UNIT 3 DEMAND AND SUPPLY IN PRACTICE

Structure

3.0 OBJECTIVES

After going through this unit, you will be able to :

- appreciate how market price and quantity are determined;
- evaluate the impact of price controls, minimum wages, price support and arbitrage on price and quantity;
- determine how the taxes and subsidies affect consumers and producers; and
- appreciate the usefulness of economic theory in our day to day life.

3.1 INTRODUCTION

Demand and supply curves are used to describe the market mechanisms. These two market forces by way of equilibrium determine both the market price of a good and the total quantity produced/supplied. The level of price and the quantity depend on the particular characteristics of Demand and Supply. Variations in price and quantity over time depend on the ways in which supply and demand respond to other economic variables.

In this unit we will try to acquaint you with the usefulness of this analysis.

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3.2 DETERMINATION OF EQUILIBRIUM

Equilibrium price is defined as the price at which the quantity demanded and quantity supplied are equal. Quantity demanded is an inverse function of price, while quantity supplied is a direct function of price. The two functions can be stated as follows:

$$q^d = 10 - 1P$$

and

$$q^s = 1P$$

Equilibrium price is the one at which the quantity demanded equals quantity supplied, i.e.,

$$q^d = q^s$$

or

$$10 - 1P = 1P$$

$$\therefore \quad P = 5$$

Equilibrium price is Rs. 5. At this price $q^d = q^s$ and $q^d = 5$ units. Thus, 5 units would be sold and purchased in the market at price Rs. 5.

Similarly, if we graphically represent these two functions as in Fig. 3.1, we find that the downward sloping demand curve intersects the upward sloping supply curve at E, forming what is known as the **Marshallian cross.**

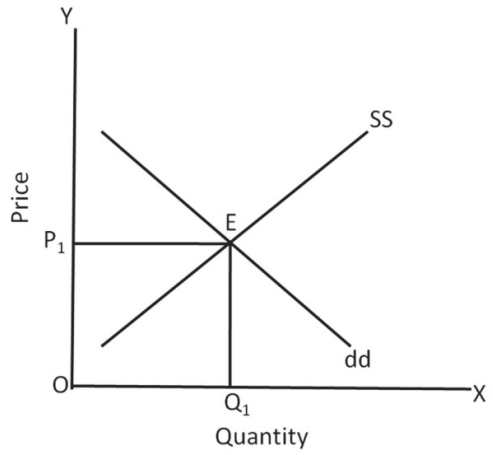

Fig. 3.1

In the equilibrium, OQ_1 quantity is sold and purchased at OP_1 price.

If, for any reason, the market price were to be less than the equilibrium price, say at OP_1, quantity demanded will be more than the quantity supplied, resulting in excess demand in the market, TW in Fig. 3.2. This will push the market price upwards, till the market price equals the equilibrium price.

Similarly, if the market price is more than the equilibrium price, the resultant excess supply, RS, will push the price downwards to OP_2. In short, we reach the following conclusions:

- All demand curves have negative slopes throughout their entire range.

- All supply curves have positive slopes throughout their entire range.
- Prices change if and only if, there is excess demand or excess supply.
- Prices rise, if there is excess demand and fall if there is excess supply.

In short, market price has a tendency to be equal to the equilibrium price. This is called **stable equilibrium.**

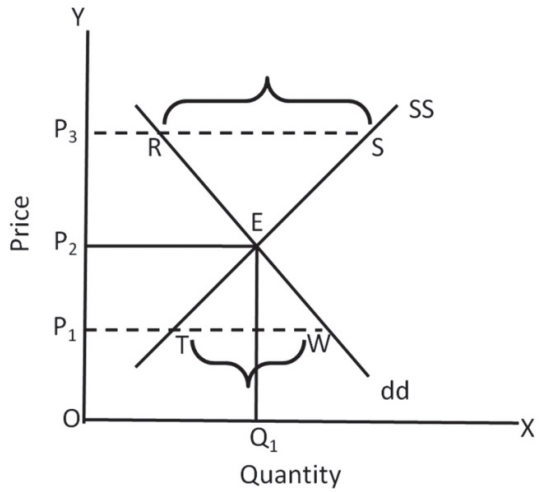

Fig. 3.2

The essential condition for stable equilibrium is that the demand curve should have a negative slope and the supply curve a positive slope. Otherwise, it will not be a stable equilibrium, this would be what can be called **unstable equilibrium.**

Let us illustrate the situation of unstable equilibrium with the help of Fig. 3.3.

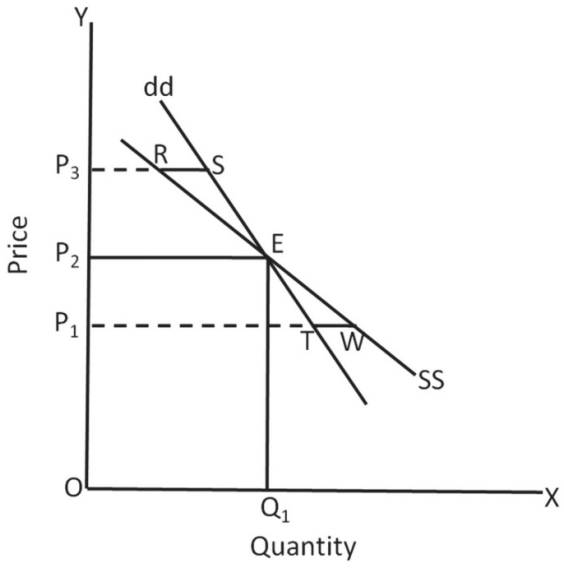

Fig. 3.3

We have plotted a negatively sloped demand curve and a negatively sloped supply curve. Equilibrium is determined at point E. If the market price were to fall to Op_1 quantity supplied > quantity demanded, and therefore the market price should fall further (rather than rise).

Similarly, if market price were to be Op_3, quantity supplied < quantity demanded, and hence the price should still rise further (rather than fall to back to equilibrium).

Thus, in this situation there is unstable equilibrium. The condition for stable equilibrium is that above the equilibrium point surplus must exist ($Q^s > Q^d$) and below the equilibrium point shortage must exist (Q^d, > Q^s). In case this condition is not fulfilled, we get unstable equilibrium.

Can there be a stable equilibrium when supply curve is downward sloping?

Yes, there can be a stable equilibrium even if supply curve is downward sloping. This is illustrated with the help of Fig. 3.4. At price Op_2, which is more than the equilibrium price Op_1 there exists surplus to the extent of SR, which creates competition among sellers, as such price falls to Op_1.

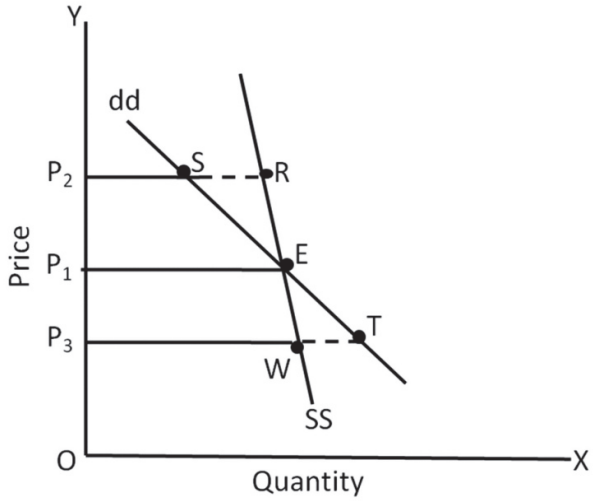

Fig. 3.4

At price Op_3, which is less than equilibrium price Op_1 there exists shortage to the tune of WT, which creates competition among buyers, this causes the price to increase to Op_1 Thus, we get stable equilibrium.

This is also known as the **Walrasian Equilibrium.** The Walrasian stability condition can be stated as follows:

Above the equilibrium price, the supply curve must be to the right of the demand curve; and below the equilibrium price, the supply curve must be to the left of the demand curve.

It would be seen that whereas the Marshallian adjustment process works through a change in quantities, the Walrasian adjustment process works through a change in price.

3.3 EFFECTS OF SHIFT IN DEMAND AND SUPPLY ON EQUILIBRIUM

In the method of comparative statics we start from a position of equilibrium and then introduce the change to be studied. The new equilibrium position is determined and compared with the original one. The differences between the

two positions of equilibrium must result from the change that was introduced, by keeping everything else as constant.

1) Shift in Demand Curve

A shift in demand curve (the supply curve remaining unchanged) will affect the equilibrium price and equilibrium quantity, as shown in Fig. 3.5.

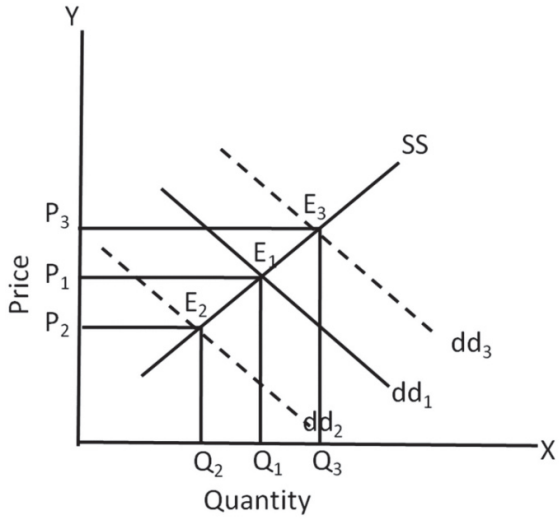

Fig. 3.5

An increase in demand would result in:

- an increase in the equilibrium price
- an increase in the equilibrium quantity.

Conversely, a decrease in demand would result in:

- a decrease in the equilibrium price
- a decrease in the equilibrium quantity.

2) Shift in Supply Curve

A shift in supply curve (the demand curve remaining unchanged) will also affect both, the equilibrium price and equilibrium quantity, as shown in Fig. 3.6.

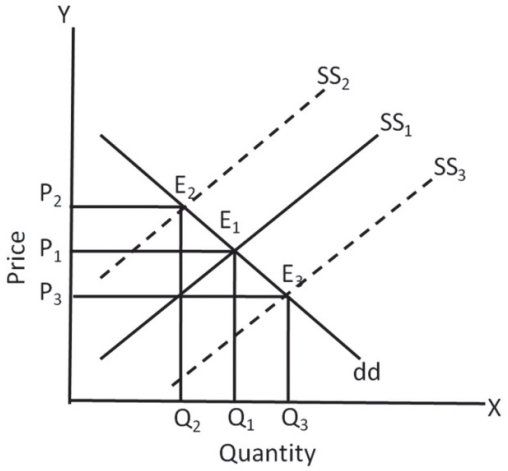

Fig. 3.6

An increase in supply would result in:

- a fall in the equilibrium price
- an increase in the equilibrium quantity.

A decrease in supply would result in:

- a rise in the equilibrium price
- a fall in the equilibrium quantity.

3) **Simultaneous Shift**

We may also examine if both demand and supply curves shift simultaneously. The combined result would be determined as we have analysed above.

The net result would depend upon the relative change in demand and supply.

The various results can be briefly summarised as follows:

When one of the demand or supply curves shifts, the effect on both the price (P) and quantity (Q) can be determined:

- An increase in demand (a shift rightward in the demand curve) raises P and increases Q.
- A decrease in demand (a shift leftward in the demand curve) lowers P and decreases Q.
- An increase in supply (a shift rightward in the supply curve) lowers P and increases Q.

When both the demand and supply curves shift the effect on the price or the quantity can be determined but without information about the relativity of the shifts, the effect on the other variable is ambiguous.

- If both the demand and supply curves increase (shift rightward), the quantity increases but the price may rise, fall or remain the same.
- If the demand decreases (shifts leftward) and the supply increases (shifts rightward) the price falls but the quantity may increase, decrease, or not change.

3.3.1 Determination of Equilibrium: A Mathematical Presentation

We begin with a simple numerical example:

$$q^d = 100 - 2p \quad (1)$$

$$q^s = 3p \quad (2)$$

$$q^d = q^s \quad (3)$$

We solve the system by substituting (1) and (2) into (3):

$$100 - 2p = 3p = 100 = 3P + 2P$$

or $5p = 100$

or $p = 20$

by putting P value in equation (1) we get,

$$q^d = 100 - 2(20)$$

$$q^d = 60$$

and $q^s = q^d = 60$

If we let the demand curve shift to the right so that 60 more units are bought at each price, (I) becomes

$$q^d = 160 - 2p \quad (1')$$

Substituting (1') and (2) into (3) yields p = 32 and $q^d = q^s = 96$.

In this manner we could solve the equations every time.

Algebra allows us, however, to find the solution to any linear demand supply system. To do this, we substitute letters, called **parameters**, for the numbers in the above system:

$$q^d = a + bp,\ a > 0,\ b < 0 \quad (4)$$

$$q^s = c + dp,\ c < a,\ d > 0 \quad (5)$$

$$q^d = q^s \quad (6)$$

The restrictions on the parameters ensure that a positive amount is demanded at a zero price (a > 0), that the demand curve has a negative slope (b < 0), and the supply curve has a positive slope (d > 0). The restriction on c is a little more complex. If c is less than zero a positive price is required to call forth any supply. If c exceeds zero, some amount is supplied at a zero price. In that case, we need less to be supplied than demanded at a zero price (a >c) if we are to get a positive equilibrium price. If c > a, supply exceeds demand at a zero price and the linear model solves for a negative price.

To avoid this, we need the added condition that p = 0 whenever c > a.

Once again, we solve by substituting the equations (4) and (5) into (6). This gives

$$a + bp = c + dp$$

Simple manipulation produces

$$p = \frac{a-c}{d-b} \quad (7)$$

Now, whenever we encounter a numerical example, we can substitute the numbers directly into (7) and obtain the answer.

3.3.2 Uniqueness of Equilibrium and Multiple Equilibria

So far, we have examined the situations in which a unique equilibrium is established, i.e., a single price (or single quantity) corresponding to a single quantity (or single price).

We can also conceive of a situation in which there is no such unique price or unique quantity. This is illustrated with the help of Fig. 3.7 and Fig. 3.8.

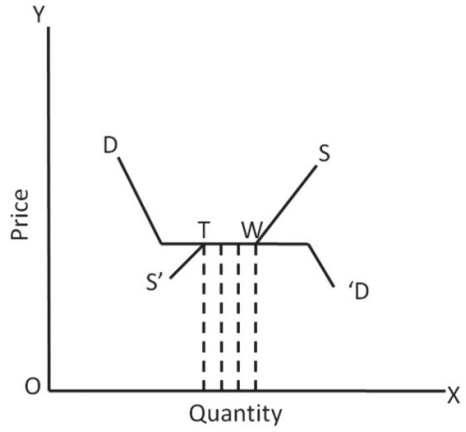

Fig. 3.7

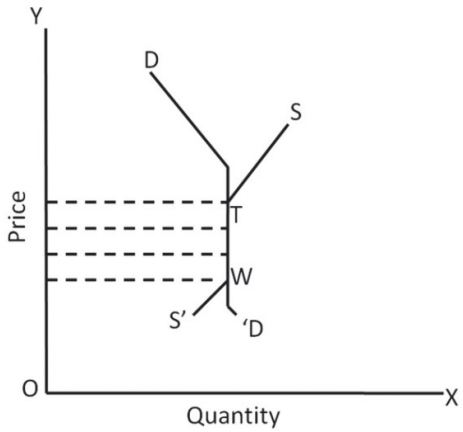

Fig. 3.8

In Fig. 3.7, both the demand curve and the supply curve have horizontal segments.

As a result of this, though the equilibrium price is uniquely determined, there is no unique quantity. It lies in the range TW.

In Fig. 3.8 similarly, both the demand curve and the supply curve have vertical segments. Though a unique quantity is determined, there is no unique price. The equilibrium price lies in the range TW.

This is also known as **multiple equilibria.**

Check Your Progress 1

1) Given the following demand and supply functions, find the equilibrium price and quantity in the market

$$q^s = -5 + 3P,\ q^d = 10 - 2P$$

2) From the following equation find the equilibrium price and output $q^d = 6 - P$, $q^s = 3P - 2$

3) State whether following statements are true or false:

   i) All demand curves have positive slopes

   ii) Prices change if and only if there is excess demand or excess supply

   iii) Prices fall if there is excess demand

   iv) The Walrasian equilibrium adjustment process works through change in quantity

   v) The quantity increases in case of both demand and supply curve shift rightwards.

4) There are 1000 identical individuals in the market for commodity X given the individual demand function $q^d = 12 - 2P$ and 100 identical producers of commodity given the individual producer supply function $q^s = 20P$. Find the equilibrium price and quantity.

3.4 APPLICATIONS

3.4.1 Rationing and the Allocation of Scarce Goods

Rationing implies fixation of price controls. Price control means that a ceiling has been imposed on the prices of such commodities as are covered under the price-control measures. Fixation of ceiling on prices means that the free operation of the forces of demand and supply is not being permitted.

Let us see what will happen in such a situation. This can be illustrated with the help of Fig. 3.9. DD and SS are the original demand and supply curves respectively for a commodity. R is the equilibrium point, corresponding to which OQ quantity is being demanded and supplied at the price OP per unit. Suppose the Government decides to interfere with the free operation of the market forces, i.e., it decides to impose price controls. Price controls, as already stated, take the form of ceiling on prices. Ceiling could be fixed at a price (a) higher than the equilibrium price, say at OK, (b) equal to the equilibrium price, i.e., OP, and (c) less than the equilibrium price, say at OH.

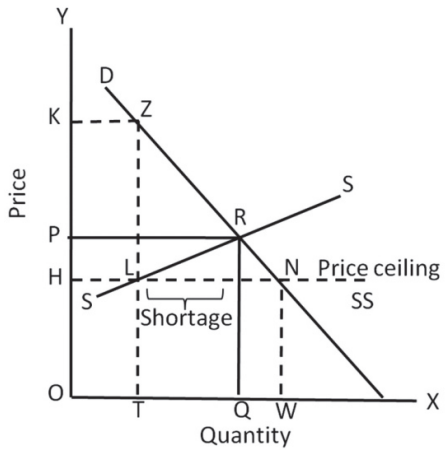

Fig. 3.9

- Ceiling price more than the equilibrium price will have no effect on the market. At a higher price say OK, OT quantity of the commodity will be demanded. The suppliers, on the other hand, would be waiting in their wings to supply more than the quantity being presently demanded. There will be a tendency for the price to fall down to the equilibrium level.

- If ceiling price equals the equilibrium price, OP, it will leave the market unaffected.

- If ceiling price is less than the equilibrium price, it will create conditions which need our further attention. Suppose, in Fig. 3.9, the Government imposes ceiling at OH per unit. The equilibrium price, OP, would no longer be legally obtainable. Prices must be reduced from OP to OH. At the lower price, OH, quantity demanded will expand to HN or OW. But at this reduced price, suppliers will be ready to supply only HL or OT quantity of goods. As a result, a shortage of this commodity (equal to quantity demanded minus quantity supplied) will emerge. This shortage is being represented by the line segment LN.

We reach the following conclusion about the effect of price control in free market: The setting of minimum prices will either have no effect (maximum price set at or below the equilibrium) or it will cause a shortage of the commodity and reduce both the price and the quantity actually bought and sold below their equilibrium values.

Consequences of Price Controls (ceiling below the equilibrium price). Imposition of ceiling below the equilibrium price will have the following major implications:

1) **Shortages:** The quantity actually sold and bought in the market will shrink. As a result, a large chunk of consumer's demand will go unsatisfied. The situation, as it arises, has been explained in Fig. 3.9.

2) **Problem of allocation of limited supplies among large number of consumers:** As already observed, shortage of a commodity means that all those consumers who demand the commodity at the ruling price cannot be satisfied. In other words, a large number of potential consumers of the commodity will be denied its use.

Here question arises how to allocate the limited supplies among large numbers of consumers?

One general way is that it is left at the retail shops to arrange for the distribution of the scarce product. For example, in our country, we have often witnessed such products as kerosene, edible oils, sugar, onions, etc., going scarce in the market. More generally, the consumer is left at the mercy of the local retailer, who more often than not chooses I: serve his regular customers in preference to others.

Among all others, the scarce product may be distributed on the basis of first-come-first-served. The latter situation often develops in the formation of long unmanageable queues at the retail centres, so that the persons lining up at the tail of the queue have only a little chance of getting the desired good. To avoid these problems which may often arise from the free marketing of the scarce product, Governments generally couple price controls with distribution controls. The most effective form of distribution control is rationing.

Rationing implies that a ceiling is imposed on the quantity which can be bought and consumed by a consumer. A consumer with less utility may choose not to purchase the rationed product. But those consumers for whom the rationed product has fairly large marginal utility are assured of some quantity at least, which possibly might not have been available to them in free marketing conditions. Rationing thus will increase the aggregate utility derived by the community from the consumption of the commodity. In such a situation, in all probabilities, rationing will replace first-come-first-served method of distribution.

We reach the conclusion:

Where there is a feeling against allocation on the basis of first-come-first-served and seller's preferences, effective price ceiling will give rise to strong pressure for a central (administered) system of rationing.

3) **Black Marketing:** It is a direct consequence of price controls. Black marketing implies a situation in which the controlled commodity is sold unlawfully, below the desk, at a price higher than the lawfully enforced ceiling price.

This situation arises largely because of the fact that (i) the number of potential consumers of the commodity is more than what can be served by the available supplies of the commodity, and, (ii) there are consumers who are willing to pay more than the ceiling price. This latter phenomenon is more important in creating black market and sustaining it.

In Fig. 3.9, OH is the ceiling price. At this price only OT quantity is being supplied and therefore actually bought in the market. We can see from DD curve in Fig. 3.9 that OT quantity would be demanded even at the price TZ or OK, which is substantially higher than the ceiling and the equilibrium price. Those buyers, who are willing to pay more than the ceiling price, will prefer to indulge in underhand transactions rather than go without the commodity since none of the free market methods of distribution can assure these consumers that the desired supplies would be coming.

Thus, we reach the interesting conclusion:

Black marketing in a commodity whose price has been controlled by the authorities will invariably arise since there are consumers who are willing to pay more than the controlled price.

3.4.2 Price Support Measures

Price support means a floor has been fixed on the prices of such commodities as are covered under the price-support measures.

Producers of these commodities need not sell at prices lower than the floor prices (i.e., the minimum prices) fixed by the Government. Fixation of floor on prices means that the free operation of the forces of demand and supply is being interfered with. Let us see what will happen in such a situation.

In Fig. 3.10; R is the equilibrium point determined by the intersection of demand and supply curves, OQ quantity is being supplied and demanded at OP price. Suppose, the Government decides to impose price supports. Price supports mean that the Government imposes a floor on prices. Floors could be fixed at a price (a) lower than the equilibrium price, say at OH; (b) equal to the equilibrium price, OP; and (c) more than the equilibrium price, say at OK.

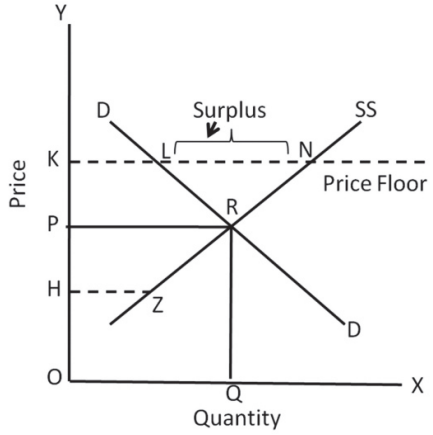

Fig. 3.10

Floor Price Lower than the Equilibrium Price: If floor price is less than the equilibrium, it will have no effect on the market. At a lower price, say OH, HZ quantity will be supplied. The consumers, on the other hand, would be willing to pay a higher price. The price will move upwards towards the equilibrium level.

Floor Price Equal to the Equilibrium Price: If floor price equals the equilibrium price, OP, it will leave the market unaffected.

Floor Price Higher than the Equilibrium Price: If floor price is more than the equilibrium price, it will need our further attention. Suppose, in Fig. 3.10, the Government imposes the price floor at OK per unit. The equilibrium price OP would no longer be legally obtainable. Price must be raised to OK. At the higher price, OK, quantity demanded will contract to KL. But at this price suppliers will be ready to supply KN quantity. As a result, a surplus will emerge; surplus is shown by the line segment LN.

We reach the following conclusion about the effect of price support in a free market:

The setting of minimum prices will either have no effect (minimum price set below the equilibrium) or it will cause surplus of the commodity to develop with the actual price being above its equilibrium level but the actual quantity bought and sold being below its equilibrium level.

Consequences of Price Support (Floor above equilibrium price): Imposition of floor prices above equilibrium price will have the following major implications:

1) **Surpluses:** The quantity actually bought and supplied will shrink as a direct consequence of price support. As a result, large chunk of producer's stocks will remain unutilised. The situation, as it arises, has been explained in Fig. 3.10 where the surplus has been shown equal to LN.

2) **Buffer Stocks:** In order to maintain the support price, the Government would have to design some such programme as to enable producers to dispose of their surplus stocks. One such programme can take the form of buffer stocks. The Government purchases the surplus stocks available with the producers, these stocks are released if and when the production of the supported commodity suffers. The buffer stock operations benefit the producers as a group. But who bears this cost? First, consumer who has to pay higher prices for the product. Second, the people in general who have to pay taxes to support this programme.

3) **Subsidies:** To offset the loss to the consumers, the Government may undertake to subsidise the product. By subsidy we mean that the Government purchases the product at the support price and sells the product to consumers below its cost of procurement. The difference between cost and price is borne by the Government.

Before we leave this discussion of price floors and ceilings, the reader should note that such terms as surplus and shortage are defined with reference to a specific price.

3.4.3 Minimum Wage Legislation

Minimum wage legislation is similar to fixing of floor prices. Governments, at times, are known to have interfered in the factor markets also. Legislation may be enacted whereby in the market, employers may be prohibited from paying less than the minimum wage fixed by the Government. The effect of fixing the minimum wage would be the same as that of fixing the minimum price of a commodity. Let us illustrate this effect diagrammatically, as in Fig. 3.11.

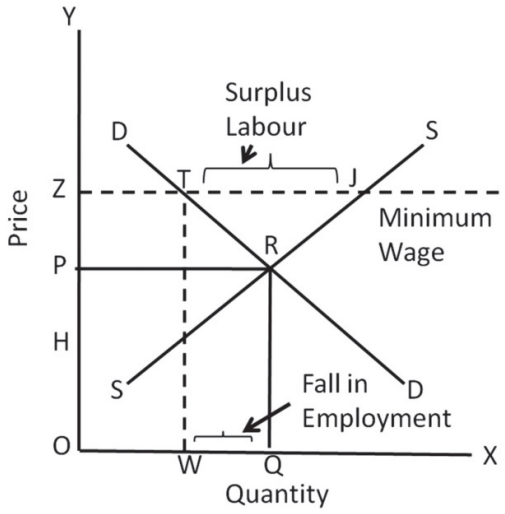

Fig. 3.11

In Fig. 3.11, OQ quantity of labour is being demanded and supplied at the equilibrium wage rate OP. If the wage rate is fixed at OZ by Government legislation, or by trade union agreement, the following consequences will follow:

1) Where the law or the agreement is effective, it will raise the wages of that labour which remains in employment, from OP to OZ.

2) Minimum wage will lower the actual amount of employment; at the new minimum wage rate only ZT or OW labour would be demanded, whereas at the equilibrium wage OQ labour was being supplied and demanded. Employment will fall by WQ.

3) Minimum wage will create a surplus of labour which would like to work, but cannot find a job. The surplus labour would equal TJ.

4) Some of the unemployed workers may be tempted or forced to offer themselves for work at the wage rate below the floor rate. Some sort of clandestine transaction in the labour market will begin to take place.

3.4.4 Arbitrage

Arbitrage is an operation involving simultaneous purchase and sale of a commodity in two or more markets between which there are price differentials or discrepancies. The arbitrageur aims to profit from the price difference; the effect of his action is to lessen or eliminate it.

Suppose fresh mushrooms are being sold in New Delhi and Noida. Geographically separate markets are illustrated in Fig. 3.12.

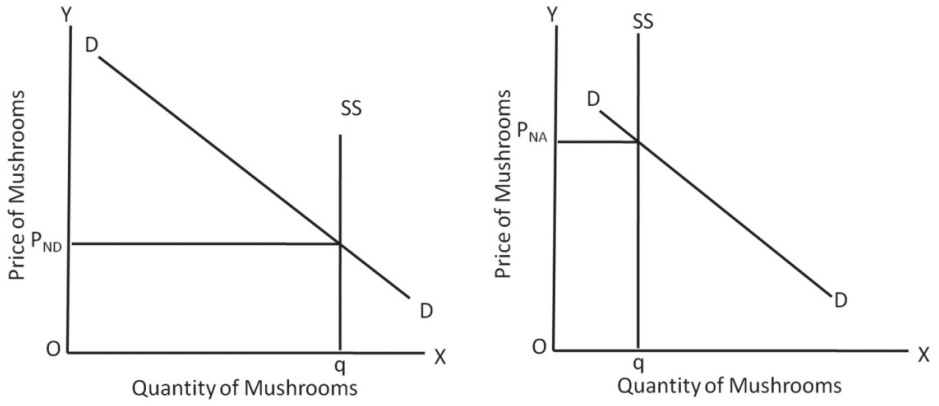

Fig. 3.12

New Delhi (ND) and Noida (NA) are separate markets with separate demand curves. The vertical supply curve in each city represents the quantity of mushrooms now available in each place. The equilibrium price in New Delhi is labelled P_{ND} and in Noida, P_{NA}.

If the equilibrium price in New Delhi is much less than that in Noida, a trucker might buy a load in New Delhi and sell them in Noida. As long as the price differential is greater than the cost of transporting the mushrooms, it will pay truckers to buy and sell in this way. As mushrooms are bought in New Delhi for sale in Noida, the price in New Delhi will increase, while that in Noida will fall. Thus the transport of mushrooms from New Delhi to Noida tends to narrow the price gap between the two cities. This process is called arbitrage.

Arbitrage will stop when the price differential becomes equal to or less than the cost of transportation between the two points. If transportation costs are small relative to the price of the good, the price differentials between cities will remain small.

Arbitrage narrows the dispersion of prices. If commodities are easily transported, geographic variations in price are small. If a commodity is easily stored, seasonal variations in price are insignificant. When markets are well-organised, with information about prices in different places and times readily available, arbitrage works easily. Any dealer can act as an arbitrageur by deciding when and where to buy. If, however, information about prices in different times and places is expensive to get, the dispersion of prices will then be greater.

Case Study

A few years ago The New York Times carried a dramatic front page picture of the President of Kenya setting fire to a large pile of elephant tusks that had been confiscated from poachers. The accompanying statement explained that the burning was intended as a symbolic act to persuade the world to halt the ivory trade. One may well doubt whether the burning really touched the hearts of criminal poachers. However, one economic effect was clear. By reducing the supply of ivory in the world markets, the burning of tusks forced up the price of ivory which raised the illicit rewards reaped by those who slaughter elephants. They could only encourage more poaching – precisely the opposite of what the Kenyan government sought to accomplish!

3.4.5 Sharing of Tax Burden

Who bears the tax burden under following situations:

a) When demand is perfectly elastic and supply is of normal shape.

b) When demand is perfectly inelastic and supply is of normal shape.

c) When supply is perfectly elastic and demand is of normal shape.

d) When supply is perfectly inelastic and demand is of normal shape.

a) When demand is perfectly elastic, the whole tax burden is borne by the producer himself as is illustrated in the Fig. 3.13. Before imposition of tax, equilibrium point is E which gives equilibrium price as OP. After the imposition of per unit tax, the equilibrium point shifts to giving equilibrium price as OP which is same as before the imposition of tax. Hence the whole tax burden is borne by the producer.

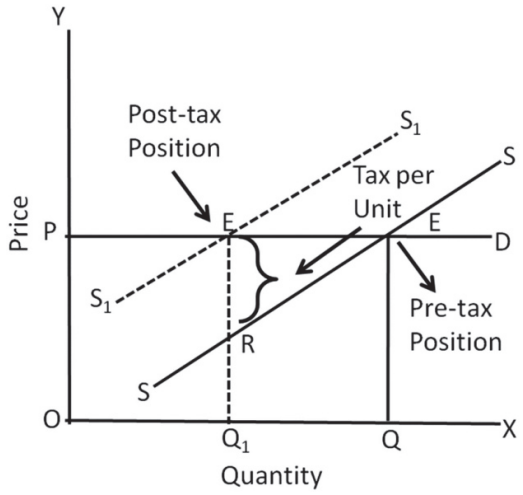

Fig. 3.13

b) When demand is perfectly inelastic, the whole tax burden is borne by the consumer because in this case the price rises by the full amount of tax as shown in the Fig. 3.14. The equilibrium point before imposition of tax is E which gives the equilibrium price as OP. After the imposition of tax per unit, the equilibrium point shifts to E_1 which gives equilibrium price as OP_1 Thus, price rises by the full amount of tax.

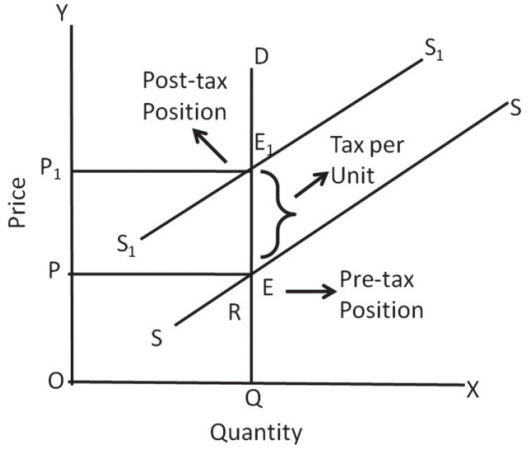

Fig. 3.14

c) When supply is perfectly elastic, the whole tax burden is borne by the consumer as illustrated in the Fig. 3.15. Before imposition of tax, the equilibrium point is E giving equilibrium price as OP. After the imposition of tax, the equilibrium point shifts to E_1 showing equilibrium price as OP_1. Thus the whole tax burden is borne by the consumer.

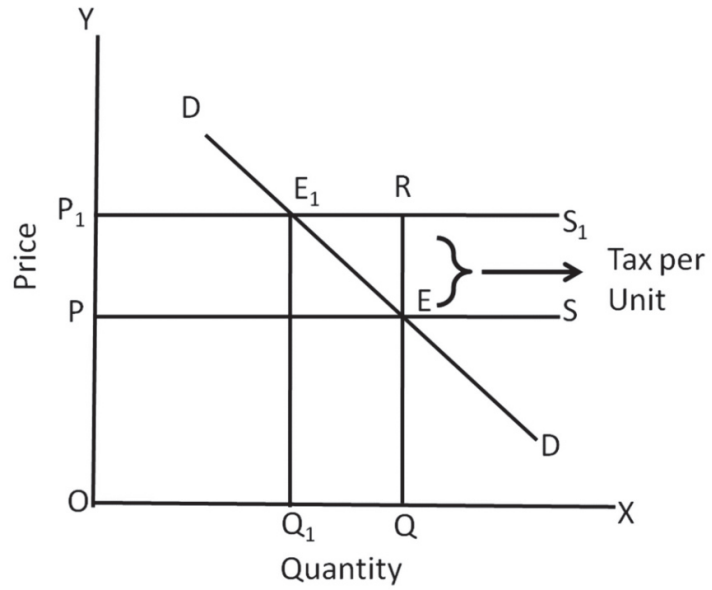

Fig. 3.15

d) When supply is perfectly inelastic, the whole tax burden is borne by the seller as the pre-tax equilibrium position and post-tax equilibrium remains unchanged, as shown in Fig. 6.16. Since supply is perfectly inelastic, with the imposition of tax the supply curve remains unchanged as such equilibrium price remains unchanged. So the tax burden falls on producer.

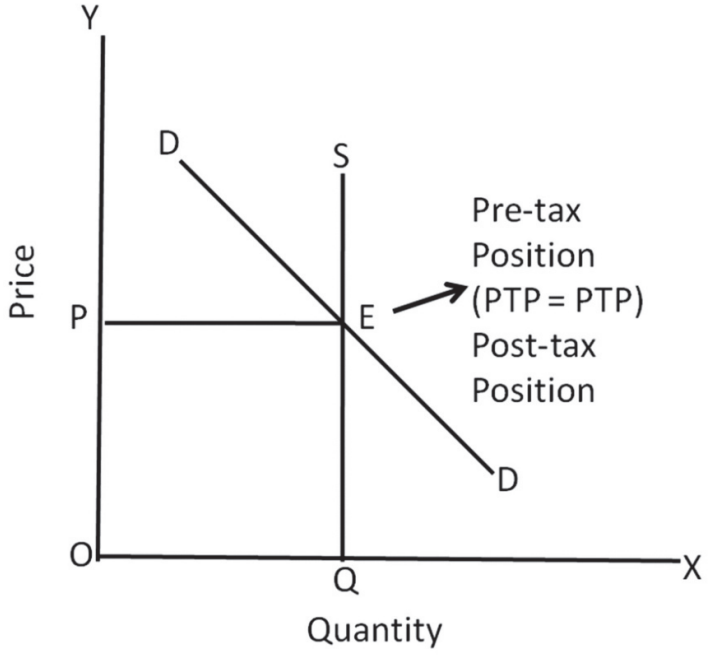

Fig. 3.16

- Show that as the demand curve becomes steep (arid hence inelastic) as greater amount of the tax is passed on to the consumer.

We take three different demand curves with different elasticities as shown in Fig. 3.17.

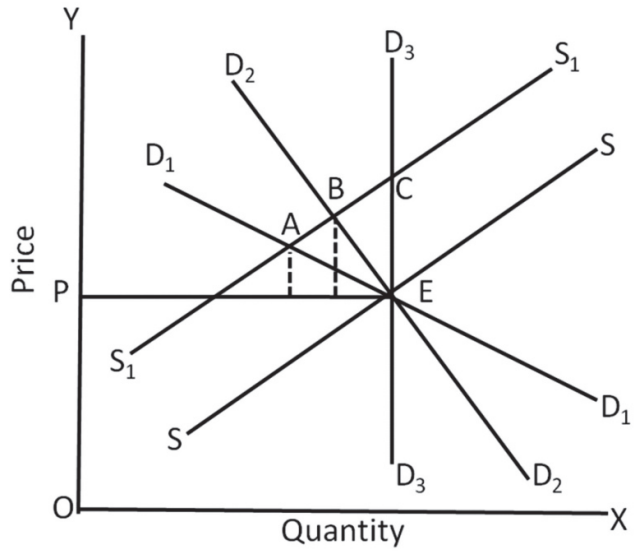

Fig. 3.17

All the three curves are drawn through the point E in order to facilitate comparison. Let the imposition of tax shift the supply curve to S_1S_1. The post-tax equilibrium position is shown by three points, A, B or C depending upon whether the relevant demand curve is D_1D_1, D_2D_2 or D_3D_3 respectively. The length of vertical line segment from points A, B or C to the line PE shows the amount of increase in the consumer price that will occur, given the respective demand curves. Examining the relationship between the amount of the price increase and the slope of the demand curve, we note that as the demand curve becomes steep (and hence elastic) a greater amount of the tax is passed onward to the consumer.

Check Your Progress 2

1) The price of a personal computer has continued to fall in the face of increasing demand. Explain.

2) New cars are normal goods. Suppose that the economy enters a period of strong economic expansion so that people's incomes increase substantially. Determine what happens to the equilibrium price and quantity of new cars.

3) State whether following statements are true or false:

   i) If ceiling price equals the equilibrium price, it will affect the market.

   ii) The minimum wage Act lowers the actual employment of workers.

   iii) Arbitrage widens the dispersion of prices.

   iv) When the demand is perfectly elastic, the whole burden is born by the consumer.

4) Suppose that the policy makers decide that the price of a pizza is too high and that not enough people can afford to buy pizza. As a result, they impose a price ceiling on pizza that is below the current equilibrium price. Are consumers able to buy more pizza: before the price ceiling or after?

5) Suppose that demand for a good is subject to unpredictable fluctuations. Explain how speculators help reduce the price variability of the good.

3.5 LET US SUM UP

Basics of demand and supply enables us to appreciate the relevance of economics in day to day life. Market price is determined at a point where quantity demanded is equal to quantity supplied. The characteristics of demand and supply may differ from one situation to another and from one market to another. These market forces influence the prices and quantity over a period of time. Marshalian equilibrium is attained through the process of change in quantity whereas Walrasian adjustment process works through a change in price.

Imposition of ceiling below the equilibrium price have implications of shortage of supply, black marketing and hence the need for central administered system of rationing. The imposition of floor prices may cause the surpluses of the commodity, hence need for buffer stocks and selling of the product to the consumers at subsidised prices.

The impact of minimum wage legislative is similar to fixing of floor prices.

The Arbitrage narrows the dispersion of prices.

3.6 REFERENCES

1) Case, Karl E. and Ray C. Fair, *Principles of Economics*, Pearson Education, New Delhi, 2015.

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3) Hal R. Varian, *Intermediate Microeconomics: a Modern Approach, 8th edition*, W.W.Norton and Company/ Affiliated East-West Press (India), 2010.

3.7 ANSWERS OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1) $P = 3$, $q^d = 4$

2) $p = 2$, $q = 4$

3) (i) False (ii) True (iii) False (iv) false (v) True

4) $P = 3$, $q = 6000$

Check Your Progress 2

1) Personal computers have fallen in price although the demand for them has increased because the supply has increased more rapidly.

2) Because new cars are a normal good, an increase in income increases the demand for them. Hence the demand curve shifts rightward. As a result, the equilibrium price rises and the equilibrium quantity also rises.

3) (i) False (ii) True (iii) False (iv) False

4) As a result of a price ceiling, the sellers would offer less quantity for sale in the market. The consumers would end up consuming less of the pizzas. There would be a large unmet demand.

5) Speculators buy the product to exploit any potential profit opportunities. In particular, speculator- aim to sell the good from their inventories if the current price is higher than the expected future price and they strive to buy the good to be added to their inventories if the current price is below the expected future price.

The first profit opportunity – selling when the current price is higher than the expected future price – reduces the current price. The second profit opportunity – buying when the current price is lower than the expected future price – raises the current price.

Selling, if the price is higher than, or buying, if the price is lower than the expected future price, means that the price will not deviate much from the expected future price.

Thus, speculators help reduce price fluctuations and make the price less variable.

3.8 TERMINAL QUESTIONS

1) Given the following supply and demand equations

$$Q^u - 100 - 5P$$

$$Q^s - 10 + 5P$$

a) Determine the equilibrium price and quantity.

b) If the government sets a minimum price of Rs. 10 per unit, how many units would be supplied and how many would be demanded?

c) If the government sets a maximum price of Rs. 5 per unit, how many units would be supplied and how many would be demanded?

d) If demand increases to

$$Q^{d1} = 200 - 5P$$

determine the new equilibrium price and quantity.

2) Discuss the likely effects of the following:

a) Rent ceilings on the market for apartments.

b) Floors under wheat prices on the market for wheat.

Use supply-demand diagrams to show what may happen in each case.

3) The demand and supply curves for T-shirts in the tourist town, Bengaluru, are given by the following equations:

$$Q^d = 24{,}000 - 500\ P$$

$$Q^s = 6{,}000 + 1{,}000\ P$$

a) Find the equilibrium price and quantity algebraically.

b) If tourists decide they do not really like T-shirts that much, which of the following might be then demand curve?

$$Q^d = 21{,}000 - 500\ P$$

$$Q^d = 27{,}000 - 500\ P$$

Find the equilibrium price and quantity after the shift of the demand curve.

c) If, instead, two more new stores that sell T-shirts open up in town, which of the following might be the new supply curve?

$$Q^s = 3{,}000 + 1{,}000\ P$$

$$Q = 9{,}000 + 1{,}000\ P$$

Find the equilibrium price and quantity after the shift of the supply curve.

4) Under which condition will a shift in the demand curve result mainly in a change in quantity? In price?

5) Under which condition will a shift in the supply curve result mainly in a change in price? In quantity?

6) Suppose the market demand for pizza is given by $Q^d = 300 - 20\ P$ and the market supply for pizza is given by $Q^s = 20\ P - 100$, where P = price (per pizza).

a) Graph the supply and demand schedules for pizza using Rs. 5 through Rs. 15 as the value of P.

b) In equilibrium, how many pizzas would be sold and at what price?

c) What would happen if suppliers set the price of pizza at Rs 15? Explain the market adjustment process.

d) Suppose the price of hamburgers, a substitute for pizza, doubles. This leads to a doubling of the demand for pizza (at each price consumers demand twice as much pizza as before). Write the equation for the new market demand for pizza.

e) Find the new equilibrium price and quantity of pizza.