Chapter 5

MARKET EQUILIBRIUM

In this chapter, we combine both consumers behaiviour and firms behaviour to study market equilibrium we also examine the effects of changes in demand and supply on this equilibrium.

In market eqilibrium market demand equals market supply ($q_D = q_S$)

Equilibrium price

The price at which market equilibrium is reached is known as equilibrium price. At equilibrium price (p) market demand (q_D) and market supply (q_S) are equal.

At equilibrium P, $q_D = q_S$

The quantity demanded and supplied at the equilibrium price is called <u>equilibrium quantity</u>

Excess demand and excess supply

If at a price, market demand is greater than market suply we say that there is an excess supply in the market at that price. Excess demand = market demand > market supply.

If at a price market supply greater market demand we say that there is an excess supply in the market at that price.

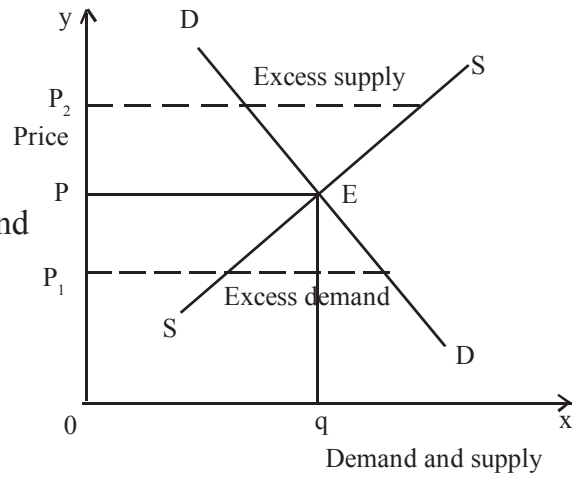
Excess supply = market supply > market demand

[Market equilibrium is a situation where there is zero excess demand and excess supply]

Market equilibrium in the case of fixed number of firms

An equilibrium is a point where market demand curve (DD) interest the market supply curve (SS).

At the point E market demand equals market supply. Here equilibrium price is 'p' and equilibrium quantity is 'q'. At any other price level (p_1 or p_2) either there is excess demand or there is excess supply



Demand and supply

Numerical example

Market demand $q_D = 200-p$ and market supply $q_S = 120+p$

At equilibrium $q_D = q_S$

$$200-p = 120+p$$

$$200-120 = p+p$$

$$80 = 2p$$

$$p = \frac{80}{2} = 40$$

Equilibrium price = 40

Substituting Rs. 40 in demand function we get $q_D = 200-40 = 160$

Similarly Rs.40 in supply function we get $q_S = 120+40=160$

Therefore equilibrium quantity is 160 kg.

Consider price less than equilibrium price say $p_1 = 25$

$q_D = 200-p = 200-25 = 175$

$q_S = 120+p = 120+25 = 145$

Therefore at $p_1=25$ $q_D>q_S$ means an excess demand of 30 kg at this price.

At any price less than equilibrium price, excess demand will be positive.

Consider a price greater than equilibrium price say $p_2 = 45$

$q_D = 200-p = 200-45 = 155$

$q_S = 120+p = 120+45 = 165$

Therefore at $p_2 = 45$ $q_S > q_D$ means an excess supply 10 kg at this price.

At any price greater than equilibrium price, excess supply will be positive.

Effect of shift (change) in demand and supply on market equilibrium with fixed number of firms

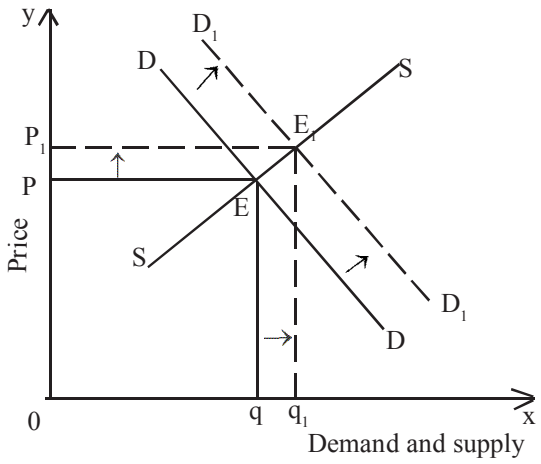
(സ്ഥാപനങ്ങളുടെ എണ്ണം സ്ഥിരമായി നിൽക്കെ ചോദനത്തിലും പ്രദാനത്തിലും ഉണ്ടാകുന്ന മാറ്റങ്ങൾ കമ്പോള സന്തുലിതാവസ്ഥയിലുണ്ടാകുന്ന മാറ്റങ്ങൾ)

1. Effect of Shift (change) in demand (supply constant)

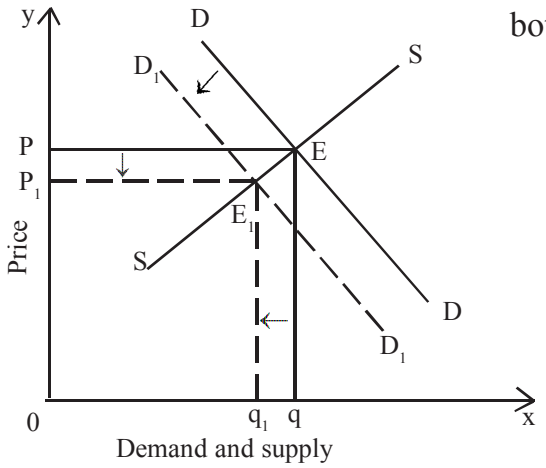
a. Increase in demand

DD curve shift right wards

Both equilibrium price and equilibrium quantity increases.



b. Decrease in demand



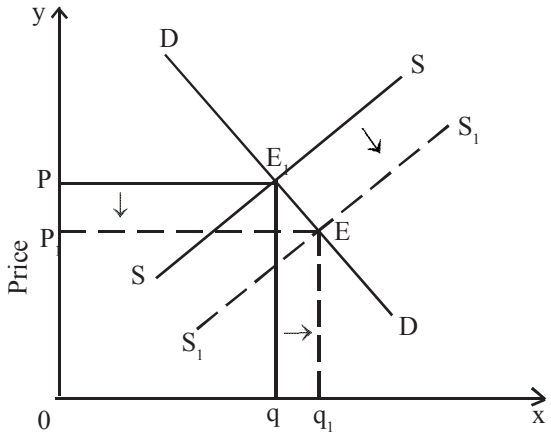
Demand and supply

SS curve shift left wards

both equilibrium price and quantity falls.

2. Effect of shift (change) in supply (demand constant)

a. increase in supply



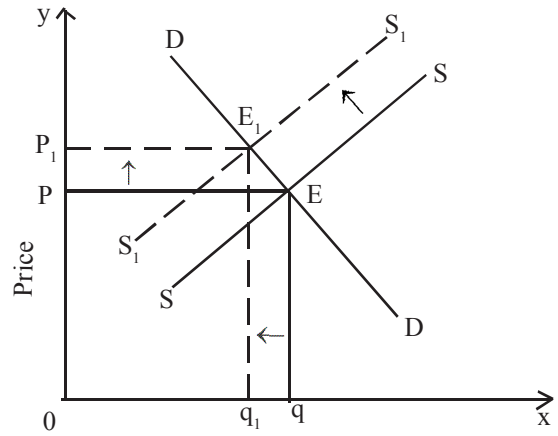
Demand and supply

SS curve shift right wards

equilibrium price falls

equilibrium quantity increase.

b. Decrease in supply



Demand and supply

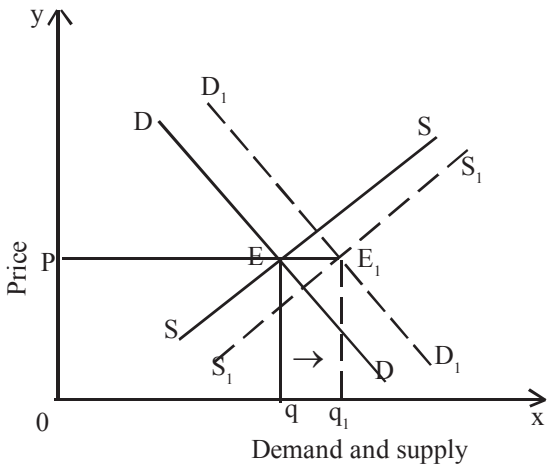
SS surve shift leftwards

equilibrium price - increases

equilibrium quantity - falls.

3. Effect of simultaneous shift (change) in demand and supply

a. Both demand and supply increases at the same rate. (DD and SS curve shift rightwards)

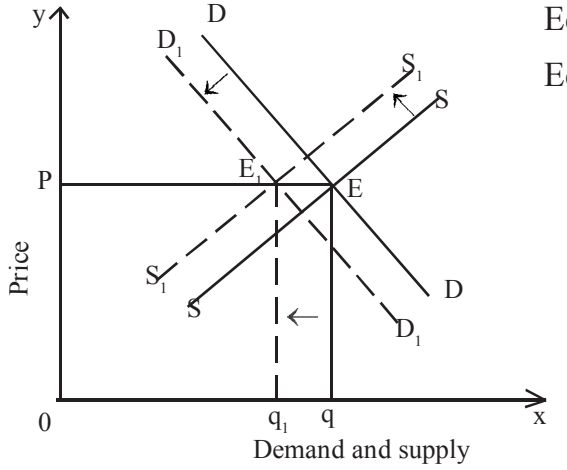


Demand and supply

Equilibrium price remain unchanged.

Equilibrium quantity increases

b. Both demand and supply decreases at the same rate (both DD and SS curve shift left wards.)

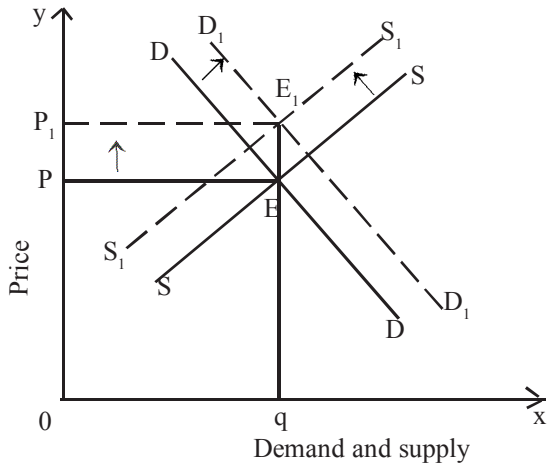


Demand and supply

Equilibrium price remain unchanged

Equilibrium quantity falls.

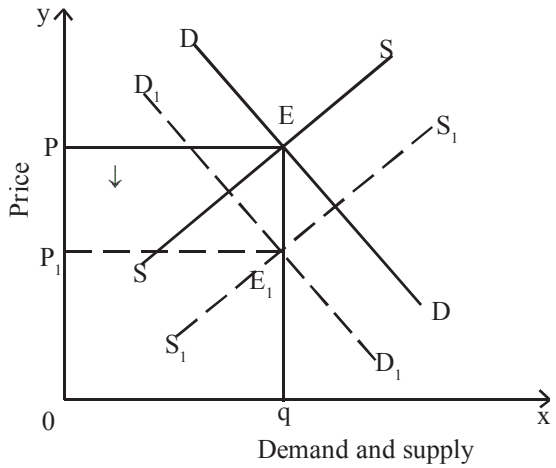
c. Demand increases and supply decreases at the same rate (DD curve shift right wards and SS curve shift left wards, proportionately)



Demand and supply

Equilibrium price increases but quantity remain unchanged.

d. Demand decreases and supply increases at the same rate (DD curve shift leftwards and Ss cruve shift right wards preportionately



Demand and supply

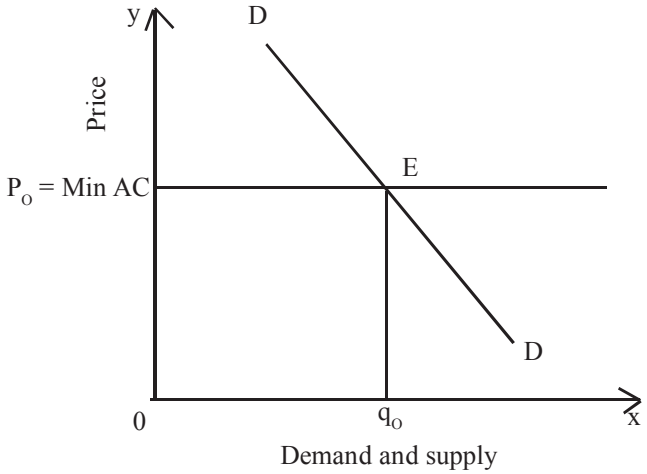
Equilibrium price falls, but quantity remain unchanged

Market Equilibrium with free entryand exist (market equilibrium with varying number of firms) (കമ്പോള സന്തുലിതാവസ്ഥ സ്വാതന്ത്രമായ പ്രവേശന നിഷ്ക്രമണ അവസ്ഥയിൽ)

In an industry the situation of free and entry and exit of firms ensure that in equilibrium, all firms earn only normal profit. In other wards market price p = minimum AC

The possibility for super normal profit (P>min AC) will attract new firms. As a result of this, finally the super normal profit wiped out. Similarly, if the firms earns less than normal profit (loss), (P<min AC), some firms will exit the industry which will lead to normal profit again. Thus with free entry and exit each firm will always earn normal profit. (P=min AC)

(പൂർണ്ണ പ്രവേശന നിർഗമന സ്വാതന്ത്ര്യമുള്ള കമ്പോളത്തിൽ സ്ഥാപനങ്ങൾ സാധാരണ ലാഭം മാത്രം നേടുന്നു. കൂടാതെ കമ്പോള വില എപ്പോഴും ശരാശരി ചെലവിന്റെ മിനിമത്തിലായിരിക്കും.)



Demand and supply

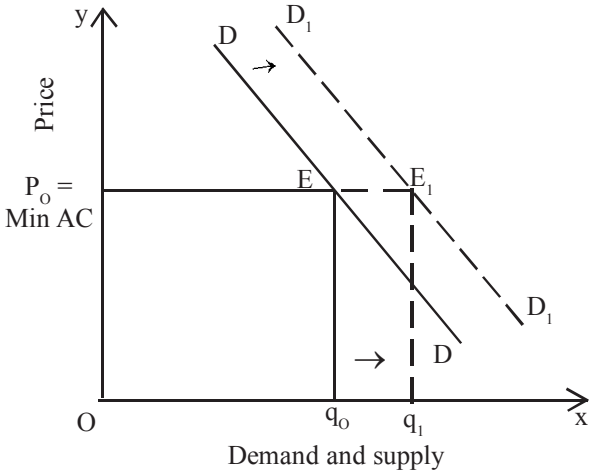
Equilibrium price determination with free entry and exit. At Po = min AC each firms supplies same quantity of output say q_{sf} (quantity supplied by a single firm)

$\therefore$ Equlibrium number of firms in the market $n_o = \frac{q_o}{q_{sf}}$

q_o = equilibrium quantity (market demand and supply)
q_{sf} = supply of a single firm

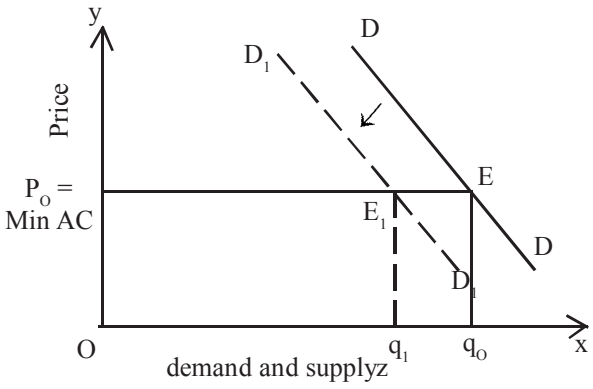
Effect of changes (shift) in demand on market equilibrium, when their is free entry exist of firms

a. Effect of increase in demand



An increase in demand at the prevailing price P_o leads to the possibility of earning super normal profit. This will attract new firms. The entry of new firms wiped out the super normal profit and price will again reach to P_o. Now more quanity supplied at the same price. In a perfectly competitive market with stituation of free entry and exit, an increase in demand brings no change in equilibrium price. However the quantity supplied and equilibrium number firms in the market increases.

b. Effect of decrease in demand



A fall in demand at the prevailing price P_o leads possibility for loss. This will lead to the exit of some firms. Consequantly price will again reached to P_o. Now less quantity will be supplied at the same price.

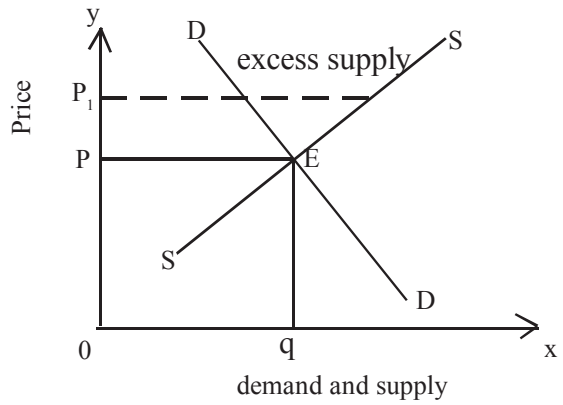
In perfectly competitive market with situation of free entry and exit a decrease in demand brings no change in equilibrium price. However quantity supplied and equilibirum number of firms in the market falls.

Applications of demand and supply analysis

To protect public interest, Government some times fixes price floor (support price) and price ceiling (control price) for some products.

A. Price floor (Support price) താങ്ങുവില

To protect the interest of producers (mainly farmers) govt. announce minimum price for their products. This floor price is generally higher than the market price.

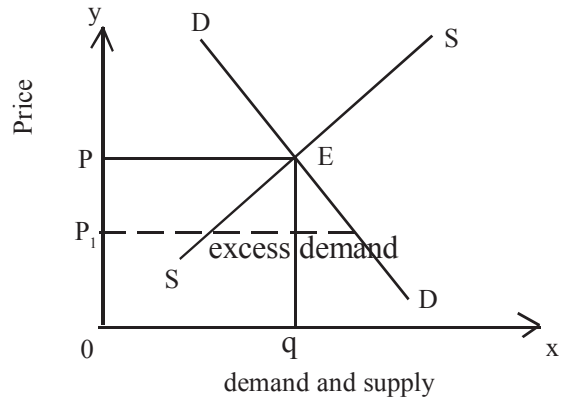


When govt. fix floor price an excess supply of product is created in the market. The possible outcome in this situation are

1. procurement activities by the govt.
2. If govt. does not purchase the excess supply price will falls back to the previous level.

B. Price ceiling (control price) നിയന്ത്രിത വില

To protect the interest of consumers, Government fixes ceiling price for some products. This ceiling price generally less than market price.



When govt fix control price an excess demand for product is created in the market. The possible out comes in this situation are.

1. Rationing
2. Black marketing

Evaluation Questions

1. Match columns B and C with A

A	B	C
Govt.Intervention	Labour Market	$Q_s = Q_d$
Market Equilibrium	P = Min. of AC	Price Ceiling
Free Entry & Exist	Income	Normal Profit
Supply of Labour	Demand & Supply Analysis	$S_1 = D_1$
Wage Rate determination	Price Floor	Leisure

2. 'The direction of change in equilibrium price and quantity is same whenever there is a shift in demand curve, supply remaining constant'.
   a. Identify the two shifts of demand curve.
   b. Draw relevant diagrams and prove the above statement

3. Give appropriate terms
   a. Price at which $Q_s = Q_d$
   b. Govt. imposed lower limit of the price of a good.
   c. The profit level that is just enough to cover the explict cost and opportunity cost of a firm.
   d. The identical equality of market price when there is free entry and exit of firm

4. Suppose the demand and supply curve shifts simultaneously, there will be four possibilities. Illustrate and explain the impact on equilibrium price and quanitity in all four situations.

5. Suppose the market demand and supply function in a competitive industry is given as follows.

   $Q_d = 700 - 50\ p$; $Q_s = 400+25p$

   a) Derive the market demand and supply schedules at prices Rs.1, 2, 3, 4, 5, 6, 7, 8
   b) Find the equilibrium price using the function.
   c) Represent the equilibrium in a graph.

6. Using supply and demand curves, show the changes in equilibrium price of flowers bought and sold during onam season in Kerala.

7. Graphically explain the effect of rise in the price of iron rod, cement and sand on the equilibrium price of newly constructed house.

8. Suppose the equilibrium price of sugarcan ein the market is Rs.15/- per kg.
   a) What will happen when the Govt.fix a price of Rs.20/- per Kg for sugar cane with a view to protect the sugarcane cultivators?
   b) By what name this policy is known?
   c) Draw diagram to illustrate this.

9. In the union budget 2009-10, import duty on crude rubber was reduced from 20% to 15% per kg. Other things remaining constant, how will it affect the equilibrium price and quantity of rubber in the country? Represent it in a diagram and explain.

10. The demand and supply function of milk are given as follows.

    $Q_d = 30 - p$ $\quad Q_s = 25 + p$

    Find the equilibrium price and quantity

11. Give the equation for equilibrium number of firms with free entry and exit. Suppose the market for chickens with identical farms have the following demand and supply functions.

    $q_d = 400 - 2p$ for $0 \le p \le 400$

    $= 0$ for $p > 400$

    $q_{sf} = 40 + P$ for $P \ge 40$

    $= 0$ for $0 \le p < 40$

    a) Find the equilibrium price and quantity
    b) Find the equilibrium number of farms.

12. Define the market equilibrium. What will happen if the price prevailing in the market is
    a) above the equilibrium price
    b) below the equilibrium price.