FRANKLIN'S LECTURES

INDUSTRIAL ECONOMICS & FOREIGN TRADE

Module 1

Part-4

HUT 300

SUPPLY – LAW OF SUPPLY AND DETERMINANTS OF SUPPLY:

What is Supply?

- Supply refers to the quantity of a good or service that producers are **willing and able to offer for sale** at various prices during a given period of time.
- It shows a **direct relationship** between price and quantity supplied

FACTORS AFFECTING SUPPLY

Price of Inputs (Raw Materials)
Goals of the firm
Price of other commodities
Price of factors of production
Technology
Government Policies (Taxes & Subsidies)

Supply Function

A **Supply Function** shows the **mathematical relationship** between the **quantity supplied** of a good and the **factors affecting it**, mainly **price**

Basic (Price-Dependent) Supply Function:

$$Q_s = f(P)$$

Where:

- Q_s = Quantity Supplied
- P = Price of the good
- f = function of

This means:

Supply depends on price – as price increases, supply increases

Law of Supply:

- The Law of Supply states that, **other things being equal**, as the **price of a good rises**, the **quantity supplied also rises**, and vice versa.
- This is because higher prices give producers an incentive to increase production.

Why it Happens:

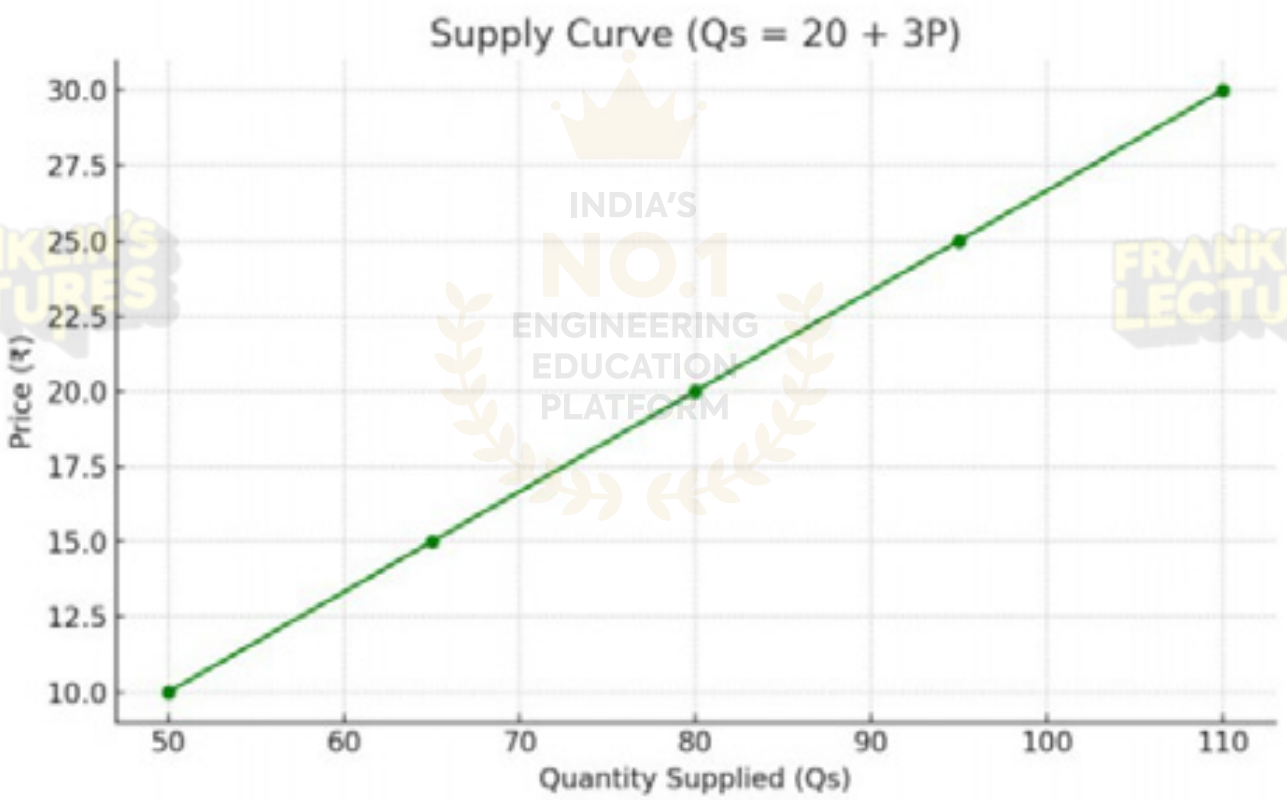
- Producers aim to **maximize profits.**
- When prices increase, production becomes more **profitable**, so suppliers are willing to produce and sell more.

Supply Curve:

- The supply curve is generally **upward sloping**, from left to right.

Example:

- If the price of wheat increases, farmers may decide to use more land and labor to produce more wheat.


Supply Curve (Qs = 20 + 3P)
Price (₹)
30.0
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
50
60
70
80
90
100
110
Quantity Supplied (Qs)

Changes in Supply

- Movement Along the Supply Curve
- Shift of the Supply Curve

Movement vs Shift in Supply

1. Change in Quantity Supplied
(Movement Along the Supply Curve)

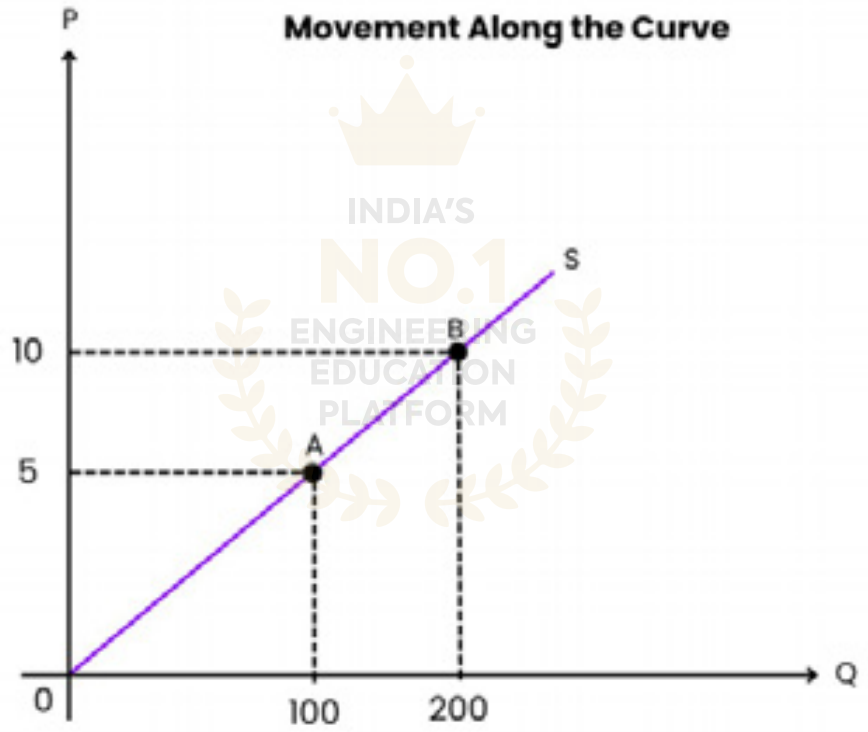
Reason: Change in the **price of the good itself**

- Price ↑ → Quantity Supplied ↑ → **Expansion (Upward movement)**
- Price ↓ → Quantity Supplied ↓ → **Contraction (Downward movement)**

Same curve, point moves up/down

Example:

Pen price increases from ₹10 to ₹12 ⟶ seller supplies more pens


Movement Along the Curve
P
S
B
10
A
5
0
100
200
Q

2. Change in Supply

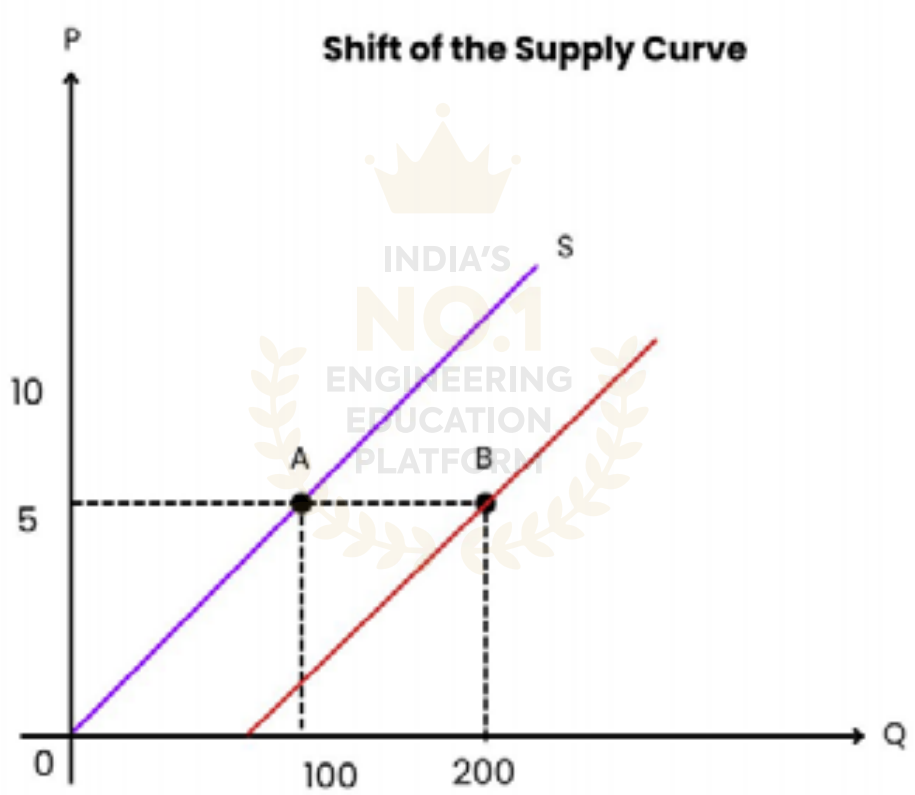
(Shift of the Supply Curve)

Reason: Change in **non-price factors,** like:

- Input cost
- Technology
- Govt policies
- Sellers
- Expectations
- Climate, etc
- Supply ↑ → Curve shifts **right**
- Supply ↓ → Curve shifts **left**

Example:

New machine reduces production cost → Supply ↑ (right shift)


Shift of the Supply Curve
P
S
10
5
A
B
0
100
200
Q

Elasticity of Supply

Elasticity of Supply measures how much the **quantity supplied** of a good changes in response to a **change in its price**

Formula:

$$\text{Elasticity of Supply (Es)} = \frac{\%\text{ change in quantity supplied}}{\%\text{ change in price}}$$

Types of Elasticity of Supply (Es)

Perfectly Inelastic Supply (Es = 0)

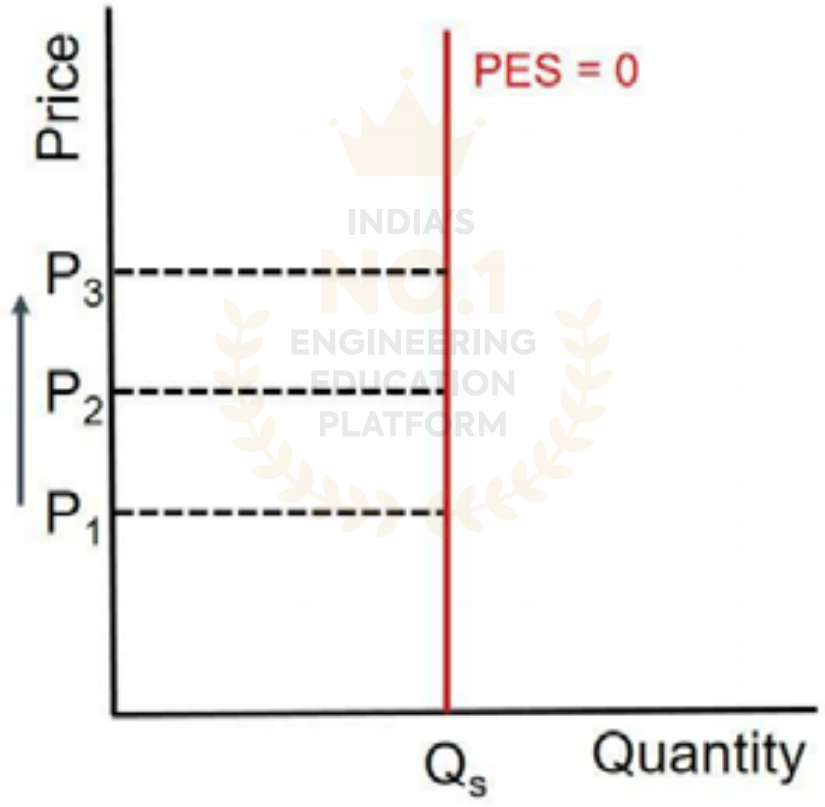
Meaning:

Price changes, but **quantity supplied remains the same.**

Graph: Vertical supply curve

Example:

- Land in a city (limited, fixed)
- Seats in a stadium — can't be increased even if ticket price doubles


Price
PES = 0
P_3
P_2
P_1
Q_s
Quantity

Relatively Inelastic Supply (Es < 1)

Meaning:

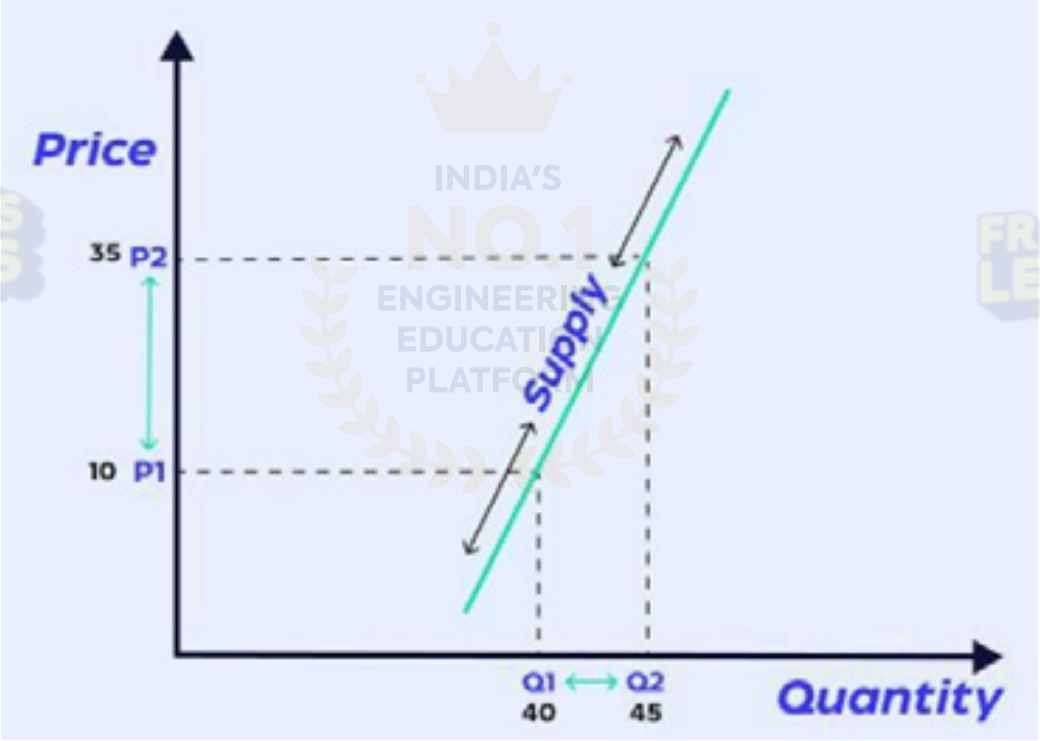
Price increases → quantity supplied increases **slightly**

Price decreases → supply drops **slightly**

Graph: Steep upward slope

Example:

- Agricultural produce in short run (like rice)
- Electricity supply (can't ramp up quickly)


Price
35 P2
10 P1
Supply
Q1 ⟷ Q2
40 45
Quantity

Unitary Elastic Supply (Es = 1)

Meaning:

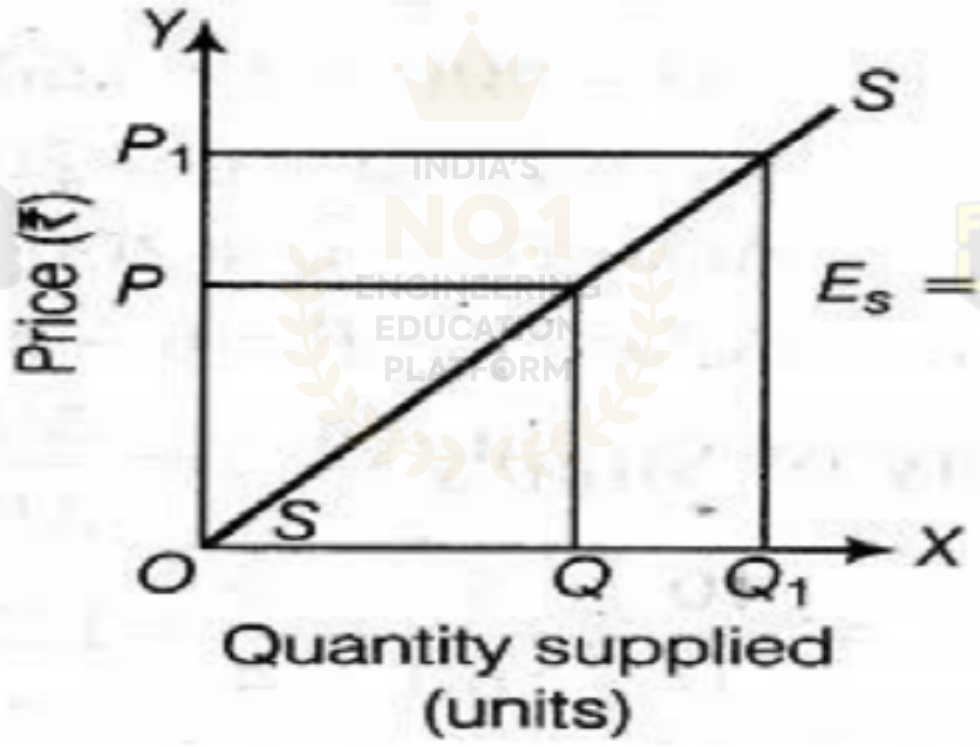
% change in price = % change in quantity supplied

⟶ Perfectly proportionate response

Graph: Straight line from origin

Example:

- Mid-scale manufacturing industries where supply changes proportionally with market price


Y
S
P_1
P
Price (₹)
$E_s = 1$
S
O
Q
Q_1
X
Quantity supplied
(units)

Relatively Elastic Supply (Es > 1)

Meaning:

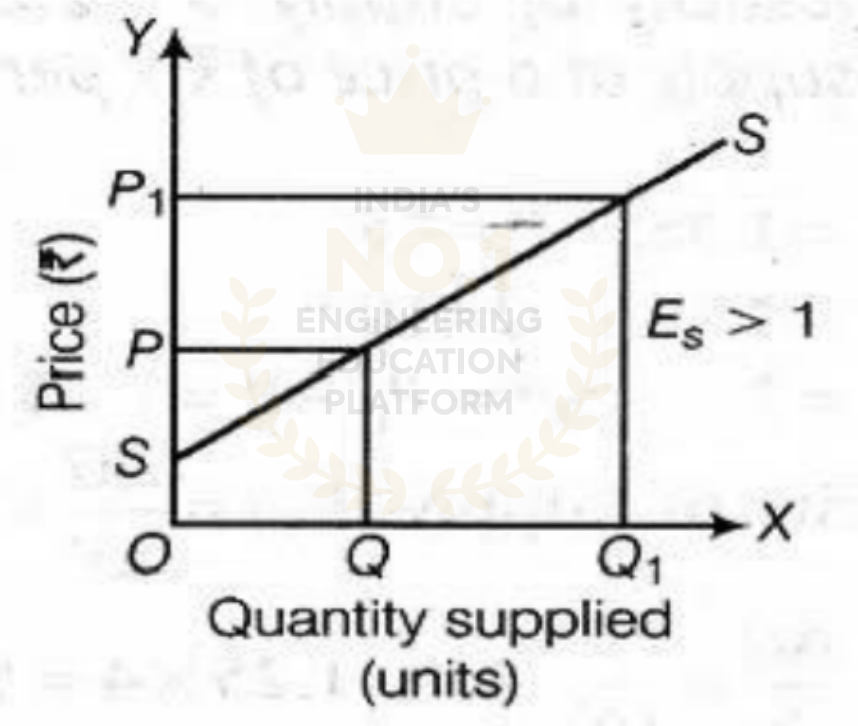
Small change in price $\longrightarrow$ **larger** change in quantity supplied

Graph: Flat upward slope

Example:

Garment industry (easy to increase supply with available labor/machines)

Mobile accessories (quick to produce)


Y
S
P_1
P
S
Price (₹)
$E_s > 1$
O
Q
Q_1
X
Quantity supplied
(units)

Perfectly Elastic Supply (Es = ∞)

Meaning:

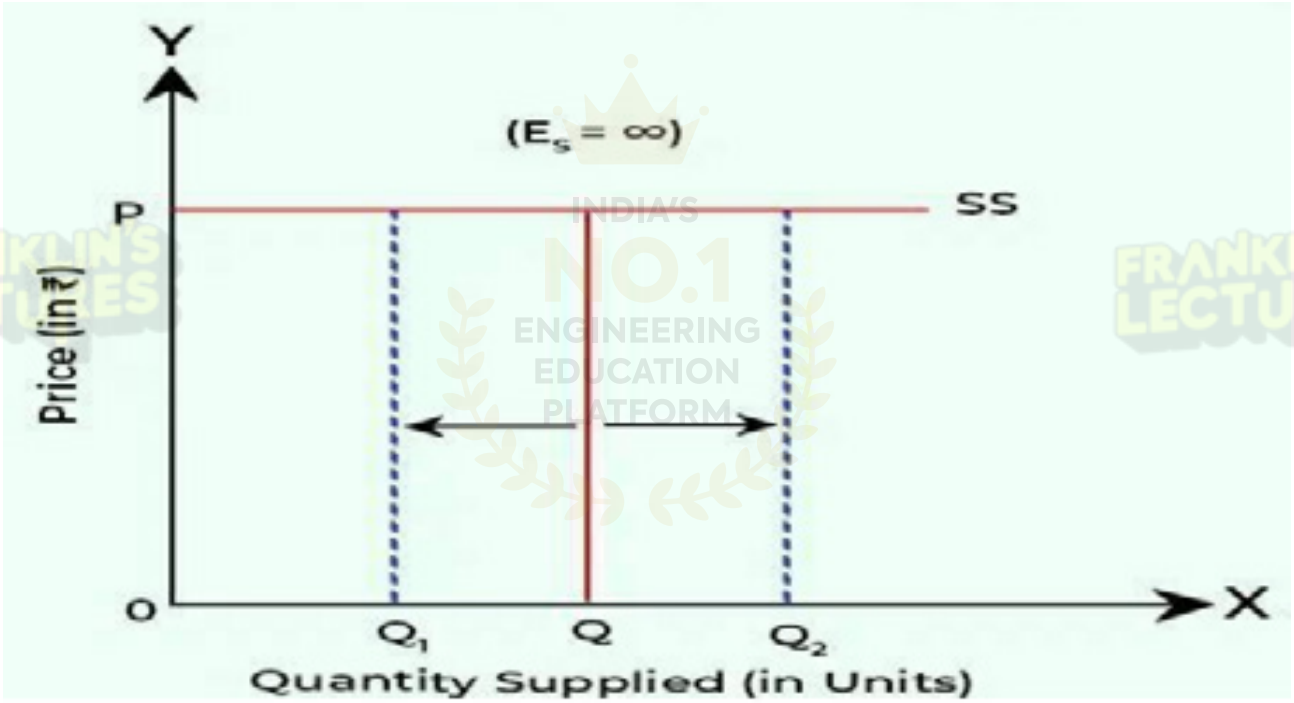
Even **tiny change in price** causes **infinite change in supply**

→ Seller will supply any quantity, but **only at one price**

Graph: Horizontal line

Example:

- Highly competitive markets under theoretical conditions
- Agricultural produce (e.g., wheat) in open perfect competition market


Y
$(E_s = \infty)$
P
SS
Price (in ₹)
O
X
Q_1
Q
Q_2
Quantity Supplied (in Units)

Equilibrium – Changes in Demand and Supply and Its Effects:

Equilibrium is the point where the quantity **demanded equals the quantity supplied** at a specific price. It is the **stable point** in the market where there's no tendency for price to change

What happens at equilibrium?

At Equilibrium	Outcome
Quantity Demanded = Supplied	Market is stable (no surplus or shortage)
No Pressure to Change Price	Buyers & Sellers are satisfied

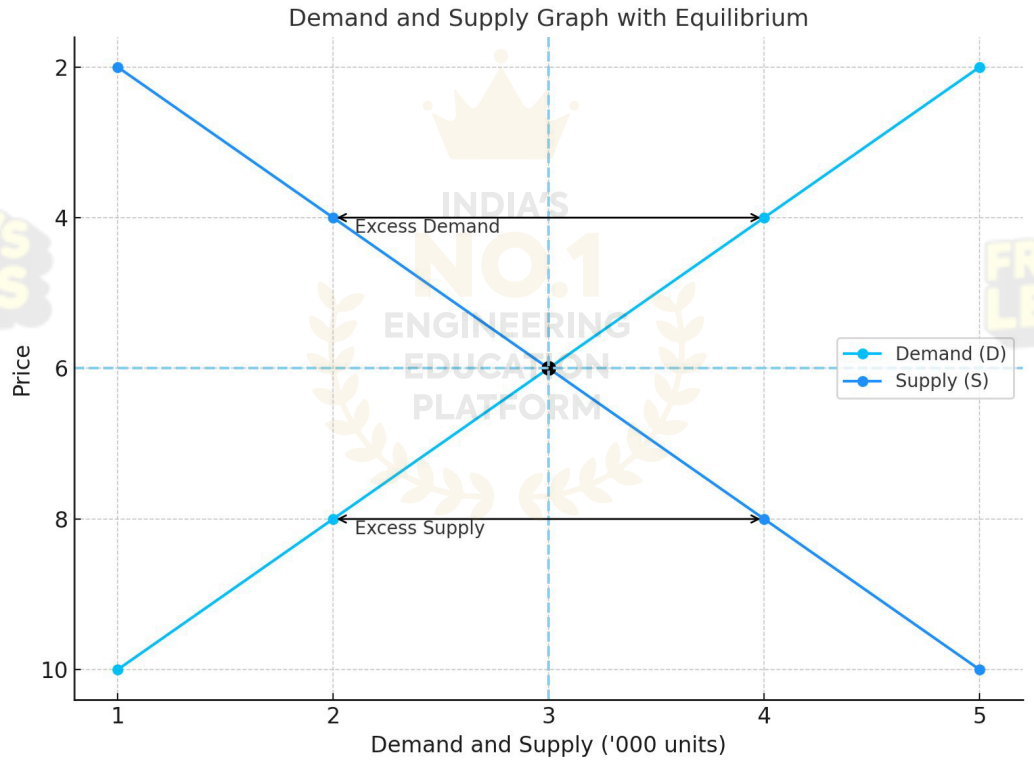
Equilibrium Price

The **equilibrium price** is the **price at which quantity demanded equals quantity supplied.**
It is the "**market-clearing" price**, where there is **no excess demand or supply.**

Equilibrium Quantity

Equilibrium Quantity is the quantity of a good or service that is **bought and sold** when the **market is in equilibrium** — i.e., when **demand equals supply.**

Price (Rs.)	Market Demand (Units)	Market Supply (Units)	Equilibrium Status
8	1000	5000	Excess Supply
7	2000	4000	Excess Supply
6	3000	3000	Market Equilibrium
5	4000	2000	Excess Demand
4	5000	1000	Excess Demand


Demand and Supply Graph with Equilibrium
Price
2
4
6
8
10
1
2
3
4
5
Demand and Supply ('000 units)
Excess Demand
Excess Supply
Demand (D)
Supply (S)

What happens when demand or supply changes?

- **Increase in Demand (with supply constant):**
  - The demand curve shifts to the right.
  - Result: **Higher price and higher quantity**
  - Example: During summer, demand for ice creams increases $\longrightarrow$ price and sales increase.

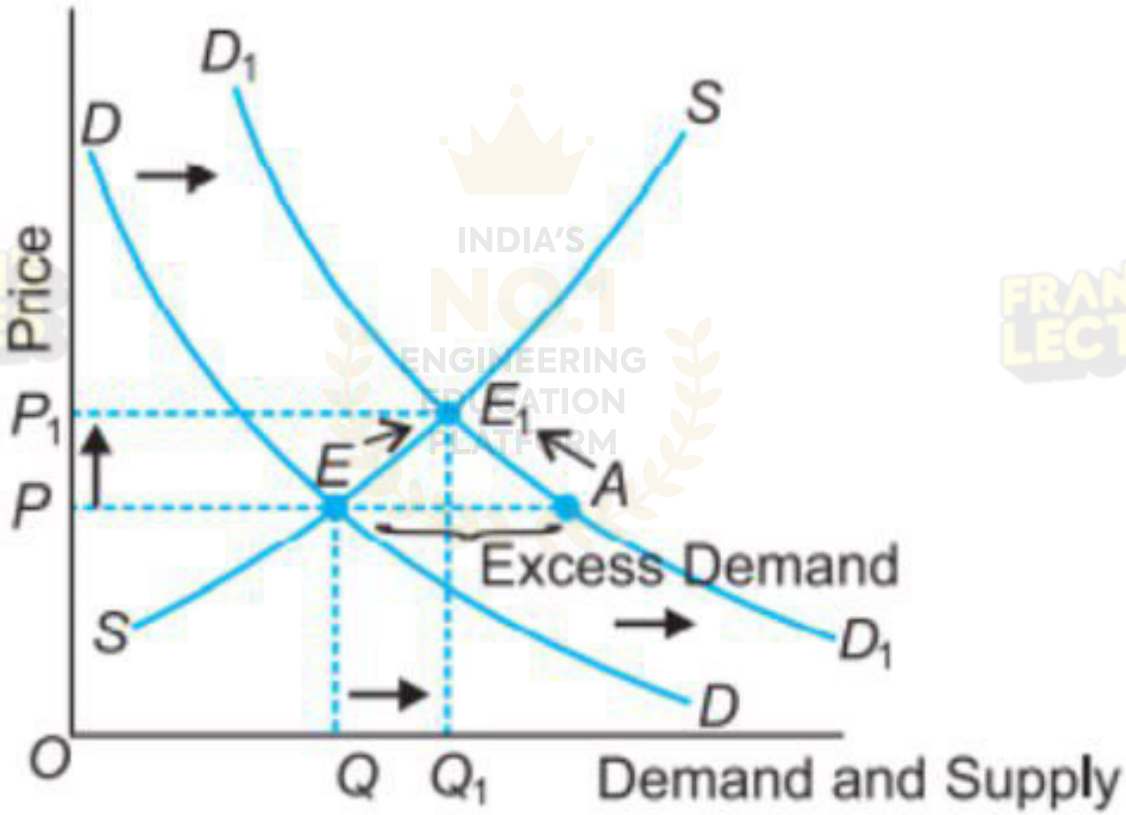
- **Increase in Supply (with demand constant):**
  - The supply curve shifts to the right.
  - Result: **Lower price and higher quantity**

  Example: If more farmers start growing tomatoes, the market price may fall

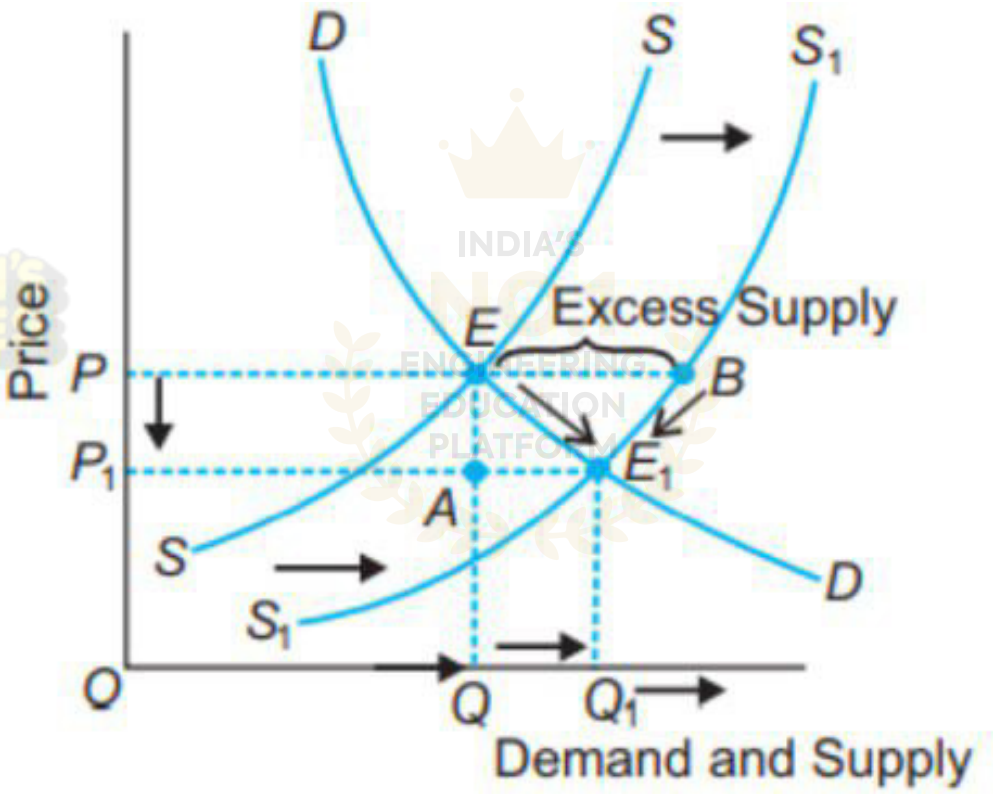
- **Decrease in Demand:**
  - Demand curve shifts left → price and quantity both fall

- **Decrease in Supply:**
  - Supply curve shifts left → price rises, quantity falls.

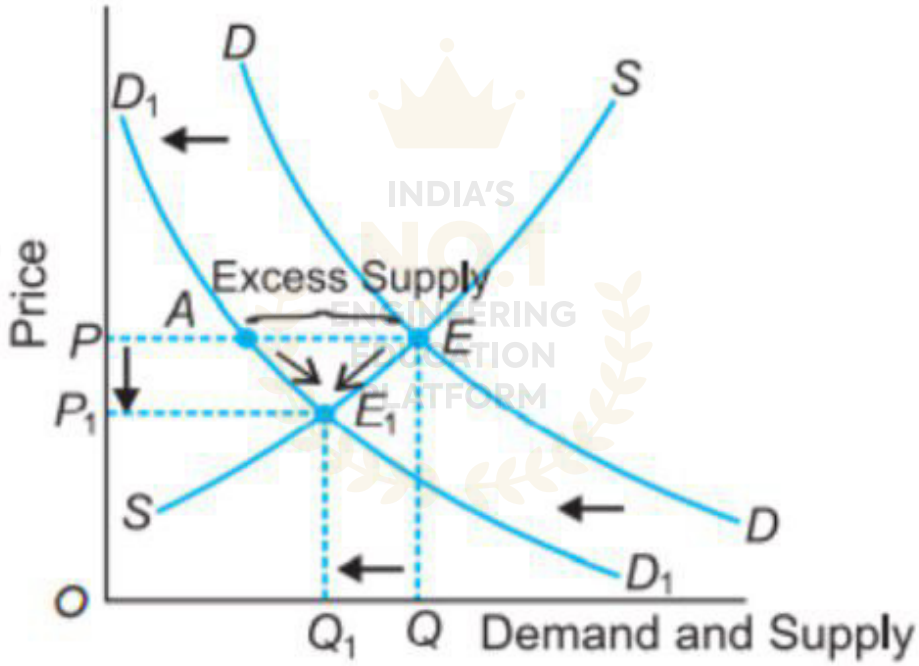
Increase in demand



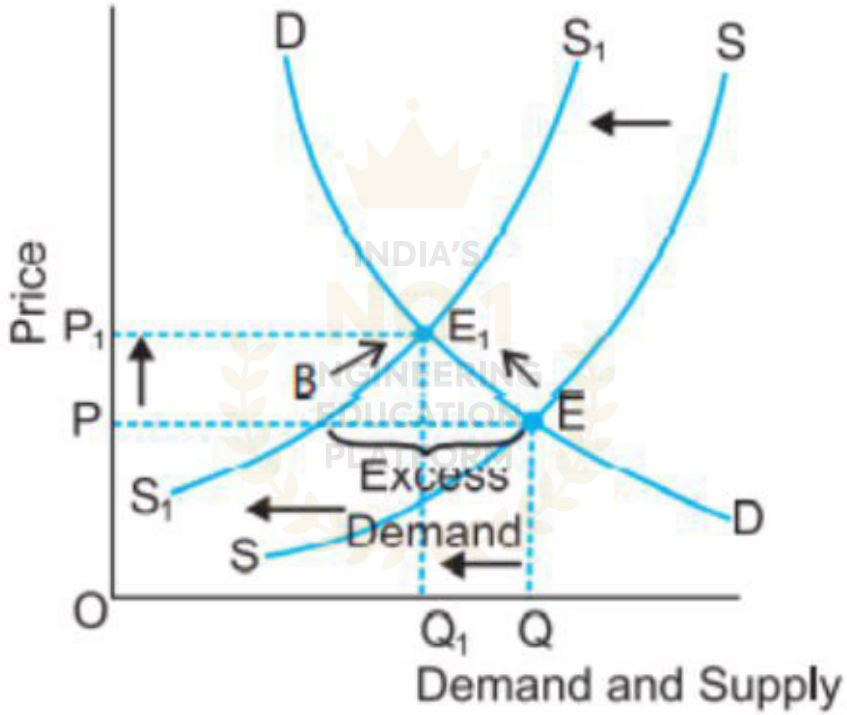
Increase in supply



Decrease in demand



Decrease in supply



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Consumer Surplus

Consumer Surplus:

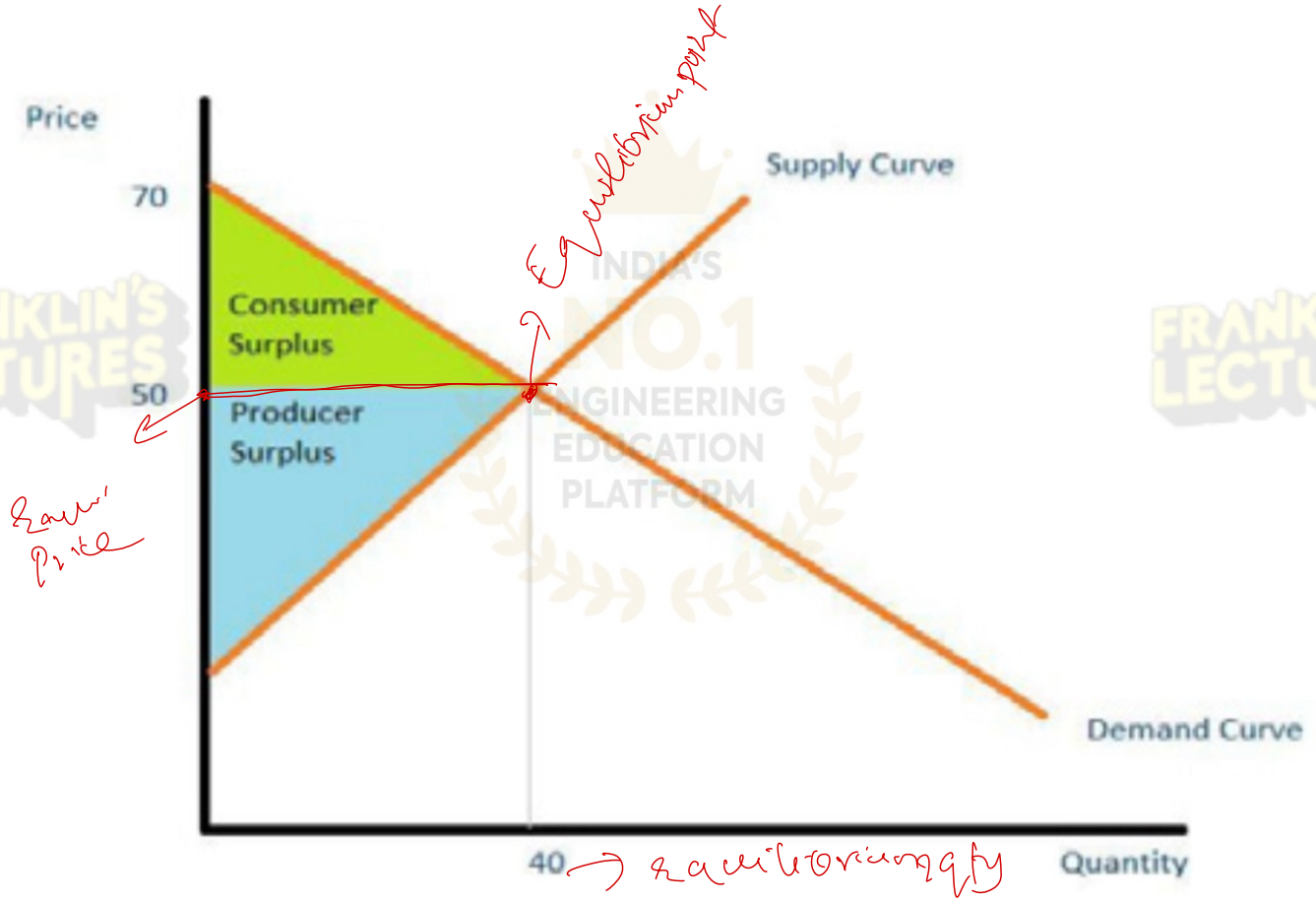
- Consumer surplus is the **extra benefit** that consumers receive when they pay less for a product than the maximum price they were willing to pay.
- It is the area **above the market price** and **below the demand curve.**

Example: If you're willing to pay ₹100 for a T-shirt but buy it for ₹70, your surplus is ₹30.

Producer Surplus

- Producer surplus is the **extra earnings** that producers receive when they sell a product for more than the minimum price they would accept.
- It is the area **below the market price** and **above the supply curve.**

Example: A seller is ready to sell a product at ₹50 but sells it for ₹70 ⟶ surplus = ₹20.


Price
70
50
Consumer Surplus
Producer Surplus
Supply Curve
Demand Curve
40
Quantity

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Q. The demand function of a product is given as D=60 - 2P and the supply function S=30 + 4P. Estimate Equilibrium price and equilibrium quantity. Also find the excess supply when Price equals Rs.6? (2022,7 marks)

P → ₹1 ↑ D → 2 units ↓

P → ₹1 ↑ S → 4 units ↑

D = 60 units

P = 0

At equilibrium

Qty supplied = Qty demanded

$30 + 4p = 60 - 2p$

$4p + 2p = 60 - 30$

$6p = 30 \qquad p = \frac{30}{6} = 5$

Eq qty $= 30 + (4 \times 5) = 50$ units

Eq price $= 5$ Eq qty $= 50$ units

When price = ₹6

Demand = $60 - (2 \times 6)$

$= 60 - 12 = 48$ units

Supply = $30 + (4 \times 6)$

$= 54$ units

6 units excess supply

Taxation

Taxation is a **compulsory financial charge** imposed by the **government** on individuals or firms to fund **public expenditures** like infrastructure, health, education, etc.

Types of Taxes
Direct Tax : Paid directly by the person/entity
Indirect Tax : Collected from consumers by sellers

Deadweight Loss (DWL)

Deadweight Loss is the **loss of total economic welfare** (consumer + producer surplus) that occurs when market equilibrium is disturbed — usually due to **taxes, subsidies, price controls, or monopolies**

It represents the **missed trades** that could have benefited both buyer and seller but no longer happen due to market distortion

A deadweight loss is the irrecoverable reduction in economic efficiency that occurs when a free-market equilibrium is disturbed by a market intervention or other shock to supply and/or demand

Why Does DWL Occur?

When a **tax** is imposed:

- Price paid by **consumers increases**
- Price received by **producers decreases**
- **Fewer units are sold** compared to equilibrium
- The trades that no longer happen cause a **loss of welfare** to society

- DWL = **Loss to society** ⟶ Not gained by government or anyone
- Larger when:
  - Tax is high
  - Demand or supply is elastic (more responsive to price changes)

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Q. Diagrammatically explain deadweight loss of taxation.Examine the consumer and producer surplus before and after a tax with the help of a diagram. (2024,7 marks)

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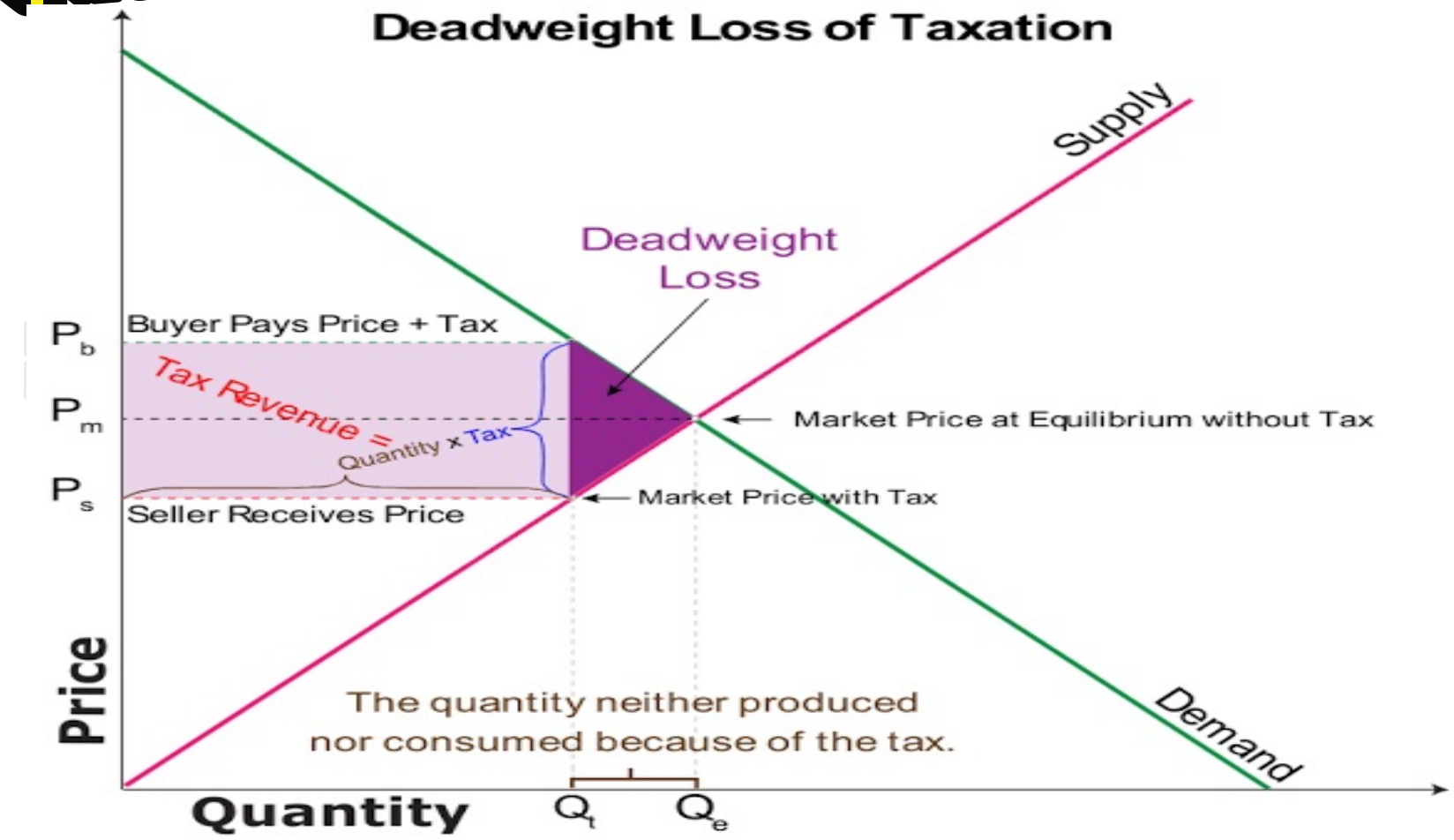

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THANK YOU