Elasticity

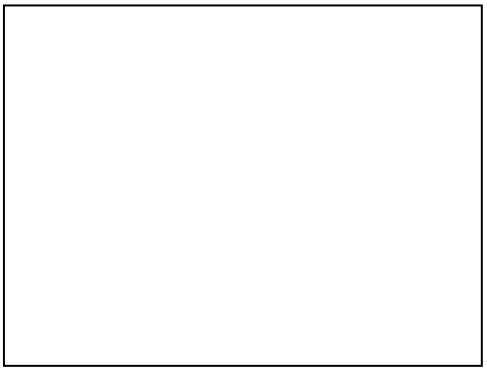
Elasticity is a measure of responsiveness (sensitivity) of the quantity demanded for a good or service to a change in some variable (price, income, related goods)

Price Elasticity of Demand (PED)

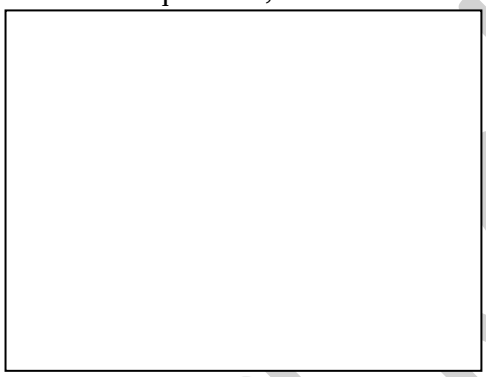
- Price Elasticity of Demand measures the percentage change in quantity demanded in response to a percentage change in price of a good or service

- **Degrees of Elasticity**
  - **Relatively Elastic**
    - A good is said to be relatively elastic when a change in price will cause a more than proportionate change in quantity demanded.
    - Eg: A 10% increase price will lead to a 25% decrease in quantity demanded
    - These goods tend to be luxury/discretionary goods
    - As a general rule, when PED is greater than 1 (in absolute terms), a price increase will lead to a fall in total revenue while a price reduction will lead to a rise in total revenue. Therefore, the firm which has a relatively elastic demand for its product will maximise its total revenue by lowering its price as much as possible.
    - PED is greater than 1 (PED>1,-1) -6, +2.2

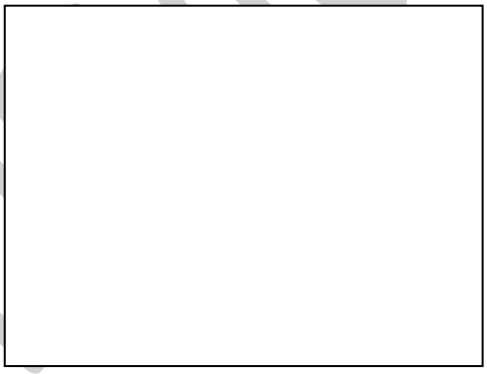
  - **Relatively Inelastic**
    - A good is said to be relatively inelastic when a change in price will cause a less than proportionate change in quantity demanded.
    - Eg: A 10% increase price will lead to a 2% decrease in quantity demanded
    - These goods tend to be necessities
    - PED is less than 1 (PED<1,-1) +0.4, - 0.7
    - To maximise his total revenue in this case the producer should raise his price.



- **Unitary elastic**
  - A good is said to be unitary elastic when a change percentage in price will cause a proportionate change in quantity demanded. Revenue for the firm will not change. A 10% increase price for a firm will not affect revenue.
  - Revenue will adjust itself accordingly. A firm with previous annual revenue of €100,000 puts its prices up by 10%. Annual revenue remains at €100,000 as quantity demanded adjusts itself proportionately.
  - Total Revenue remains constant at varying prices as quantity demanded adjusts itself proportionately therefore the firm should not change price in order to increase revenues.
  - PED is equal to 1, -1

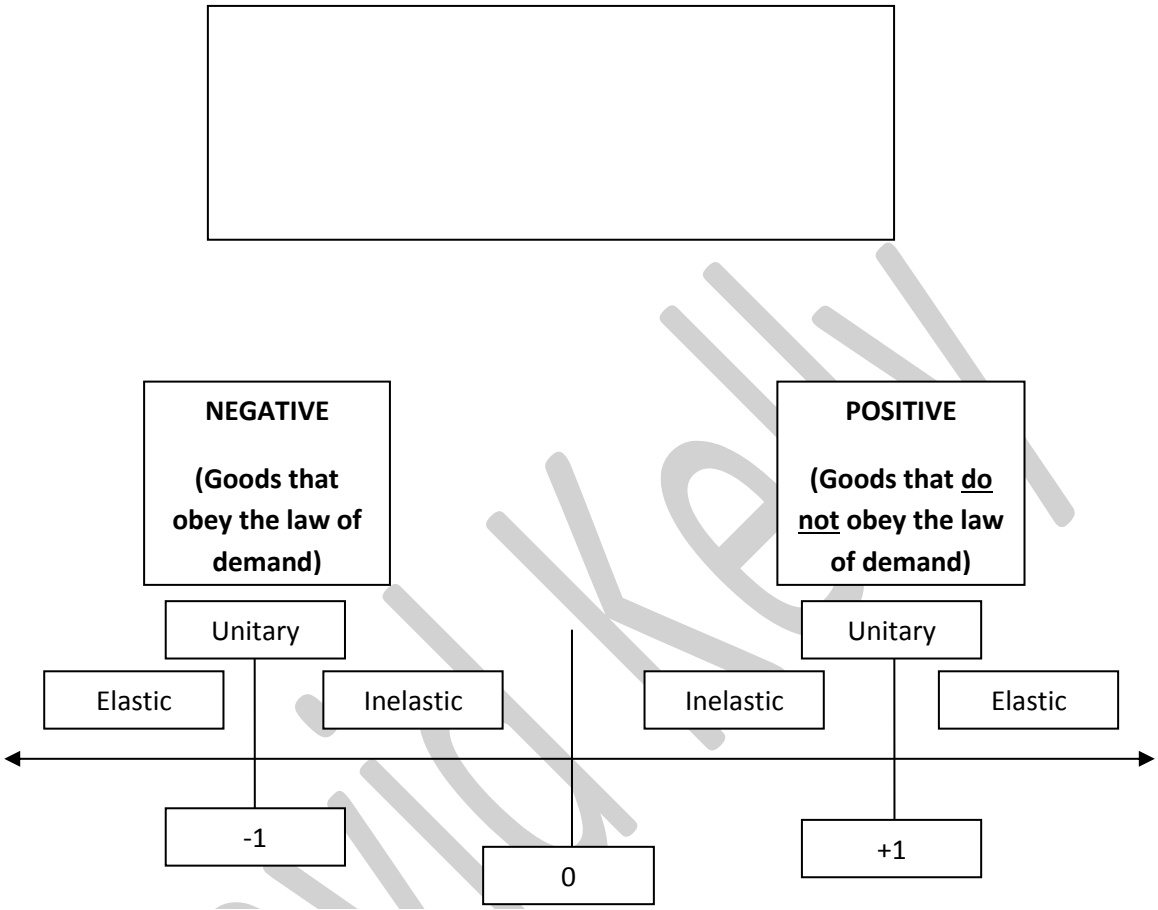


- **Perfectly Elastic**
  - A good is said to be perfectly elastic when an increase in price of that good causes quantity demand to fall to zero.
  - PED is equal infinity ∞



- **Perfectly Inelastic**
  - A good is said to be perfectly inelastic when an change in price of that good causes no change in quantity demanded
  - PED is equal to zero
  - In order to maximise his total revenue the producer will increase his price as much as possible.

- **Calculating PED**
  - **Formula on page 28 of the Log Table**



- **Factors that influence PED**
  - **The availability of close substitutes**
    - When a good has a close substitute and its price is increased the demand for the good will be elastic because people will switch to the cheaper substitute. Where a good has no substitutes and its price is increased there is no substitute to switch to and so it will be inelastic. The closer the substitutability between goods the more consumers will tend to switch their purchasing behaviour in response to a change in relative prices and thus the greater will be PED.
  - **Complementary goods**
    - If the good in question is the cheaper of two goods, which are in joint demand, then the demand for it is likely to be relatively inelastic in response to changes in its own price. For example when shoe laces are bought with shoes, if the price of the shoes laces goes up PED for the laces would tend to be inelastic as their cost is a small fraction of the more expensive complement

- **Is the commodity a luxury or necessity?**
  - It is not vital that one should possess luxuries and therefore the PED for them will be relatively elastic. Necessities are vital for life – people must buy them even when their price is increased, so their PED will be relatively inelastic.
- **The proportion of income which is spent on the commodity.**
  - In general the greater the proportion of income which is spent on a good, the more elastic the demand for it is likely to be, in response to a change in its own price. A rise of 50% in the price of a box of matches is unlikely to have a significant effect on its demand.
- **The durability of the commodity.**
  - The more durable the commodity, the more elastic is the demand for it likely to be in response to a change in its own price. If products such as motorcars increase in price, it is likely that the public will extend the life of their existing model and postpone the purchase of a replacement.
- **Expectations as to future changes in price.**
  - If, in the face of a price reduction, the public considers that prices are likely to fall even further, they may wait for the further reduction in price, in which case demand may not be very elastic on the initial price reduction.
- **The length of time allowed for adjustment to price changes**.
  - In the long run, demand is more elastic as consumers have time to adjust to a change in price. If the price of electricity rose by 80% a consumer may economise on the use of various appliances in the short term. In the long term the consumer will have to consider substituting other forms of energy. The demand will at first be highly inelastic but as time goes on will become more elastic
- **Consumer habits / brand loyalty.**
  - A consumer may become strongly attached to a particular product through habit or loyalty to that brand. An increase in price for that good will not cause him/her to consume less of the product or to switch to cheaper substitutes. The demand for such goods will therefore be price inelastic.

- **An understanding of the theory behind the price elasticity of demand is useful to the following groups of people when making decisions that involve the changing the prices of goods and services.**
  - **Suppliers:**
    - Suppliers are always looking for ways to increase revenue. An understanding of price elasticity of demand can help them to make price changes that can cause revenue to rise. For example, a pharmacist selling essential medicine could increase revenue by increasing the price charged, as the good is a necessity. A supplier of cookers and flat screen televisions could see that by decreasing the price of such elastic goods revenue could be increased, as the demand for such good is elastic.
  - **The Government and The Minister for Finance**:
    - Indirect taxes such as VAT and Excise Duties increase the price of many goods. The government tends to tax goods that are relatively inelastic,

e.g. cigarettes, alcohol, petrol and diesel. When their prices rise due to taxes, the quantity demanded is barely affected and the government can raise huge amounts of revenue

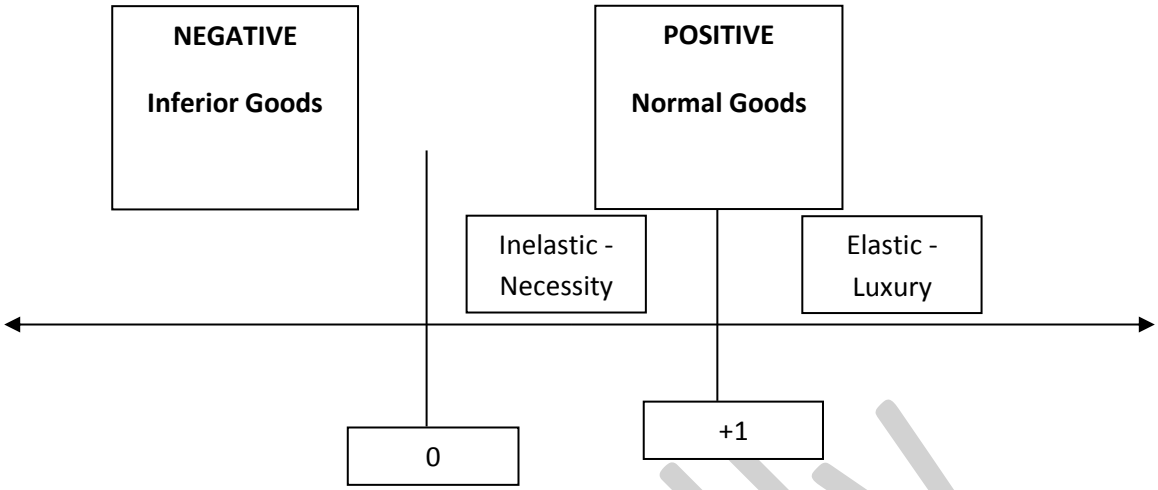
- **A Monopolist:**
  - When fixing the price of the good, a monopolist can use his/her knowledge of elasticity to maximize revenue. The price can be raised until demand becomes elastic.

Income Elasticity of Demand (YED)

- Income Elasticity of Demand measures the percentage change in quantity demanded in response to a percentage change in real income

- **Normal Goods vs Inferior Goods**
  - **Normal Goods**
    - Goods that have a positive income effect. Income goes up, quantity demanded goes up. Income goes down, quantity demanded goes down
    - These goods will have a positive result in elasticity calculations. I.e. the answers will be a "+"
    - If YED < 1 the good is inelastic and is typically a normal necessity
    - IF YED >1 the good is elastic and is typically a luxury good. The higher the result the more luxury the good
  - **Inferior Goods**
    - Goods that have a negative income effect. Income goes up, quantity demanded goes down. Income goes down, quantity demanded goes up
    - These goods will have a negative result in elasticity calculations. I.e. the answers will be a "-". I.e. the calculation will result in an answer less than zero
    - Goods with zero YED are goods that people purchase when their income is low and they do not purchase additional quantities as their income increases

- **Calculating YED**
  - **Formula on page 28 of the Log Table**

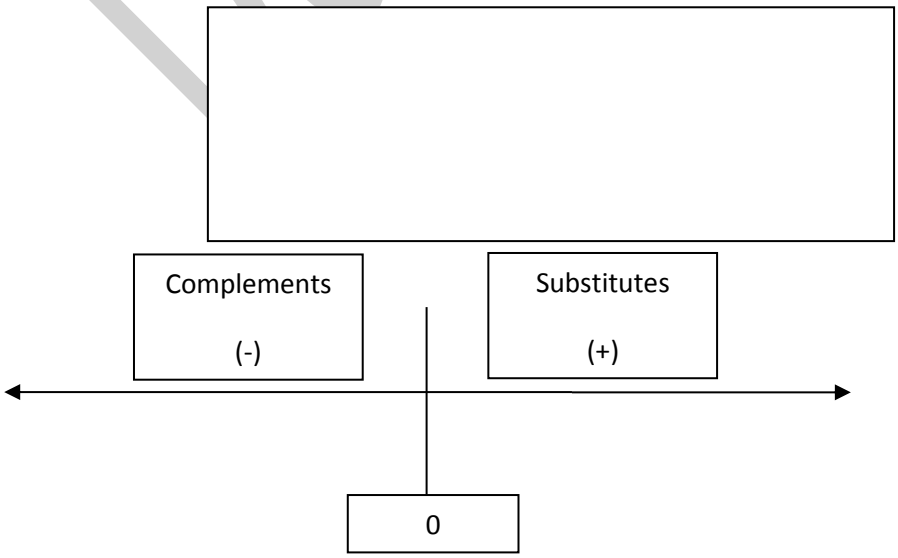


Cross Elasticity of Demand (CED)

- Cross Elasticity of Demand measures the percentage change in quantity demanded in response to a percentage change in price of another specific good

- **Substitute goods vs Complementary goods**
  - **Substitute Goods**
    - These goods will have a positive result in elasticity calculations. I.e. the answers will be a "+"
    - The bigger the value the closer the substitute
  - **Complementary Goods**
    - These goods will have a negative result in elasticity calculations. I.e. the answers will be a "-"
    - The bigger the value the closer the complement

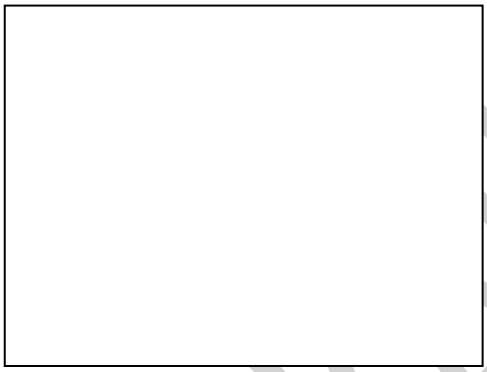
- **Calculating CED**
  - **Formula on page 28 of the Log Table**



Price Elasticity of Supply (PES)

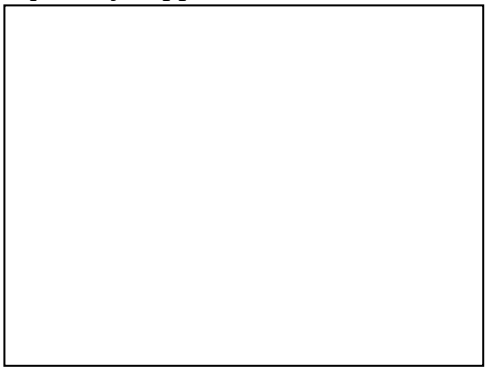
- Price Elasticity of Supply measures the relationship between the percentage change in quantity supplied in response to a percentage change in price of a good or service

- **Degrees of Elasticity**
  - **Elastic**
    - A good is said to be elastic when the proportionate change in quantity supplied is greater than the proportionate change in price
    - PES is greater than 1 (PES>1) +2.2



  - **Inelastic**
    - A good is said to be inelastic when the proportionate change in quantity supplied is less than the proportionate change in price
    - PES is less than 1 (PES<1), 0.6

  - **Zero Elasticity of Supply**
    - Alternatively called Perfectly Inelastic Supply
    - An increase in the selling price of a good does not result in an increase in quantity supplied



- **Calculating PES**
  - **Formula on page 28 of the Log Table**

NB: Answers tend to be positive

- **Factors that influence PES**
  - **Firm's Capacity**
  - **Mobility of Factors of Production**
  - **Time period**
  - **Nature of the product**
  - **Storage Costs**
  - **Cost Conditions**
  - **Products in joint supply**
  - **Stock**