We are looking to figure out what a demand curve is. Intuitively, it will show us how much of the good that consumer would like to purchase, given various prices.

Total value (TV) - how much it is worth to consume a certain quantity of goods. Total value is always increasing, but at a decreasing rate. See below.

Consider a BLT sandwich. Most of you would pay $0.01 for a sandwich. Most of you would not pay $50 for a sandwich. There is some point in between where you just can't decide, maybe $2.00. Having $2.00 is just as good as having the sandwich. If the sandwich costs $2.01, you'd rather have the $2.01 in your pocket. If the price changed to $1.99, you'd buy the sandwich. But at $2, you just can't decide. We say that you are **indifferent** between the two choices – you are willing to let someone else choose which you will have. Then, for you, the total value of the sandwich is $2.00.

We can ask you the same question for 2 BLTs. First off, it better be more than $2, as the second sandwich is worth something. Second, we don't expect it to be more than $4. Would the second sandwich be worth less than the first? Maybe it turns out to be $3.50. You can think of total value as the amount of money you would be willing to pay for so many units of a good.

BLTs	Total Value	Marginal Value
0	$0	-
1	$2	?
2	$3.50	?
3	$4.45	?

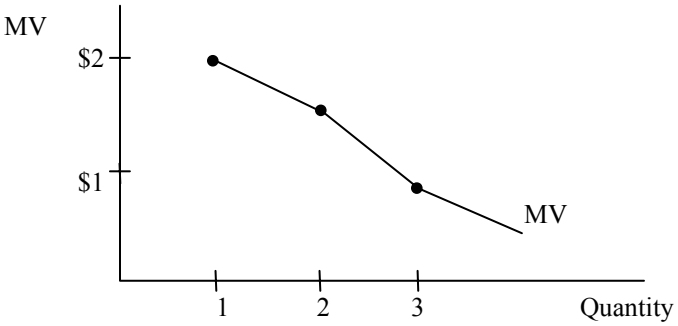
Marginal value (MV) - the change in total value for each (one) additional unit of consumption. You can think of marginal value as your "willingness to pay" for each individual unit. If you say your MV is $1.50, this means that you would be willing to pay $1.50 to consume the unit. When we talk about marginal stuff, we are talking about making small changes. We are looking at what happens one unit at time. This is **extremely** useful.

For the MV of the first unit, we just see how much total value has increased from 0 units to 1. Well, 0 BLTs had a TV of $0, 1 BLT has a TV of $2, it must be that the first BLT added $2 of value. Thus, the MV of the first BLT is $2.

1 BLT has a TV of $2. 2 sandwiches have a TV of $3.50. Thus, the second unit has a MV of $1.50 ($3.50 - $2). Repeat...

BLTs	Total Value	Marginal Value
0	$0	--- (not defined)
1	$2	$2
2	$3.50	$1.50
3	$4.45	$0.95

Principle of diminishing marginal value - As the rate of consumption increases, the marginal value falls. Notice in our example that as we have more and more BLTs, the marginal value keeps decreasing. The first BLT is worth more than the second, and the third…. Here I have plotted the MV. Does this make sense? Would it make sense to have a value of the 74th BLT in a day that was higher than the 1st? Are you still hungry?



Assert a **decision rule** - people choose to consume at a rate of consumption such that marginal value is just equal to the market price. Let's not worry about where the market price is coming from yet, but just accept it as given somehow (we'll look at this later). Think of the market price as the price on price tags for now.

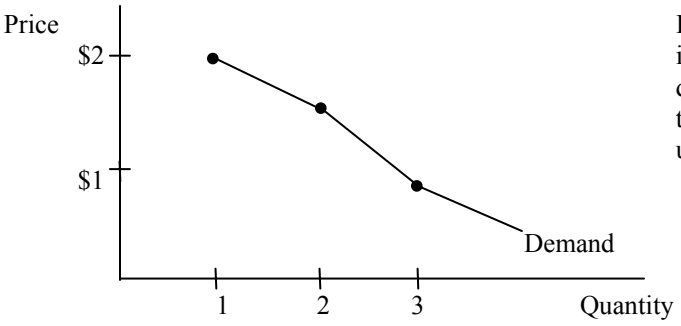
Let's use our decision rule.

Suppose price was $2. How many BLTs will you consume? Our decision rule says we will consume at a rate where MV = P ($2) Well, MV = $2 when we buy one BLT. You will consume one BLT. Or in other words, if **P = $2, Q = 1**.

Suppose price was $1.50. How many BLTs will you consume?. Well, again, P = MV ($1.50) at a quantity of 2. The decision rule says you'll consume two BLTs. Or in other words, if **P = $1.50, Q = 2**.

If **P = $0.95, Q = 3**.

Finally, we want to plot a **demand curve**. We want a relationship between price and quantity demanded. If we plot the points I have in bold above, we'll have a demand curve. But, we already have it, it is our MV curve. Re-label the vertical axis P instead of MV, and call it a demand curve.



Keep in mind that since a demand curve is really a MV curve, the height of a demand curve at quantity q, say, shows us the marginal value of consuming the qth unit.

The **demand curve** shows us a relationship between the price and the quantity demanded. It tells us the quantity demanded by consumers (how much they want to buy) at each particular price.

Normally, we will draw demand curves as nice smooth curves. They don't have to be (see below on discontinuities), but we'll usually keep it smooth. Demand curves will always be downward sloping.

Aside: this is a weird decision rule, does it make any sense? I think so. Read on.

Suppose the market price of a BLT is only $1.50. (I don't know how the market decided that the price was $1.50, but take this as a given for a second).

Remember, marginal value is the value of consuming one unit, or what you are willing to pay for that one unit. Suppose you haven't had any sandwiches yet. Let's consider buying the first BLT. If you do, your TV increases by $2, thus MV is $2. Consuming this BLT is worth $2 to you. But it only costs $1.50. You should buy it. (You are willing to pay $2, but they are offering it to your for only $1.50).

Now, do you buy the second BLT? Let's see. If you do, your TV increases from $2 to $3.50. The MV is $1.50. The price of the BLT is $1.50. OK, you're indifferent. Let's do it anyway. Here MV = P. Just like in our decision rule. (You are willing to pay $1.50 and they offer it to you for $1.50).

Now, do you buy the third BLT? TV increases from $3.50 to $4.45. MV is thus $0.95. The price of the BLT is still $1.50. Should you pay $1.50 for a BLT that is only worth $0.95 to you? No. (You are willing to pay only $0.95, and they offer it to you for $1.50).

If MV > P. Buy more. Increase consumption. The goods are worth more to the consumer than they cost.
If MV < P, buy less. Decrease consumption. Cost more than they are worth to the consumer.
P = MV, just right.

So, the P = MV decision rule is just the same as saying I'll buy BLTs until the price is just equal to what its' worth to me. Or I will buy units of the good until my "willingness to pay" is just equal to the market price.

What about discontinuities? Should I lose sleep over this? Answer: No.

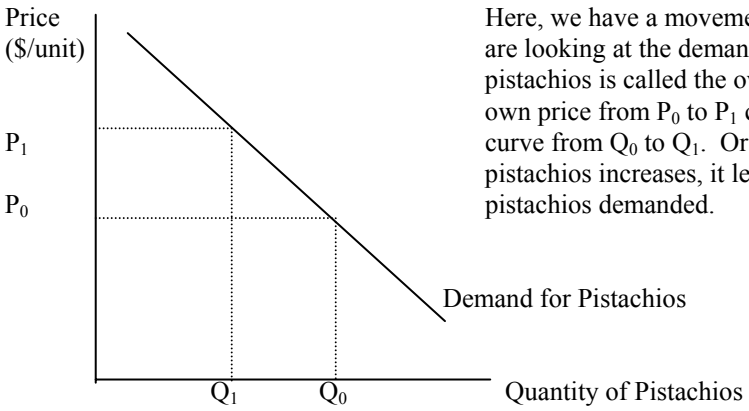
Suppose that the price is $1.15. In this case, the decision rule says to consume where MV = $1.15, but there is no quantity of sandwiches that satisfies this value. Certainly, at least 2 units would be consumed, but you wouldn't consume as much as 3. By connecting the dots on our demand curve, we are implicitly assuming that fractional units of sandwiches can be consumed, i.e. you can purchase, say 2.25 sandwiches where the marginal value is $1.15 if you so desire (if you can't, the demand curve would be a downward sloping step function). As we shall see later with the market demand curve, demand curves will get smoother as we add more consumers. Say if we are looking at weekly demand for sandwiches, 2.25 sandwiches might represent 3 sandwiches one week and 2 sandwiches the next three weeks. As such, you really needn't worry about this, as it only complicates the analysis with virtually no benefit.

Back to Demand – What else do we know? What shifts demand curves around?

First Law of Demand - holding other relevant factors constant (ceteris paribus), the lower the price of a good, the greater will be the quantity demanded of that good. (Demand curves are downward sloping).

This is symmetric. Holding other relevant factors constant, the higher the price of a good, the lower will be the quantity of that good demanded. You can take the 1st Law of Demand to the bank.

A change in the "**own price**" of a good implies **a movement along a given demand curve**. We say that this is "a change in quantity demanded". The "own price" is the term we mean to refer to the good whose demand curve we are examining. Thus, if we are looking at the demand for potato chips, the own price refers to the price of potato chips.



Here, we have a movement along a demand curve. When we are looking at the demand curve for pistachios, the price of pistachios is called the own price. Thus, a change in the own price from P_0 to P_1 causes a movement along the demand curve from Q_0 to Q_1. Or stated differently, when the price of pistachios increases, it leads to a decrease in the quantity of pistachios demanded.

In the 1st Law of Demand, we said that to draw a demand curve, we most hold all other relevant factors constant. When we draw a demand curve, we are not allowing all this other stuff to change. We want to isolate the effect of the price on quantity demanded. What are the other relevant factors?

Demand ceteris paribus conditions – the other factors held constant when we draw demand curves

1. price of other goods
    a. substitutes - alternatives — e.g. butter and margarine, coke and pepsi
    b. compliments - used together — e.g. butter and popcorn, rum and coke

2. income of consumers
    a. normal (superior) good — e.g. shoes, CDs, baseball hats
    b. inferior good — e.g. spam, generic corn flakes, cafeteria food

3. "X-vector" = everything else of relevance
    e.g. vodka causes/cures cancer, law makes something illegal that was previously legal

Your book lists some more. They're fine, and if you like, you can read about them in the textbook. They include:

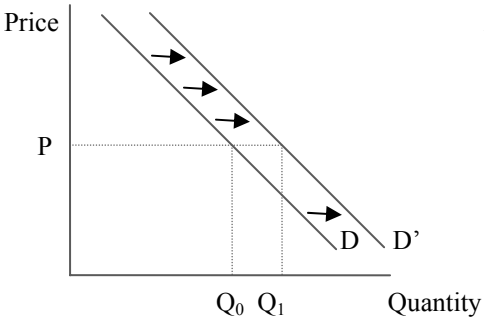
Tastes / Advertising
Potential # of consumers
Expectations of future prices.

Demand curve shifts

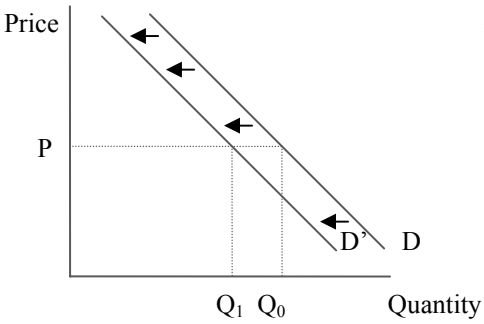
Any change in one or more of the ceteris paribus conditions above implies a shifting of the entire demand curve. Recall what ceteris paribus conditions are. These are the things that we hold constant when we are drawing a demand curve. If we change one of these conditions, we have a new demand curve.

We say that this is a change in demand, or a shift in demand. When we shift the demand curve outward (to the right), it is called an increase in demand. An inward shift (to the left) is called a decrease in demand.

When we have an increase in demand, the entire curve shits to the right. That is, an increase in demand implies that at each and every price, a larger quantity of goods is demanded. A decrease in demand is a shift of the demand curve to the left. A lower quantity of goods is demanded at each price.



An increase in demand. Notice at each price, there will be a higher quantity demanded. Originally, at price P, the quantity demanded is Q_0. After the shift, the quantity demanded is Q_1.



A decrease in demand. Notice at each price, there will be a lower quantity demanded. Originally, at price P, the quantity demanded is Q_0. After the shift, the quantity demanded is Q_1.

Ceteris paribus = (Latin for) holding other relevant factors the same

Which way do changes in our ceteris paribus conditions shift Demand?

1. Prices of related goods

Substitutes

Goods X and Y are called substitutes if when the price of good X changes, the demand for good Y changes in the same direction. Examples of substitutes would be butter & margarine, Coke & Pepsi, generic corn flakes and Kellogg's corn flakes, Bud Light & Miller Lite, etc.

Thus, suppose that Bud Light & Miller Lite are substitutes. If the price of Bud Light rises, this means there will be an increase in the demand for Miller Lite.

The intuition on substitutes is easy. If you find Bud Light and Miller Lite to be pretty similar (that is, they are good substitutes) and the price of Bud Light increases, you will switch consumption to Miller Lite, thus increasing the demand for Miller Lite.

If the price of butter were to fall, there would be a decrease in the demand for margarine.

If the price of butter were to fall, people would find the cheaper butter more desirable and would switch to butter and eat less margarine. Thus, we'd see a decrease in the demand margarine.

Compliments

Goods X and Y are called compliments if when the price of good X changes, the demand for good Y changes in the opposite direction. Examples of compliments would be cars and gasoline, popcorn and butter, CDs and CD players, etc.

Thus, suppose eggs and bacon are compliments. If the price of eggs rises, this means there will be a decrease in the demand for bacon.

The intuition is as follows. Compliments are things that are complimentary, or used together. If the price of eggs rises, you will want to eat less 'bacon and eggs'. One source of the demand for bacon is from people eating "bacon and eggs". Since people are eating less "bacon and eggs", this will lead to a reduction in the demand for bacon.

If the price of popcorn were to fall, this will cause an increase in the demand for butter.

If the price of popcorn falls, people will eat more "buttered popcorn". Since one source of the demand for butter comes form people eating buttered popcorn, more people eating "buttered popcorn" will increase the demand for butter.

2. **Income of Consumers**

Normal Goods

Good X is called a normal (superior) good if when incomes change, the demand for good X changes in the same direction. Examples include most everything, including baseball hats, VCRs, snakeskin boots, etc.

Suppose baseball hats are a normal or superior good. If incomes of consumers were to rise, the demand for baseball hats would increase (shift to the right). Likewise, if incomes of consumers were to fall, there would be a decrease in the demand for baseball hats (shift to the left).

Most everything you are likely to think of is a normal good. As your income increases, you will want to buy more of most goods, thus increasing your demand for these goods. As you income falls, you will cut back, thus decreasing your demand for these goods.

Inferior Goods

Good X is called an inferior good if when incomes change, the demand for good X changes in the opposite direction. Examples include SPAM, generic cornflakes, Mad Dog 2020, Boone's Wine, K-Mart tools, Yugos, used syringes, cafeteria food, etc.

Thus, if Mad Dog is an inferior good, an increase in the income of consumers will lead to a decrease in the demand for Mad Dog. Likewise, a decrease in the income of consumers will lead to an increase in the demand for Mad Dog.

Inferior goods are sometimes counterintuitive, but think of these things as things you stop (or cut back) purchasing as you have more income, or on the other hand, things you begin to purchase as you have less income.

3. **X – Vector**

This is everything else that could possibly shift a demand that doesn't fit into either of the two previous categories. These should be things that are pretty clear.

Suppose that suddenly oranges were found to cure cancer. This would lead to an increase in the demand for oranges. On the other hand, suppose oranges were now made illegal to consume. In this case, the demand for oranges would decrease.

Some phraseology

Change in quantity demanded	Change in demand
Caused only by a change in "own price"	Caused by a change in a ceteris paribus condition
Refers to a movement along a given demand curve	Refers to a shift of the entire demand curve
Must be referred to as a change in quantity demanded	Can be referred to a as an increase in D, a decrease in D, a change in D, a reduction in D, D is lower, D is higher, a shift in D, etc.

Remember, a change in own price causes a movement along a demand curve, and everything else will shift the entire demand curve. Be very careful.

Things in the book that are somewhat important, but we won't worry about for a while

Thus far, we have been talking about an individual's demand curve for a good. While this is interesting in its own regard, we can take all individuals' demand curves and add them up using a process called horizontal summation. When we've done this, we call the result the market demand curve for a good. It's easiest to see this in a chart, but just as easy really to do this graphically. Let Q_D represent, the quantity demanded for each person at the various prices.

Price	Shaggy's Q_D	Fred's Q_D	Velma's Q_D	Market Q_D
\$1	9	4	2	15
\$2	6	3	1	10
\$3	3	1	0	4

To come up with the market demand curve, simply pick any price, and add all of the individual's quantity demanded at that price. The result is the market demand curve.

So, if P = \$1, Shaggy wants to buy 9, Fred 4, and Velma 2. Thus, the market would buy 15, if P = \$1 per unit.
If P =\$3, Shaggy wants to buy 3, Fred 1, and Velma none. The market would buy 4 at a price of \$3 per unit.

You can do this graphically, just as well. We'll worry about this more later, but for now, I just want you to have an idea where the market demand curve comes form. It comes from adding up all the *potential* customers individual demand curves, using horizontal summation. (Notice, at a price of \$3, Velma does not purchase any of the good in question. However, if the price falls low enough, she begins to purchase the good. Even though she would not have "been in the market for the good" at \$3, we still add her in the horizontal summation).

For fun you could pull out a piece of paper, plot the market demand curve and see how it compares to the individual demand curve. It can have all sorts of kinks and such, but we'll usually draw them nice and smooth. More later…

What should I read

Chapter 3 – steer clear of the discussion of elasticities for now.