**ADVANCED PRICE TOOLKIT**

**THE CONCEPT OF ELASTICITY**

**Introduction to the concept of elasticity**

The concept is called elasticity because it measures the responsiveness of a change in one variable (say demand) is to a change in another (say price?). With the basic price toolkit we were always assuming that a change in price for example would have a proportionate (equal) response in demand. So if price increased by 20%, then demand would fall by 20%. However goods and services are rarely this simplistic.

Economists, businesses and Governments are therefore very interested in the relationship (or responsiveness – ‘elasticity’) between the following four variables:

**DEMAND ELASTICITIES**

1. Price and quantity demanded (Price Elasticity of Demand – PED)
2. Income and quantity demanded (Income Elasticity of Demand – YED)
3. Price of one good and quantity demanded of a related good (Cross Price Elasticity of Demand – XED)

**SUPPLY ELASTICITIES**

1. Price of one good and quantity supplied (Price Elasticity of Supply – PES)

Elasticity will answer the following questions

* PED: E.g. what will happen to quantity demanded of cigarettes if price doubled? You know that the quantity demanded would fall (law of price) but by what proportion (percentage) would it fall by?
* YED: E.g. what will happen to the demand for foreign holidays if UK incomes fall by 10%? You know that the quantity demanded would probably fall but by what proportion (percentage) would it fall by?
* XED: E.g. what will happen to the demand for Coke if the price of Pepsi is reduced by 5%? You know that the quantity demanded would increase but by what proportion (percentage) would it increase by?
* PES: E.g. what will happen to the supply of housing if prices increased by 15%? You know that the quantity supplied would increase so firms are able to make further profits (law of supply) but by what proportion (percentage) would it increase by?

The answers to these questions could help firms make decisions about their business strategy and how much to charge to maximize their revenue. Equally Governments would find this information useful when trying to maximize their ‘tax take’ (the money received from setting taxes on cigarettes for example). They might also want to ensure that any subsidies they provide (say on environmentally friendly technology) has the desired effect.

***Remember elasticity means ‘responsiveness’.***

* UNITARY RESPONSE: So far we have been assuming that the ‘responsiveness’ or ‘elasticity’ is unitary….so if price increases by 20%, the quantity demand falls by 20%.
* ELASTIC RESPONSE: However if the relationship between two variables is ‘very elastic’, it suggests that a change in one variable (price) would affect the other variable (demand) significantly. For example, if the price of coke doubled, you would probably find demand for coke falling quite significantly as consumers could choose the cheaper Pepsi instead. Therefore the response to the change price has been ‘elastic’ (responsive).
* INELASTIC RESPONSE: Also, if the relationship between two variables was ‘very inelastic’, it would suggest that a change in one variable (price) would have only a very small affect on the other variable (demand). An example might be cigarettes…as the price of cigarettes increases by 20%, the fall in demand might only be 5% because although some consumers will quit smoking, the majority would find it very hard and would continue to buy cigarettes.

**(1) Price Elasticity of Demand (PED): *Negative Relationship Only (price goes up, demand goes down and vice-versa)***

Price elasticity of demand is how responsive (elastic) a price change has on the demand for that good. For example, cigarettes might be considered to be ‘inelastic’ because consumers are addicted to smoking, if the price increases then demand would not fall by a huge amount. Some people would give up smoking or smoke less but the majority of smokers would probably pay the higher price.

**TASK 1:** Think of one other good which might be considered to be price inelastic and one other good which might be considered to be price elastic. Explain your choices.

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| --- | --- |
| Price elastic (i.e. price changes do have a significant response on demand for that product) | Price inelastic (i.e. price changes do not have much of a response on demand for that product) |
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**TASK 2:** For the following goods, complete the blanks on this table (I have done the first one as an example:

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| --- | --- | --- |
| **MARKET** | **ELASTIC? UNITARY? INELASTIC?** | **POSSIBLE EXPLANATION?** |
| **Fruit market –** consumption of apples | ELASTIC | There are plenty of substitutes for apples and so if the price increased for example, the demand might fall substantially as consumers would switch to oranges. |
| **Wheat market –** consumption of wheat based products |  | On one hand, there are substitutes to wheat based products but often wheat based products (like bread etc.) are very popular still. |
| **Livestock market** Consumption of pigs, cows, sheep etc. | INELASTIC |  |
| **Rented housing-** Renting a house or flat to live in | UNITARY |  |
| **Second hand housing –** House buyers buying at least a 2nd hand property | ELASTIC |  |
| **New build housing –** House buyers buying a brand new house | ELASTIC |  |

**TASK 3:** What factors might determine whether the supply of a good or service is elastic or inelastic? Use any ‘agricultural markets’ (fruit, wheat, livestock etc.) and ‘housing markets’ (rented, second hand or new build markets etc.) to jot down some ideas for discussion in class

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**(2) Income Elasticity of Demand (YED): *Positive or Negative Relationship***

Income elasticity of demand measures the responsiveness of demand to a change in income (rather than price as above). So far, we have learnt that as income rises, demand for all goods increases. This is what is called a ‘normal good’. However in reality, there are some goods that as incomes increase demand falls and these are called ‘inferior goods’. Inferior goods are goods such as the Sainsbury’s Basics range. As peoples incomes rise they switch to the ‘taste the difference’ range and therefore demand for Sainsburys basics declines. There is also a third classification called ‘Luxury Goods’….these are like normal goods but very responsive to changes in income…so as incomes rise, demand for these goods sky rockets (or at least increases at a greater proportion than the change in income).

Therefore in summary:

1. **Inferior good:** An inferior good means an increase in income causes a fall in demand. It has a negative YED. An example, of an inferior good is Tesco value bread. When your income rises you buy less Tesco value bread and more high quality, organic bread.
2. **Normal good.** This means an increase in income causes an increase in demand. It has a positive YED. Note a normal good can be income elastic or income inelastic.
3. **Luxury good.** A luxury good means an increase in income causes a bigger % increase in demand. It means that the YED is greater than one. For example, high definition TV’s would be luxury. When income rises, people spend a higher % of their income on the luxury good. (Note: a luxury good is also a normal good, but a normal good isn’t necessarily a luxury good)

***EXERCISE: Evaluating YED (e.g. of holidays)***

You could be asked in the exam to evaluate the YED of a product. In this case it is worth considering:

It depends: on type of product (e.g. UK holidays will have different YED to foreign holidays)

Other factors: are other factors affecting demand other than income (e.g. if incomes fall and demand for UK holiday rises, is this due to income changing or other factors such as change in quality of holidays on offer or advertising?)

**TASK 1:** In the last year there has been a recession in the UK. Assuming incomes in the UK fell by an average of 5%, complete the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| **Good** | **Change in Quantity Demanded** | **Normal or Inferior Good?** | **Inelastic or Elastic?**  **Why – justify our answer….** |
| Foreign holidays | -17.5% |  |  |
| Clothes | -3% |  |  |
| All foodstuffs | -1% |  |  |
| Basic foodstuffs | +2.5% |  |  |

**(3) Cross Price Elasticity of Demand (XED): *Positive or Negative Relationship***

Cross-price elasticity measures the responsiveness of the demand of one good to a change in the price of another good in a different market (remember POG and inter-relationships between markets). Therefore we are dealing with two specific demand inter-relationships between markets: Joint Demand (or Complements) and Competitive Demand (Substitutes).

***EXERCISE: Complete the table below***

|  |  |  |  |
| --- | --- | --- | --- |
|  | Substitute or complement? | Is the relationship between these two products ‘positive’ (i.e. if one goes up, the other follows) or ‘negative’? | Comment on how elastic the relationship might be between these two goods? If the price of one good went up, would it really have an impact on the demand for the other good? It is just your opinion but make sure you have a quick justification? |
| **Public Transport and Cars**  http://deckchairdiaries.files.wordpress.com/2009/01/public-transport.jpg |  |  |  |
| **Blu Ray Players and Blu Ray Discs**  http://www.theguyspodcast.com/wp-content/uploads/2008/01/blu-ray-logo-718027bmp.jpg |  |  |  |
| **A Coldplay CD and a Jay-Z CD**  http://www.mtv.com/news/photos/g/grammy09/show/15_jayz.jpg |  |  |  |
| **Strawberries and Cream**  http://farm4.static.flickr.com/3041/2381461016_397e5db8de.jpg |  |  |  |
| **Innocent Smoothies and PJ Smoothies**  http://yasher09smoothie.files.wordpress.com/2009/01/innocent_smoothies.jpg |  |  |  |
| **Printers and printer ink**  http://www.inkforprinter.org/wp-content/uploads/993a00e24cfbf16.jpg |  |  |  |

**(4) Price Elasticity of Supply (PES): *Positive Relationship Only***

When considering PES it is important to think from a business or producers point of view. If price rises then there is an incentive to supply more i.e. there is a positive relationship between price and quantity supplied. Therefore **PES will always be positive**.

The key question, however, is *how much will supply change* given a change in price. If supply is elastic then it is quick and easy to supply more at the higher price, whereas inelastic supply means it is hard to increase supply. Most goods will have **more elastic supply in the long-run**.

For example, the supply of car engines would have inelastic supply in the short-run due to time to build the car engine (unless there were lots in a store room!). Therefore, even if the price of car engine rises, mechanics annot respond easily and quickly by building another 100 car engines to make more profits. However, in the long-run mechanics have time to build new car engines.

**TASK 1:** For the following goods, complete the blanks on this table (I have done the first one as an example:

|  |  |  |
| --- | --- | --- |
| MARKET | ELASTICITY? | POSSIBLE EXPLANATION? |
| **Fruit market –** apples | UNITARY | It is hard for new entrants to get into this market due to the length of time it takes to grow apple trees or acquire land. However existing apple producers can freeze excess stock which lasts for at least a year and bring it back into the market quite easily. |
| **Wheat market –** growing of wheat for food companies | INELASTIC |  |
| **Livestock market** – cows, pigs, sheep for meat consumption |  | It is relatively easy to convert land to the production of livestock. Equally existing producers often have spare capacity on their farms and are able to accommodate more livestock quite easily. |
| **Rented housing-** landlords might own several houses or flats | UNITARY |  |
| **Second hand housing –** individuals might decide to move house or sell their property | ELASTIC |  |
| **New build housing –** large building developers | INELASTIC |  |

**TASK 2:** What factors might determine whether the supply of a good or service is elastic or inelastic? Use any ‘agricultural markets’ (fruit, wheat, livestock etc.) and ‘housing markets’ (rented, second hand or new build markets etc.) to jot down some ideas for discussion in class

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**SUMMARY EXERCISES**

Think you’ve nailed it? Have a go at these questions to see if you have really understood the material above? Just have a go, do not worry about getting it right or wrong…we will go through this exercise during the lesson. Do not leave a box blank!!

For PED and PES, you must be able to draw a demand and supply curve to demonstrate whether a good is ‘elastic’, ‘unitary’ or ‘inelastic’. See if you can work out what an elastic and inelastic supply and demand curve might look like? I have drawn a unitary (hopefully a familiar diagram!).

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| --- | --- | --- | --- |
|  | **ELASTIC** | **UNITARY** | **INELASTIC** |
| **DEMAND** |  |  |  |
| **SUPPLY** |  |  |  |