These notes essentially correspond to chapter 2 of the text.

1 Supply and Demand

The first model we will discuss is supply and demand. It is the most fundamental model used in economics, and is generally used to predict how equilibrium prices and quantities will change given a change in the underlying determinants of supply and demand.

1.1 Demand

Recall the Law of Demand from your principles of economics courses:

Law of Demand: *There exists an inverse relationship between the price of a good and the quantity demanded of the same good*

This law has been verified using "real-world" data for many goods. If the law holds, then we can draw a demand curve if we place price on the y-axis and quantity on the x-axis. Demand curves for which the law of demand holds will be downward-sloping. They may be linear or non-linear, although we will generally work with linear demand curves for simplicity. Graphed below are portions of a linear and non-linear demand curve:
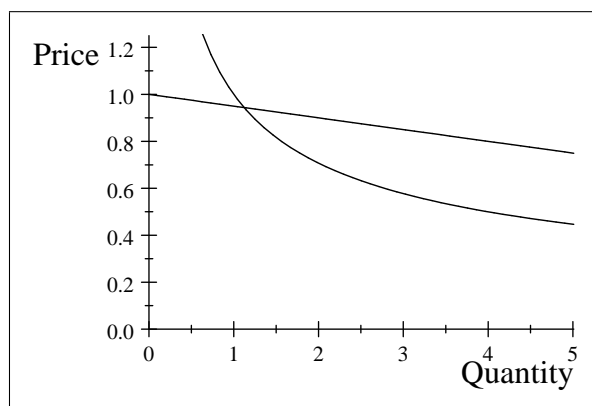
1.1.1 A simplification of reality

The demand curve is really a simplification of reality. There are many factors that go into determining the demand for a specific product (how many consumers in a market, the prices of related goods, the amount of income consumers have, etc.), but when we graph the demand curve we only consider the price of the good and the quantity demanded. In a sense, we are saying that the quantity demanded of a good is only a function of the price of the good (or the own-price of the good as I have called it). Mathematically, we say that $Q_D = f(P_{own})$. For the more complex case we could write, $Q_D = f(P_{own}, P_{sub}, P_{comp}, Income, \# \ of \ consumers)$. However, to show this in a picture we would need more and more dimensions (2 dimensions for Q_D and P_{own}, 3 dimensions for Q_D, P_{own} and the price of one substitute, 4 dimensions for Q_D, P_{own}, the price of one substitute and the price of one complement, etc.). Since it is difficult to draw and picture such higher dimension objects we only consider the graph of Q_D and P_{own}.

1.1.2 Demand functions and inverse demand functions

As you can see above, we will be working with demand equations in the course. When Q_D is isolated, so that $Q_D = f(P_{own})$, this is called a demand function. If P_{own} is isolated, so that $P_{own} = f(Q_D)$, then this is called the inverse demand function. (Note: If you are going to graph a demand curve you need to use the inverse demand function, since price is on the y-axis and quantity is on the x-axis and we typically think of graphing equations of the form $y = f(x)$.)

To find the inverse demand function when given the demand function you simply have to solve for P_{own}. Suppose that you have the linear demand function $Q_D = 12 - 6P_{own}$. Then the inverse demand function

would be: $P_{own} = 2 - \frac{1}{6}Q_D$. In general, our linear demand functions will take the form of $Q_D = a - bP_{own}$. (Note: Be careful here. The inverse demand functions may also be generally written as $P_{own} = a - bQ_D$. However, the a's and b's will not be the same. If a demand function is written as $Q_D = a - bP_{own}$, then the inverse demand function is actually $P_{own} = \frac{a}{b} - \frac{1}{b}Q_D$. If an inverse demand function is written as $P_{own} = a - bQ_D$, then the demand function is actually $Q_D = \frac{a}{b} - \frac{1}{b}P_{own}$. The main point: KNOW WHICH FUNCTION YOU ARE WORKING WITH!!!)

Examples A simple demand function example is one where Q_D is only a function of P_{own}. Thus, $Q_D = 286 - 20P_{own}$ is a simple demand function. If we rewrite this as the inverse demand function we get: $P_{own} = 14.3 - 0.05Q_D$. We can now graph the inverse demand function on our plane using routine methods. The number 14.3 is the price (or y) intercept. The slope of the line is (-0.05). Note that the slope of the demand curve will always be negative if the law of demand holds.

A more complex demand function takes the form of $Q_D = f(P_{own}, P_{sub}, P_{comp}, Y)$. You should note that Y is income. Writing this out we get: $Q_D = 171 - 20P_{own} + 20P_{sub\#1} + 3P_{sub\#2} + 2Y$. The inverse demand function would be: $P_{own} = 8.55 - 0.05Q_D + 1P_{sub\#1} + 0.15P_{sub\#2} + 0.1Y$. Attempting to graph this would be difficult, so we hold the values of the variables other than P_{own} and Q_D at their constant (or average or ceteris paribus) levels. Suppose $P_{sub\#1} = 4$, $P_{sub\#2} = \frac{10}{3}$, and $Y = 12.5$. We then plug these constant values in to the complex demand (or inverse demand) function to find the simple demand (or inverse demand) function. Plugging them in gives:

$P_{own} = 8.55 - 0.05Q_D + 1(4) + 0.15\left(\frac{10}{3}\right) + 0.1(12.5)$
Simplifying gives:
$P_{own} = 8.55 - 0.05Q_D + 4 + 0.5 + 1.25$
Or
$P_{own} = 14.3 - 0.05Q_D$
Thus a simple demand function assumes the values of other variables are held at their constant level.

1.1.3 Changes in demand

What happens when one of the values of a variable held at its constant level changes? Suppose that $P_{sub\#1}$ increases from \$4 to \$4.5. Now we need to recalculate the simple demand curve. We do this by plugging in the new constant value for $P_{sub\#1}$. We get:

$P_{own} = 8.55 - 0.05Q_D + 1(4.5) + 0.15\left(\frac{10}{3}\right) + 0.1(12.5)$
$P_{own} = 8.55 - 0.05Q_D + 4.5 + 0.5 + 1.25$
$P_{own} = 14.8 - 0.05Q_D$
If we graph the new and old demand curves we will have:
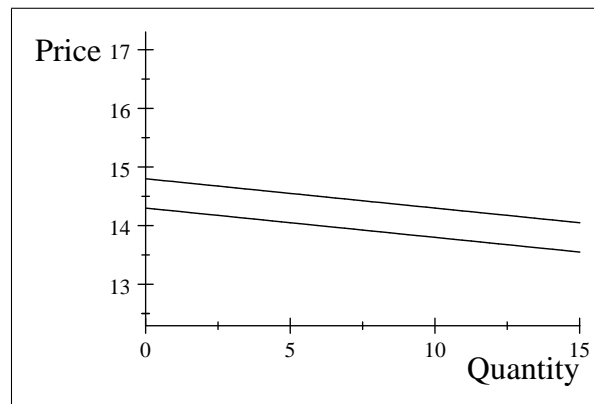
The new demand curve (after $P_{sub\#1}$ increases) is the demand curve to the right with the higher intercept (the unfortunate part of using the actual functions is that I cannot place labels inside the box when I graph them). Recall that a shift to the right is an increase in demand. This should make sense because as the price of a substitute good increases, the demand for our good also increases. Thus the factors other than P_{own} determine where the demand curve is placed on the graph.

1.2 Supply

Recall the Law of Supply from your principles of economics courses:

Law of Supply: *There exists a direct relationship between the price of a good and its quantity supplied.*

While not as strong as the law of demand (we will see why later in the course), we will assume that the law of supply holds for now. Supply curves for which the law holds will be upward sloping. They may be linear or non-linear, although we will generally work with linear supply curves for simplicity. Graphed below are portions of a linear and non-linear supply curve:
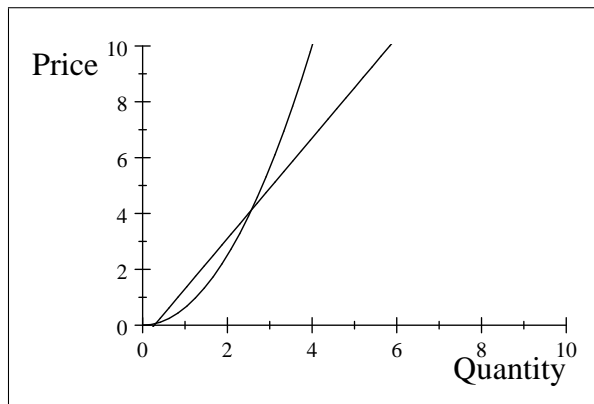
1.2.1 Supply functions and inverse supply functions

There are both supply functions and inverse supply functions. We denote the supply function as $Q_S = f(P_{own})$ and the inverse supply function as $P_{own} = f(Q_S)$. Note that these are the simple supply and inverse supply functions – the complex functions can include many other factors, such as resource prices, the number of sellers in a market, etc.

Examples A simple supply function example is one where Q_S is only a function of P_{own}. Thus, $Q_S = 88 + 40P_{own}$ is a simple supply function. If we rewrite this as the inverse supply function we get: $P_{own} = -2.2 + 0.025Q_S$. We can now graph the inverse supply function on our plane using routine methods. The number (-2.2) is the price (or y) intercept. The slope of the line is 0.025. Note that the slope of the supply curve will always be positive if the law of supply holds.

A more complex supply function takes the form of $Q_S = f(P_{own}, P_{resource})$. Writing this out we get: $Q_S = 178 + 40P_{own} - 60P_{resource}$. The inverse supply function would be: $P_{own} = -4.45 + 0.025Q_S + 1.5P_{resource}$. Attempting to graph this would be difficult, so we hold the value of $P_{resource}$ at its constant (or average or ceteris paribus) level. Suppose $P_{resource} = 1.5$. We then plug this constant value in to the complex supply (or inverse supply) function to find the simple supply (or inverse supply) function. Plugging it in gives:

$P_{own} = -4.45 + 0.025Q_S + 1.5(1.5)$

Simplifying gives:

$P_{own} = -4.45 + 0.025Q_S + 2.25$

Or

$P_{own} = -2.2 + 0.025Q_S$

Thus a simple supply function assumes the values of other variables are held at their constant level.

1.2.2 Changes in supply

What happens when the value of a variable held at its constant level changes? Suppose that $P_{resource}$ increases from $1.5 to $1.75. Now we need to recalculate the simple supply curve. We do this by plugging in the new constant value for $P_{resource}$. We get:

$P_{own} = -4.45 + 0.025Q_S + 1.5(1.75)$

$P_{own} = -4.45 + 0.025Q_S + 2.625$

$P_{own} = -1.825 + 0.025Q_S$

If we graph the new and old supply curves we will have:
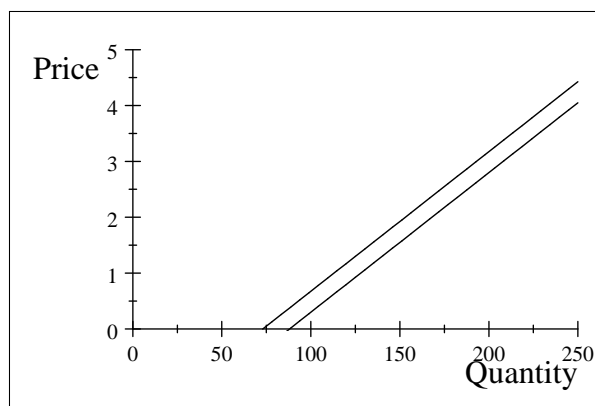
In this case the new supply curve, after $P_{resource}$ changed from 1.5 to 1.75, is the one to the left. Note that the supply curve has decreased (shifts to the left are decreases). Again, this should coincide with what you were taught in principles – when the price of a resource increases, the supply of a good decreases.

2 Equilibrium Determination

Alfred Marshall, whose principles of economics text was most likely read by every economics student from 1900 – 1950, compared supply and demand to the blades of a pair of scissors. In order for the pair of scissors to function properly, both blades are needed. The same is true with supply and demand – in order to properly understand how prices bring about equilibrium, we need to use both supply and demand.

I have no doubt that you all are capable of finding the equilibrium price and quantity if given a graph. Simply find the coordinates of the point where supply and demand intersect and you have your equilibrium price and quantity. However, accurately graphing the supply and demand functions and determining their price and quantity at the intersection point from a graph is a daunting task. It is much easier (especially if you don't have the graph given to you) to determine the equilibrium price and quantity by simply solving a system of equations. Using our supply and demand functions from above, can we determine an equilibrium price and quantity? We have:

Demand function: $Q_D = 286 - 20P_{own}$

Supply function: $Q_S = 88 + 40P_{own}$

With only these 2 equations we CANNOT solve for a unique price and quantity pair. Notice that we have 3 variables: Q_D, Q_S, and P_{own} but only 2 equations. However, we do know that a 3rd equation holds at the equilibrium point: $Q_D = Q_S$, which must be true if a market is in equilibrium. We now have 3 equations and 3 unknowns (although this does not guarantee that a solution exists).

2.1 Steps to solve for equilibrium prices and quantities

Begin with your 3 equations:

$$Q_D = 286 - 20P_{own}$$
$$Q_S = 88 + 40P_{own}$$
$$Q_D = Q_S$$

You can use whatever method you want to solve for the unknowns. Given the current set-up, I would say:

1. Substitute Q_S in for Q_D in the demand function.

2. Next, the left-hand side of the supply and demand functions are now both equal to Q_S. Set the two functions equal to each other.

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3. Solve for P_{own}.

4. Plug P_{own} back into the demand function to find Q_D.

5. Plug P_{own} back into the supply function to find Q_S. You should make sure that $Q_D = Q_S$. (The purpose of this 5th step is to check your algebra.)

Now, to do the work:

$$Q_S = 286 - 20P_{own}$$
$$Q_S = 88 + 40P_{own}$$

Next,

$$286 - 20P_{own} = 88 + 40P_{own}$$

Next,

$$P_{own} = \frac{198}{60} = 3.3$$

Next,

$$Q_D = 286 - 20 * (3.3) = 220$$

Finally,

$$Q_S = 88 + 40 * (3.3) = 220$$

Since $Q_D = Q_S$ at P_{own}, we have solved for the equilibrium price and quantity. Either that or we made so many mistakes along the way that things just worked out. I'll assume it's done correctly...

You should also be able to recalculate the equilibrium price and quantity given that one or more of the underlying factors of the supply or demand functions has changed. In those cases, you would need to plug the new constant value into either the new supply or demand function, recalculate the simple supply or demand function, and then work through the steps to solve for the equilibrium price and quantities.

3   Result of the price system

One result of the price system is that the gains from trade in a market are maximized. The gains from trade are the sum of consumer surplus and producer surplus. Consumer surplus is the net gain to consumers, which we can find as the area below the demand curve but above the equilibrium price. Consumer surplus defined in this manner is a somewhat abstract concept, but think about any time you have gone into a store and seen an item and said or thought "I can't believe that only costs $10; I'd gladly pay $45 for it". So the difference between someone's willingness to pay and the price they actually pay is consumer surplus. Producer surplus is the net gain to producers, which we can find as the area above the supply curve but below the equilibrium price. It is similar to, but not the same as, profit, for reasons which we may discuss later in the course. The following picture illustrates consumer and producer surplus on the graph, with consumer surplus in green and producer surplus in red:
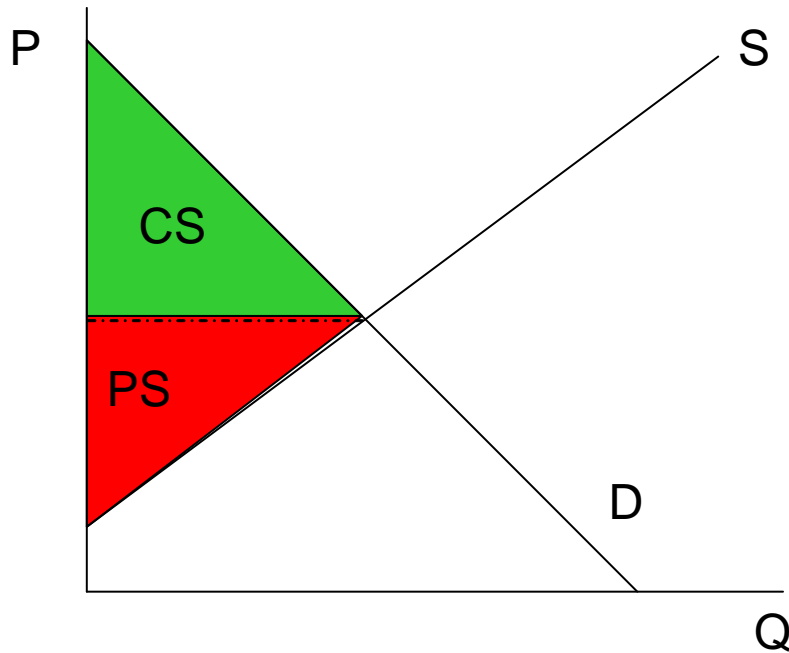
Mathematically, if we have a general inverse demand function $P_{own} = f(Q_D)$, then we have consumer surplus as:

$$CS = \int_0^{Q^*} f(Q_D)\,dQ - \int_0^{Q^*} P^*\,dQ$$

$$CS = \int_0^{Q^*} (f(Q_D) - P^*)\,dQ$$

where Q^* is the equilibrium quantity and P^* is the equilibrium price. For an inverse supply function, $P_{own} = f(Q_S)$, producer surplus can similarly be defined as:

$$PS = \int_0^{Q^*} P^*\,dQ - \int_0^{Q^*} f(Q_S)\,dQ$$

$$PS = \int_0^{Q^*} (P^* - f(Q_S))\,dQ$$

4 Times when $Q_D \neq Q_S$

There are some cases when determining the equilibrium price and quantity cannot be done as described above. Typically, these cases involve some restriction imposed on either price or quantity in the market. We will work through an example of a price floor.

4.1 Price Floor example

Recall that a price control is a government mandated price. A price floor is a price set by the government which the market price cannot fall below. A price ceiling is a price set by the government which the market price cannot rise above.

Suppose we have the following supply and demand functions:

$$Q_D = 286 - 20P_{own}$$
$$Q_S = 88 + 40P_{own}$$

These are the same supply and demand functions from above, so the equilibrium price is $3.30 and the equilibrium quantity is 220. Suppose the government imposes a price floor of $4. We now know that the price cannot fall below $4. How would we go about solving for the price and quantity traded (to be honest, it is really NOT an equilibrium quantity because $Q_D \neq Q_S$ which is why I call it the quantity traded) in the market? I propose the following steps:

1. First, calculate the equilibrium price and quantity without imposing the price floor. I say this because if the price floor is BELOW the equilibrium price, then the price floor does not bind because the market price is greater than the price floor. Thus, the equilibrium price and quantity would be the price and quantity traded in the market. So, if the government had decided to set a price floor of $3 in this market, the outcome would just be the equilibrium price and quantity because $3 < $3.30. (It is possible that a price floor set below the true equilibrium price may end up being a focal point in the market, but the "conventional wisdom" is that non-binding price controls have no effect on the market.)

2. If the price control does bind then you need to calculate Q_D and Q_S by substituting the value of the price control ($4 in the example) into the demand and supply functions. We find that $Q_D = 206$ when $P_{own} = $4 and that $Q_S = 248$. Note that this is NOT an equilibrium solution because $Q_D \neq Q_S$.

3. Finally, choose the quantity level that is lower: in this case, $Q_D < Q_S$. The reason that we choose the lesser amount is that even if you have 248 units for sale, if people only want to buy 206 units at the price you are charging then only 206 units will be traded.

When a market cannot obtain equilibrium then the gains from trade are not maximized, which means there are gains from trade that are not realized because profitable transactions to both the buyer and seller do not occur. These "unrealized gains from trade" are known as deadweight loss.The following picture shows consumer surplus, producer surplus, and deadweight loss graphically.
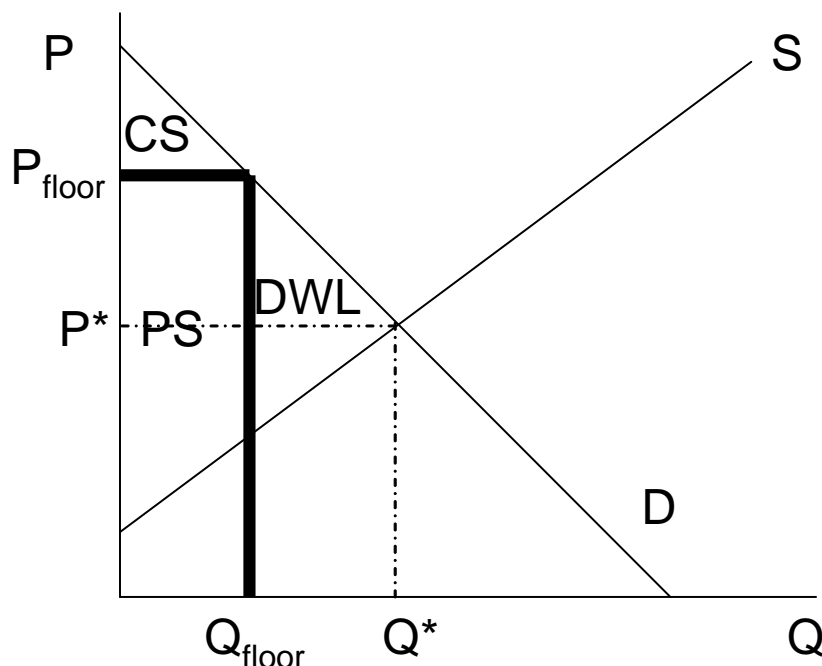
Mathematically, deadweight loss is simply the area beneath the demand curve but above the supply curve for those units which are not traded, or:

$$DWL = \int_{Q^T}^{Q^*} (f(Q_D) - f(Q_S)) \, dQ.$$

Note that Q^T stands for the quantity traded in the market. This equation should make it clear that when the quantity traded in the market is equal to the equilibrium quantity that there is no deadweight loss.

5   Elasticities

An important concept in economics is elasticity. Recall that when we are measuring elasticity we want to see how responsive a quantity measure (demanded or supplied) is to a change in a dollar measure (a price or income). In particular, elasticities measure the percentage change in the quantity measure to a percentage change in a dollar measure. Some of the more common elasticities and their uses are discussed below.[1]

5.1   Own-price elasticity of demand

The own-price elasticity of demand is commonly called the price elasticity of demand (PED). When we calculate this elasticity we are measuring the percentage change in quantity demanded ($\%\Delta Q_D$) to a given percentage change in the own price of the good ($\%\Delta P_{own}$). Mathematically, we have:

$$PED = \frac{\%\Delta Q_D}{\%\Delta P_{own}}$$

The basic formula to find the percentage change in anything is to take the new amount, subtract off the old amount, and then divide the difference by the old amount. So we can write:[2]

$$\%\Delta Q_D = \frac{Q_D^{new} - Q_D^{old}}{Q_D^{old}} \text{ and } \%\Delta P_{own} = \frac{P_{own}^{new} - P_{own}^{old}}{P_{own}^{old}}$$

So our elasticity can then be written as:

$$PED = \frac{\frac{Q_D^{new} - Q_D^{old}}{Q_D^{old}}}{\frac{P_{own}^{new} - P_{own}^{old}}{P_{own}^{old}}}$$

Rearranging some terms,

$$PED = \frac{Q_D^{new} - Q_D^{old}}{P_{own}^{new} - P_{own}^{old}} * \frac{P_{own}^{old}}{Q_D^{old}}$$

Letting $Q_D^{new} - Q_D^{old} = \Delta Q_D$ and $P_{own}^{new} - P_{own}^{old} = \Delta P_{own}$ (note that these are NOT percentage changes but simply the net change in quantity and price), we have:

$$PED = \frac{\Delta Q_D}{\Delta P_{own}} * \frac{P_{own}^{old}}{Q_D^{old}}$$

Recall that $\frac{\Delta Q_D}{\Delta P_{own}}$ is the basic definition of a derivative or partial derivative. So if we have a demand function, $Q_D = a - bP_{own}$, then we will have:

$$PED = -b * \frac{P_{own}^{old}}{Q_D^{old}}$$

A verbal way of stating this is that PED is the ratio of a price to its corresponding quantity (as given by the demand function) times the coefficient on P_{own} (which is $-b$ in the example).

Now that the mathematical details have been laid out, what does it all mean? We say that the demand for a good is elastic when the $|\%\Delta Q_D| > |\%\Delta P_{own}|$ or when $\frac{|\%\Delta Q_D|}{|\%\Delta P_{own}|} > 1$. We say that the demand for a good is inelastic when $|\%\Delta Q_D| < |\%\Delta P_{own}|$ or when $\frac{|\%\Delta Q_D|}{|\%\Delta P_{own}|} < 1$. In the rare case when $|\%\Delta Q_D| = |\%\Delta P_{own}|$ or $\frac{|\%\Delta Q_D|}{|\%\Delta P_{own}|} = 1$, we say that demand is unit elastic. The elasticity for a good is primarily determined by the availability of substitutes for the good. Goods that have many available substitutes are more elastic

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[1] For a quick refresher on PED, you can see my principles of micro notes. The link to them is: http://www.belkcollegeofbusiness.uncc.edu/azillant/prmicroch7out.pdf

[2] In your principles of micro class you may have calculated the arc price elasticity of demand where you had $\%\Delta Q_D = \frac{Q_{new} - Q_{old}}{\frac{Q_{new} + Q_{new}}{2}}$. This formula was used so that you would get the same measure of elasticity regardless of whether you started from the old quantity or the new quantity.

than goods that have few substitutes. Graphically, the flatter (less steep) a demand curve becomes the more elastic it becomes, until we reach a perfectly horizontal demand curve which we call perfectly elastic. As the demand curve becomes steeper it becomes more inelastic, until we reach a perfectly vertical demand curve which we call perfectly inelastic.

5.2 Income elasticity

Income elasticity (IE) measures how responsive quantity demanded is to a change in a consumer's income (Y). Technically, it is the percentage change in quantity demanded in response to a percentage change in income. Mathematically,

$$IE = \frac{\%\Delta Q_D}{\%\Delta Y}$$

Or, plugging in $\frac{Q_D^{new} - Q_D^{old}}{Q_D^{old}}$ for $\%\Delta Q_D$ and $\frac{Y^{new} - Y^{old}}{Y^{old}}$ for $\%\Delta Y$, we get:

$$IE = \frac{Q_D^{new} - Q_D^{old}}{Y^{new} - Y^{old}} * \frac{Y^{old}}{Q_D^{old}}$$

Again, letting $\Delta Q_D = Q_D^{new} - Q_D^{old}$ and $\Delta Y = Y^{new} - Y^{old}$, we have:

$$IE = \frac{\Delta Q_D}{\Delta Y} * \frac{Y^{old}}{Q_D^{old}}$$

Now, suppose that our demand function is:

$$Q_D = a - bP_{own} + cY$$

Again, $\frac{\Delta Q_D}{\Delta Y} = \frac{\partial Q_D}{\partial Y}$ which with this demand function is c. Plugging that result into our initial formula we get:

$$IE = c * \frac{Y^{old}}{Q_D^{old}}$$

Verbally, the income elasticity of a good is equal to the product of the income to quantity demanded ratio and the coefficient on income in the demand function. It is important to note that c can be positive or negative, and that the sign has important implications for the good as discussed below.

5.2.1 Normal and Inferior goods

The sign of the IE determines if the good is a normal good or an inferior good. A normal good is a good with a positive IE. We call it normal because if income increases then the quantity demanded of the good also increases (recall this rule from the principles class). An inferior good is a good with a negative IE. We call them inferior because as consumers earn more income they shift away from these goods, which is contrary to what we usually believe happens when consumers earn more income. Examples of such inferior goods are used clothing and Ramen noodles.

Classifying normal goods – necessities and luxuries If a good is a normal good we can classify it as either a luxury good or a necessity. A necessity is a good with an IE between 0 and 1. Consider electricity. If you receive a moderate increase in your income you are unlikely to change your electricity purchases given this change in income. Perhaps you will consume a slight amount more, perhaps not. Since there is such a small change in quantity demanded when your income rises, we classify goods such as electricity as necessities. However, with even small to moderate increases in income we may see large increases in quantity demanded of other items. Suppose you receive a \$15 per week raise and this causes you to increase the number of times that you eat out per week to increase from 1 to 2. You have seen a 100% increase in the amount of times you eat out per week even though you only had a minor increase in income. This would be considered a luxury good.

5.3 Cross-price elasticity of demand

Cross-price elasticity of demand measures how responsive quantity demanded is to a change in the price of a different good $\left(\%\Delta P^B\right)$. Technically, it is the percentage change in quantity demanded in response to a percentage change in the price of another good. Mathematically,

$$X - price = \frac{\%\Delta Q_D^A}{\%\Delta P^B}$$

Using the same steps as above, we can find that:

$$X - price = \frac{\Delta Q_D^A}{\Delta P^B} * \frac{P^{B,old}}{Q_D^{A,old}}$$

Specify the demand function as:

$$Q_D^A = a - bP_{own} + cY + dP^B$$

Again using that $\frac{\Delta Q_D^A}{\Delta P^B} = \frac{\partial Q_D^A}{\partial P^B}$ we have that $\frac{\Delta Q_D^A}{\Delta P^B} = d$ in this example. Thus we have the $X - price$ elasticity in this example as:

$$X - price = d * \frac{P^{B,old}}{Q_D^{A,old}}$$

Verbally, the cross-price elasticity of a good is equal to the ratio of the price of good B to the quantity demanded of good A times the coefficient on the price of good B in the demand function. It is important to note that d can be positive or negative, and that the sign has important implications for the two goods as discussed below.

5.3.1 Substitutes and Complements

The sign of the cross-price elasticity measure is important in determining which goods are substitutes and which goods are complements. If the cross-price elasticity between two goods is positive, then the two goods are substitutes. The logic is that if the quantity demanded of one good increases when the price of another good increases, consumers must be substituting away from the good with the now relatively higher price by replacing purchases of the second good with more purchases of the first good.

If the cross-price elasticity between two goods is negative, then the two goods are complements. The logic is that if the quantity demanded of one good decrease when the price of another good increases, consumers are responding to the price increase of the second good by cutting their purchases of the first good. This implies that the goods are consumed together, which means that they are complements.

5.4 Price elasticity of supply

Price elasticity of supply (PES) measures how responsive quantity supplied (Q_S) is to a change in the own-price of a good (P_{own}). Technically, it is the percentage change in quantity supplied in response to a percentage change in the own-price of the good. Mathematically,

$$PES = \frac{\%\Delta Q_S}{\%\Delta P_{own}}$$

We find that PES is:

$$PES = \frac{\Delta Q_S}{\Delta P_{own}} * \frac{P_{own}^{old}}{Q_S^{old}}$$

Using a SUPPLY function such as:

$$Q_S = z + vP_{own}$$

We can find that the term $\frac{\Delta Q_S}{\Delta P_{own}} = \frac{\partial Q_S}{\partial P_{own}} v$. So our formula for the PES is:

$$PES = v * \frac{P_{own}^{old}}{Q_S^{old}}$$

Verbally, the price elasticity of supply for a good is equal to the ratio of the price to the quantity supplied times the coefficient on the price of the good in the supply function. You should note that v will always be positive if the supply curve is upward-sloping.

We can classify supply curves as elastic or inelastic. If $PES > 1$ we say that the supply curve is elastic at the point at which we are evaluating the elasticity. If $PES < 1$ we say that the supply curve is inelastic at the point at which we are evaluating the elasticity. Graphically, the flatter (less steep) a supply curve becomes the more elastic it becomes, until we reach a perfectly horizontal supply curve which we call perfectly elastic. As the supply curve becomes steeper it becomes more inelastic, until we reach a perfectly vertical supply curve which we call perfectly inelastic. If a firm can use its resources to produce many other goods, then the supply curve will be relatively elastic. However, if the firm can produce only the specific good with its resources then the supply curve will tend to be more inelastic.

5.5 Interpreting elasticities

The general form for interpreting elasticities is as follows: A 1% increase in (fill in dollar measure) will cause a X% (increase or decrease depending on the sign of the elasticity) in the (fill in quantity measure).

Suppose the $PED = -0.6$. This means that a 1% increase in the own-price of the good will cause a 0.6% decrease in the quantity demanded of that good.

Suppose the $IE = 1.4$. This means that a 1% increase in the consumer's income will cause a 1.4% increase in the quantity demanded of that good.

Suppose the $X - price = -1.5$. This means that a 1% increase in the price of good B will cause a 1.5% decrease in the quantity demanded of good A.

Suppose the $PES = 0.2$. This means that a 1% increase in the own-price of the good will cause a 0.2% increase in the quantity supplied of that good.

As you can see, they all follow the general form for interpreting elasticities that is given above – you simply need to fill in the correct dollar measure and quantity measure.