PJC 2017 H1 Prelim Exam Paper 1

Question 3:

(a) Explain what might cause price elasticity of demand to be different for different products. [10]

(b) Profits are earned when revenue exceeds costs of production. Discuss whether it is both possible and beneficial for producers to change the price elasticity of demand for their products. [15]

Price elasticity of demand (PED) measures the degree of responsiveness of quantity demanded due to a change in the price of the same good, ceteris paribus. Demand for some products are price elastic when a change in the price causes a ***more than proportionate*** change in the quantity demanded. This means that the value of PED (ignore the negative sign) is more than one. For products that have price inelastic demand, the value of PED is between 0 and 1 as a change in the price causes a ***less than proportionate*** change in the quantity demanded. The value of price elasticity of demand tends to be different for different products due to factors such as availability of close substitutes, proportion of income spent on the good and nature of the good.

The value of price elasticity of demand tends to be different for different products due to availability of close substitutes.

The greater the number of substitutes and the closer the substitutes for the good, the more price elastic will be the demand for the good. The presence of close substitutes enables consumers to respond and switch to other substitutes when the price of the good rises. This causes the quantity demanded of the good to fall significantly when price rises. For example, the demand for Nike shoes will tend to be price elastic as there are many close substitutes available in the market such as Adidas, Reebok and New Balance shoes. On the other hand, demand for petrol is price inelastic as there are no close substitutes available in the market.Hence, the more close substitutes a good has, the more elastic will be its demand.

The value of price elasticity of demand tends to be different for different products due to the proportion of income spent on the good. The higher the proportion of income spent on a good, the more price elastic will be the demand for the good. For example, if the price of ballpoint pen increases by 20% (from $1 to $1.20 per pen), consumers are unlikely to cut down the use of ballpoint pen significantly since expenditure of ballpoint pen is only a very small proportion of consumers' income. In contrast, if the price of a winter holiday package increases by 20% (from $2000 to $2400), it is likely to affect the consumer's spending ability to a large extent as expenditure on a winter holiday package takes up a much larger proportion of consumers' income. Thus, a consumer is more likely to be more responsive to a change in price for goods when consumer expenditure takes up a large proportion (%) of his income.

Lastly, the nature of the good also determines the value of price elasticity of demand. Necessities are goods that are considered to be essential or necessary. Thus, necessities such as rare-earth and diabetes medication tend to have an inelastic demand. Producers of televisions and computer screens require the use of rare-earth in producing electronic goods are not sensitive to a price increase. Similarly, diabetic patients' demand for diabetes medication is also price inelastic. In addition,goods which are addictive goods such cigarettes tend to be more price inelastic in demand since habitual cigarette smokers are not responsive to a price increase. On the contrary, demamnd for luxuries such as fine dinning is price elastic. As luxuries are not considered to be indispensable, consumers will be sensitive to price changes. For example, if the price of fine-dinning rises by 15%, quantity demand is expected to fall by more than proportinately. Thus, the nature of the good does affect the value of price elasticity of demand for the good.

From the above we can see that the determinants of price elasticity of demand are as follows: availability of close substitutes, proportion of income spent on the good and nature of the good. It is important for a producer to know the value of price elasticity of demand for the firm's good as price adjustments has a direct impact firms' total revenue.

PJC 2017 H1 Prelim Exam Paper 1

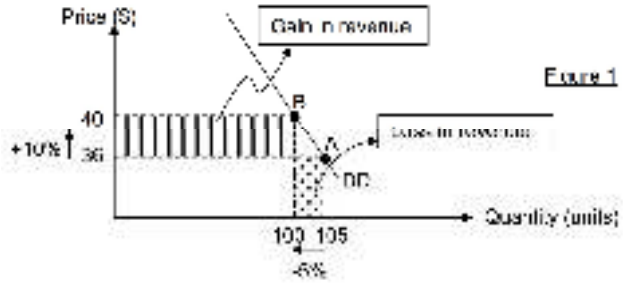
Question 3:

(b) Profits are earned when revenue exceeds costs of production. Discuss whether it is both possible and beneficial for producers to change the price elasticity of demand for their products. [15]

It is possible and beneficial to change the price elasticity of demand for the product.

Producers can change the price elasticity of demand for a product by making the demand for the good to be more price inelastic. This aims to make consumers less sensitive to price changes. A producer can make the demand for a good to be more price inelastic via advertising or long-term research and development to improve the product quality. These strategies will reduce the number of close substitutes available in the market. Effective advertising can convenience consumers that the firm's product has features that are unique. As for R&D (research and development), it results in improvement in quality of the good which helps to differentiate the firm's products from others.

If the producer is successful in making the demand for the good to be price inelastic, prices can be raised to increase the total revenue. Total revenue is the money received by firms when they sell a good. Total revenue is equal to price of the good multiply by the quantity of the good sold (TR = PXQ). When demand for a good is price inelastic, an increase in price causes a rise in total revenue. This is because a rise in price will result in less than proportionate fall in quantity demanded, and hence, total revenue will increase. Graphically, this can be seen in Fig 1.



Refer to Figure 1. A rise in price from $36 to $40 (+10%) leads to an fall in the quantity demanded of the good from 105 to 100 units (-5%).

At price $36 (point A), Total revenue = $36 X 105 = $3780
At price $40 (point B), Total revenue = $40 X 100 = $4000

From the above, we can see that total revenue rises as price increase for inelastic demand. This is because when price falls, quantity demanded increases less than proportionately. (↓ TR = ⇓ P X ↑ Q)

For a given supply curve, the more price inelastic the demand for a good, the higher will be the tax borne by the consumers. This is because the producers are able to increase the price of the good after the tax by a large extent as the quantity demanded will only decrease by a relatively small extent given the inelastic demand curve.

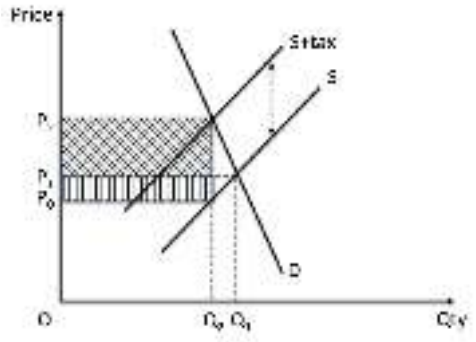


Figure 2

The original equilibrium price and output is OP_1 and output is OQ_1. With the imposition of a specific tax, the supply curve shift from S to S+tax as shown in Figure . As a result, the price increases to OP_2.

Government's tax revenue is represented by the shaded areas: 

The consumers' burden of the tax for each unit of the good is represented by the increase in the price = P_1P_2. Thus, the total consumer burden for OQ_2 units is shown by the shaded area  .

The total producers' burden for OQ_2 units is shown by area  .

Given the price inelastic demand (relative to the supply), the consumer is bearing a greater burden than the producer.

Hence, from the above, it is possible and beneficial to change the price elasticity of demand for the product.

Nevertheless, producers need to consider the impact on profits. An attempt to reduce the value of PED is likely to raise costs. Since profit = total revenue – costs, costs may rise more significantly than total revenue. Hence, profit may fall. Hence, firms may not benefit from reducing the PED value of its products.

Furthermore, in reality, it is difficult for firms to determine the value of the price elasticity of demand and set price their products accordingly. When we calculate the PED value, we need to assume the ceteris paribus condition. This means that we have to separate out all the other factors that influence the demand for the product and just measure the impact of the price change alone on quantity demanded. However, these non-price factors such as consumers' preference and income could have changed over time.

To sum up, it is possible and beneficial to change the price elasticity of demand for the product. However, producers need to carefully consider (i) the impact of changing the change the price elasticity of demand for the products on (i) revenue and costs and (ii) the accuracy in determining the price elasticity of demand and (iii) whether the assumption of ceteris paribus condition holds true.