

**Subject: Microeconomic Theory I**

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## **PRICE ELASTICITY OF SUPPLY**

### **Measurement and Interpretation of Price Elasticity of Supply**

The price elasticity of supply (PES) of a good is a measure of the degree of responsiveness of the quantity supplied to a change in the price, *ceteris paribus*.

The PES of a good is calculated by dividing the percentage change in the quantity supplied by the percentage change in the price.

$$\text{PES} = \frac{\% \Delta \text{ Quantity Supplied}}{\% \Delta \text{ Price}}$$

Due to the law of supply, the PES of a good is always positive.

If the PES of a good is greater than one, the supply is price elastic which means that a change in the price will lead to a larger percentage/proportionate change in the quantity supplied. A good with a price elastic supply has a relatively flat supply curve. If the PES of a good is less than one, the supply is price inelastic which means that a change in the price will lead to a smaller percentage/proportionate change in the quantity supplied. A good with a price inelastic supply has a relatively steep supply curve. If the PES of a good is equal to one, the supply is unit price elastic which means that a change in the price will lead to the same percentage/proportionate change in the quantity supplied.

Special Cases: If the PES of a good is zero, the supply is perfectly price inelastic which means that a change in the price will not lead to any change in the quantity supplied. A good with a perfectly price inelastic supply has a vertical supply curve. If the PES of a good is infinity, the supply is perfectly price elastic which means that a fall in the price will lead to an infinite decrease in the quantity supplied. In theory, this means that the quantity supplied will fall from infinity to zero. A good with a perfectly price elastic supply has a horizontal supply curve.

## **5.2 Determinants of Price Elasticity of Supply**

## **Production Time and 'Stockability' of the Good**

When the price of a good rises, firms can increase the quantity supplied in two ways: increase production and draw from stock. Therefore, if the production time of a good is long and if it cannot be stocked in large quantities, the supply is likely to be price inelastic, and vice versa. The 'stockability' of a good depends on the size of the good and whether it is perishable. Goods that are small in size and non-perishable can be stocked in large quantities, and vice versa. For example, the production time of agricultural products is long due to the long gestation period and they cannot be stocked due to the perishable nature. Therefore, the supply of agricultural products is price inelastic. In contrast, the supply of manufactured goods is more price elastic as the production time is shorter and they generally can be stocked. The supply of luxuries is likely to be price inelastic as the production time is likely to be long because they are typically high quality goods that normally undergo stringent quality control. In contrast, the supply of necessities and inferior goods is likely to be price elastic as the production time is likely to be short due to the limited focus on the quality.

## **Excess Capacity**

Given any increase in the price of a good, the lower the output level and hence the larger the amount of excess capacity, the slower the marginal cost of production will rise as firms increase output. The slower the marginal cost of production for a good rises as firms increase output in response to a rise in the price, the larger the increase in output. Therefore, the lower the output level of a good and hence the larger the amount of excess capacity, the more price elastic the supply. Conversely, the higher the output level of a good and hence the smaller the amount of excess capacity, the less price elastic the supply.

## **Definition of the Good**

The more broadly a good is defined, the less price elastic the supply. Conversely, the more narrowly a good is defined, the more price elastic the supply. For example, the supply of a crop is more price elastic than the supply of crops as a whole as it is easier to obtain factor inputs from within the agricultural sector to produce a crop than to obtain factor inputs from other industries to produce crops as a whole.

## **Time Period**

The longer the time period after an increase in the price of a good, the more price elastic the supply as firms are able to increase the production by a larger amount with more time. Time period can be divided into the immediate run, the short run and the long run. The immediate run is the time period that is so short that the output level is fixed. The supply of the good is perfectly price inelastic, assuming firms do not keep stock of the good. The short run is the time period during which at least one of the factor inputs used in the production process is fixed. In the short run, when the price of a good rises, firms can increase the production only by employing more of the variable factor inputs used in the production process. The long run is the time period after which all the factor inputs used in

the production process are variable. The supply of a good is more price elastic in the long run than in the short run as firms can increase the production by employing more of all the factor inputs used in the production process.

### **Mobility of Factors of Production**

The ease with which factors of production can be moved from the production of one good to another will influence the price elasticity of supply of a good. The supply of a good will be more price elastic the higher the mobility of factors of production. Conversely, the supply of a good will be less price elastic the lower the mobility of factors of production. For example, if a manufacturing firm in the city is able to swiftly employ rural farmers to increase output, the supply of the good is likely to be price elastic.

## **Books**

1. Chapter 3 from Pindyck and Rubinfeld with Mehta (2005), Microeconomics- latest available Edition in market.
2. Chapter 4 from D.N Dwivedi (2016), Microeconomics Theory and Application-- latest available Edition in market.

