ELASTICITY

DEMAND AND SUPPLY

DEFINED

The rate of change of the quantity demanded or quantity supplied due to a change in a variable.

Variables that affect change: consumers income or the price of other goods *all things being equal*

* WE are dealing with mostly a goods responsiveness to change in price.

FACTORS AFFECTING DEMAND ELASTICITY

1. Availability of substitutes (goods that have substitutes are more elastic)
2. Nature of an item (goods that are necessities are more inelastic)
3. Fraction of income spent on the item (goods that are expensive tend to be inelastic)
4. Amount of time available (over time some goods become elastic, short run goods are more elastic - substitutes become available)

- Which one affects prostitution in SuperFreakonomics?

ELASTICITY OF DEMAND

The responsiveness of quantities demanded and supplied to changes in price.

Consumers buy more of a product when its price falls and less of it when its price rises.

But how much more? How much less?

AGAIN...

The responsiveness to change in price means that if the price goes up, will people still consume it or will they get a substitute?

For example: if marijuana goes up in price there is nothing to substitute, so drug dealers can raise price and people will still consume it. (inelastic)

Or

Coke-a-Cola for example: if the price goes up then people will simply get something else as it is not special enough and can be easily replaced. (elastic)

THIS MEANS:

Inelastic demand: prices rise and total revenue rises; prices fall total revenues fall.

Elastic demand: prices rise total revenues fall; prices fall total revenues rise.

Unitary demand: prices do not change.

Now go to the first table on your sheet and calculate the demand elasticity.

Which is best for the producer? Which is best for the consumer?

Now we need to find out when is it good for a seller to raise prices?

FINDING % PRICE CHANGE

Price Change = Change / Average x 100

Therefore if something is at 1.00 and the price lowers to .90 you do this equation –
.10 (change in price) / .95 (the average) x 100 = 10.5

FINDING % CHANGE, QUANTITY DEMANDED

Change in Quantity Demanded / Average Change x 100

Therefore if the quantity changed from 300 to 400 the change is 100 and the average is 350

Therefore 100/350 x 100 = 28.5

PRICE ELASTICITY OF DEMAND

The actual change in quantity demanded whose price has changed.

The Equation Looks like this:

Coefficient of demand elasticity $=$ % change in quantity demanded
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% change in price

COEFFICIENT

28.5/10.5 = 2.7

CHANGE IN QUANTITY DEMANDED / CHANGE IN PRICE
28.5   Divided by   10.5 = 2.7

JUDGING ELASTICITY

Now we have to judge the elasticity!
Inelastic Coefficient = a coefficient between 0 and 1.
Elastic Coefficient = a coefficient more than 1.
Unitary Coefficient = a coefficient equal to 1.
Is our equation inelastic, elastic or unitary?
Now look at your calculations and decide if the demand is inelastic, elastic, or unitary.

PRACTICE
1. For which of the following products would demand be elastic? Inelastic?
a) Beef
b) Steak
c) Soft Drinks
d) Coca – Cola
e) Pencils
f) Public Transportation
g) haircuts

2. Suppose prices of farm products rise. Explain whether farmers' incomes are likely to rise or fall.

3. An economist estimates that the coefficient of elasticity of demand for a seller's product is 1.5. She advises the seller that eh would benefit by lowering his selling price, if possible. Explain why this economist might make such a recommendation.

4. How would this economist's advice change if she estimates that the demand coefficient for the seller's product is .09.

GROUP BRAINSTORM

In your groups:

A) Make two columns on with the paper you have been given. In one column title it Elastic Demand Products in the other Inelastic Demand Products.

B) List as many as you can for each column.

TOTAL REVENUE

Businesses want to know if total revenue rises or falls when prices rise or fall.

Will a rise in price mean increased revenues? If the elastic coefficient is inelastic then the answer is yes! So lets check out the following graph.

REVENUE CHECK

Price Per Liter of Gas	Quantity Demanded in Millions	Revenue	Coefficient	Elasticity
$.50	10	5 million		
$.54	9.5			
$.58	9			
$.62	8.5			
$.66	8			
$.70	7.5			
$.74	7			
$.78	6.6			

Fill in the following chart

REVENUE CHECK

Price Per Liter of Gas	Quantity Demanded in Millions	Revenue	Coefficient	Elasticity
$.50	10	5 million		
$.54	9.5	5.13	.67	inelastic
$.58	9	5.22	.76	inelastic
$.62	8.5	5.27	.86	inelastic
$.66	8	5.28	1	unitary
$.70	7.5	5.25	1.1	elastic
$.74	7	5.18	1.24	elastic
$.78	6.5	5.07	1.4	elastic

Fill in the following chart

SO…

When should the oil company increase price and when should they decrease price?

ELASTICITY OF SUPPLY

Measures how responsive the quantity supplied by a seller is to a rise or fall in price.

The Equation Looks like this:

$$\text{Coefficient of supply elasticity} = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

% CHANGE IN PRICE

Average of change in supply
If a price changes from 120 to 140 :
120 + 140 / 2 = 130
Change in price = 20
Therefore its 20/130 x 100 = 15.38%

% CHANGE IN QUANTITY SUPPLIED

Change in actual quantity is from 1 million to 1.2 million.
So we add the 2 figures together (1 + 1.2) then divide by 2 = 1.1

This gets us the average change.

The Change in quantity is .2 therefore the price change is .2/1.1 x100 = 18.18

THE ANSWER

18.18/15.38 = 1.182

CONCEPTS OF SUPPLY

Inelastic: a coefficient of less than one. The seller cannot increase the quantity supplied by more than the increase (%) in price

Unitary: a coefficient of 1 . The seller is just able to match price increase with the quantity supplied.

Elastic: a coefficient of more than 1. Seller can increase quantity supplied to match demand. Increasing revenues.

FACTORS AFFECTING SUPPLY ELASTICITY

1. Time *(longer the time a seller has to increase production the more elastic the supply)*
2. Ease of storage *(some products are easier to store, some are not)*
3. Cost Factors *(increasing output may be expensive depending on the product)*

PRACTICE

Price Per Cone	Short – Term Supply	Coefficient	Longer – Term Supply	Coefficient
$1	300		1000	
$2	500		5000	
$3	700		10 000	

1. Prices for a particular product are rising because of strong consumer demand. An economist estimates that the coefficient of supply for the product is .08. is this good or bad news for the SELLERS who want to supply and sell more. Explain.
2. If the coefficient were 1.5 instead, how would the news compare to question 1?
3. The chart above provides data on the supply of ice cream cones. Using the formula for supply elasticity, calculate the coefficient for each price range (1 to 2 then 2 to 3) for both the short – term and the long – term periods.

ANSWERS

Price Per Cone	Short Term Supply	Coefficient	Longer Term Supply	Coefficient
$1	300		1000	
$2	500	.75	5000	.2
$3	700	.82	10 000	1.66

1. **a)** A Coefficient of .8 is bad for sellers because it means supply is inelastic. Sellers are slow to increases supply because they want to take advantange of rising price.
b) A coefficient of 1.5 is good for sellers because supply is elastic. Sellers can increase supply fast to take advantage of rising price

CURVES

Now read the elastic supply and demand curves
'Thinking Like an Economist 'handout you have been given.