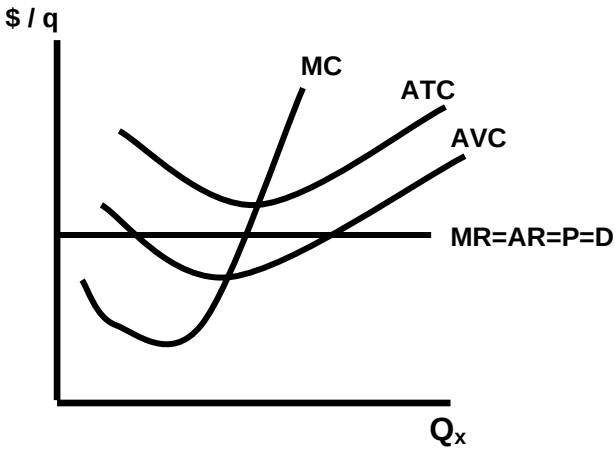


Figure 6.8
Lose $300

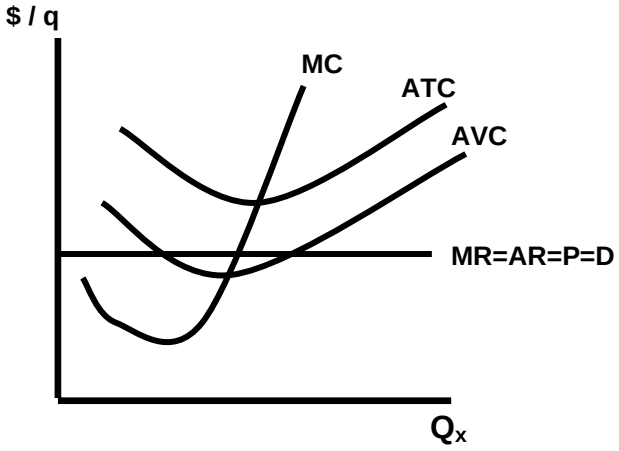


Figure 6.9
Lose $999

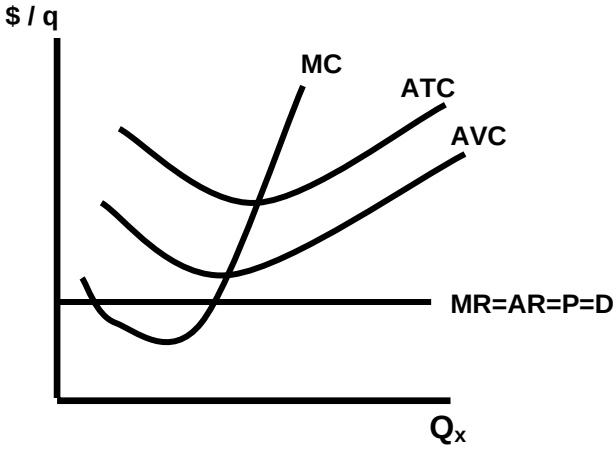


Figure 6.10
Shut down

If you lose exactly the same amount as your fixed costs, you can flip a coin whether to produce or shut down. Realistically, you would look ahead to see what future conditions might bring. Remember, also, that when a firm breaks even as in Figure 6.7 it is making a 'normal profit', enough to buy more materials in order to stay in business. This was a 'cost of production' that needed to be covered. If normal profits are 'zero', a firm will not break-even because zero normal profit means you are not getting a normal profit. Normal profits must be a positive number to break-even, but a normal profit is not enough to attract competitors into the market.

A final note on the short run: since a firm will produce as long as it covers its variable costs, the supply curve of the firm is anywhere along the marginal cost curve above the AVC curve. It has no supply curve below AVC since it is unwilling to produce at a price below AVC.

Long Run

If a firm is making an economic profit (more than a normal profit) (Figure 6.11), others will enter the market to try and grab some quick money. Entry is easy in perfect competition so many will possibly enter the industry. Although one firm is a drop in the bucket, many firms will have an impact on the market supply. If many firms enter the market due to an economic profit the market supply for that good will increase, causing the industry supply curve to shift to the right. Since market supply and demand determine price, and new price will be reached due to the shift in supply (Figure 6.12). This price will be lower.

Now all firms in the industry face a lower price and, thereby, a lower MR = AR = P = D curve (Figure 6.13). The cost curves do not shift for the firms so now some of the businesses will be losing money. It is also easy to get out of the industry in perfect competition so those firms losing money will exit the industry. If many firms leave the industry, this will cause a decrease in supply, shifting the market supply curve to the left (Figure 6.14). We now have another new intersection of supply and demand at a higher price which will cause the MR = AR = P = D curve for the firm to rise (back to Figure 6.11). It is evident that we can go seesawing back and forth. Each time, however, the change is less until we reach the point of break-even. At this point, no firms will have the incentive to enter the market due to profits, nor will any firms leave the industry due to losses. So in the long run, the perfect competitor will stay put and break-even, or make a normal profit (Figure 6.15).

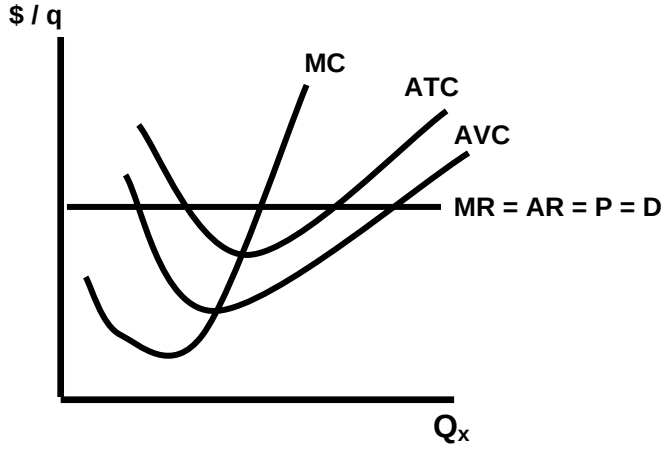


Figure 6.11

Economic profit

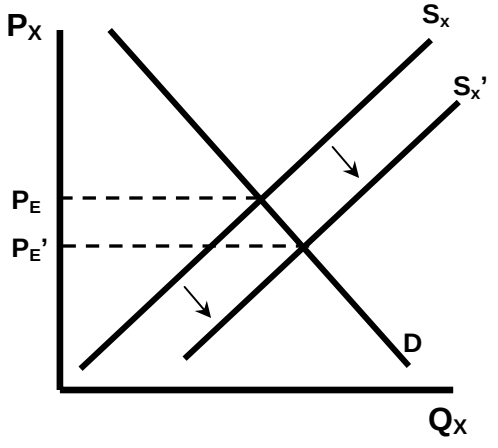


Figure 6.12

Increase in market supply lowers the price

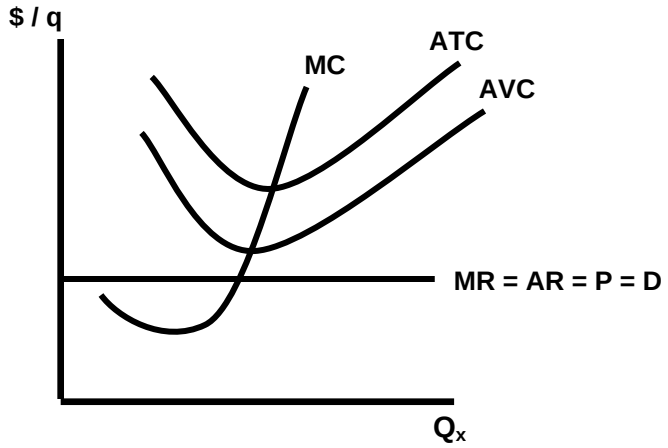


Figure 6.13

Shut down

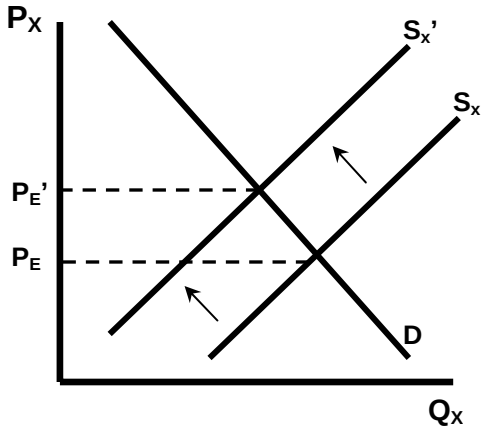


Figure 6.14

Decrease in market supply raises the price

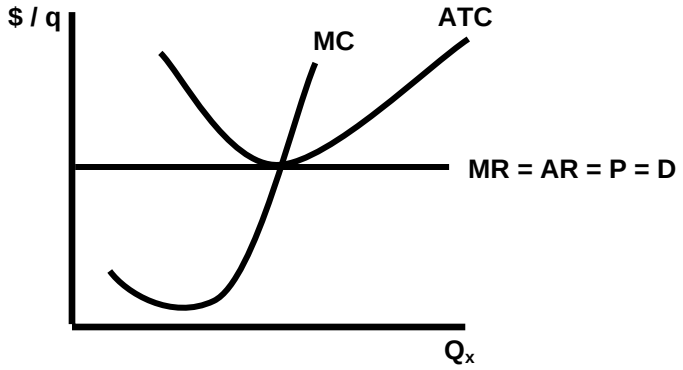


Figure 6.15

Long run equilibrium, break even, normal profit

A final note on perfect competition: in the long run, perfect competition is efficient. It operates on the lowest point of the AC curve, or where P = AC. This is called **productive efficiency**. You only pay what the average cost of the product was and it was produced in the least costly manner. A perfect competitor also has **resource allocative efficiency** or operates at the **social optimum**. There is no other combination of resources that could be used to lower costs or produce more benefit for society. This occurs when P = MC. A perfect competitor achieves both in the long run.

CHAPTER 7 Monopoly

The Monopoly

The remaining forms of market structure are called imperfect competition. The first of these is the monopoly. A **monopoly** is the absence of competition. A monopoly is a single firm that sells a product for which there is no close substitute. Since the monopoly is a single seller, it is the industry. Therefore, the graphs that represent the monopoly firm also represent the industry. There is no separate graph for the industry such as the industry supply and demand curves for perfect competition. Entry is blocked for other firms wishing to compete. Reasons for this vary such as

- the monopolist owning all the resources (diamond mines in South Africa)
- patents which preclude others from competing
- financial barriers due to scale (size)
- government regulated monopolies like public utilities (called natural monopolies due to high fixed or startup costs which often result in a AC curve that declines as production is increased--forced competition may raise costs and cause more inefficiencies).

Since the monopoly is the industry, it has control over the price by withholding the supply of the product. Therefore, the monopolist is called a **price maker**. It can affect price by changing the quantity supplied. Because of this, the monopolist faces the market demand curve, which is downsloping. At a given price, the only way to sell more of a good is to lower the price. The key point now is that in order to sell more, <u>all</u> units must be sold at the lower price. You can't charge some people $10 and others $5 and still others $1 for a good. The ability to do so would be called **price discrimination** where one can segregate the buyers so he can sell the product at different prices to different groups without justifying the different prices on the basis of different costs.

Monopoly Curves

With a downsloping demand curve, we get a totally different marginal revenue curve. First, let's look at the total revenue curve. At some extremely high price, no units will be sold, bringing in no revenue. As price falls, total revenue will rise. This holds true with the elasticity test. To the left of the midpoint of demand, total revenue rises as price falls since demand is elastic in this portion of demand (price down--total revenue up). When we reach the midpoint of the demand curve the elasticity switches to inelastic and total revenue starts to fall as the losses from lowering the price exceed the

gains made from increasing the units sold. Eventually, at a price of $0.00, total revenue will again reach zero.

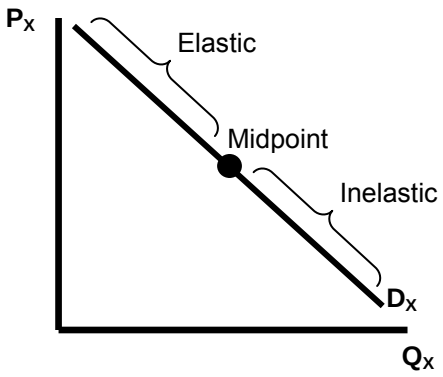


Figure 7.1

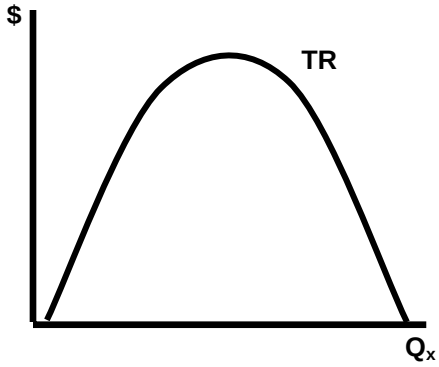


Figure 7.2

Since the demand curve is downsloping, the marginal revenue curve will lie under the demand curve. For the perfect competitor, each additional unit brought in the same additional money. However, the monopolist must sell all previous units at the lower price so the gain in revenue by selling more units is offset by having to sell the previous units at the lower price, as well. If you are currently charging $10.00 a unit, the only way to sell more is to lower the price, let's say, to $9.00. However, you will not get $9.00 in marginal revenue because all units must now sell for $9.00 so some of the money is lost that could have been made from charging $10.00. This is due to the inability to price discriminate.

For some, this may be easier to see when deriving a marginal revenue curve from the total revenue curve. At first marginal revenue is high due to sales at a high price but it immediately falls like the demand curve but much faster. When total revenue reaches its peak, marginal revenue is zero. When total revenue starts to decline that means additional revenue (MR) is now negative, falling below the horizontal axis. 'MR' is zero at the peak of 'TR' or the midpoint of demand where there is 'unit' elasticity. So the marginal revenue curve 'bisects' the demand curve.

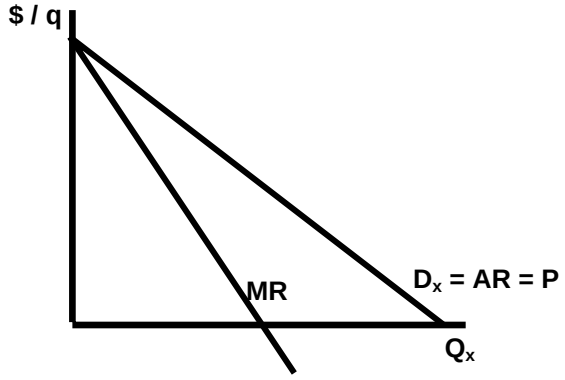


Figure 7.3

The demand curve is still the price curve as it represents the current price being charged. It is also the average revenue curve. Since all units are being sold at this price, it is the 'average revenue' being received from the product.

Maximizing Profit

The **MC = MR Rule** remains in effect.

1) We will produce at the quantity where MC = MR. Find the intersection point and drop straight down to the horizontal axis (Q_x).

2) To find price (at that quantity), go to the average revenue curve. Where MC = MR, go straight up to the demand (AR) curve, then over to the vertical axis for price.

3) To find profit, compare average revenue to average cost.

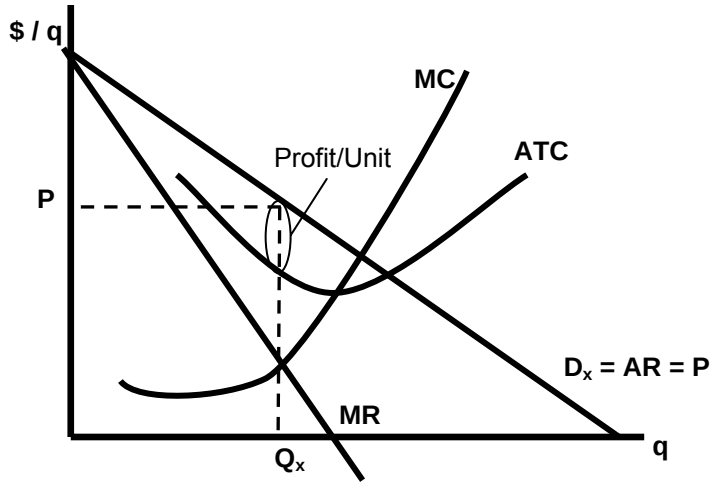


Figure 7.4

The desire for the monopolist is to maximize profits, not get the highest price possible. The 'highest price' would bring little sales and reduce profits. Also we can see that the monopolist will always operate in the elastic portion of the demand curve where marginal revenue is positive.

In perfect competition, the firm operates where P = MC. In a monopoly, this is obviously not the case. A monopolist charges a higher price and produces less than perfect competition. For the monopolist, P > MC. This, along with the lower quantity is called **underallocation of resources**. Nor does the monopolist operate on the lowest point of the average cost curve or where P = AC. For these reasons, we say that a monopoly is bad. It is considered inefficient because price is too high, quantity is too low and it doesn't operate at its lowest cost level. On top of that, profits are held by the firm and not distributed among society. The only incentive a monopoly may have to be efficient is to keep out competitors from entering the market.

Monopoly Regulation

Varying degrees of monopoly power may be inevitable, so the government may step in to regulate the monopolies to protect the consumer. There are two approaches to take on this problem. First, the monopoly could be forced to operate at the 'social optimum'

point where P = MC. This would be best for society by forcing prices down and allowing more to be produced. Yet, if the point P = MC lies under the AC curve, the monopolist will suffer losses. Then the government would either have to release controls or subsidize the business (with our tax money, of course!). The second alternative is to allow the company to earn a 'fair return' or a normal profit. This is the break-even point where P = AC. This is not the 'ideal' for society, but it is better than an unregulated monopoly.

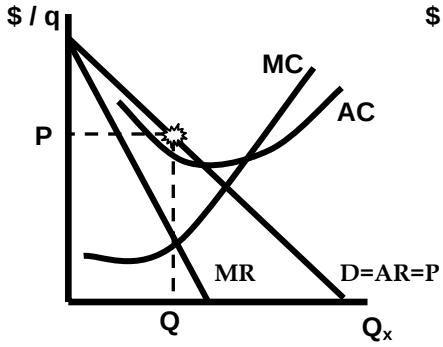


Figure 7.5

Unregulated Monopoly

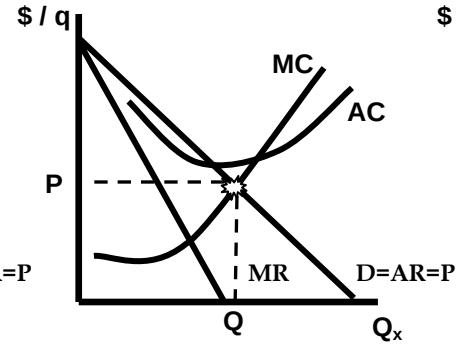


Figure 7.6

Social Optimum P=MC

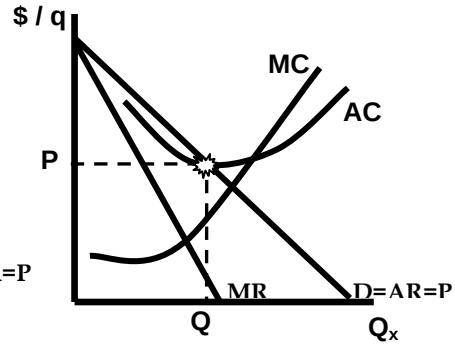


Figure 7.7

Fair Return P=AC

CHAPTER 8 Monopolistic Competition & Oligopoly

The last two types of market structure are sometimes called 'real world' competition because monopolies and perfect competition rarely, if ever, exist in a pure form. We will analyze monopolistic competition first.

Monopolistic Competition

Be careful not to confuse the references of monopolists and monopolistic competitors. They may sound similar but they aren't. The industry of monopolistic competition has <u>many</u> firms, each producing a relatively small percentage of the industry's output. Due to this, each firm will basically ignore the actions of its rivals because one firm's impact on the industry is slight. The products in the industry are 'differentiated', which means variations on a product. Each firm tries to create a sort of 'mini-monopoly' by doing something special with the product. The clothing industry is a good example. A shirt is a shirt but look at the vast variety of shirts on the market. When Ralph Lauren puts the polo player on his shirts he is differentiating his product. In this way he captures a little chunk of the market that is willing to pay the high prices for his clothes. Those who are not willing to pay can find another firm to substitute for polo shirts. In this way, the firms ignore what others are doing; they each try to find their niche in the market.

For the most part, prices are determined by the market. Yet there is some discretion among businesses that can vary prices based on quality, packaging or advertising. So the monopolistic competitor is neither a price taker nor a price maker but rather a **price setter**. Since there are <u>so many firms</u> in the industry, the demand curve for the good is highly elastic or fairly flat (but not perfectly elastic). Given this, we say that monopolistic competition is more similar to perfect competition than monopoly. The following graph shows the firm's situation. The three steps of the **MC = MR rule** hold here, as well.

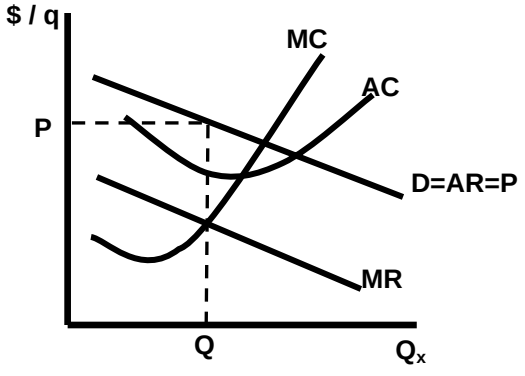


Figure 8.1
Short run

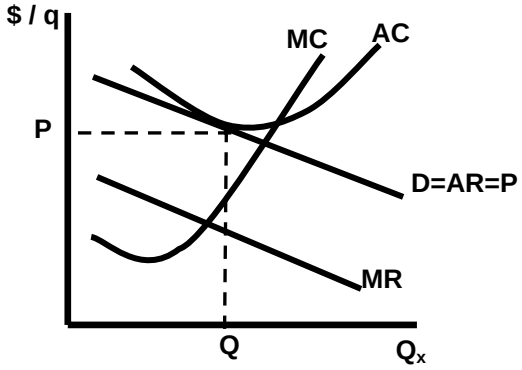


Figure 8.2
Long run

In the above short run situation (Figure 8.1), the monopolistic competitor is making a profit. This profit will attract others into the industry to try to obtain some profit, as well. Just as in perfect competition, the industry supply curve will increase (shift right) causing prices to drop. This will cause some businesses to lose money and drop out of the industry. Once again, like perfect competition, all surplus profits will disappear till the firm receives only a 'normal profit'. So, in the long run (Figure 8.2), the 'tendency' is for firms to break-even. There will be some firms that may continue to obtain a profit so that is why we say a 'tendency' to get a fair profit. As can be seen from the long run graph, the monopolistic competitor is inefficient. Prices are somewhat high and resources are slightly underallocated. Usually, inefficiency shows in what is called **excess capacity,** which means that a smaller number of firms could provide the current level of production more efficiently (less resources would be used up). For example, you may see three or even four gas stations on one corner in a town. Surely, these are not all necessary and we have excess capacity, or more than is needed to satisfy the consumers' wants.

Oligopoly

An **oligopoly** is one of a very few number of firms in an industry. The output of the industry is large and the firms tend to be quite large as well, but we say that the industry itself is small since there are so few firms within the industry. In the U.S.A. the car industry is primarily made up of the big three companies, Chrysler, Ford and General Motors. Anheuser-Busch, Miller and Coors dominate the beer industry. The soft drink industry is basically Pepsi and Coca-Cola. These are just a few examples of an oligopoly. We say that in an oligopoly we have very few firms selling 'generally substitutable' units of a class of product. The product may be homogeneous (steel) or differentiated (cars).

What makes an oligopoly? Size is a factor. It is hard to jump into an industry that requires the massive financial investment and requires large amounts of resources just to get off the ground. Patents that may be hard to duplicate may cause others difficulty in trying to compete. A big cause lately in some industries is the merger. Bigger ones eat up smaller companies that can no longer successfully compete until only a few businesses remain to do battle.

The industry is so small that each firm must consider the actions of its competitors when formulating a price policy. What will be Pepsi's response if Coke raises prices? What will Chrysler do if Ford offers zero % financing? In this way, we say that the firms are interdependent. They don't make a move without considering the reactions of their rivals. How does this work? Let's take a look, shall we?

Example 8.1

The price-output behavior of oligopolies is based on their reaction to their rivals' actions in the industry. Remember the product in the industry is generally substitutable between firms. Let's take Pepsi and Coca-Cola as an example. Suppose the price of a six-pack of both Pepsi and Coca-Cola are $2.50. If Pepsi raised the price of its pop to three dollars, what would Coke's reaction be? They would ignore it because they know that people would now buy Coke as the substitute. People would quit buying Pepsi at the higher price. Pepsi would actually lose out due to the price hike. So above the current price, the demand curve for Pepsi would be very elastic, as any increase in price of Pepsi would cause a loss of total revenue. So Pepsi would consider Coke's reaction and choose not to raise prices.

What if Pepsi lowered the price of pop to $2.00? Coke would immediately match this price decrease so as to not lose out to Pepsi. With Pepsi being matched quickly by Coke also lowering their prices, neither is any better off because Pepsi has not lured any consumers away from Coke. By not making any measurable gain in sales the curve is inelastic below the current price. A drop in price causes a loss in total revenue. So a competitor in an oligopoly will ignore price increases and will match price decreases of its rivals. This gives us an odd 'kinked' demand curve, which is elastic above price and inelastic below the current price. Since we really have two demand curves here we also will have, in essence, two marginal revenue curves. If we draw only the applicable segments on the graph, we end up with a MR curve that has a large break or gap in it directly under the price. What this leads to is little change in price, as a move either way will hurt business. Even changes in costs may not affect the price if the change in costs remains in the gap of marginal revenue.

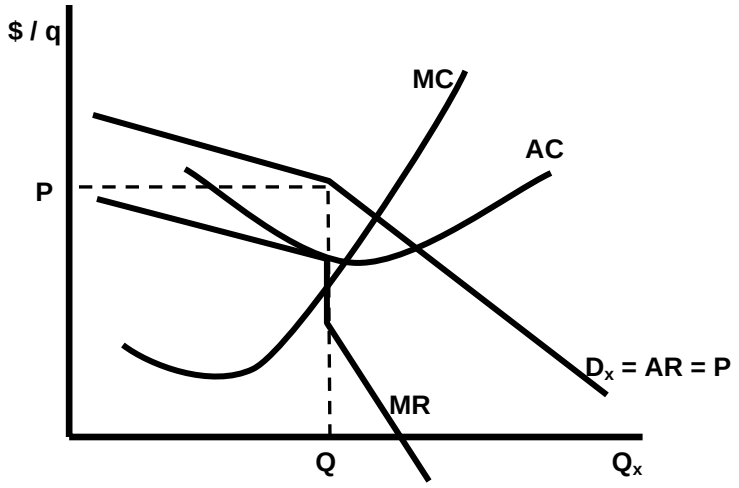


Figure 8.3

Once again, the **MC = MR rule** will work for determining quantity (MC = MR), price (go straight up to the AR curve), and profit (compare AR and AC). An oligopoly is also inefficient because it doesn't operate on the lowest point of the AC curve and P > MC. Price is not at its lowest level consistent with the cost of the last unit.

A couple of phenomena may occur in an oligopoly. One is **price leadership** where the dominant firm in the industry may raise prices and the others soon follow suit rather than ignoring the price change. Somewhat in the same vein, there is the **collusive oligopoly**. These firms collude, or work together, to set output and prices rather than compete. In this way prices may be kept artificially high. This is illegal in the United States and is also hard to maintain. A good example of a collusive oligopoly is the 'OPEC' cartel in the Middle East. These countries have tried to hold back supply to force prices up and increase profits. Professional sports owners have been accused of colluding in the past by agreeing among themselves not to sign players to lucrative contracts. A number of factors, besides the legality of it, make it hard for collusion to be successful. The more firms there are in the industry, the harder it is to get agreement among all parties. Cost differences among firm also contribute to difficulties as well as economic situations. If there is a recession, some people will just do without the product if the price is too high and that will make it difficult for the businesses to keep prices high. Finally, cheating by the firms can stop collusion. One firm decides it can take advantage of the higher prices and supply more of the good. Eventually the extra supply forces prices back down. This was a fairly common occurrence with OPEC years ago.

The final phenomena that may occur are **price wars**. For some reason a firm may decide to match another's price decrease and so on, and so on it goes, with prices falling to sometimes ridiculous levels. In the past, it has happened at gas stations in certain localities. The 'war' continues until the price may reach as low as 0.9¢ per gallon. Pretty soon the businesses come to their senses but in the meantime, consumers would line up for blocks to fill their tanks.

CHAPTER 9 Factor (Resource) Markets

The previous units have dealt primarily with the product market, that is, the supply and demand for economic goods. We now switch gears to the purchase of factors of production, or resources. A business sells products (output) and buys resources (inputs). The demand for these resources is a 'derived demand', meaning the demand for the final good to sell determines what kind and how much of a resource should be hired to produce that good.

A business may be a perfect competitor in the factor market. This could be a small business in a large town with many businesses. The firm hires such a small amount of the total supply of workers that its 'price' or wages are unaffected by the amount of workers hired. It must pay the going wage or it will not be able to attract workers and it would be dumb to pay more than the going wage since it can get workers at the going rate.

Monopsony

The other side of the coin is a business that is the only buyer of resources, for example, a large plant in a small town that employs most of the populace. This is called a **monopsony**.

Monopsony – A market situation where one firm hires the majority of all resources in a factor market.

A monopsonist has more control over wages. If a person wants a job they must accept the wages that are offered. They can't shop around to find a better offer.

When studying factor markets, the primary objective of the business is to find out how to combine resources in the least costly manner and to get the most for the least from these resources. Would it be better to buy a machine or to hire another worker? To find out we must return to our productivity curves.

First we will look at combining resources in the least costly manner. In order to minimize costs one must get equal output from the inputs relative to the price of the inputs. Let's suppose a worker produces 100 units a day (info is gathered from marginal productivity data). Some refer to this simply as marginal product (MP) while others refer to it as marginal physical product (MPP). If the worker's wages are $50.00 a day then the ratio of output (MPP) to input price (P) is 100 to 50. Obviously, this reduces to two. If you know this then you would apply this knowledge to another resource such as a machine. If the machine produces 100 units a day but costs $100 a day to run, it would not be at the least cost combination. The ratio of 'MPP' to 'P' is one. You are not

getting your money's worth out of the machine compared to the worker. If the machine produced 200 units and cost $100 a day then the ratios would be equal (both two) and would be at the 'least cost' combination. So least cost combination is realized when the MPP ÷ the cost (price) of the resource are equal for all resources.

Not 'least cost'

$$\frac{MPP_{worker}}{P_{worker}} \neq \frac{MPP_{machine}}{P_{machine}}$$

$$\frac{100}{50} \neq \frac{100}{100}$$

'Least cost'

$$\frac{MPP_{worker}}{P_{worker}} = \frac{MPP_{machine}}{P_{machine}}$$

$$\frac{100}{50} = \frac{200}{100}$$

Secondly, we will want to find the combination of resources that provides us with the maximum profit. Keep in mind the MR = MC rule here; it is used here but in a different disguise. To find profits we must find out not just how many units our factors are producing but how much that output is worth or the revenue it will bring in. To do this we need to know the price of the product (output) we are selling. Take the number of units (MPP) and multiply by the price of the product. This gives you the marginal revenue product (MRP). (It may also be called 'VMP' or value of the marginal product). If a worker is producing 100 units a day that sell for $2.00 each, the MRP is 200. To be at profit maximum, we want to be where the MRP ÷ P is equal to one. Put simply, the MRP = P. It's the MC = MR rule! The MRP is marginal revenue and the price (wages) is the marginal cost of the next unit. So if our worker produces an MRP of 200 and costs $50.00 a day what would you do? Hopefully you would hire more workers as they are bringing in more than they cost. The MRP/P ratio is four. As you hire more workers what will happen? The law of diminishing returns says that each additional worker will provide less so eventually the MRP will fall to 50. It is at this point that MRP = P and you would be getting the most out of your workers.

$MPP \times P_{product} = MRP$ **Profit Max:** $MRP = P_{worker}$ or $MRP / P_{worker} = 1$


Example 9.1

Let's try another example. Suppose your store is trying to stop shoplifting. A camera will cost $10 a day and will prevent $25 worth of merchandise a day from being stolen. A security guard will cost $60 a day and prevent $50 in theft. The ratios are:

Camera: MRP = 25, Price = 10

Security Guard: MRP = 50, Price = 60

The camera is saving more money than it costs so you would buy more cameras until the MRP drops to where it equals 'P'. The security guard costs more than the value of merchandise he is preventing from being stolen so you would hire fewer guards until the MRP rose to equal 'P'. What if the guard's MRP was 100? Then you would hire more guards and buy more cameras until MRP = P.

Resource Curves

The previous information applies to a business that is a perfect competitor in the factor market. The graph for determining wages would look like this:

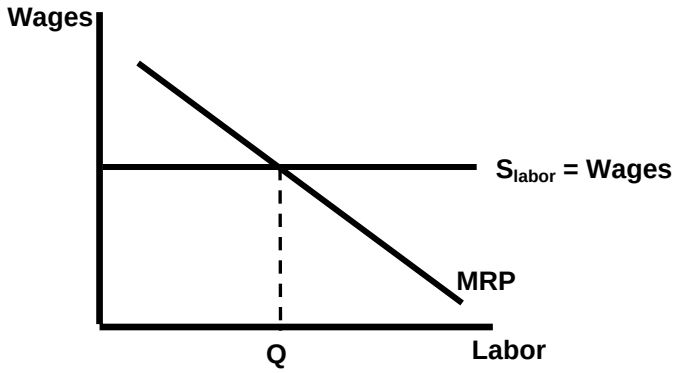


Figure 9.1

Perfect competition

A monopsonist must pay higher wages to attract more workers and all workers would have to be paid the higher wages so (in the manner of a monopolist's demand and 'MR' curve) it will have a 'MRC' (marginal resource cost) curve which lies above the supply curve for labor. It will hire at the quantity at which MRC = MRP and to determine the wage rate, it will drop down to the supply (average wage) curve. So a monopsonist will hire fewer workers at a lower rate than a perfect competitor in the factor market.

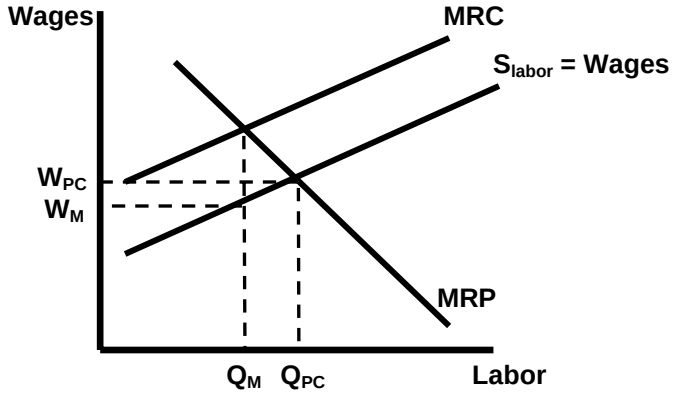


Figure 9.2

Monopsony (M) vs Perfect Competition (PC)

Economic Rent

There are times when a resource receives more than the value of its input. If this happens it is called profit. If excess profits occur, others will be attracted into that line of work. Why do you think so many aspire to be professional athletes? It pays much better than any other job opportunity available. This brings us to the concept of **economic rent** or **economic surplus**. Rent is defined as the excess beyond which one would earn at his second best alternative. Let's suppose a baseball player earns $1,000,000 a year. His second best alternative may be as a coach earning $100,000 a year. So his economic rent or surplus is $900,000. That is why ballplayers near the end of their career will be willing to play for less money. They will still make more than if they had to take a 'regular' job.

So just why do ballplayers get these ridiculous salaries? Some of it is legitimate. A big name player will bring more fans to the park so his 'MRP' is much higher than some bench warmer. Michael Jordan did wonders for Chicago and also filled the seats at visiting arenas that didn't normally sell out. As long as fans are willing to continue to pay higher prices for tickets, salaries will also continue to rise. Money brought in from lucrative television contracts brings more money to the owners and in turn, good ballplayers (somewhat of a monopoly) can demand higher salaries in exchange for their 'scarce' resources.

CHAPTER 10 Externalities, Taxes & Government

Externalities

The final material usually covered in an introductory course deals with the government and the concept of externalities. An **externality** is something than has an effect on somebody else who had nothing to do with the situation. Externalities can be good or bad, positive or negative. The one who had nothing to do with the situation is called the **third party**. If a chemical plant is dumping pollutants in a river, a fisherman downstream may be affected by the pollution or the water supply of a city may be tainted. These are negative externalities. Education is a positive externality. Thanks to someone getting a good education, many people may be helped if that person finds a cure for some disease. These third parties had nothing to do with the event but were hurt or helped by what happened.

With externalities, we say that the private costs (or benefits) are not equal to the social costs (or benefits). Society is hurt or helped much more than the costs or benefits to the individual. The response to a negative externality is to overallocate resources to that externality. The chemical plant will produce more if it is not forced to pay the costs of cleaning up its mess or resources are shifted to fixing up the negative externality; resources that could have been used elsewhere for the production of goods and services. The response to a positive externality is to underallocate resources. People don't see the need to help out when something is already doing good things. They take it for granted. Also, you cannot force all who benefit from the externality to pay for it so the costs remain high and less than the optimum amount is produced. Take education, for example. The response is "Hey, my kids are learning to read and write, so why should I pay more for school?" Or, "I don't have any kids in school, so why should I pay for it?"

If we could force those who produce negative externalities to pay all the costs of fixing things up the supply curve would shift left (decrease) and less would be produced. If we could get money from all who benefited from a positive externality we could produce more of that good (increase in supply, shifting right).

Since that is easier said than done, the response is to tax those who produce negative externalities, giving them incentive to clean up their act. Unfortunately the tax can often be passed on to the consumer. The response to a positive externality is to subsidize it in order to provide more money to continue supplying the good. The degree of successfulness in these responses depends on the elasticity of demand for the goods in determining who will pay for these externalities.

When we try to correct a negative externality, how far should we go? Should we make a firm stop producing every gram of pollutant? Once again, the answer is found in the MC = MR rule. We will clean up to the point where the benefits gained are equal

to the costs of cleaning up. If a town wanted to revitalize a downtown area that has become run down it would weigh the costs of fixing up the area opposed to the benefits or money that would reenter the downtown area after it was fixed up. If a $2,000,000 cleanup only brought a return of $1,000,000 the project would not be pursued. But as long as the return would be greater or equal to the costs of cleanup, the cleanup would be worth doing.

Taxes

The next subject is taxes. The two theories about making taxes as fair as possible are the 'ability-to-pay' and 'benefits-(or cost of service)-received' theories. The **ability-to-pay theory** implies that those who are most able to pay taxes should do so. This is the basis of our federal income tax. **Benefits-received** means that you should pay for something only if you use it. Gasoline tax is used, in part, to pay for road repairs. So those who use the roads the most will buy more gas and pay more taxes based on their usage of the roads.

Taxes may be levied in three ways: **progressive**, **regressive** and **proportional**. With a progressive tax, the more you earn, the higher % you will pay. The federal income tax is based on this with the percent levied increasing as the level of income increases. A regressive tax falls in % as income rises. A flat dollar amount levied would be an example of this. As income rises, the percent taken by this amount will fall. A sales tax is considered regressive because a 5% tax on groceries takes a bigger bite out of lower incomes than higher incomes. A proportional tax takes out the same % regardless of income. Some states have a proportional tax. For example, in Illinois, the state income tax is 3% of any income over $1,000 so after this level, it is proportional. Some taxes are regressive and some are progressive so on the whole, we say that taxes are generally proportional in the United States.

Sometimes we speak of the **incidence** of a tax. That means, who will bear the burden of a tax? A tax on businesses may be passed on to the consumer if the demand for a good is inelastic. Businesses can just raise the price to pay for the tax since the consumer will likely still be willing to pay the higher price. An example is the tax on cigarettes. Demand is inelastic so most of the taxes can be passed on to the consumer. Taxes on goods that have elastic demands will likely be borne by the producer. If they tried to pass on the tax to the consumer they would see a large drop in the quantity demanded so they cannot afford to raise the price very much to cover the tax. Recently, there was a luxury tax on expensive boats. The government thought this would be a way of collecting more money from the wealthy since it assumed they would still buy the goods. However, luxuries have an elastic demand and sales dropped. In turn,

production was cut and the average working person who produced the goods was out of a job (derived demand). The luxury tax was quickly rescinded.

Government

Our final topic is the government and its role in production. There are some goods that need to be produced which businesses cannot or are unwilling to produce. These goods fall into the categories of high financial investment such as water purification or products that will not provide much of a return to the business such as research. These goods are called public goods as opposed to private goods produced by private firms.

To be a public good, the product usually falls into one of two categories: shared consumption and non-exclusion. **Shared consumption** means that everyone receives a benefit from a good without reducing the benefits that someone else may receive. Water purification helps everyone and is not lessened by someone else taking advantage of it. **Non-exclusion** means you can't keep people from benefiting from the product unless they pay for it. National defense protects us all but you can't say, "We won't protect you unless you pay $100 a month." Many arguments arise over whether a good should be provided by the government or paid for by private individuals.

A final note on the government is the concept of **government failure**. This is when the government steps in to what it perceives as something that needs to be fixed and actually makes the situation worse than what it was before the government got involved. An example of this has already been covered in the example of price ceilings and floors that can cause additional problems to arise when the government tries to adjust the economy to try to make things better than they were before.

CHAPTER 11 National Income Accounting

Gross Domestic Product

It is important that we know how our economy is doing. We cannot simply go ask a couple individuals how they feel about the economy. We need a much more expansive look at the "big picture". Macroeconomics is the view of the entire economy. We look at various measurements to determine the health and welfare of our country and its citizens. These measurements fit under the category of **National Income Accounting**. One of the most popular statistics for measuring a nation's economic health is the **Gross Domestic Product,** or commonly, **GDP**.

Gross Domestic Product (GDP) – For America, the GDP is the total market value of all final goods and services produced in the United States in one year (regardless of whether or not it is sold in that same year.)

It doesn't matter what is being produced; it could be cars, bubble gum, or widgets. Anything that is produced with a dollar value is added to the GDP. To calculate a business' contribution to the GDP, we multiply the number of units produced times the price of the product.

Some very clear distinctions must be made as to what counts in the GDP. If one is not careful, the GDP may be greatly exaggerated by including items that should not be considered. First of all the definition says only "final" goods and services should be counted. This means that raw materials and intermediate goods should not be counted. Why? Because if we were to count them they would get counted more than once in the process. If we counted all the bits and pieces of a car each step along the way as it got added to larger and larger parts, a $20,000 car may appear to actually be worth $75,000. We want to avoid "double counting" so we only count the value paid by the final user of a product. For the most part, this will be the price paid by the consumer for a product. Businesses will only count the products they buy and keep for their own use, not products they will turn around and resell.

As a bit of an aside, we CAN calculate GDP in this manner if we stick precisely to the "Value Added" approach. This method requires one to add only the value they add to a product at each stage of production. In this way, the value added at each stage of production will total up to the final value for which the product is sold.

Another item that should not be counted in the GDP is any used good because it has already been counted in the GDP in the year that it was produced. Even if it is sold for

much more than its original value, it is not counted. Something must be exchanged for the money, so non-productive transactions are not included. These include purely financial transactions such as stock market trades. No good has been produced; we are simply shuffling around money and paper. We also disqualify "Transfer Payments" from the GDP. This is money given to someone for which no productive service is offered in return. Examples include scholarships for school and retirement pensions (work may have been done previously but is not currently offered in exchange for the money.

Having that out of the way, we can get around to calculating the Gross Domestic Product. There are two methods used to do so. The first method is called the **OUTPUT** or the **EXPENDITURES** approach. This calculates the total dollars spent to buy the output. The second method has three names. They are the **INCOME** or **EARNINGS** or **ALLOCATIONS**. This method calculates the income received from producing the output. Both give the same answer based on the identity of Income = Expenditures.

Output/Expenditures Approach

The Output/Expenditures formula for Gross Domestic Product is

$$C + I_g + G + X_n = GDP$$

C stands for personal **Consumption** of goods and services. $\mathbf{I_g}$ is **Investment** spending. This is final business spending on machines and the like, <u>all</u> construction, and changes in inventories (this reflects output that was produced in a year but not consumed). $\mathbf{I_g}$ specifically stands for Gross Private Domestic Investment. This is a combination of new or added investment and replacement investment (replacing capital goods that have depreciated). The new or added investment is called Net Investment ($\mathbf{I_n}$). If this number is positive, the economy is expanding. If Net Investment is negative, it means the economy is declining because we are not replacing depreciated equipment. We are <u>disinvesting</u> or using up more capital than was produced. Therefore $\mathbf{I_g}$ minus $\mathbf{I_n}$ equals depreciation or replacement investment.

G is **Government** spending for purchases on the local, state, and federal levels. It does not include transfer payments. $\mathbf{X_n}$ stands for **Net Exports** or net foreign trade. This is calculated by taking Exports – Imports. <u>Exports</u> are products leaving the country and represent money coming into the country. <u>Imports</u> are products coming in to the country and money leaving the country. If the result of Exports minus Imports is positive, it adds to the GDP. If it is a negative number, it reduces the GDP.

Income/Earnings/Allocations Approach

The Income/Earnings/Allocations approach adds up income earned from all productive resources yet begins with two non-income charges. First is **depreciation** (also known as Capital Consumption Allowance (CCA) or also Consumption of Fixed Capital (CFC)). This is income that is set aside for the charges of depreciation or the loss of value of capital goods. It comes from income but is not paid out to anyone. The other non-income charge is Indirect Taxes (**IT**) or more commonly known as sales taxes. The government requires this money but it is not really part of the value of the product itself. Yet, the money is income to the government.

The other sources of income include **wages** (income for labor), **rent** (income from property), **interest** (income from money capital), **proprietors' income,** and **corporate profits** (composed of income taxes, dividends, and retained earnings also known as undistributed corporate profits). Finally, we subtract income earned abroad by Americans since GDP only counts money earned in the boundaries of the U.S.A.

Add in other national accounting concepts and we can create a complete circular flow "equation".

C + $\mathbf{I_g}$ + **G** + $\mathbf{X_n}$ = **GDP** – **CCA** = **NDP** – **IT** + **Income Abroad** = **NI** (National Income) – **(Corp. Taxes, Retained Earnings, Soc. Sec. Taxes**) + **TP** (Transfer Payments) = **PI** (Personal Income) – **PT** (Personal Taxes) = **DPI** (Disposable Personal Income) – **S** (saving) = **C.**

It is possible to work your way to GDP from either end depending on the statistics you have to work with.

Price Indexes

We use GDP to measure the health of an economy from year to year. But, since GDP is the dollar value of goods and services, it is affected by price changes from year to year so adjustments need to be made so that price changes do not skew the real changes in GDP. We can only compare GDP from one year to the next if prices do not change. The GDP can be listed either as unadjusted or adjusted for price changes. If we use the actual dollar amounts for a year (unadjusted), it is called **Nominal**, **Money**, or **Current GDP**. If we adjust the GDP for price changes it is called **Real** or **Constant GDP**. Price indexes are useful tools to help us compare one year to another. One common index is the Consumer Price Index (CPI) which measures the combined price of a "Market Basket" or collection of goods and services from one time period to

another. Another index is called the GDP Deflator, which covers more items but is based on the same principles of the CPI.

To find the current index, you must establish a base year, and set its level at 100%. Then take the price of the market basket for the current year, divide it by the base year price and then multiply by 100. For example if the price of the goods in the base year was $3.35 and this year it is $4.50, you would take 4.50/3.35 x 100 and get an answer of 134.3. This means that prices have risen 34.3% since the base year.

Now we can use the price index to adjust GDP to see if increases or decreases in GDP are caused by real changes in production or simply price changes. We express GDP in real terms, as if the base year prices are still in effect. To do this we take the Nominal GDP/Price Index to obtain the Real GDP. If you know the Real GDP, you can find Nominal GDP by multiplying Real GDP times the Price Index.

The GDP is not a perfect measurement of the state of the economy because it overlooks the underground economy, trading, people who work and don't get paid (homemakers), and we could be producing millions of dollars worth of useless products.

CHAPTER 12 Unemployment & Inflation

Our economy goes through periods of ups and downs that are said to be normal growing pains of a continually growing economy. Numerous reasons are presented as causes for these ups and downs. These fluctuations in output, income, trade, employment, and business activity are called the **Business Cycle**. The top of the cycle is called the peak or prosperity. As we move down, that is called a decline or contraction. The bottom is called the trough and moving up the cycle is called recovery or expansion. Depending on your favorite economist, we are said to be in a recession if GDP falls for 2-3 quarters in a row (6-9 months). A depression is occurring if we are in a decline for "a long time". Recessions tend to hurt industries with durable outputs because people will often hold off purchases of things like cars, furniture and appliances until the economy improves. Food industries, on the other hand, do not suffer as badly because people still have to buy those products to survive.

Unemployment

One of the obvious consequences of a recession or depression is unemployment. If you are out of work, you must satisfy certain criteria to be considered unemployed. Only the Civilian Labor Force is used to determine employment. The Civilian Labor Force is anyone who is 16 years or older and willing and able to work. However, there are a number of exclusions from the Civilian Labor Force. Students, homemakers, and members of the military are not counted. Also, retired persons, people not looking for work, and "discouraged" workers (those who have given up looking for a job) are not counted because they are considered unwilling or unable to work. It is this reason that teenage unemployment is so high. The only teenagers considered as unemployed are those who are not students and those are typically dropouts from school and will have difficulty finding jobs.

Other quirks in employment figures may overstate actual employment because we include workers who can only find part-time work but really want full-time work. Also, workers may be "underemployed" in that they have specialized skills but are not using them, e.g. someone with a master's degree but is currently flipping burgers at a fast food store. Both of these groups are not considered unemployed but they are not using their resources to their fullest extent.

The term **Full Employment** refers to the full use of resources. It does *not* mean 0% total unemployment (it does mean 0% *cyclical unemployment*). This is also referred to as the **Natural Rate of Employment**. Typically, most economists claim that about 4-5% is

the full employment level in our economy. Some unemployment is considered normal due to the nature of unemployment.

Unemployment is said to have four causes or types. These are frictional, structural, cyclical, and seasonal unemployment:

Frictional unemployment is for those who are between jobs (voluntary or fired) or looking for their first jobs after school. Sometimes called "search" or "wait" unemployment it is not necessarily considered bad since it hopefully will lead to a better job and/or better use of resources.

Structural (also called compositional) unemployment is somewhat similar to frictional but is more long-term. It deals with those who no longer have the skills to do a job. There is a change in the structure of jobs or a change in the demand for certain skills.

Cyclical (deficient-demand) unemployment occurs due to recessions. A decrease in the demand for goods leads to a decrease in the demand for labor producing those goods (derived-demand).

Finally, there is **seasonal unemployment**. It refers to jobs that are dependent on the weather like construction and farm work. Sometimes this is lumped in with frictional unemployment.

When unemployment occurs, we lose possible output. We have a **Potential GDP (natural rate of output)** where the possible GDP is projected given full employment. This is compared to the actual GDP and the amount that we fall below the Potential GDP is called the **GDP Gap**. Arthur Okun says that for every 1% that unemployment is above the Natural Rate (full employment) there will be a 2½% gap of output below the potential GDP. This is known as **OKUN's Law.** So, if we had 8% unemployment (3% over full employment) we would have a GDP that is 7½% below its potential.

Inflation

The other major problem that can face an economy is inflation. Inflation is a rise in the general level of prices, not just blip or rise of one product's price. Inflation is measured by the change in the price index from one year to the next. If this year's index is 120 and last year was 115, the inflation rate would be 4.35% (120-115) divided by 115 times 100). Inflation decreases the "purchasing power" of money, meaning the dollar cannot buy as much as it could previously. Inflation hurts those with fixed incomes and those who lend out money (creditors) because the money they get back is worth less than what they lent out. Inflation helps borrowers (debtors) because they now have "more" money to pay back the loans.

Some inflation is expected for normal growth to occur but there are causes for unanticipated inflation. These causes are **Demand-Pull** and **Cost-Push (Supply-Side)**.

Demand-Pull inflation occurs when an increase in aggregate demand "pulls" prices up. If the economy tries to expand beyond Full Employment levels (remember the PPC curve?) it cannot, so prices are merely "bid up". This is where the phrase "too much money chasing too few goods" originates. If we create a graph showing potential levels of output, we can portray three ranges of spending.

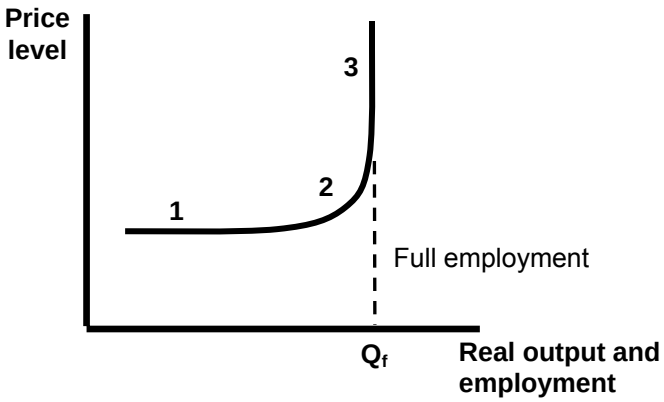


Figure 12.1

The three ranges of spending

Range 1 shows idle resources (GDP Gap) (inside the PPC). In this instance, spending more money, without an increase in prices can increase output and employment. As we move closer to the level of natural output (range 2), increases in quantity are accompanied by price increases. In range 3, we have reached full employment (on the PPC) so any increase in spending will only raise prices, not output.

The other cause of inflation is cost-push or supply-side inflation. When costs of production such as wages and raw materials rise, a business responds by raising prices to cover those costs. This may occur alongside an increase in demand. In extreme cases, the supply of the raw materials is severely depleted such that prices rise and workers also lose their jobs. This Supply-Shock led to both unemployment and inflation (**stagflation**) in the 1970's due to the oil shortages.

In addition to stagflation, there is a unique phenomenon called **hyperinflation.** In this situation, prices rise hundreds, even thousands of percent in a year. Obviously, prices are out of control and money becomes close to worthless. Usually, a collapse of the money system occurs due to poor government control of the money supply.

CHAPTER 13 Aggregate Supply & Demand

Aggregate Demand

Since macroeconomics looks at the big picture, we must look at total supply and demand of the economy. We use the term aggregate to combine all elements of output.

Aggregate Demand (AD) – the various amounts of real output (goods and services) which all sections of the economy (C+I+G+F) will collectively want to buy at every price level.

Aggregate demand is a downsloping curve but not for the same reasons as an individuals demand curve. The substitution effect is not valid because *all* prices change, and the income effect will not work as incomes usually rise along with price increases.

There are three causes for the AD curve to be downsloping. They are the Wealth Effect (Real Balances), the Interest Rate Effect, and the Foreign Purchases Effect. The **wealth effect** deals with the fact that as prices rise, your purchasing power falls. As your purchasing power falls, you buy less (particularly assets such as bonds). The **interest rate effect** shows that as prices rise, interest rates also rise (you'll need more money, so the demand for money increases, increasing interest rates) so you'll borrow and buy less. The **foreign purchases effect** says that as prices rise we will try to substitute foreign products and buy fewer domestic products.

Aggregate demand is determined by the following:

1. Changes in consumer spending based upon:
   a. Change in wealth, e.g. real estate, stock prices
   b. Price expectations
   c. Indebtedness—more debt = less spending & vice versa
   d. Taxes—lower taxes ↑ AD and higher taxes ↓ AD
2. Changes in investment spending based upon:
   a. Interest rates—as they rise, AD ↓; as they fall AD ↑
   b. Profit expectations
   c. Taxes
   d. Changes in technology
   e. Excess capacity—if there is unused capital, there is no incentive to produce more
3. Changes in government spending.
4. Changes in spending for net exports based upon:
   a. National income abroad—if foreign incomes rise there will an increase in AD for U.S. goods
   b. Exchange rates—if the US dollar depreciates (foreign money appreciates), US goods will be cheaper so exports will ↑ causing AD ↑ and vice versa

Aggregate Supply

Aggregate Supply (AS) – defined as the amount of real output available at each possible price level.

The AS curve is made up of three segments. (1) is the horizontal or "Keynesian range". (2) is the intermediate range and (3) is the vertical or "Classical" range.

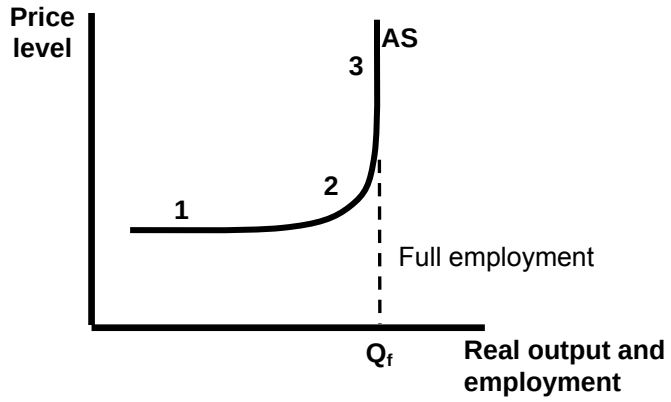


Figure 13.1

Aggregate supply curve

The Keynesian range (1) implies recession or at least unused resources. The Classical range (3) implies full employment. Keynesian economists contend that our economy is usually in the horizontal range or perhaps the upsloping (intermediate) portion (2). Here, a change in AD will increase output with little or no change in prices. Classical economists contend that the AS curve is vertical throughout and therefore a change in AD will only affect prices and not output.

Aggregate supply is affected by the following:

1. Changes in input prices (costs of production)
2. Market power over wages and quantity
3. Changes in productivity
4. Taxes & Subsidies and their effect on costs
5. Regulations

Here are three graphs showing changes in AD.

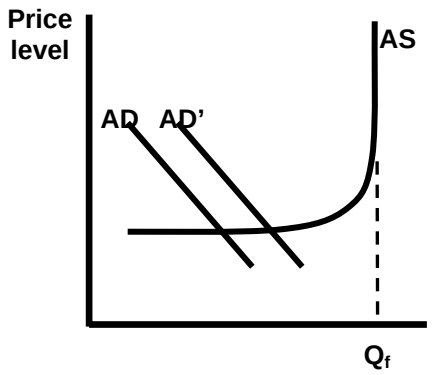


Figure 13.2

A change in AD in the Keynesian range that increases output without a price increase

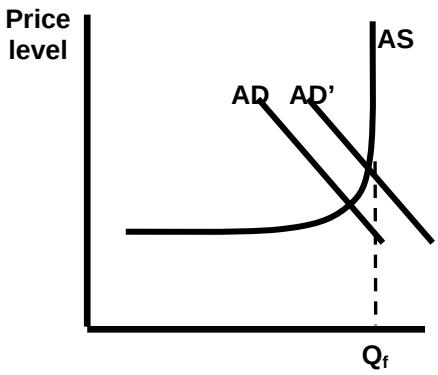


Figure 13.3

An increase in AD in the intermediate range that increases in both price and quantity

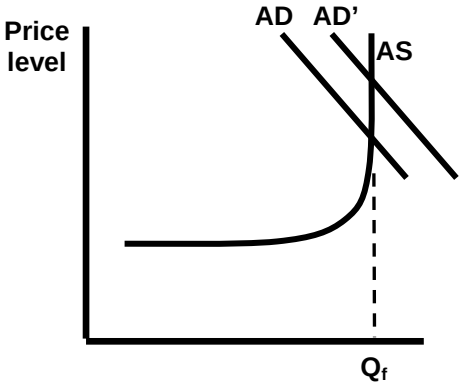


Figure 13.4

An increase in AD in the Classical range that has no effect on output but raises price

Figure 13.3 and 13.4 demonstrate demand-pull inflation. However, prices are *inflexible downward.* So, if AD were to decrease one would expect prices to fall but reality tells us that prices rarely go in reverse. This is explained by the "**ratchet effect**". Let's look at Figure 13.5. Beginning with AD & AS at Q_1, an increase in AD to AD' causes prices to rise to P' and quantity to Q_2. However, a decrease in AD will not lower prices because AS "ratchets" itself into a new curve (AS') with the horizontal range now at the current price (P') and quantity now at Q_3.

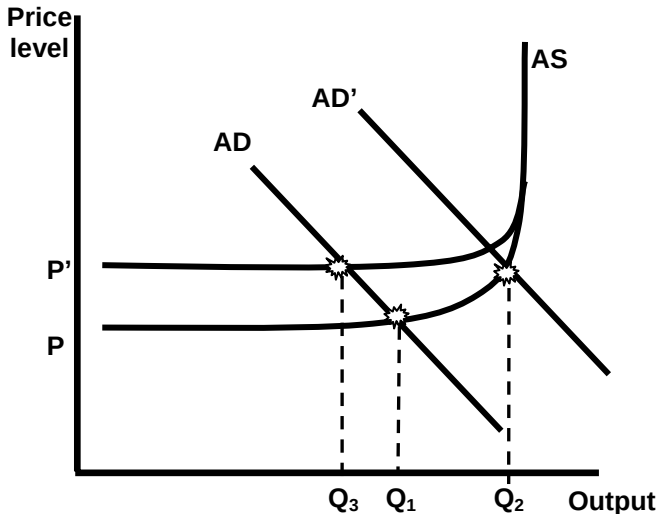


Figure 13.5

The "ratchet effect"

The graph below shows cost-push inflation that can occur due to a decrease in AS or increases in output due to increases in AS.

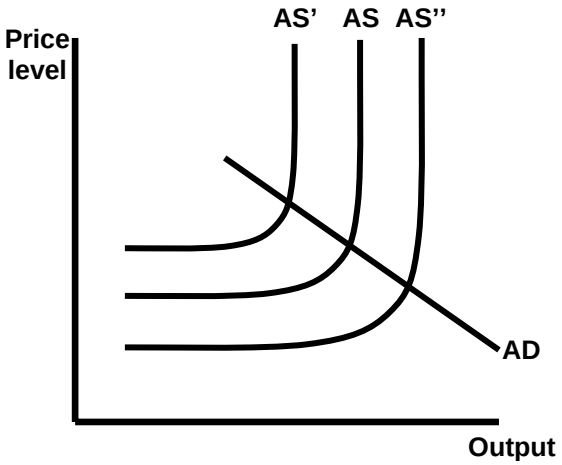


Figure 13.6

CHAPTER 14 Classical Economics

The Classical school assumes a vertical Aggregate Supply curve at the level of full employment. Price levels are then determined by the intersection of the Aggregate Demand curve.

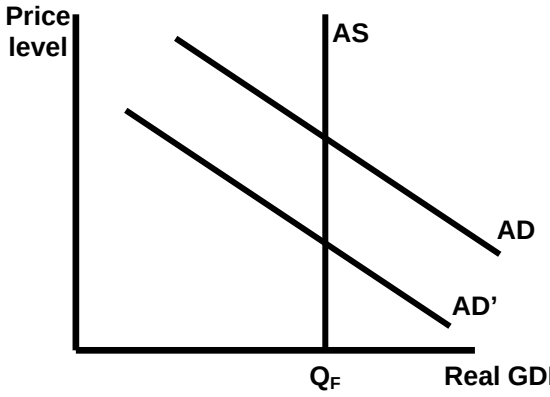


Figure 14.1

As AD decreases, input costs would also fall along with prices so that real profit and real GDP would remain unchanged. Therefore, real GDP depends on the amount of money that consumers and businesses have and the purchasing power or real value of money. If prices fall, purchasing power rises, so the consumers buy more and real GDP remains the same. According to Classical economists, AD depends on the stability of the money supply.

The Classical theory assumes that GDP = NI = DPI = PI. It ignores government (laissez-faire) and depreciation. The Classical Theory of Employment is based on two main principles:

1. Underspending is unlikely to occur because the market economy ensures full employment and restores itself after upheavals.
2. If some deficiency does occur, wages and prices will quickly adjust, changes in real prices or income would not happen, and full employment would be maintained.

Another tenant of classical economics is the fact that supply creates its own demand. This is called **Say's Law**.

Say's Law – Production provides the income that is needed to buy all the output that is on the market, maintaining full output.

What if we do not spend all of our income but instead save some of that income? Saving is considered to be a leakage from spending. If that were the case then we would not be at full employment. Classical economics says that businesses will use those savings for investment (which is called an **injection**). So, saving = investment, or leakages = injections. In this scenario, underspending will not occur and full employment will be maintained.

CHAPTER 15 Keynesian Economics

15A – Theory and Tools

John Maynard Keynes could not rationalize classical economics with the extended unemployment that occurred during the Great Depression of the 1930's. Classical theory argued that the economy would right itself following any deficiencies and maintain full employment.

Keynes argued that capitalism does not guarantee full employment. He also put forward the argument of downward inflexibility of prices thereby rejecting classical theory as he claimed that interest rate and price/wage adjustments wouldn't work. As prices and wages decline nationwide, national income must also fall. Since there is less money available for production, output will also fall.

Keynes also rejected Say's Law. More saving will not mean more investment. This is because there will be less consumption as saving increases; so how can businesses expand as consumption is falling? He also stated that there are different influences behind saving and investment so they will rarely match up with each other. Investment is motivated by the interest rate while saving by consumers is affected very little by the interest rate. He says that saving and consumption levels are primarily affected by the level of national income. In addition, there are also other sources of money for investment besides saving, such as accumulated money balances (checking accounts and cash available for loans) and banks seeking to loan out more money in order to increase the money supply.

In Keynesian theory, real GDP depends on aggregate demand. Due to downward inflexibility of price, aggregate supply is flat or slightly upsloping. AD is unpredictable, so government intervention is needed to avoid recessions.

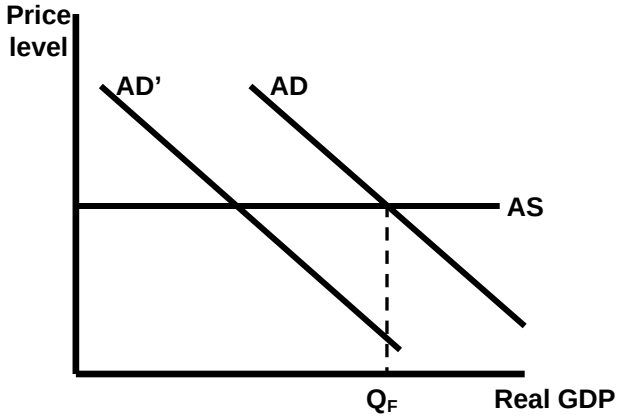


Figure 15.1

Consumption/Saving

Keynesian theory uses two major tools to determine the equilibrium level of GDP: **Consumption/Saving** and **Investment**. Consumption makes up the biggest chunk of GDP (almost 2 out of every 3 dollars) and thereby has the greatest effect on GDP. The most important determinant of consumption and saving is the level of disposable personal income. DPI is made up of saving and consumption. So, a "consumption schedule" is created to show the relation between consumption and DPI. A 45° line shows the point of reference where spending equals income.

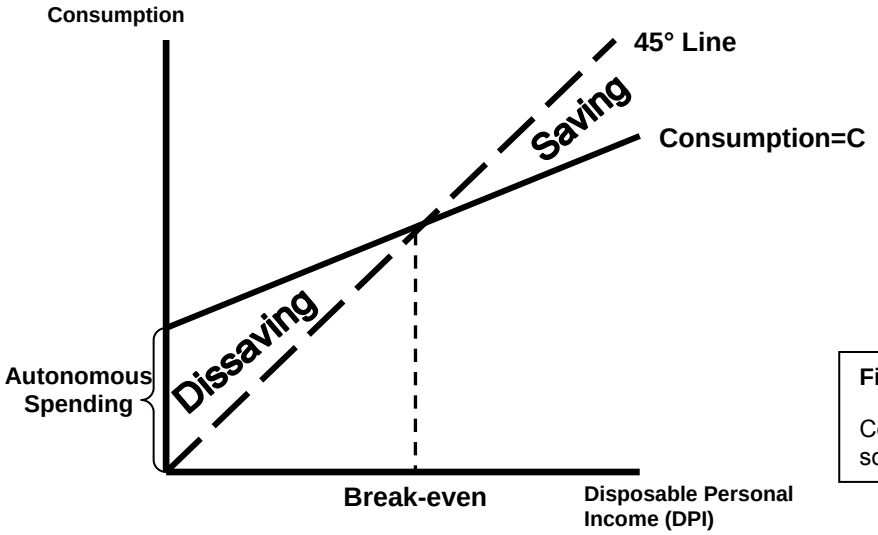


Figure 15.2

Consumption schedule

The consumption schedule is created by plotting the points or amounts that people plan to consume at each level of income (Consumption=C). Any point to the left of the intersection of the 45° and Consumption would indicate that people are spending more than their income (dissaving), and any point to the right indicates consumers are spending less than their income (saving). The amount of consumption at zero income is money that would be spent regardless of income level and is called "autonomous spending". This money would be borrowed (go into debt, or dissaving) if needed to automatically spend a certain amount. The point where C intersects the 45° line is called "break-even" where consumption = spending.

A saving schedule can also be created which will have the same break-even point as the consumption schedule. It shows that households will spend a larger proportion of a small income than that of a large income.

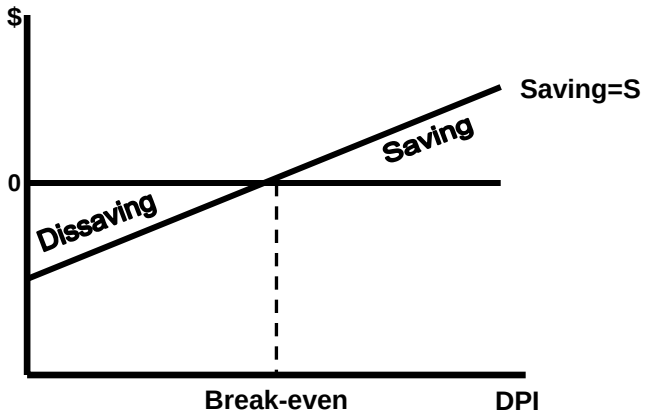


Figure 15.3

Saving schedule

The percentage of income that is consumed is called the Average Propensity to Consume (APC) and the percentage of income that is saved is called the Average Propensity to Save (APS). APC is found by dividing consumption by income. APS is found by dividing saving by income. As income rises, the APC falls. It is also worth remembering that APC + APS = 1.

A more useful measurement is one that measures the consumption of any change in income. This is called the Marginal Propensity to Consume (MPC). It is calculated by dividing the change in consumption by the change in income. It is the same as the slope of the consumption line (rise/run). We also have the Marginal Propensity to Save (MPS) which is the change in saving divided by the change in income. It is useful to remember that MPC + MPS always equals one.

The consumption and saving lines have a number of determinants. They are income, wealth, price level, expectations, indebtedness, and taxes. If income changes, it causes a change in the amount consumed or a movement along the consumption curve. If any of the other determinants change, it will cause a change in the consumption schedule or a shift of the curve.

An increase in wealth will increase consumption. An increase in the price level will cause the consumption schedule to decrease. If consumers expect an increase in prices, this will cause an increase in spending. The more consumers get in debt, the less they will spend because they must use their income to pay off their debts. An increase in taxes will shift both the consumption and saving schedules down because they have less money in general for anything.

Investment

The other major tool used to find equilibrium GDP is **Investment**. Investment spending is based upon the real interest rate and also the expected rate of net profit.

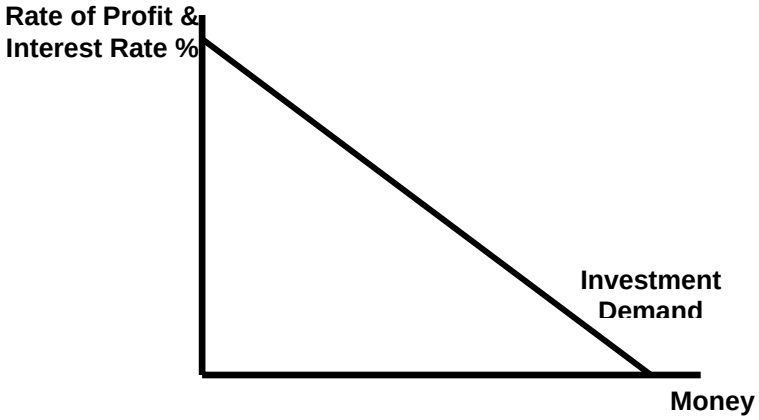


Figure 15.4

Investment is downsloping because it is hard to find assets that have a high rate of return and conversely, easier to find assets with lower rates of return. Also, as interest rates rise, there is less incentive to borrow money.

A change in interest rates will move you along the Investment Demand curve. Other factors will shift the curve. These include cost, taxes, technology, expectations and the stock of capital goods.

Investment spending can be either autonomous or induced.

In reality, investment tends to be quite volatile compared to consumer spending. This is due to the irregularity of innovations, the variability of profits, the fact that capital is replaced at variable times, and the variability of expectations (e.g. is it a bull or bear market?).

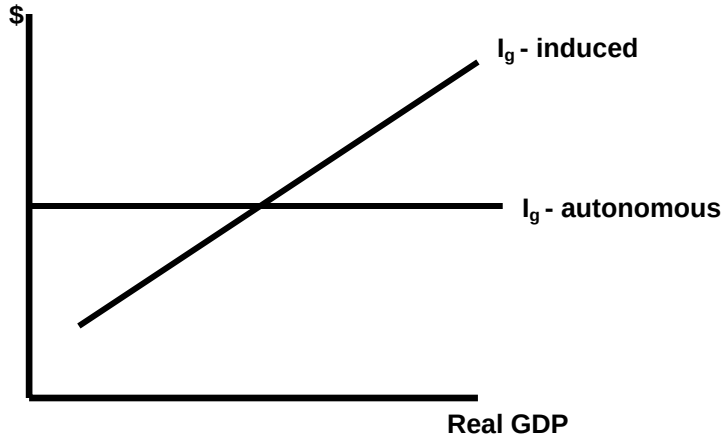


Figure 15.5

15B – Keynesian Model & Fiscal Policy

Determining Equilibrium GDP

The "tools" of consumption and investment spending are used by Keynesian economics to determine equilibrium GDP. This is the level of output whose production will create spending just sufficient enough to buy that output. At this level of production, total spending (C + Ig) = total production/income.

If we are below or to the left of equilibrium GDP (spending is greater than production) production will be pulled upward. We are experiencing an unintended drop (disinvestment) in business inventories. If we are above or to the right of equilibrium GDP (production is greater than spending) production will fall back because the economy cannot sustain that high level of production.

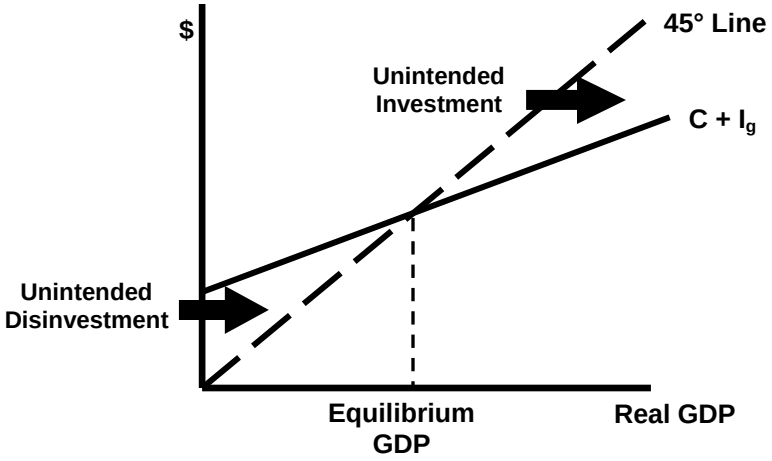


Figure 15.6

The leakages and injection approach also takes the economy to equilibrium. If investment exceeds plans, production is too high and the economy will pull back.

We find equilibrium GDP at the point where planned investment = saving. Saving = actual investment at all points along the saving line but only equals planned investment where saving intersects planned investment.

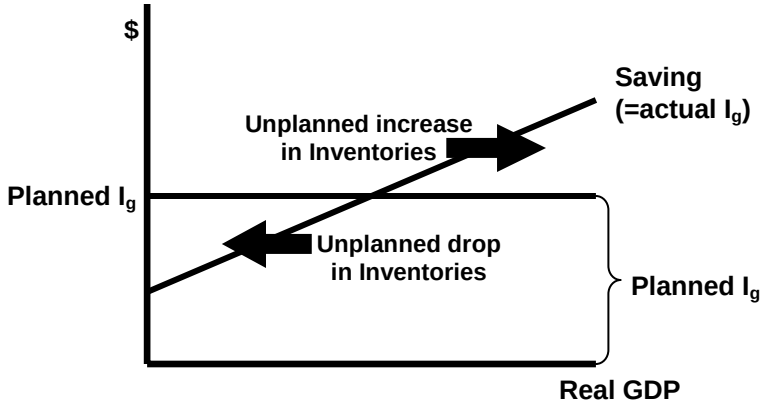


Figure 15.7

If we always move toward equilibrium, how does the equilibrium ever change? It will change in response to shifts in the consumption or investment schedule. If the schedule shift up, it creates a new point of intersection that is to the right and raises GDP. If the schedule shifts down, or decreases, it creates a new intersection point to the left and lowers GDP.

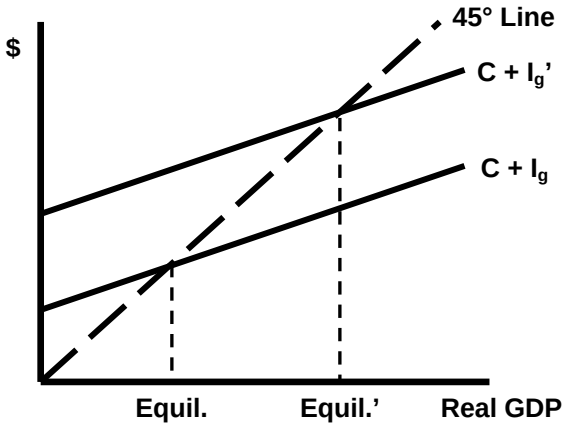


Figure 15.8

Shift up on the consumption schedule

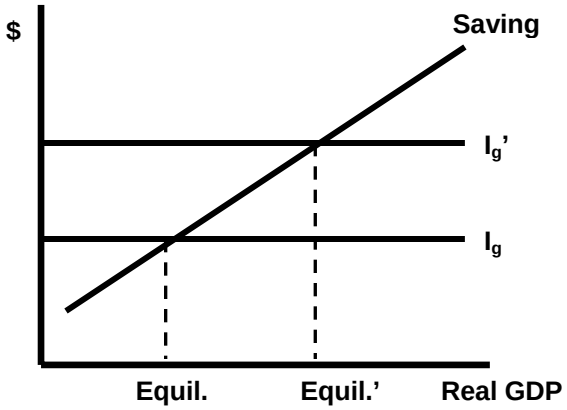


Figure 15.9

Shift up on the investment schedule

How much will equilibrium change given a change in consumption or investment? This is based on the **multiplier**.

The multiplier is the change in GDP divided by the change in initial spending (C or I_g). A change in spending results in a change in income for others, which changes their spending, and so on and so on. The multiplier is related to the MPC. If the MPC were .75 then a $1000 increase in spending will increase another's income by $1000. Then, according to the MPC, that person will spend $750 of the $1000. Then the $750 will become income for another who will spend 75% of that, and so on until the "cycles" use up all the money. The original change in spending multiplies through the system.

The multiplier is inversely related to the marginal propensity to save (MPS). So, if the MPC is .75, the MPS is .25. One divided by the MPS in this case would be 4. If the multiplier is 4 then that means that the initial increase of $1000 would result in a $4000 increase in equilibrium GDP. If the MPC were .9, the multiplier would be 10.

We can use this information to come up with an equation to calculate equilibrium GDP. Income (Y) equals all autonomous consumption plus the MPC times income.

$$Y = C + I_g + (MPC \times Y)$$

When we spend more, equilibrium GDP increases by the multiplier times the change in spending. If we try to save more, the GDP will decrease by the multiplier times the drop in consumption but puts the savings back so that we still save the same amount but at a lower GDP. This is called the **Paradox of Thrift**. Society saving may lower inflation but in the process may trigger a recession.

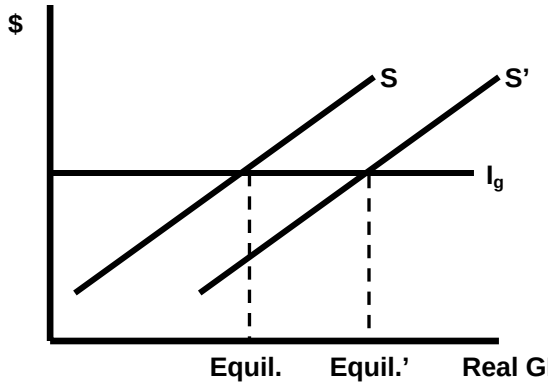


Figure 15.10

Equilibrium GDP vs Full Employment GDP

The next item to look at in the Keynesian model is the comparison between equilibrium GDP and full employment GDP. The equilibrium GDP may or may not be at the full employment level.

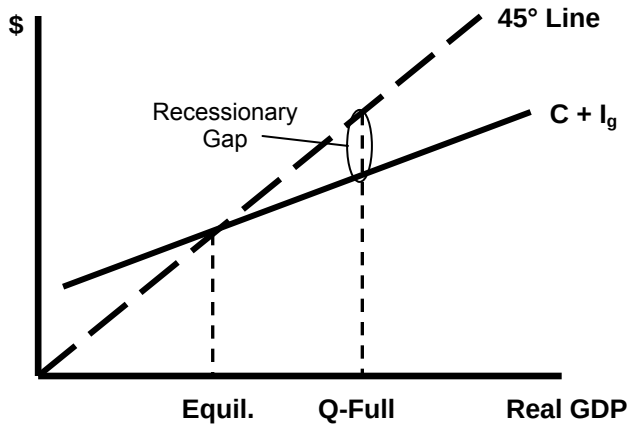


Figure 15.11

The recessionary gap

In Figure 15.11 above, spending (Equilibrium GDP) falls short of full employment levels. Spending is less than full employment level by the amount of the gap between the 45° line and the C + I_g line. This is called a **recessionary gap**, as our spending does not reach its potential. The amount of this gap times the multiplier is the amount that GDP falls below its potential (natural or full) output level.

It is possible that spending exceeds the full employment level of GDP. If this is the case, we are experiencing demand-pull inflation which causes prices to rise to the

physical volume of production. Nominal (current or unadjusted) GDP will rise but Real GDP will not rise. We have an inflationary gap where the equilibrium level of GDP exceeds (is to the right of) full employment. The difference between the 45° line and the C + I_g line is the amount of the inflationary gap. That gap times the multiplier is the amount that GDP exceeds full employment GDP as shown in the graph below.

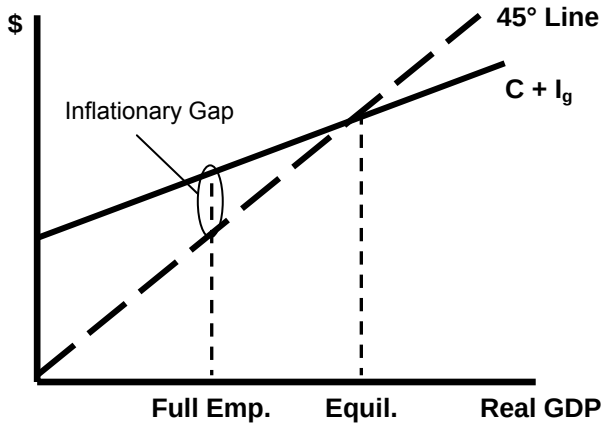


Figure 15.12

The inflationary gap

Next, we add foreign trade into the mix. If X_n is positive (exports exceed imports—money coming into U.S.), it will increase AD and cause GDP to increase by the multiplier. If X_n is negative, it will decrease AD and lower GDP by the multiplier.

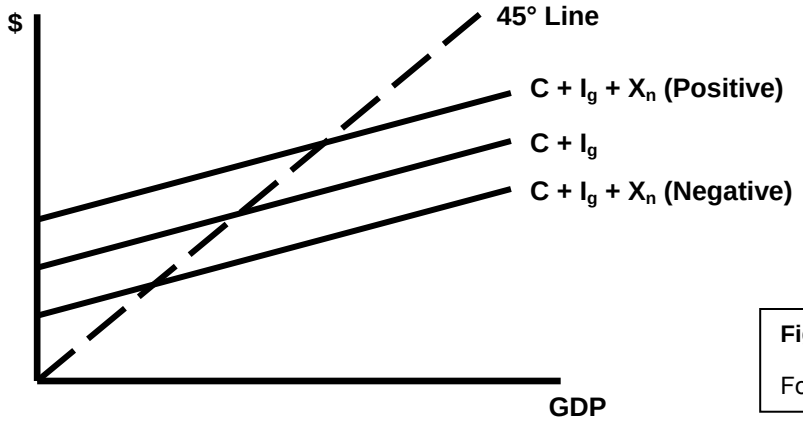


Figure 15.13

Foreign trade

Fiscal Policy

Part of Keynesian theory is that government can step in and stabilize the economy through influencing equilibrium GDP. This decision making on the part of the government is called **Discretionary Fiscal Policy**. It is the government's decisions on spending and taxes or very simply put, its budget. Government decisions can help stabilize the economy by attempting to remove recessionary or inflationary gaps. **Expansionary fiscal policy** would be used during a recession to help expand the

economy and **contractionary fiscal policy** would be used during inflation to remove an inflationary gap and slow down the economy.

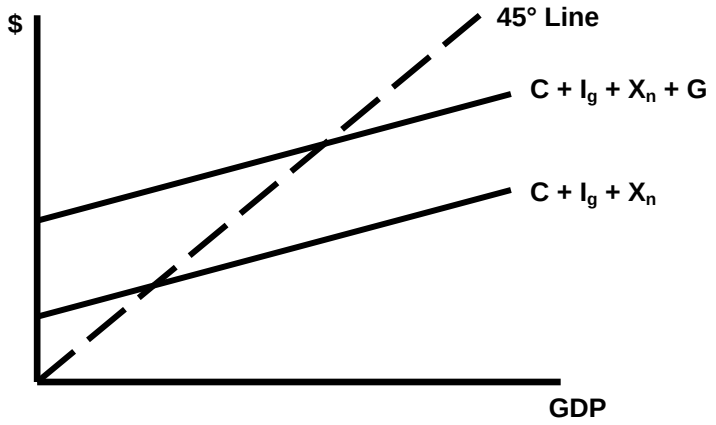


Figure 15.15

If government increases spending, GDP will grow by the increase in spending times the multiplier. A decrease in GDP will occur if government reduces spending. If the MPC were .75 (Multiplier = 4), a $20 change in spending would cause a $80 change in equilibrium GDP.

This also works with the leakage/injection approach. With Net Exports being added, it is necessary to split X_n. Exports (X) are an injection (money coming into the economy) and imports (Im) are a leakage (money leaving the economy).

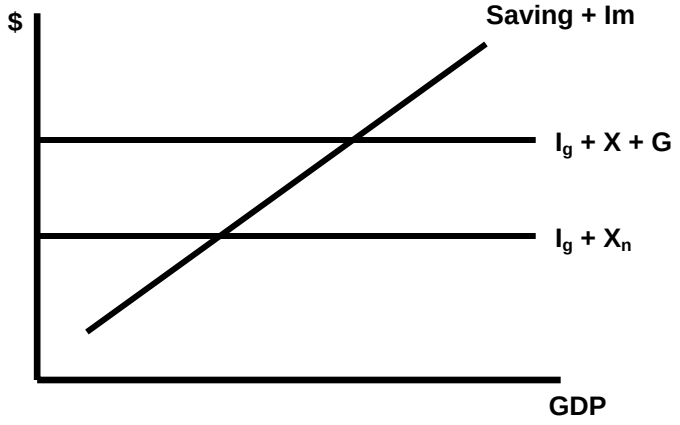


Figure 15.16

Fiscal policy does not quite work the exact same way with taxes, however. Taxes reduce both saving and consumption. A tax of $20 would reduce income by $20 but that would be split between consumption and saving. If the MPC were .75, then the tax of $20 would result in a $15 drop in consumption and a $5 drop in saving. Using the multiplier (4) times the change in consumption, the change in equilibrium GDP would be $60. So, it shows that a change in spending has a stronger effect than a change in taxes when manipulating equilibrium GDP.

Expansionary fiscal policy is used to increase the equilibrium GDP through increases in spending or decreases in taxes. It is said that the government goes into deficit spending to spur the economy. Budget deficit is sometimes called "**easy money**". Contractionary fiscal policy is used to lower the GDP during inflationary times through lowering spending or increasing taxes. This is known as "**budget surplus**" or also "**tight money**". As an aside, budget deficit refers to one year; the term debt or national debt refers to the total of all deficits combined over the years.

How does the government finance a deficit? One way is to borrow money from the public through the sale of interest bearing bonds. This increased demand for money drives up the interest rate, however, and may "crowd out" private borrowing/spending thereby negating some of the expansionary effects. The other method the government can use is to simply issue new money to creditors. This creation of money does not "crowd out" the private sector and is therefore more expansionary.

What can the government do with its surplus? The government can use the excess money to reduce the national debt. However, by putting money back in the system, we offset the contractionary effects and may even add to inflation. The other option is more contractionary. The government simply impounds the money and lets it sit idle so it stays out of the system.

There is also "Non-Discretionary" fiscal policy, also known as **built-in stabilizers**. If GDP were to fall, then incomes would fall, as would taxes. The lower taxes automatically help stabilize GDP without government intervention. If GDP expands, incomes follow and taxes will increase, thereby reducing the inflationary effects without government intervention.

Criticisms of Fiscal Policy

There are a number of criticisms of fiscal policy.

(1) The problem with timing the effects of government intervention. Built-in stabilizers may "fix" a problem and government intervention on top of that may cause an adjustment too far in the other direction. Also, there is a lag in the time between government recognition of a problem and its reaction to the problem due to bureaucratic snags.

(2) Sometimes, critics claim that political goals of lawmakers outweigh the true needs of the economy.

(3) As already mentioned, the crowding out effect occurs when the government borrows money, interest rates rise, and private spending is diminished.

(4) Keynesian theory claims we are on the horizontal segment of the AS curve and that an increase in AD will not raise prices. Critics claim that this is not necessarily true and if we are in the upsloping or vertical portion of the AS curve an increase in AD will cause inflation.

(5) Finally, there is the Net Export effect. An expansionary fiscal policy might raise interest rates (crowding out effect). This will attract foreign demand for US dollars, so the dollar appreciates. As the dollar appreciates, our products become more expensive to foreigners so they buy fewer of our exports and we can buy more imports with our appreciated dollar. This total effect of this is to lower net exports. Therefore, an expansionary fiscal policy will be partly negated due to lower net exports. A contractionary fiscal policy tends to lower interest rates, depreciate the dollar and thereby increase net exports. Simply put, fiscal policy has the opposite of the desired effect on net exports.

Others see that fiscal policy can also have some effect on AS curves as well as the AD curves through tax changes. This is called **"Supply-Side" fiscal policy**. As in the graph below, a tax cut will increase aggregate demand from AD to AD'. This would cause quantity and prices to rise (from 1 to 2). However, the tax cut may also lower costs for businesses which will increase aggregate supply from AS to AS'. This will increase quantity even more and actually lower prices (from 2 to 3).

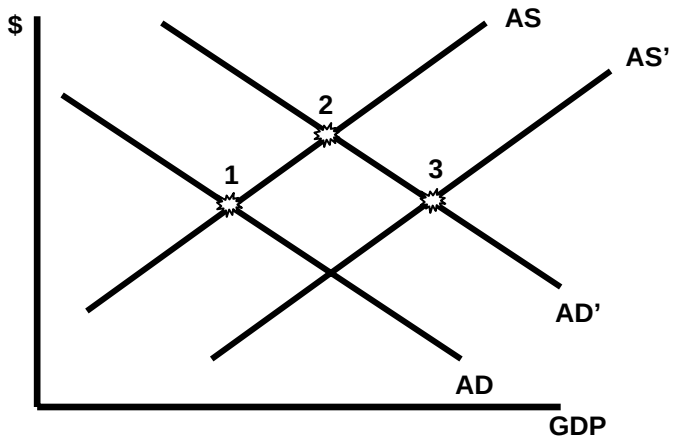


Figure 15.17

CHAPTER 16 Money, Banking, Federal Reserve & Monetary Policy

Money

Money serves three functions in our society. It is a medium of exchange (used to trade for things), a measure of value (shows the relative worth), and a store of value. The money supply (M1) is made up of coins, currency (Federal Reserve Notes) and checks (Demand Deposits) with checking accounts making up over 2/3 of the money supply. There is also "near money" (M2 & M3) that is made up of savings accounts, time deposits, government securities, money market and mutual funds. Credit cards are not considered money but rather short-term "loans" from banks that are paid off with checks.

Money has no real intrinsic value but obtains its value from the faith that people have in it. Money is no longer backed by gold. It also maintains its value through the fact that it is accepted by everyone, it is legal tender (government laws that say it must be accepted), and the fact that it is relatively scarce.

The current value of a dollar is found by dividing 100 by the price index. For example, if the price index is 120, the value of a dollar is now .8333, which means that the purchasing power of the dollar has fallen by 16.67% compared to the base year.

The demand for money is based on the need for money to buy goods and services and holding money as a store of value. This means we have a "transaction demand" for money as well as an "asset demand" for money.

Transaction demand (D_t) is independent of the interest rate. It is the money one needs for purchasing goods and services. How much money one needs will vary directly with the price level or output level of the economy.

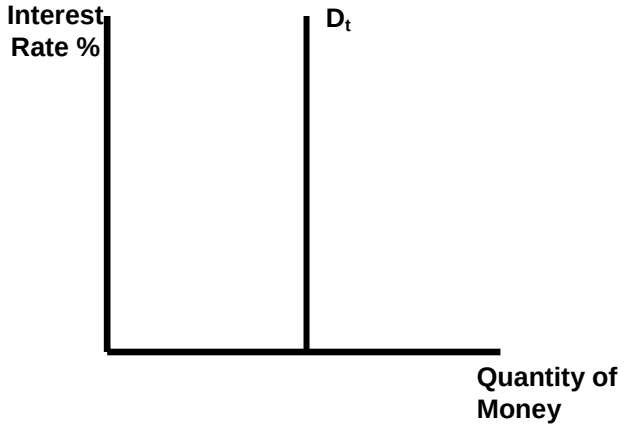


Figure 16.1

Transaction demand

Asset demand (D_a) is holding money as a store of value or holding assets as stocks, bonds, or M1. If the interest rate is high, you will want to hold less money as cash but rather in interest bearing assets. If interest rates are low, it does not pay much to hold assets so you want cash instead. Dollars are a good asset when prices drop but poor if prices are rising. The opposite is true for assets like interest bearing bonds. Simply put, D_a has an inverse relation to interest rates.

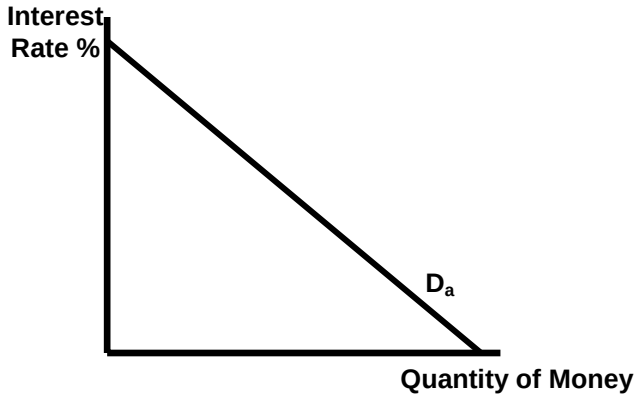


Figure 16.2

Asset demand

The total demand for money (D_m) is found by horizontally adding $D_t + D_a$. The supply of money (S_m) at a given point in time is perfectly inelastic as it shows a particular stock of money. An increase in GDP increases the demand for money (D_m shifts right) and vice versa for a decrease in GDP.

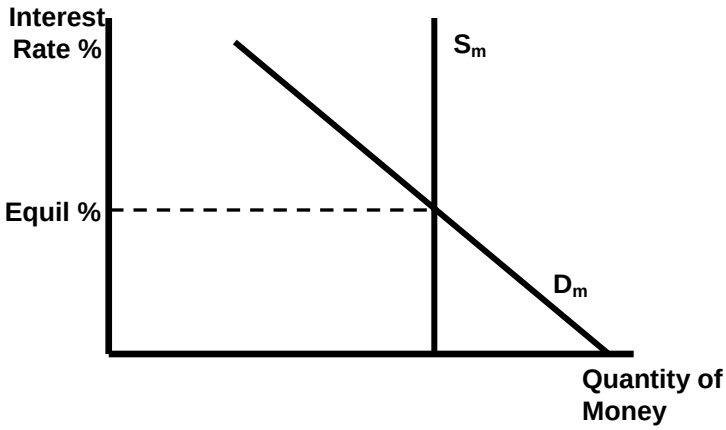


Figure 16.3

Total demand and supply of money

The combined supply and demand for money portrays the money market and determines the equilibrium rate of interest. If the supply of money were to fall, there would be a shortage. The price of money (interest rates) would rise and bond prices would fall (it takes less money to earn the same amount of interest on the bonds). If supply of money were to rise, there would be a surplus. The price of money (interest rates) falls and bond prices would rise (it takes more money to earn the same amount of interest on the bonds).

Banking and the FED

In the United States, the Federal Reserve System (FED) is responsible for the money supply. Its purpose is to regulate the money supply in order to promote general economic welfare. The FED has 6 general functions:

1. It issues coins and currency.
2. It is a clearinghouse for checks.
3. It is the fiscal agent for the government.
4. It supervises member banks.
5. It holds the deposits or "reserves" of member banks
6. Its most important function is to regulate the money supply, also known as **Monetary Policy**.

Money is created when banks loan out money. **"Fractional Reserve" banking** is when banks loan out more than they actually hold in cash. The FED sets a reserve ratio or required reserves (RR) which is a percentage of demand deposits (DD), that is, checking accounts that must be kept on deposit at the FED. This money is not available for loans. If the RR is 10%, this means that out of a $500 deposit, $50 must be held as reserves and $450 is available as excess reserves to loan out or to "create" new money.

The lending potential of the entire banking system is based on the "**money multiplier**". The multiplier is found by dividing one by the reserve requirement percentage. So, if the RR is 10%, the multiplier would be 1/.1 or 10. Reserves that are loaned out by one bank become deposits at another bank and so on, and so on. If the RR were 10%, an initial deposit of $500 would result in a total increase of $5,000 to the money supply. (The original $500 plus new money created through loans of $4,500.) The process may work in reverse, too, if money is withdrawn from banks.

Leakages may reduce the effect of the multiplier. One leakage would occur if the borrower does not deposit the full amount of the loan in another bank. Another would occur if banks chose not to loan out the full amount of their excess reserves.

Those who support monetary policy (monetarists) place the focus of economic stability on the money supply. They use the "**equation of exchange**":

$$MV = PQ$$

M = the money supply and V = the velocity of money (how often a dollar is spent in a given time period. P times Q is the same as GDP. The money supply multiplied by how many times it is spent in a year is the same as the GDP (remembering that spending = output). The velocity can be found with this equation:

$$V = GDP / M$$

Monetary Policy

Given this information, monetarists believe if the FED alters the money supply, GDP can be manipulated. This process is called **Monetary Policy**. There are three primary tools used to change the money supply. They are:

1. Changing the reserve requirement (RR)
2. Changing the discount rate (DR)
3. Engaging in Open Market Operations (OMO).

The most powerful but least used is changing the reserve requirement. If the RR% is raised, banks must now hold out more money in the FED and can loan out less money. This would decrease the money supply (MS) and would be called tight money or contractionary monetary policy. Lowering the RR% means the banks have more money available to loan, thereby increasing the MS (easy money/expansionary monetary policy). The RR% and MS go in <u>opposite directions</u>. RR ↑, MS ↓. RR↓, MS ↑.

The discount rate (DR) is the interest rate that the FED charges banks for loans. This affects the federal funds rate (loans between banks) and interest rates to the consumers. The discount rate is also seldom changed, and can only be changed at Board of Governors monthly meetings. If the DR is raised, banks will raise interest rates, which will decrease loans and lower the MS (tight money). If the DR is lowered, interest rates will fall and loans and MS will increase (easy money). The DR% and MS go in <u>opposite directions</u>. DR ↑, MS ↓. DR ↓, MS ↑.

On a daily basis, the FED engages in Open Market Operations to vary the amount of reserves and thereby the money supply. OMO's involve the FED buying and selling government securities. This is the key; <u>the FED</u> does the buying and selling. If the FED sells securities, people are giving up money, which the FED can pull out of circulation thereby reducing the money supply. If the FED buys securities, people receive money and the MS goes up. FED buys—MS ↑ (easy money). FED sells—MS ↓ (tight money).

The monetarist interpretation is that when the MS increases, GDP will increase through the equation of exchange (MV = PQ). The Keynesian interpretation is that an increase in MS will cause interest rates to fall. The lower interest rates will increase investment spending, and the increase in AD will increase the GDP by the multiplier.

There are two major strengths of monetary policy. OMO's continue on a daily basis, so there is a great deal of flexibility and a speedy response time compared to fiscal policy. Secondly, monetary policy is considered to be much more non-political than fiscal policy.

There are some weaknesses, however, with monetary policy. If the MS is reduced too much, it might cause a recession. If the MS is raised too much, inflation might occur.

The equation of exchange works based on the stability of Velocity. If Velocity goes in the opposite direction of the change in money, the change in money is offset.

Finally, there is debate over whether to target the money supply or target interest rates because you cannot do both at the same time. If there were a recession, interest rates would be falling. If you wanted to prevent rates from falling further, you would tighten the MS but that would also cause more contraction in the economy. If there were inflation, interest rates would be rising. If you wanted to lower the interest rates, you would increase money supply but that would also cause more expansion in the economy.

From the international point of view, we saw that an expansionary fiscal policy increased the demand for money (D_m to D_m') which causes interest rates to rise. The dollar appreciates; exports fall since they are more expensive, thereby reducing the expansionary effect.

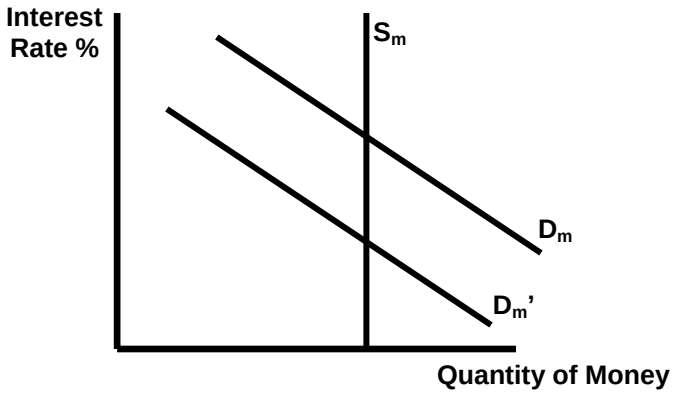


Figure 16.4

Expansionary fiscal policy

An expansionary monetary policy increases the money supply (S_m to S_m') which cuases interest rates will fall. The dollar depreciates, US products become cheaper, exports rise, X_n rises, and GDP rises.

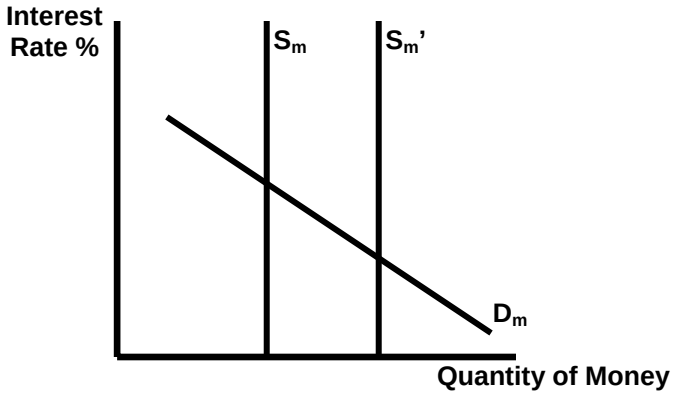


Figure 16.5

Expansionary monetary policy

CHAPTER 17 Summary of Economic Models

Besides Keynesian theory and Monetarism, there are other schools of thought that influence economic thinking. These are the **Theory of Rational Expectations** (new or neo-classical) and **Supply-Side Economics**.

Rational Expectations Theory

Rational Expectations Theory (RET) is similar to Monetarism in that it believes in a monetary rule of stable growth in the money supply to keep a stable economy and that the economy is stable in the long run at the natural or full rate of employment.

Rational Expectations Theory (RET) – The RET believes in a monetary rule of stable growth in the money supply to keep a stable economy. The economy is stable in the long run at the natural or full rate of employment.

The major difference from classical economics is that RET assumes that people will response naturally to perceived changes in the economy before the government makes any adjustments so any move by the government is countered by the public before the government reacts thereby making policy ineffective.

Supply-Side Economics

Prior to the 1970's, there was a graph known as the Phillips Curve that was used by Keynesian economists to show an inverse relation between unemployment and inflation. The stagflation of the 70's threw that out of kilter with the supply shocks that hit the economy. Supply-Side economics emerged as the latest cure for the ills of the country. Its basic tenet was to promote policies which would increase the AS curve in hopes of boosting output and lowering prices. This would be accomplished through a series of tax cuts designed to invigorated both business and consumer spending and also to promote incentives to work. These marginal tax cuts could possibly result in higher revenue for the government, as shown on the Laffer Curve.

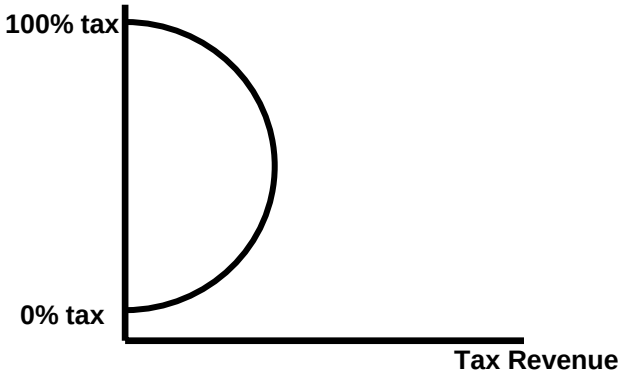


Figure 17.1
The Laffer Curve

Here are the models' views of fiscal policy:

Keynes — Changes AD and GDP through the multiplier

Monetarism — No effect unless money supply changes

New-Classical (RET) — No effect because any changes are anticipated

Supply-Side — Changes GDP and prices through changes in AS

Here are their views of monetary policy:

Keynes – Δ in MS leads to Δ in IR, Δ in Investment, Δ in real GDP

Monetarism — MV = PQ; Δ in MS directly changes GDP by Δ in AD

New-Classical (RET) — No effect because any changes are anticipated

Supply-Side — Changes investment and thereby changes AS

CHAPTER 18 International Trade

As already covered in the Microeconomics section, comparative advantage demonstrates how all nations can benefit through specialization of products that have the lowest opportunity cost for each nation. This will result in the greatest possible output. It is for this reason that many argue that there should be free and open trade between nations. Still, others argue for isolation and the goal of self-sufficiency.

Barriers to trade exist primarily in two forms: **tariffs** and **quotas**. Tariffs are taxes placed on imports from other countries. They serve as a means of revenue for the government or as a way of protecting domestic producers from foreign competition. Quotas quantify the limits of imports. Once that number is reached, no more of the product may enter the country. Other means of limiting trade are basically different types of quotas. Sometimes a country requires that products meet certain specifications that another producer cannot possibly satisfy, or that the countries obtain a license to trade (and those licenses are scarce!)

There are arguments against trade barriers. They may protect domestic industries but also many have less incentive to be more efficient or productive since they are "protected" from outside competition. In addition, foreign countries may respond in kind, retaliating with similar barriers that may cancel out any anticipated positive effects.

As already noted, exports create a demand for US dollars (since we want to be paid in US currency, not foreign dollars) and increases supply of money and the GDP in the US. Imports create a demand for foreign currency, reduce the supply of US money, and decrease the GDP in the US.

The net difference between the incoming money from exports and the departing money for imports is called the **balance of trade**. If X_n is positive (exports > imports), there is a trade surplus or a favorable balance of trade. If X_n is negative (exports < imports), there is a trade deficit or an unfavorable balance of trade. However, money also flows between nations for investments, interest, services, and transfers. All monies flowing between the US and other countries make up the balance of payments.

Since we do not have a common currency worldwide, we must exchange our dollars for foreign currency when we want their goods and foreign countries must exchange their currency for US dollars to buy our products. Exchange rates determine how many dollars it takes to obtain the desired foreign currency. The rates are "floating", based on the supply and demand for the currencies.

Let's suppose it takes $1.50 to obtain one British pound (£1). If the US dollar depreciates, it will take more dollars to obtain foreign currency, perhaps now $2.00 for £1. This means that the British pound has appreciated. If the US dollar appreciates, it takes fewer dollars to obtain pounds, perhaps now $1.25 for £1. Here the pound has depreciated.

If the demand for foreign goods (and therefore, foreign currency) increases, the foreign currency appreciates and the US dollar depreciates. If the demand for US goods increases, the US dollar appreciates and foreign currency depreciates.

If the national income of a country grows faster than other countries, its currency will likely depreciate because it is likely to increase its demand for foreign products.

The relative price levels between nations also affect exchange rates. If domestic prices rise relative to foreign prices, Americans will search for cheaper foreign goods which increases the demand for foreign currency causing the US dollar to depreciate and foreign currency to appreciate.

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