

Econ-Hub **Rapid Revision** Classes

Market Economics

Market Equilibrium Analysis

Unit [2] - BOOK [4]

Theory Recap Material [TRM]

2027 A/L Edition





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Theory Recap Material [TRM]
Input for Practice Questions [PQs]

Essentials

05

[TRQ: 1] What is meant by a state of 'Market Equilibrium'? [03 marks]

[TRQ: 2] What is a 'Market in Disequilibrium' and outline its main properties [04 marks]

- If intended supply $>$ intended demand, price will fall [an excess supply disequilibrium condition]
- If intended supply $<$ intended demand, price will rise [an excess demand disequilibrium condition]
- If intended supply = intended demand, price stays the same [the equilibrium condition, while Excess demand = 0 and Excess supply = 0]
- Realised supply $\equiv$ realized demand, at all prices (this is an 'identity')

[TRQ: 3] The market supply and demand equations of a given product is $[Q_s = 40 + 10P]$ and $[Q_d = 100 - 10P]$, answer the following question based these equations:

(I) Estimate the equilibrium price and quantity of this product in the following methods:

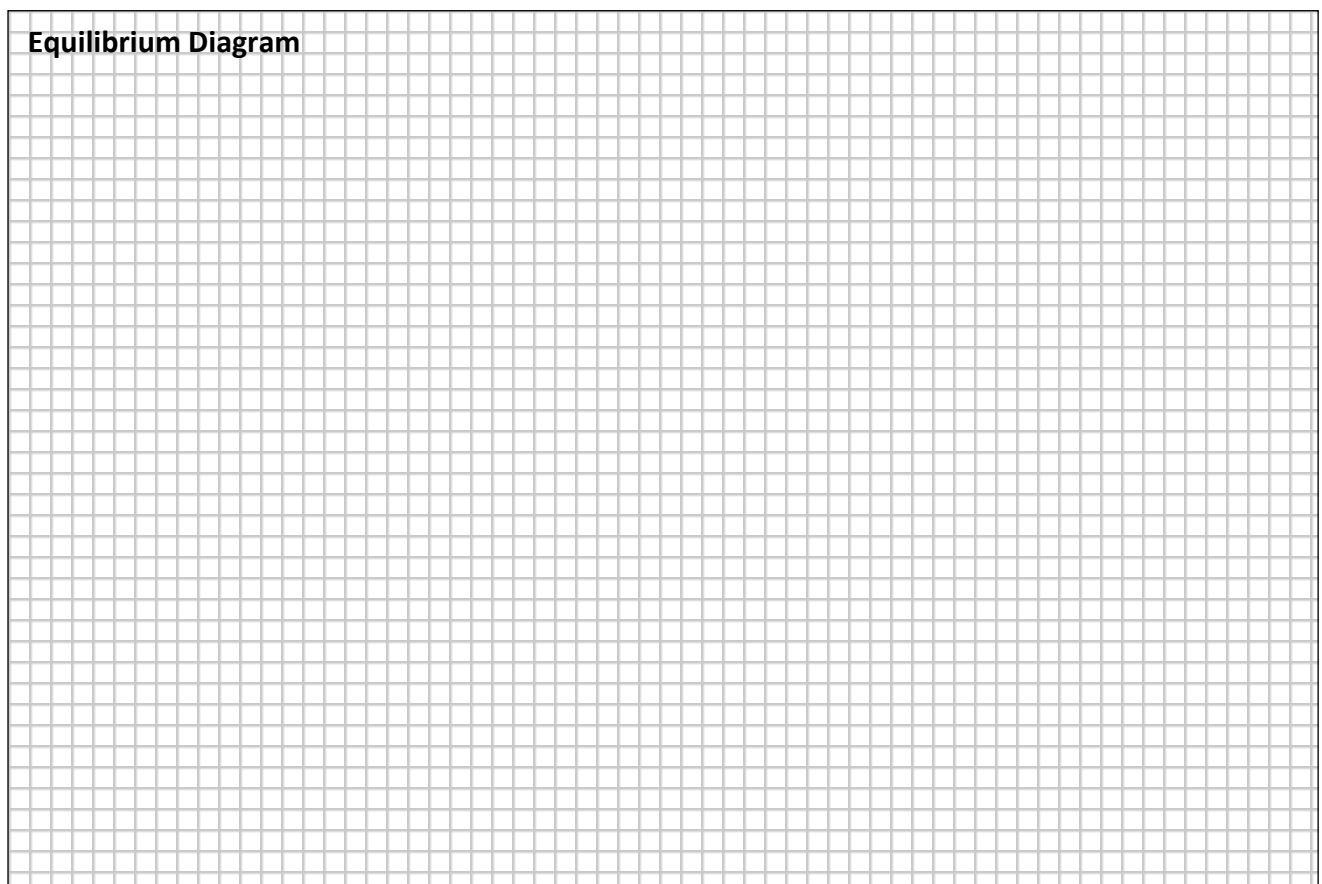
- (A) Market demand and supply schedules (schedule given)
- (B) Market equilibrium diagram
- (C) Market demand and supply equations

(II) Derive the market Excess Demand and Excess Supply equations

(A)

Price (Rs)	Qd	Qs	Ed	Es
00				
01				
02				
03				
04				
05				
06				

(B)



(C)

[illegible]

(II)

[illegible]

Also Relevant [3]:

Change in Equilibrium: a change in equilibrium occurs when there is a **change in factors underlying market demand and supply** (i.e. a change in non-price factors). Such changes are summarized in to 'Demand Rules' and 'Supply Rules'.

Demand Rules: [1] $\Delta D \uparrow \rightarrow \Delta P \uparrow$ and/or $\Delta Q \uparrow$

[2] $\Delta D \downarrow \rightarrow \Delta P \downarrow$ and/or $\Delta Q \downarrow$

Supply Rules: [1] $\Delta S \uparrow \rightarrow \Delta P \downarrow$ and/or $\Delta Q \uparrow$

[2] $\Delta S \downarrow \rightarrow \Delta P \uparrow$ and/or $\Delta Q \downarrow$

[TRQ: 4] Briefly explain what is meant by an ‘Economic Surplus’ in the context of a liberal competitive market

[03 marks]

Economic Surplus: is the **benefits or gains** received by both **producers** (suppliers) and **consumers** (demanders), simply through the process of **participating** in the **equilibrium exchange**. Such economic surplus is said to be **optimize within a liberal competitive market**.

The **total utility exceeding total consumer expenditure** is the benefit received by consumers known as **consumer surplus** and the **total revenue exceeding the total variable cost of production** is denoted by **producer surplus**.

Accordingly economic surplus or the contribution to overall economic welfare at equilibrium is a combination of two main factors namely, consumer surplus and producer surplus

Alternatively:

Economic Surplus at Equilibrium:

Economic Surplus = Consumer Surplus + Producer Surplus

[TRQ: 5] Briefly describe what is meant by ‘Consumer Surplus’, and outline how it is estimated

[04 marks]

Consumer surplus is the **aggregate value** (total value) of the **positive differences** between the **prices** a **consumer** is **willing** and ready to pay (i.e., **marginal utility**) and the **actual price** paid for the equilibrium **quantity** of good **exchanged in the market**.

In other words, **consumer surplus** is the **total utility exceeding total consumer expenditure or outlay**.

Generic Formula

Consumer Surplus = $\frac{[\text{Maximum Demand Price} - E_p] \times E_q}{2}$

OR = $[(\text{Maximum Demand Price} - E_p) \times E_q] \times \frac{1}{2}$

[TRQ: 6] Assume the equilibrium price of a given product is **Rs. 20.00**. If the market demand function of this product is **$Q_d = 1000 - 20P$** . Estimate the total value of **consumer surplus** at equilibrium

[TRQ: 7] Briefly describe what is meant by ‘**Producer Surplus**’, and outline how it is estimated

[04 marks]

This is the **aggregate value** (total value) of the **positive differences** between the **minimum prices**, i.e., **marginal cost** a producer is expecting for a product and the actual price received in the market at the equilibrium level of exchange.

In other words, **producer surplus** is **total revenue exceeding the total variable cost of production**.

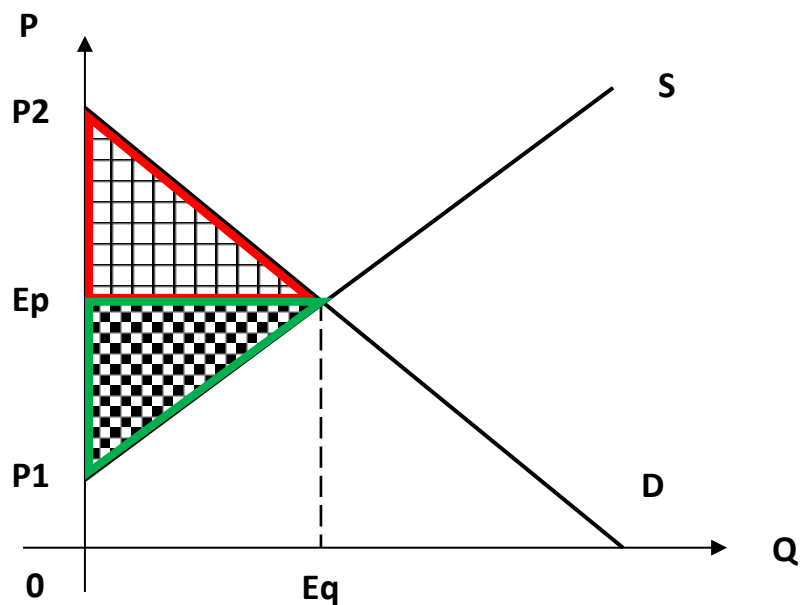
Generic Formula

$$\begin{aligned} \text{Consumer Surplus} &= \frac{[E_p - \text{Minimum Supply Price}] \times E_q}{2} \quad \text{OR} \\ &= [(E_p - \text{Minimum Supply Price}) \times E_q] \times \frac{1}{2} \end{aligned}$$

[TRQ: 8] Assume the equilibrium price of a given product is Rs. **20.00**. If the market supply function of this product is [$Q_s = -200 + 20P$]. Estimate the total value of **producer surplus** at equilibrium

[02 marks]

Also Relevant [4]: Visual Representations



Legends/Meaning of Notations

- P2 - Maximum Demand Price
 P1 - Minimum Supply Price
 Ep - Equilibrium (Mkt) Price
 Eq - Equilibrium (Mkt) Quantity



Consumer Surplus



Producer Surplus

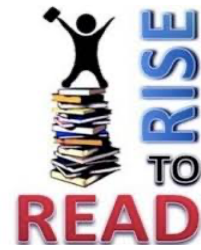
[TRQ: 10] If the demand and supply for a product traded in a competitive market are presented by the equations, $Q_d = 160 - 2P$ and $Q_s = -40 + 2P$ respectively, estimate the following:

- (A) Equilibrium price and quantity
(B) Consumer surplus at equilibrium
(C) Producer surplus at equilibrium
(D) Economic surplus at equilibrium

[02 marks each]

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Special - Theory Recap Questions [STRQs]: SPECIALLY DESIGNED FOR FURTHER learning & clarifications



STRQ [21]

Discuss the concept of competitive **Market Equilibrium** [05 marks]

As a general concept 'equilibrium is a **state of rest**, when there is no reason for anything to change unless disturbed by any outside shock'

[Powell, 1996: 45]

In order to understand the operations or functions of a free-market economy it is important to observe the **equilibrium level of exchange** created by the **interactions between market demand and supply forces**.

An equilibrium level of exchange is created in a situation where the purchasing plans of buyers [**intended demand**] and sales plans of suppliers [**intended supply**] reach a certain agreement. Market equilibrium comes at the **price** at which **quantity demanded equals quantity supplied**.

At that equilibrium, there is **no tendency for the price to rise or fall**. The equilibrium price is also called the '**market clearing price**'. This denotes that all supply and demand orders are filled, the books are 'cleared' of orders, and demanders and suppliers are satisfied. The mechanism that creates an equilibrium situation in a market by increasing and decreasing price through market demand and supply forces is the '**price mechanism or system**'.

At any point or situation apart from the equilibrium price the intended market demand and supply quantities will not be equal, this imbalance in the market will be termed as '**market disequilibrium**'.

The **conditions** (features) for competitive market equilibrium can be present in many different forms (in a situation of equilibrium...).

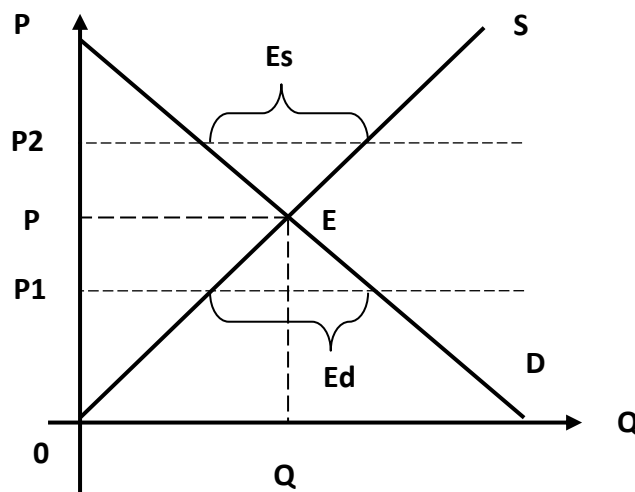
- The quantity demanded (Q_d) and quantity supplied (Q_s) will be equal [i.e. intended Q_d equals intended Q_s]
- There will not be any excess demand (E_d) or supply (E_s)
- Demand price (P_d) and supply (P_s) price will be equal
- Excess demand price (E_{dp}) and supply prices (E_{sp}) will be zero
- Plans or intentions of consumers and producers agree with each other
- Market forces causing changes in price and quantity are at a balance

Special Note [1]: Brief on 'Equilibrium Analysis'

Market equilibrium comes at the price at which **quantity demanded equals quantity supplied**. At that equilibrium, there is no tendency for the price to rise or fall.

The equilibrium price is also termed the '**market clearing price**'. This denotes that all supply and demand orders are filled, the books are 'cleared' of orders, and demanders and suppliers are satisfied.

The mechanism that creates an equilibrium situation in a market by increasing and decreasing price through market demand and supply forces is the '**price mechanism**'.



* Engage in a rigorous analysis of the above, market equilibrium diagram

Analysis

- **Equilibrium Level of Exchange:** the equilibrium price (E_p) and Quantity (E_q) is formed at the point at which the market demand and supply curves shall intersect (i.e. the point/price at which $Q_d = Q_s$).
- At any price below equilibrium price (e.g. P_1) there will be a shortage or excess demand ($E_d = Q_d > Q_s$) is created, while at any price above equilibrium price (e.g. P_2) an excess supply ($E_s = Q_s > Q_d$) or a surplus will be created in the market.
- A situation of (E_d) or (E_s) represents a market Disequilibrium; in a stable equilibrium such situation of market disequilibrium tends to be a temporary phenomenon in comparison to a market with an instable equilibrium

STRQ [22]

Discuss the following concepts relating to **Market Disequilibrium**

- **Excess Demand** (Market Shortages) – [Ed]
- **Excess Supply** (Market Surpluses) – [Es] **[04 marks each]**

Excess demand refers to a situation where at certain price quantity demanded is higher than the quantity supplied. Excess demand represents a shortage of goods in the market.

Excess supply is a situation where the quantity supplied is higher than the quantity demanded at given price. Excess supply represents a surplus of goods in the market.

Under a price that is decided within conditions of excess supply and demand there is no agreement between the plans of buyers and sellers, in such a situation price represents a high tendency to change. In a situation of excess demand there is a tendency for price increase and in a situation of excess supply there is a tendency for price to decrease.

As stated earlier such changes always move the market price towards equilibrium. Since this effect or tendency for price to change will exist at any price other than the equilibrium price this situation is known as '**competitive market disequilibrium**'.

The concept of excess demand can be presented using an excess demand schedule, curve and equation. The excess demand schedule will include the quantities demanded in excess of quantity supplied at each price, estimated based on the formula of **(Ed = Qd – Qs)**. At any price lower than the equilibrium price (Ed) will be a positive value and at price higher (Ed) tends to be a negative value.

The excess demand curve will be downwards sloping from left to right and shall intersect the price axis at the equilibrium price where the quantity of excess demand tends to be zero. The excess demand function can be estimated based on the principle of **(Ed = Qd – Qs)** using the market demand and supply equations or the excess demand curve. This will be a negative function in reference to the law of demand.

The concept of excess supply can be presented using an excess supply schedule, curve and equation. The excess supply schedule will include the quantities supplied in excess of quantity demanded at each price, estimated based on the formula of **(Es = Qs – Qd)**. At any price lesser than the equilibrium price (Es) will be a negative value; at price higher (Es) tends to be a positive value.

The excess supply curve will be upward sloping from left to right and shall intersect the price axis at the equilibrium price where the quantity of excess supply tends to be zero. The excess supply function can be estimated based on the principle of **(Es = Qs – Qd)** using the market demand and supply equations or the excess supply curve. This will be a positive function due to the law of supply.

STRQ [23]

Discussed the manner in which the equilibrium level of exchange; arrived at by a market is subject to change, with specific reference to the '**demand and supply rules**' applicable in these scenarios

[05 marks]

When the elements underlying or **determining** market demand or supply change (Δ in Condition, other factors or **non-price factors affecting Demand and Supply**), this leads to **shifts** in market demand or supply and to changes in the market equilibrium of price and quantity. Always remember that by shift in demand or supply we mean a shift of the demand or supply curve or schedule, not a movement along the given curve.

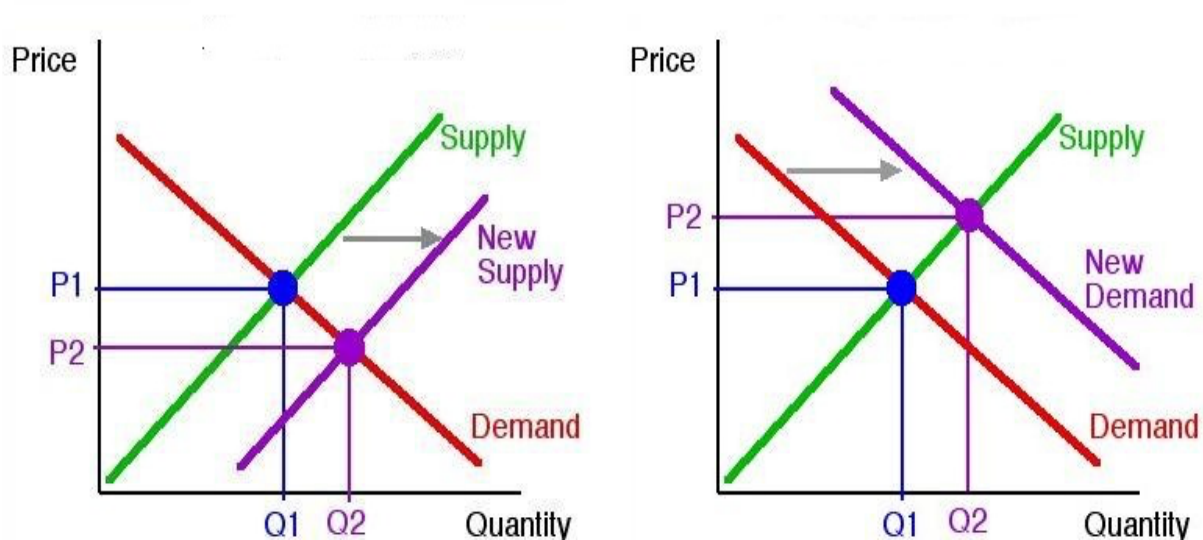
Accordingly, the main factors causing a change in the equilibrium situation of a competitive market is a shift in market demand or supply. These changes can be analyzed based on four general rules of demand and supply.

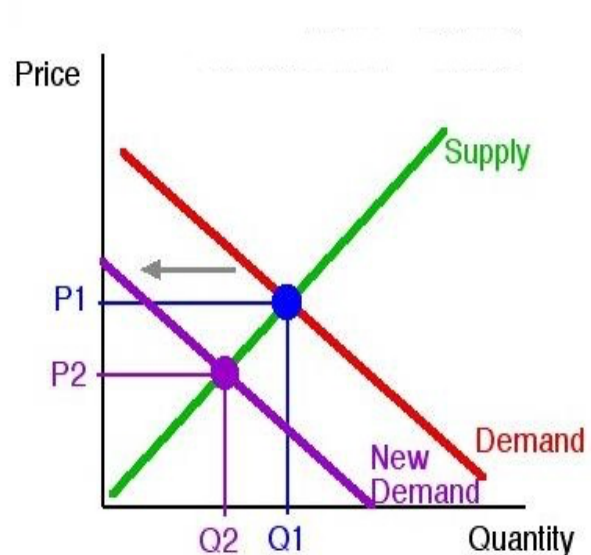
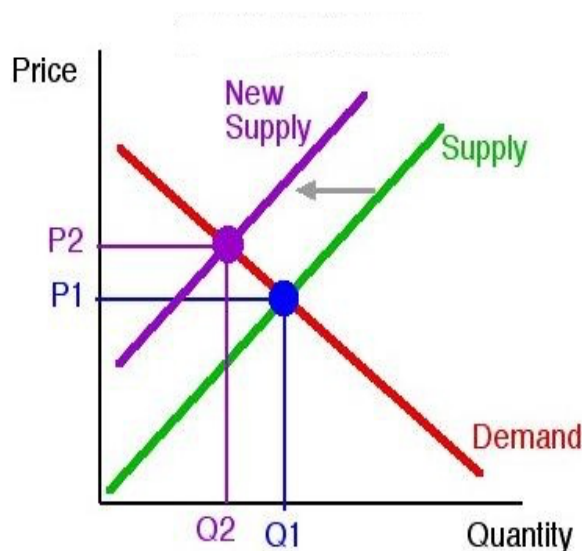
DEMAND RULES

- 1) When market demand increases, while supply is constant: Equilibrium price and/or quantity increases
- 2) When market demand decreases, while supply is constant: Equilibrium price and/or quantity decreases

SUPPLY RULES

- 1) When market supply increases, while demand is constant: Equilibrium price shall decrease and/or quantity increases
- 2) When market supply decreases, while demand is constant: Equilibrium price increases and/or quantity decreases

Visual Summary



STRQ [24]

Discuss the broader concept of '**Economic Surplus**' in the context of free market equilibrium

[05 marks]

According to the 'Principle of invisible hand' introduced by the classical economist Adam Smith, the market system or mechanism is able to create a sound coordination between the plans of demanders and supplies functioning based on self-interest and achieve a level of maximum social welfare.

An equilibrium exchange that takes place within a free market is able to produce an '**Economic Surplus**'. Economic surplus refers to the **benefits** or **gains** received by both **producers** (suppliers) and **consumers** (demanders) simply through the process of **participating** in the **equilibrium exchange**.

In simple terms this is the welfare or net gains from production and consumption of a good. Economic surplus is also an indicator of efficiency within a competitive market. Since this economic surplus is voluntarily or freely exchanged in the market it also represents the contribution of the market to the economies '**Overall Social Welfare**'.

The benefit received by consumers or demanders is known as consumer surplus and the benefit received by the producers or suppliers are denoted by producer surplus. Accordingly economic surplus or the contribution to overall economic welfare at equilibrium is a combination of two main factors namely, consumer surplus and producer surplus

CONSUMER SURPLUS

Consumer surplus is the **total utility exceeding total consumer expenditure** or outlay. That is the total received by adding the difference between marginal utility received and the price paid for the product at each unit when purchasing a certain amount of a good.

Alternatively, this is the **aggregate value** (total value) of the **positive differences** between the **price a consumer is willing and ready to pay** (i.e., **marginal utility**) and the **actual price** paid for the equilibrium **quantity of good exchanged in the market**.

The money value of the consumer surplus can be estimated (at the equilibrium level of exchange) using a demand curve diagram. **This is the area under the demand curve but above the price line.**

Generic Formula

$$\begin{aligned} \text{Consumer Surplus} &= \frac{[\text{Maximum Demand Price} - E_p] \times E_q}{2} \\ &\text{OR} \\ &= [(\text{Maximum Demand Price} - E_p) \times E_q] \times \frac{1}{2} \end{aligned}$$

PRODUCER SURPLUS

This represents the total revenue exceeding the producer's total variable cost, when producing and selling a certain quantity of a given product.

This is the **aggregate value** (total value) of the **positive differences** between the **minimum prices**, i.e., **marginal cost** a producer is expecting for a product and the actual price received in the market at the equilibrium level of exchange.

The money value of producer surplus at the equilibrium level of exchange can be estimated using a supply curve diagram. **This is the area above the supply curve but under the price line up to the amount sold.**

Generic Formula

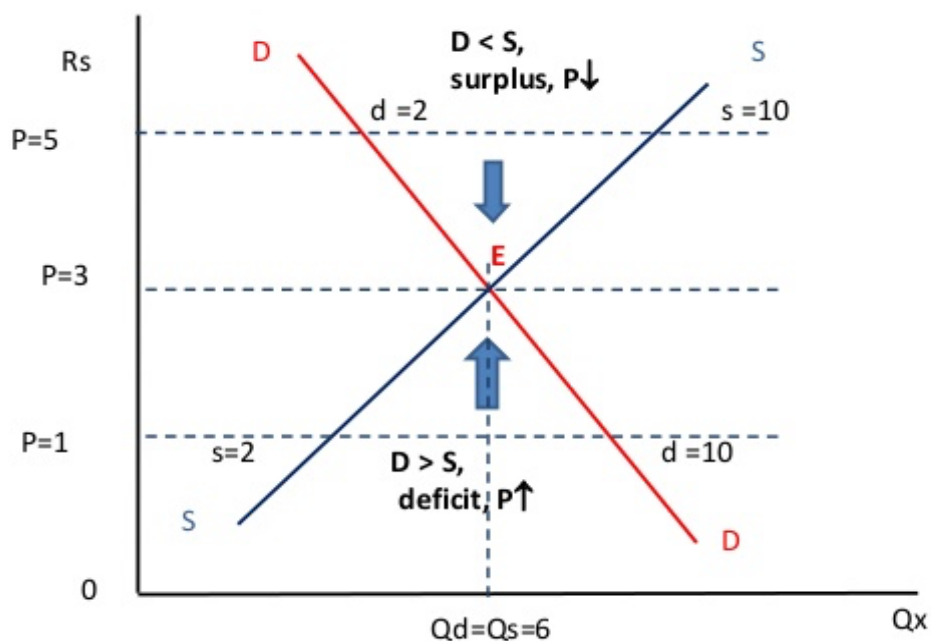
$$\begin{aligned} \text{Consumer Surplus} &= \frac{[E_p - \text{Minimum Supply Price}] \times E_q}{2} && \text{OR} \\ &= [(E_p - \text{Minimum Supply Price}) \times E_q] \times \frac{1}{2} \end{aligned}$$

Special Note [2]

Stable Equilibrium

- A situation where a market which has deviated from a state of equilibrium (i.e. entered a disequilibrium), is naturally moving /correcting itself back towards the original equilibrium.
- In such a situation if there is any barrier or disruption causing a disequilibrium, the market represents the strong tendency and ability to work itself back to equilibrium.

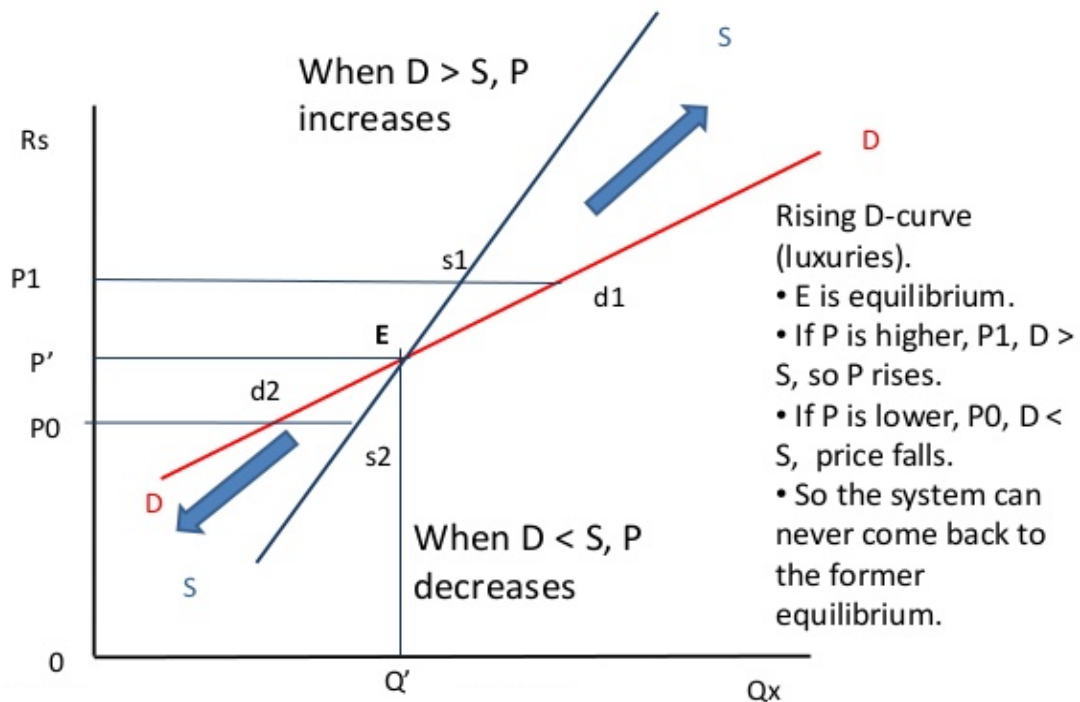
Stable Market Equilibrium



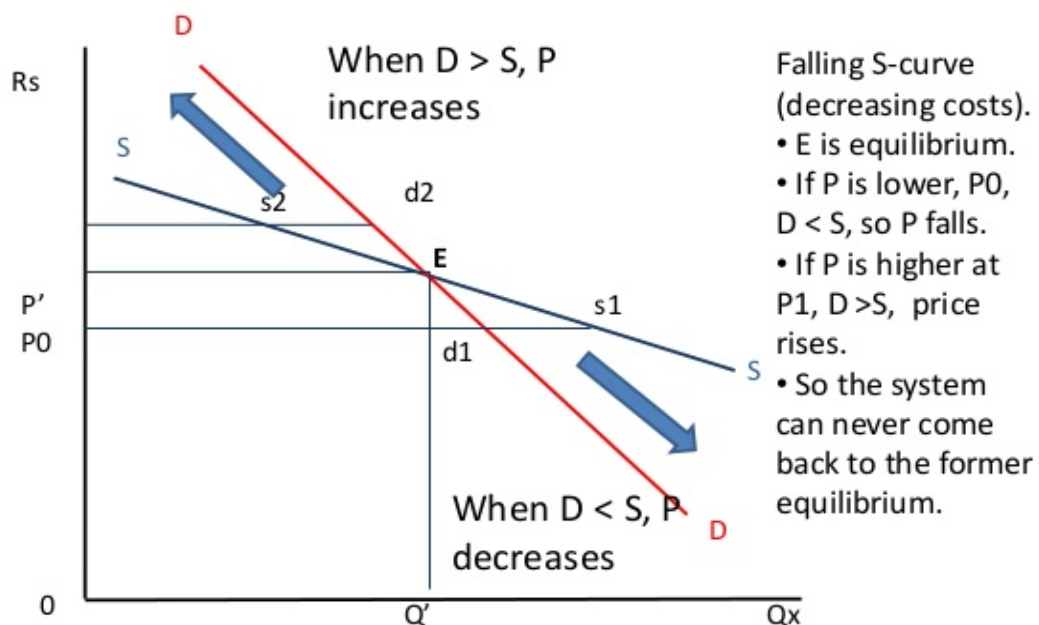
Unstable (Instable) Equilibrium

- A situation where a market which has deviated from a state of equilibrium (i.e. entered a disequilibrium), is unable to naturally move or correct itself back towards the original equilibrium.
- In such a situation the market represents an inability to work itself back to equilibrium, and tends to persist in a state of disequilibrium.

Unstable Equilibrium



Unstable Equilibrium



Study Notes

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Study Notes

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