Chapter - 2 Unit - 3

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Supply

Expectation of change in price
If price is expected to rise in near future — Supply ↓

If price is expected to fall in near future — Supply ↑

Number of firms
No. of firms ↑ Supply ↑
No. of firms ↓ Supply ↓

other factors affecting supply.
govt. Industrial & ~~foreg~~ foreign policy
Goal of firm.
Infrastructural facilities, Natural factor
Man made factors such as labour, war, strike etc.

Supply function

Dependent = F (Independent variable)

Supply = F (P_x, P_s, P_o, T, G)

Functional — determinants

66 The functional relation between supply & it determinants (factors affecting supply) is called supply function.

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Supply schedule

The tabular presentation of relation between price of a good & quantity supplied

- Individual Supply Schedule
  - The tabular presentation of relation b/w price & quantity supplied for 1 firm
- Market supply schedule
  - All firm

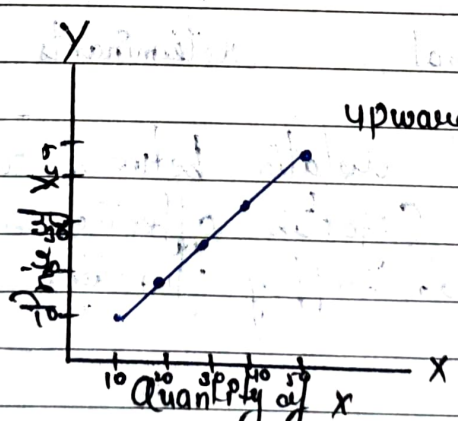
P_x	Q_{sx}
1	10
2	20
3	30
4	40
5	50

$P_x \uparrow$: $Q_s \uparrow$

$P_x \downarrow$: $Q_s \downarrow$

→ Supply curve ←

The graphical presentation of relation b/w price & quantity supplied



SS = Supply curve

Supply curve is upward slopig due to direct relation b/w price & qty supplied.

Law of supply ←

Law of supply states, the direct relation b/w price & quantity supplied of a good, when other factors remain constant.

Ceteris paribus

$P_x \uparrow \; Q_{S_x} \uparrow$
$P_x \downarrow \; Q_{S_x} \downarrow$

→ ELASTICITY OF SUPPLY ←

Responsiveness of quantity supplied due to change in price

(I) E/C :- Coefficient of elasticity

$$e = \frac{\% \text{ } \Delta \text{ in quantity supplied}}{\% \text{ } \Delta \text{ in price of good}}$$

eg: if % change in P = 20%
% change in Q.S = 40%

$$e = \frac{40}{20} = 2$$

P↑ Qs↑ [e = +ve]

(II) $$e = \frac{\% \text{ } \Delta \text{ in } Q_S}{\% \text{ } \Delta \text{ in } P} = \frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100}$$

$$e = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}, \quad e = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

$$e = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Here = $\Delta Q = Q_1 - Q$
$\Delta P = P_1 - P$
Q = initial qty
P = initial price

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eg: P=10 Q=100

$P_1 = 12 \quad Q_1 = 200$

$$e = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$e = \frac{100}{2} \times \frac{10}{100} = 1$$

eg:3 P = 10 Q = 80 e = 2

$P_1 = 12 \quad Q_1 = ?$

$$2 = \frac{Q_1 - 80}{2} \times \frac{10}{80}$$

$$32 = Q_1 - 80$$

$$112 = Q_1$$

eg:4 P = 10 $Q_1 = 100$ e = 1

$P_1 = ? \quad Q_2 = 120$

$$1 = \frac{20}{P_1 - 10} \times \frac{10}{100}$$

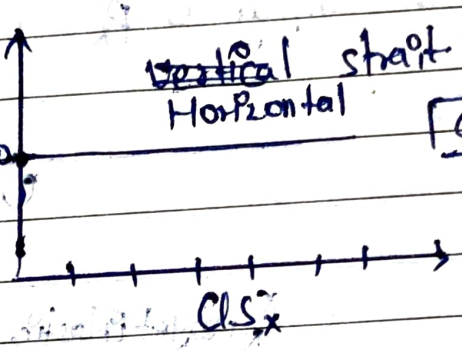
$$P_1 - 10 = 2$$

$$P_1 = 12 \quad \text{Ans.}$$

→ Degree Of Elasticity Of Supply ←

Perfect Elastic – No change in price and full response by supply

$$e = \frac{\% \Delta \text{ in } Qs}{\% \Delta \text{ in } P} = \frac{0}{\%} = \infty$$

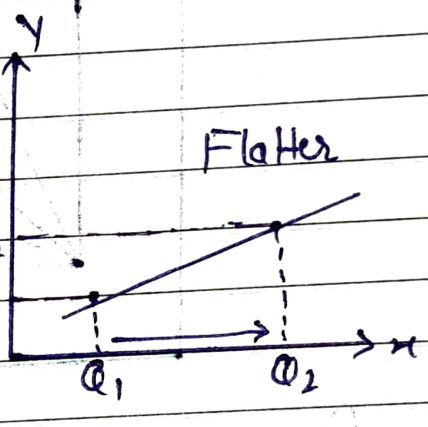


Elastic

% Δ in Qs > % Δ in P

50% > 10%

$e > 1$

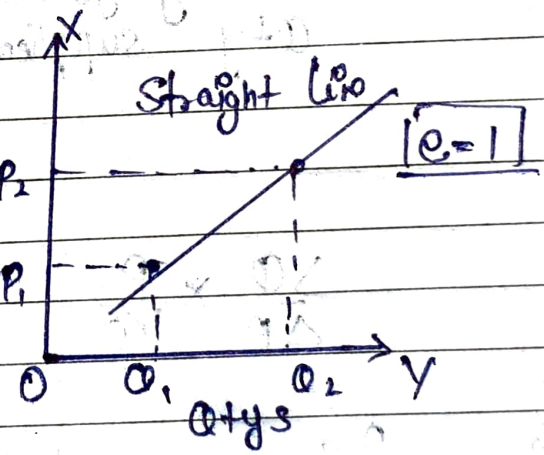


Unitry Elastic

% Δ P in Qs = % Δ in P

20% = 20%

$e = 1$

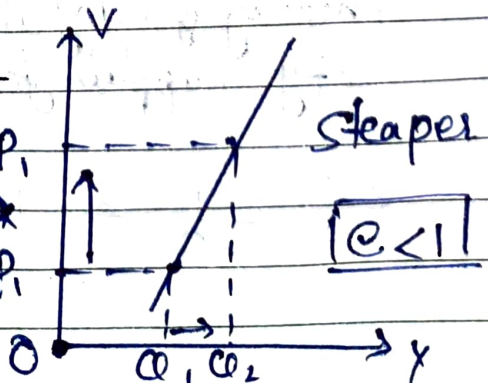


Highly Inelastic –

% Δ in Qs < % Δ in P P1

10% < 60%

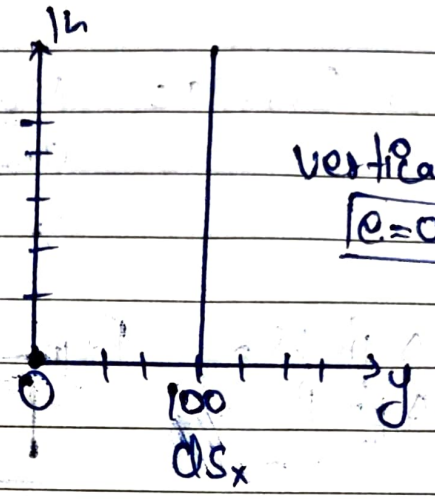
$e < 1$

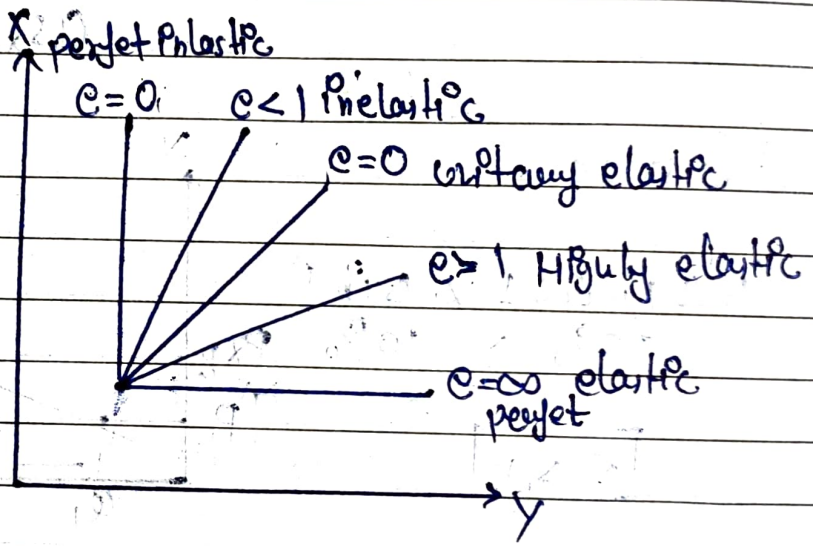


V PERFECTLY INELASTIC –

% Δ in Price
Change in supply = 0 Px

$e = 0$





eg: Price of good ↑ from 15 to 19 p.u
Qty supplied ↑ from 75 to 95 unit

$e = ?$

$$\frac{\Delta Q}{\Delta P} \times \frac{P}{Q} \Rightarrow \frac{20}{4} \times \frac{15}{75} = 1$$

eg: Price of good fall by 20%.
Qty supplied fall by x.

$$e = \frac{25}{20} = 1.25 > 1$$

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Point Elasticity Method

* $Q = 100 + 10P$ $\quad e_s = ?$

$$e_s = \frac{dq}{dP} \times \frac{P}{Q}$$

$\frac{dq}{dP}$ = differentiation of supply function with respect to P

P = price, Q = qty

eg: given supply function $Q = -100 + 10P$, $P = ₹15$

(i) Q = ?

(ii) e_s = ?

Sol (i) $Q = -100 + 10P$

$Q = -100 + 150$

$Q = 50$

(ii) $e_s = \frac{dq}{dP} \times \frac{P}{Q}$

$e_s = 10 \times \frac{15}{50}$

$e_s = 3$

eg 2 $Q = -10 + 2P$ $\quad P = 10$

(i) Q = ?

(ii) e_s = ?

$Q = 10$

$e_s = 2 \times \frac{10}{10}$

$= 2$

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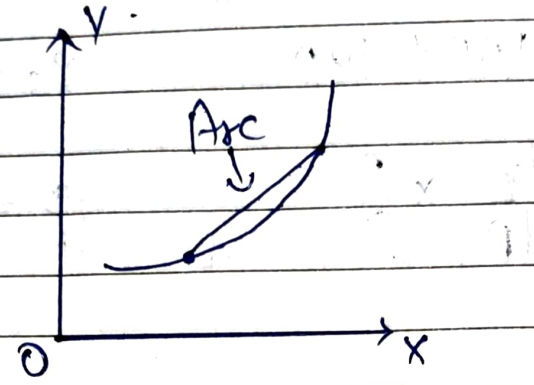
Arc Elasticity



$$e_s = \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

eg:- $P_1 = 10$ $\quad Q_1 = 50$ $\quad e_s = ?$ (Arc Method)
$P_2 = 12$ $\quad Q_2 = 60$

$$\frac{60-50}{60+50} \times \frac{12+10}{12-10}$$

$$e_s = \frac{10}{110} \times \frac{22}{2} = 1 \quad \boxed{e = 1}$$

Compeclete formula

1. $e = \frac{\%\ \Delta \text{ in } Q_S}{\%\ \Delta \text{ in } P}$

2. $e = \frac{\Delta Q}{\Delta P} \times \frac{Q}{} \quad \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

3. $e_s = \frac{dq}{dp} \times \frac{P}{Q}$ [Point elasticity]

4. $e_s = \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$ [Arc Elasticity]

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Determinats of Elasticity of S

Cost of production (COP):
COP ↑ Less Elastic
COP ↓ More Elastic

Complexity:
More Complex — Less Elastic
Less Complex — More Elastic

Time period
Longer the time — More Elasticity
smaller the time — Less Elasticity

No. of firms
Large number of firms — More Elastic
Small number of firms — Less Elastic

Capacity of working
Full capacity — More Elastic
Spare Capacity — Less Elastic

Availability of Raw material
~~Easily~~ Easily Available — More Elastic
Difficult to Available — Less Elastic

Mobility of factor
Easily mobile — more elastic
Can't mobile/switch — less elastic

Greater substitutability
Greater substitute availa. — More elastic
Lesser " " — Less elastic

Expectation about future price
Rise in future price — Less elastic
80/- → 100/-

Fall in future price — More elastic
80/- → 60/-