

## Price elasticity of supply

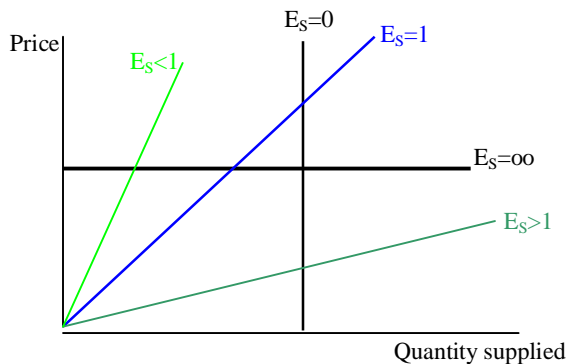
Price elasticity of supply measures the responsiveness of quantity supplied to changes in price

The formula for measuring price elasticity of supply is:  $E_s = \frac{\% \Delta \text{in Quantity Supplied}}{\% \Delta \text{in Price}}$

This is equivalent to:  $\frac{\Delta Q}{Q} \div \frac{\Delta P}{P} \Rightarrow \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} \Rightarrow \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

If the percentage change in price is greater than the percentage change in quantity supplied, supply is said to be **price inelastic** and the value of price elasticity of supply will be less than one.

If the percentage change in price causes a much larger percentage change in quantity supplied, supply is said to be **price elastic**. Price elasticity of supply will therefore be greater than one.



1.  $E_s=0$  – perfectly inelastic supply – no response in supply to the change in price – quantity supplied of a commodity remains the same whatever its price
2.  $E_s<1$  – inelastic supply
3.  $E_s=1$  – unitary elastic supply - % change in quantity supplied is the same as the % change in price
4.  $E_s>1$  – elastic supply
5.  $E_s=\infty$  – perfectly elastic supply – producers are willing to supply as much as they can at one particular price and supply nothing at any other price

## NATURAL CONSTRAINTS

Goods and services requiring time, skills or techniques generally have an inelastic supply.

There are some special types of goods for which supply cannot change no matter the length of time allowed for change:

1. Land surface, ocean surface and other natural resources
2. Sector mobility – the ease with which factors of production can be moved from one use to another will affect elasticity of supply. The higher the sector mobility, the greater will be the elasticity.
3. Risk taking – the more willing entrepreneurs are to take risks, the greater will be the elasticity of supply. It will be partly influenced by the system of incentives in the economy. If for example the rate of tax is very high it may reduce the elasticity of supply.

The concept of elasticities of demand and supply has a widespread use:

- It can be applied to exports and imports to assess the effects of depreciation in the currency
- Firms are concerned with it in their price and output policy
- The chairman of the exchequer will be concerned with it in determining the level of taxes (exchequer – government department dealing with collection and care of national revenue)

## EXAMPLE

Below is the supply schedule for daffodils in the springtime.

Price per bunch of five daffodils	Quantity supplied per month
\$1	10 000
\$2	12 000

$$\% \text{ change in quantity supplied} = \frac{12000 - 10000}{10000} \times 100 = 20\%$$

$$\% \text{ change in price} = \frac{2 - 1}{1} \times 100 = 100\%$$

$$E_s = \frac{\% \Delta \text{in Quantity Supplied}}{\% \Delta \text{in Price}} = \frac{20}{100} = 0.2$$

The price elasticity of supply of daffodils is less than one, that is supply is price inelastic. This is because even if there is a large rise in price more daffodils cannot be grown very quickly.

### Determinants of elasticity of supply

#### 1. The availability of resources (substitutes)

Substitutes here are not consumer substitutes, but producer substitutes. These are goods, which a producer can easily produce as alternatives. For instance one model of car is a good producer's substitute for another model. On the other hand oranges don't have so many substitutes, which means that the farmer cannot easily switch from the production of oranges to car production.

- Ø If a product has many substitutes, then producers can easily alter the pattern of production if its price rises or falls. Its elasticity will be relatively high.
- Ø If producers have no alternative to substitute goods and it is difficult to change the pattern of production if the prices changed, the price elasticity of supply will be low.

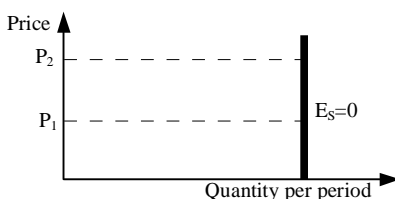
If a firm wishes to expand production it will need more of the factors of production of land, labour and capital. If the economy is already using most of its scarce resources then firms will find it difficult to employ more and so output will not be able to rise. The supply of most goods and services will therefore be price inelastic.

If, however, there is much unemployment of resources, for example, labour, firms will be able to use them when they want to raise output and supply will be more price elastic.

#### 2. Time

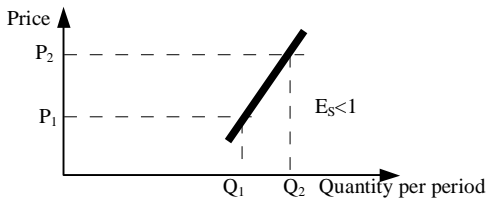
The daffodil example illustrates how the price elasticity of supply can vary over time. Supply of most goods and services, including daffodils, will be fixed at any one moment in time.

For example, a shop will only have a certain amount of records, books, joints of beef. A market stall will only have a fixed amount of daffodils to sell. It will take time to get more of these things. In this special case the supply curve is a vertical line showing that whatever the price the quantity supplied will be the same.



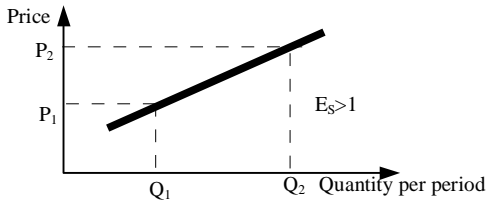
**Perfectly price inelastic**, that is, price elasticity of supply is 0, when supply at any one moment is fixed- **momentary period**

In the short run, firms can produce some more goods for sale, but only by using more labour, that is, by working overtime or employing more workers. More daffodils can be picked and sent to the market as price rises. However, supply can only rise a little because the amount of land, seeds and the season needed to grow the daffodils, will soon run out.



Supply is **price inelastic** in the **short run**. – A rise in price from  $P_1$  to  $P_2$  causes only a small extension in supply from  $Q_1$  to  $Q_2$ .

In the long run, firms can obtain more labour, land and capital to expand their scale of production, so in the long run supply becomes more price elastic.



Supply is **price elastic** in the **long run** - a rise in price from  $P_1$  to  $P_2$  causes a large extension in supply from  $Q_1$  to  $Q_2$ .