Ch. 7 outline

The Fundamentals of Consumer Choice

The focus of this chapter is on how consumers allocate (distribute) their income. Prices of goods, relative to one another, have an important role in how income is allocated among goods.

5 principles that underlie consumer behavior

1. **People make choices because they have a limited income**.
   A. If you only have twenty dollars you have to decide what to buy with that twenty dollars.

2. **Consumers make decisions purposefully.**
   A. Consumers make choices in a rational manner. (This is an assumption of consumer theory – just go with it.)

3. **One good can be substituted for another**.
   A. There are many different combinations of goods that provide benefits (utility) to consumers. You might think that water has no substitute. However, you do not have to pay for water if the price becomes too high. You could collect rain and drink it or move to a lakeside and just use that water. The point is that all goods have substitutes (some just have better substitutes than others.)

4. **Consumers do not have perfect information regarding the decisions they make**.
   A. This statement says that people cannot know everything about the purchase they are about to make. Consumers can be well-informed but they will not know everything about the purchase.

5. **THE LAW OF DIMINISHING MARGINAL UTILITY**.
   A. This is a **KEY** principle in economics. It states that the more you have of a good this less benefit you have from another unit of the good. If you have 12 apples and you get another apple, the 13th apple will not give you as much benefit as the 12th apple, the 12th apple did not give you as much benefit as the 11th apple, etc. (**For now, accept this as fact**. It is another assumption necessary for the theory.)

Marginal Utility, Marginal Benefit, and the Demand Curve

We already know what marginal utility is. Marginal benefit is the maximum price that the consumer would be willing to pay for that unit of good.
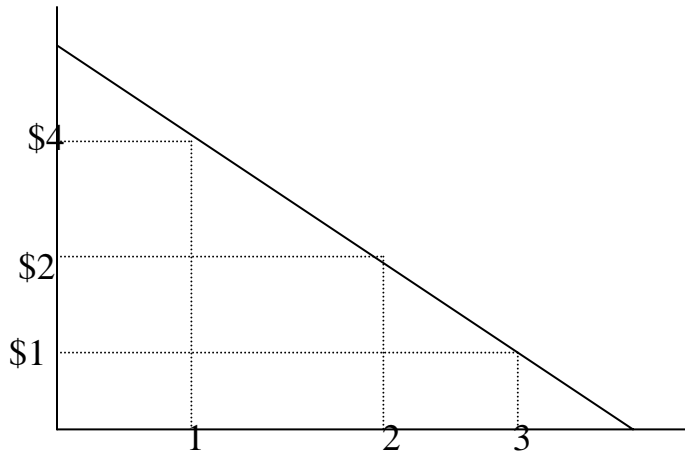
This graph shows Bob's demand for apples. If the price were $4 per apple, Bob would buy one apple; if the price was $2 per apple, Bob would buy two apples; and if the price were $1 per apple, Bob would buy three apples. This graph displays the law of diminishing marginal utility because for Bob to buy more apples the price of apples has to be lower (for Bob to buy 3 apples the price of apples needs to be $1or less; for Bob to buy 1 apple the price can be as high as $4). The marginal benefit for the first apple is $4; the marginal benefit of the second apple is $2; the marginal benefit of the third apple is $1.

Story time:
Suppose the price of apples is $2. How many apples will Bob purchase? He will purchase 2 apples. This illustrates the point that a consumer will purchase as much of the good (apples in this case) as he (Bob) can **until** the price exceeds his marginal benefit. So Bob will not buy his third apple until the price falls to $1, because that is the marginal benefit that Bob receives from the third apple.

Consumer equilibrium with more than one good
How do you decide what good to purchase? Simply put, rational consumers will purchase those combinations of goods that gives them the greatest amount of utility.

Price changes and consumer choice

We use the definition of the law of demand to describe two effects when a price of a good changes. These effects are the substitution and income effects.

Substitution effect – when the price of a good falls consumers tend to substitute that the cheaper good in place of the now more expensive good

Story: Suppose the price of apples is $2 per apple. The price of oranges is $1 per orange. You have $15 dollars that you spend on either apples or oranges. You decide to buy 5 apples and 5 oranges. Now the price of apples falls to $1.50 per apple. If you buy 5 apples and 5 oranges you only spend $12.50 out of the $15 that you can spend (for simplicity assume you can only buy apples and oranges). The substitution effect says that you will substitute more apples for oranges because they are cheaper (relative to what they originally cost) than oranges.

Income effect – when the price of a good falls that change in price frees up more of your income that will now allow you to buy more of all goods not just the cheaper one

Story: Consider the same example as the substitution effect. Consumers now have more income to spend however they wish. If you have $15 and you are only spending $12.50 you can buy one more apple and one more orange, not just more apples. You have now spent your entire allowance of $15 by purchasing more of both goods, not just the cheaper one. This illustrates the income effect.

Time cost and consumer choice

There are two things in life that everyone could use more of: time and money. Both are scarce resources. The important part of this section is to realize that money cost does not always represent the total cost to individuals – time is also an important element. (This is essentially the same argument as opportunity cost.)

Market demand reflects the demand of individual consumers

If Bob buys 3 apples at $4, 2 apples at $2, and 1 apple at $1; and Bill buys 4 apples at $4, 3 apples at $2, and 1 apple at $1 the market demand for apples (assuming Bob and Bill are the only consumers) is:
7 apples at $4
5 apples at $2
2 apples at $1
All we do is add the individual demands at each price together to get the market demand.

Total versus Marginal Value (The Water/Diamond Paradox)
How can some goods, which are necessary for survival (water), be valued at less than other goods which do absolutely little or nothing for survival? We (should) know that price represents marginal value. We (should) also know that total value of a good includes consumer surplus. It is possible for something to have large total value, but a very small marginal value. It is also possible for something to have a small total value but a high marginal value.
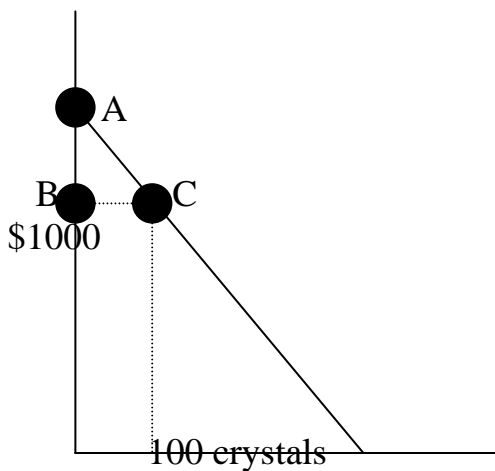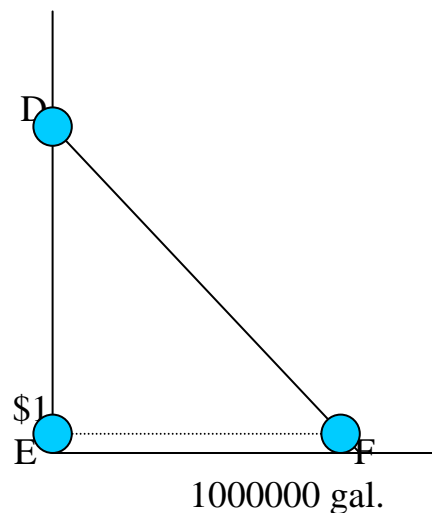
Diamonds   Water

These are demand curves for diamonds and water (assume water is sold at $1/gallon and diamonds at $1000/crystal). You can see that the marginal value of diamonds is higher than that of water while the total value (including consumer surplus) is greater for water.

Elasticity

Elasticity is an important concept in economics. It informs economists of the degree of substitutability of a good. To calculate price elasticity of demand, the formula that you are to use depends on what you are given. If you are given the percent change in quantity and the percent change in price, you would calculate price elasticity of demand as

<div align="center">

Percent change in quantity demanded

Percent change in price

</div>

Story: If percent change in quantity demanded is 20% and percent change in price is 50%, what is the price elasticity of demand for the good?

Answer: It is 2/5 or (20%÷50%).

Now if you are given an original price and quantity and then told that the price and quantity have changed to a new point, you would use the midpoint formula to determine the price elasticity of demand. The midpoint formula is: Take the original quantity minus the new quantity. You should get a number. Divide that number by the sum of the original quantity plus the new quantity. Multiply that number by 100 and you will have your percent change in quantity demanded. Now take your original price minus your new price. Divide that number by the sum of the original price and the new price. Multiply that number by 100 and you will have your percent change in price. Finally, divide your percent change in quantity demanded by your percent change in price to get your elasticity number.

Story: If our original quantity demanded is 10 and our original price is $5, what is the price elasticity of demand if our new quantity demanded is 15 and our new price is $2?

Answer: We take the percentage change in quantity demanded ($\%\Delta Q_d$):

$$\frac{(10-15)}{(10+15)}$$

which equals (-1/5)x100 = -20.

and we divide that by the percentage change in price ($\%\Delta P$):

$$\frac{(\$5-\$2)}{(\$5+\$2)}$$

which equals (3/7)x100 = 42.9

Now we have the percentage change in $\%\Delta Q_d = (-20)$;

and the percentage change in $\%\Delta P = (42.9)$;

We divide $\%\Delta Q_d$ by $\%\Delta P$ and we get $-(20) \div (42.9)$, for a price elasticity of demand of $-(.466)$. As economists we drop the negative sign so we have just $(.466)$. Simple, right?

It is now easy to compute any type of elasticity change (price elasticity of demand, price elasticity of supply, or income elasticity). The same formula applies for all of them. You take the percentage change in quantity and divide it by some percentage change in price or income (think of this as percentage change in quantity divided by some percentage change in a form of money).

***Remember that Δ means change in.
Price elasticity of demand: $\%\Delta Q \div \%\Delta P$.
Price elasticity of supply: $\%\Delta Q \div \%\Delta P$.
Income elasticity: $\%\Delta Q \div \%\Delta Income$
Note that prices and income are based in $$$.
Now that we can calculate all different kinds of elasticity, what does it mean?
The number (5/6) actually has a meaning to economists. There are three categories that elasticity can fall into:
If the elasticity (I am going to call elasticity **E** from now on because it's too long too type) is less than one we say it is an inelastic good.
Mathematically, if **E** < 1, then the good is inelastic.

If **E** is equal to one, then the good is unitary elastic.
Mathematically, if **E** = 1, unitary elastic.

If **E** is greater than 1, then the good is elastic.
Mathematically, if **E** > 1, elastic.

**What do inelastic, unitary elastic, and elastic mean**?

Inelastic – a percentage increase in price results in a smaller percent reduction in sales. Cigarettes, alcohol, (any addictive substance in general)

are said to be inelastic goods. The price can change and people will still buy these goods because they "need" to have them.

Unitary elastic – a percentage change in price results in an equal percentage change in quantity demanded.

Elastic – a percentage change in price leads to a larger percentage change in quantity demanded. If a good is elastic it means that there are good substitutes available for it (any specific food is generally considered to be an elastic good because people can always substitute a different food for the one whose price has changed.)

Here are some graphs representing the elastic and inelastic goods (unitary elasticity is just a special case of elasticity. Besides economists need some point to distinguish between elastic and inelastic goods).
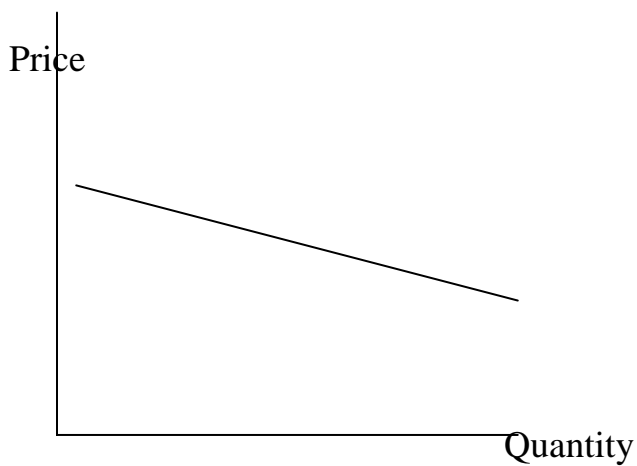
Price

Quantity
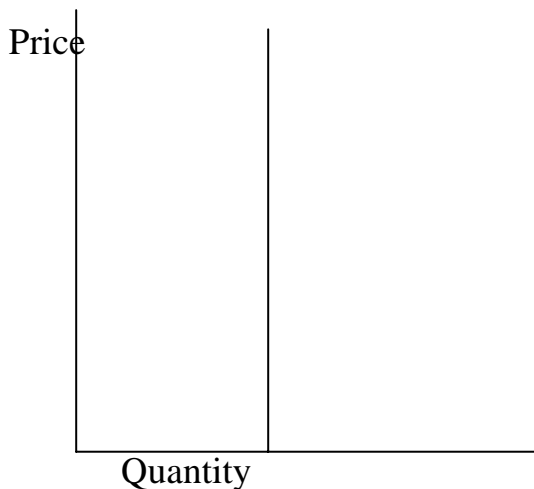
This graph represents an inelastic good. Notice that it is straight up and down in the same form as the letter I. That is one way to remember which graph is for inelastic.

Price

Quantity
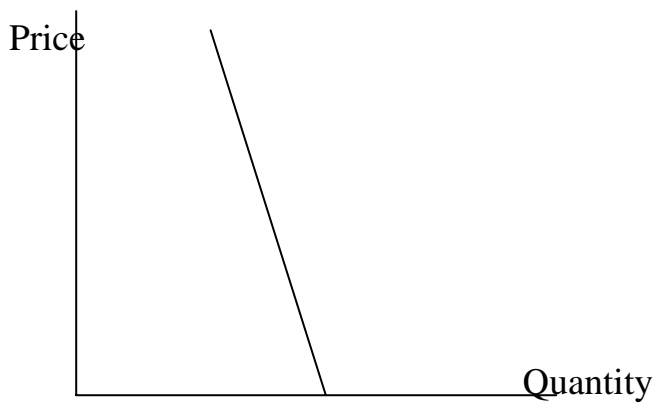
This graph also represents an inelastic demand curve. Notice how it has shifted a little bit.

Price

$3
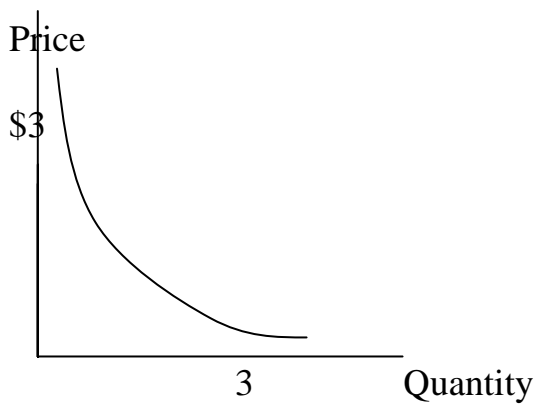
This demand curve is unitary elastic.
It is unitary elastic because any
% change in P will bring about an
equal % change in Q_d.

3   Quantity

Price

Quantity

This demand curve is relatively elastic. This is the demand curve for goods that have good substitutes available.

Price

|

|_____

|

|_____ Quantity
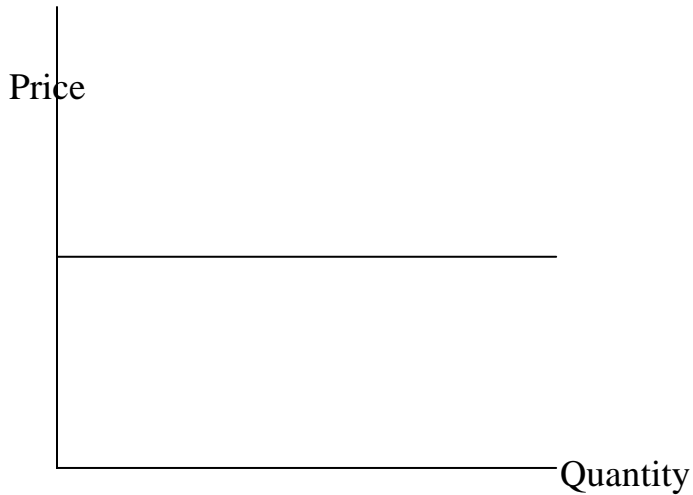
This demand curve is perfectly elastic. Any higher change in price will result in none of this good being purchased. Setting the price any lower will not result in any more of the good being purchased.

What is the most important determinant of the price elasticity of demand?

THE AVAILABILITY OF GOOD SUBSTITUTES

What is another determinant of price elasticity?

Time. This goes back to the definitions of the long run and the short run. Like producers, consumer purchases are also more flexible in the long run than in the short run. This is because consumers have more time in the long run to seek out substitutes. Thus, demand is more elastic in the long run than in the short run.

Total expenditures and the price elasticity of demand

Total expenditure (TE) is defined as Price (P) times Quantity (Q). The question we now ask is what happens to total expenditures based upon our knowledge of the price elasticity of demand.

According to the law of demand, when price increases, quantity demanded decreases. Because price and quantity move in opposite directions TE can move either up or down depending on which change has the most impact (Does the change in P or Q change TE the most?).

Three simple guidelines:

1. Inelastic – If the demand for a good is inelastic, TE will increase with a price increase.

2. Elastic – If the demand for a good is elastic, TE will decrease with a price increase.

3. Unitary elastic – If the demand is unitary elastic, TE will stay the same with a price increase.

These same guidelines also apply for a producer regarding total revenue (TR).

1. Inelastic – TR will increase with a price increase.

2. Elastic – TR will decrease will decrease with a price increase.

3. Unitary elastic – TR will remain the same with a price increase.

Income Elasticity

Income elasticity is similar to price elasticity of demand. However, income elasticity is calculated by taking the percentage change in quantity demanded divided by the percentage change in income. Mathematically, that would be %ΔQ÷%ΔIncome. Notice that we can have both negative and positive income elasticities. For positive income elasticities we use the same method to determine elastic, unitary elastic, and inelastic as we did with price elasticity of demand. However, if a good takes on a negative income elasticity we say that the good is an inferior good.