

## **M15 TZ1 Paper 1 (SL)**

**Q2. a) Explain the view that an increase in price will lead to a decrease in the quantity demanded whilst an increase in demand will lead to an increase in price. (10 marks)**

Demand refers to the quantity of a good that buyers are willing and able to buy at various prices over a given time period, ceteris paribus. The Law of Demand states that there is a negative causal relationship between price,  $P$ , and quantity demanded,  $QD$ , of a good. In other words, as price increases, quantity demanded decreases. The law of demand is illustrated by the downwards-sloping demand curve.

Two diagrams: one showing contraction of demand with decrease in supply, one showing increase in demand at a single  $QD$ .

Changes in the price of a good cause movements along the demand curve. According to the law of demand, if price increases, e.g. due to a supply shock that decreases supply and shifts the supply curve leftwards, then the quantity demanded decreases. This is shown on the graph by the increase in price from  $P_1$  to  $P_2$ , and the subsequent decrease in  $QD$  from  $Q_1$  to  $Q_2$ , which causes an upwards movement along the demand curve, which is known as a contraction of demand.

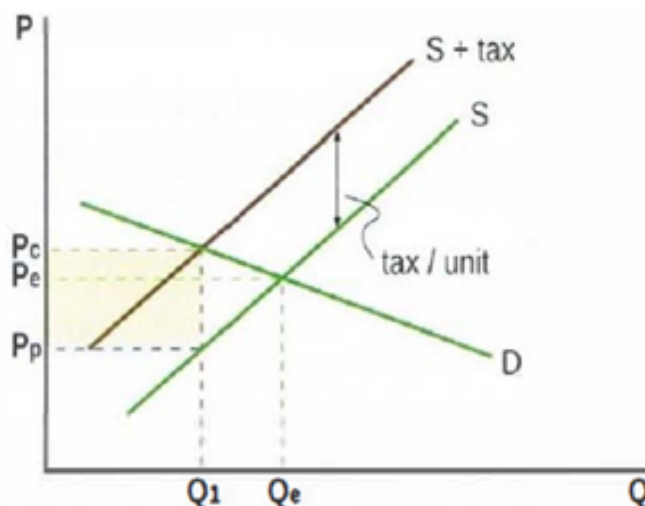
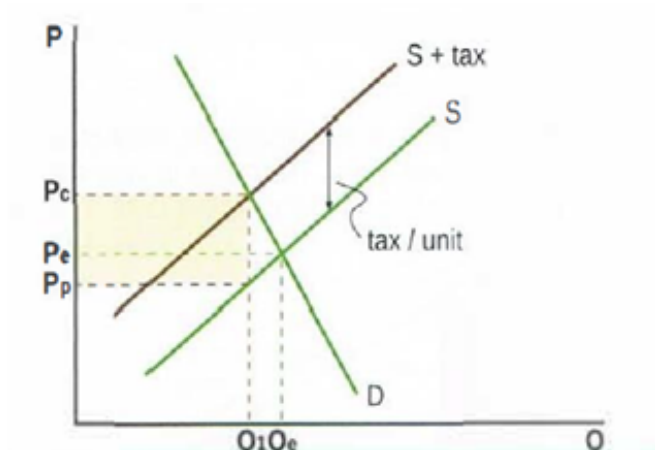
Changes in any of the non-price determinants of demand causes a shift in the demand curve. An increase in demand refers to a rightwards shift of the demand curve, which increases the quantity demanded of a good at all price points. As shown by the graph, the rightwards shift in demand from  $D_1$  to  $D_2$  causes an increase in price at all quantities demanded.

The extent to which quantity demanded is affected by price is shown by the price elasticity of demand for a demand curve.

**Q2. b) Discuss the significance of price elasticity of demand for government intervention in markets. (15 marks)**

Price elasticity of demand refers to the degree of responsiveness quantity demanded has in response to changes in price. Demand is said to be price inelastic if its  $PED < 1$ , which means that the percentage change in quantity demanded is less than proportional to the percentage change in price. Demand is said to be price elastic if its  $PED > 1$ , which means that the percentage change in quantity demanded is more than proportional to the percentage change in price.

Knowledge about the price elasticity of demand for a specific good can provide valuable insight for the government into the level of tax revenue received upon applying an indirect tax on the good, as well as determining who the incidence of the tax falls upon. An indirect tax is a tax levied on the production of goods and services, which is paid indirectly to the government through firms. The incidence of a tax refers to the burden of a tax, i.e. the particular group who pays the majority of the tax.



Demand for cigarettes is price inelastic due to the addictive nature of tobacco. Before the indirect tax is applied, there is market equilibrium at  $P_e$  and  $Q_e$ . Due to the social costs that smoking has on society, governments may choose to impose taxes on the production of cigarettes to limit its consumption. This causes a leftward shift in supply from  $S_1$  to  $S_1 + \text{tax}$  due to the increase in unit cost of production, which increases the price paid by consumers from  $P_e$  to  $P_c$ , and decreases the price received by producers from  $P_e$  to  $P_p$  (as they must pay the tax of  $P_c - P_p$ ), all the while quantity demanded changes less than proportionally to the change in consumer price. Thus, the government receive tax revenue of  $Q_1 \times (P_c - P_p)$ , which is shown by the area  $A+B$ .

If an indirect tax is imposed on a price elastic good, then the percentage change in quantity demanded is more than proportional to the percentage change in consumer price. However, in the case of price elastic demand, governments receive less tax revenue, which is shown from areas  $A+B$  being greater than  $C+D$ . Thus, levying taxes on price inelastic goods yields greater government revenue than levying taxes on price elastic goods. Hence, knowledge about the price elasticity of a good can better inform governments about the amount of tax revenue they will receive, which may provide benefit for government planning.

Furthermore, knowledge of how elastic a demand curve is compared to a supply curve provides information as to the incidence of the indirect tax. The price elasticity of supply refers to the degree of responsiveness of quantity supplied to changes in price. The share of a tax paid by consumers and producers is determined by the relative sizes of  $PED$  and  $PES$ . If  $PED \gg PES$ , for example in the first graph on the market for cigarettes, then the tax paid by the consumer,  $P_c - P_e$ , is greater than the tax paid by the producer,  $P_e - P_p$ . This means that the burden of the tax falls mostly on consumers, which is shown by area  $A >$  area  $B$ . If  $PED > PES$ , for example, in the case of the second graph, then the tax paid by the producer is greater than the tax paid by the consumer, so the burden of the tax falls onto producers, which is shown by area  $D >$  area  $C$ .

This knowledge allows governments to better understand who is suffering more from the imposition of a tax. If a government wished to decrease the consumption of a good, e.g. in the case of cigarettes that produce negative externalities of consumption, then they would prefer that the majority of the tax burden fall on the consumers. If a government wished to

decrease the production of a good, then they would prefer that the incidence of the tax is primarily on producers.

In conclusion, the price elasticity of demand for a good provides valuable insight into how indirect taxation will affect the stakeholders in a market, as well how much government revenue will be yielded from the tax. However, when it comes to deciding whether or not to intervene in a market, governments should not solely rely on PED values, as it is often difficult to gain an accurate value for PED in any market.

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