Chapter 3

Supply

Abstract

Since the 19th century, supply and demand have been driving variables in the capitalist system. As, managers are mainly responsible for organizing and ordering products, they need to be vigilant when it comes to popularity in contrast about the availability of products and services. A proper understanding of these both can mean the difference between high profitability and loss of revenue. Supply is the basically the amount of product that a manufacturer is capable and willing to provide products into the market within a specified time span and price. Commonly, as the market price of a product increases, manufacturer would enhance their supply in the market. In this chapter, concept and importance of supply is given. Shifters of supply curve, costs of production, changes in production technology, government taxes and subsidies, climatic conditions, change in the price of a substitute and the number of producers in the market are explained. Law of supply, elasticity and reservation price are also discussed.

Keywords: Supply, market, cost of production, technology, substitute, elasticity

3.1. Introduction

Willingness and capability to supply products, regulate the trader's activities. At elevated price level, proportionately more commodity will be available in the market. In this way, producers will be able to attain the profits, irrespective of elevated cost of firm that can cause short term expansion of capacity.

In actual market, when the available goods and services are not as much as are demanded than producer will rise the both, quantity of product and its price as well. The short-term elevation in supply triggers the cost of production to increase that cause increase in the price. Change in the prices increase the required rate of production. Classical economic theory has quantified this complex method through the supply curve (Gopal et al. 2007). It is clear from the figure, the supply curve slopes upward with every incremental unit and it is expected to be more costly to make than the previous one. Therefore, it needs a higher price to justify its production.

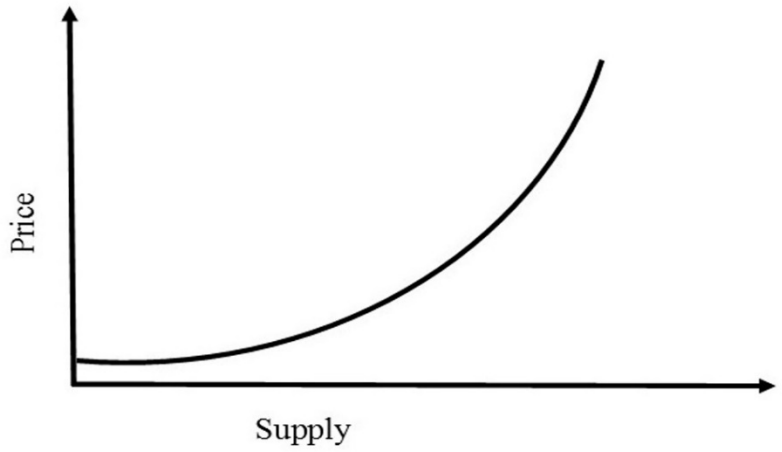


Fig. 3.1 Supply Curve

At elevated prices, there is additional incentive to enhance production of a good. This figure shows the short-term quantification of classical economic theory.

3.1.1. The Concept of Supply

It is not just the amount of something rather it is basically the willingness and ability of probable producer to manufacture and sell it.

3.1.2. Quantity Supplied

It is the whole amount of a product that producer will produce and sell it in the market under specific conditions, and these can be following,

Price of the good, input cost (labor, capital), prices of substitute goods that can be produced within the firm, technology, productive capacity, and expectations of future prices. These all are except for the output price, as determinants of supply. However, in case of supply, there is correlation between quantity supplied and the price of the good, with ceteris paribus.

3.2. Deriving a Market Supply Curve from Individual Supply Curves

Next, there is market supply curve, it is basically derived from the individual curves. Here, same method is adopted as was used in the market demand curve. Just supply curves of each firms are added for given prices to find the whole market quantity supplied.

Supply is the amount of a product that a producer is desiring and capable to produce and deliver within the given time span and price. Oftenly, as the price of any product

increases, traders increase their supply in the market [Kohli and Mahajan (1991), Shea (1993)]. It provides direct association among price and the quantity supplied.

When the price in the market elevate (e.g., following an increase in consumer demand), it grows into more plausible for businesses to enhance quantity of their product in the market. Elevated prices are indicator for the producer and they follow it for enhancing their profits by fulfilling their demand in the market. However, when production increases company's production cost increase, and it is why high prices are required for more output and to cover costs. The raised price level attracts the other firms to manufacture same good. At this point, new traders enter in the market, leading to an increase in the supply available for customers. It is why, at high prices supply increases and vice versa. This graph basically indicates the relationship of price and the quantity of product for which trader is ready and capable to sell.

Let's look first at a specific bakery, and call it as A's Bakery. Here, A is ready and can produce 1 bread pack / week, while keeping its price at Rs. 40 / unit. If the price is Rs. 60 / bread pack, A agrees and capable to supply two breads pack / week. The facts this schedule shows that the amount of bread for which A is capable and willing to supply at various price levels, holding price of inputs constant, technology, taxes and subsidies, and expectations about future prices. Now, we study the attitude of another firm. This is company B and it is willing and able to supply two breads of bread pack / week when the price of bread is Rs. 40 / bread. He's willing and able to supply three breads of bread at a price of Rs. 60 / bread pack, and so forth. As the price of bread increases, the quantity supplied from B bakery increases.

Suppose that B and A have the only bakeries in town. What does the market supply curve for bread look like? The market supply curve for bread will be the sum of the individual supply curves of B and A company. At any given price, to find the market quantity supplied, simply add the quantity supplied by B's company to the supply of A. At a price of Rs. 150 / bread pack, B Company supplies five breads pack / week. Company A, supplies four packs of bread. The market quantity supplied, in that case, will be 9 pack of bread each week. You can do the same for any given price. Find the quantity that B company is willing and able to sell, add it to the quantity that A-company is willing and able to sell at the same price, and that gives you the market quantity supplied. Now, we can put B and A's information together and wind up with the market supply schedule for bread.

3.3. Shifters of Supply Curve

Variables that can change the market supply from S_1 to S_2 (Figure 4.2) are described below,

3.3.1. Costs of Production

Decrease in the production costs cause an elevation in the supply of products, as the supply shifts downwards and to the right. Smaller cost of production shows that now company can produce more at given prices, e.g., a business may get benefit from a decrease in the process of imported raw material. If cost of production elevates then

a firm will not be in position to produce as much as it should at these price level. Supply curve will be shifted inward, like, due to an increase in wage costs, supply curves would be shifted in this pattern.

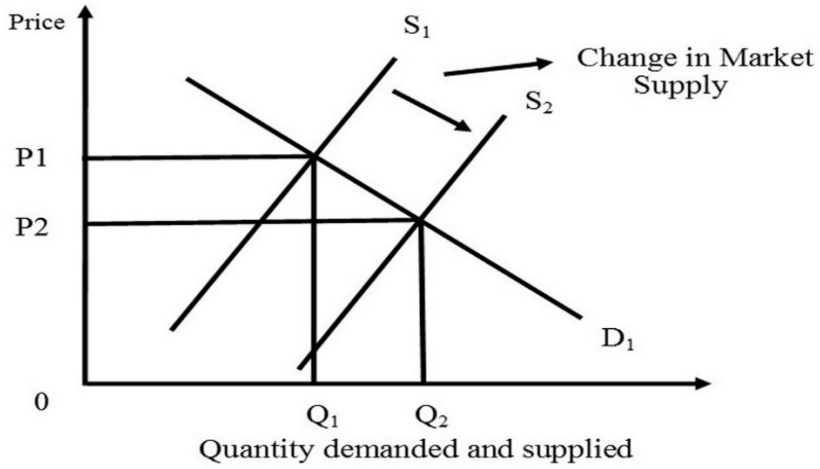


Fig. 3.2 Shift of market supply curve

3.3.2. Changes in Production Technology

Technology keeps on changing with the passage of time and speed of this variability is fast. It can be predicted that in future, it will cause increases in supply and prices of commodities will be lower.

3.3.3. Government Taxes and Subsidies

Public sector intervention in the market system could have a main impact on the supply side. As tax paid by the firms will enhance the cost of production and will be reason of supply curve movement. Ultimately, optimal production would not be attained after the taxation, and subsidy will have opposite effect, on the other hand. As subsidies are negative tax and these would enhance supply due to payment by the public sector and will decrease the cost of firm. In this way, at a given price level, firm will be able to produce more, and the supply curve will move below.

3.3.4. Climatic conditions

For farm products like, coffee, fruit and wheat the climate can put a pressure on the supply side. Better environmental conditions would cause optimal productions and will boost up the supply. Contrary, sudden and abnormal extreme meteorological

events, such as floods, will cause low yields and ultimately supply will decrease. These abrupt variations could impact price at market level for farm products.

3.3.5. Change in the price of a substitute

A substitute in production is a product that can be manufactured by employing same inputs. For example, an increase in the price of wheat causes farmers to grow more wheat and they replace barley with the wheat crop and in this way supply curve of barley will move to the left.

3.3.6. The number of producers in the market

Number of firms are also an important factor determining the amount of supply. When new producers enter a market, quantity supplied increase and resultantly, it exerts pressure on the prices of market. Sometimes, firms reduce the quantity of product without any reason by decreasing the production by applying quotas. This strategy is used to decrease the supply of product and to push prices of output up. Entry of new producers into a market structure leads to Marginal producers expand the volume of supply and increase the range of choice available.

3.4. The Law of Supply

It states that "when the price of a good rises, and everything else remains the same, the quantity of the good supplied will also rise." In short,

$$\uparrow P \rightarrow \uparrow Q$$

A supply curve is a graphical relationship between price and quantity supplied holding other things constant. It is a basically a figure, and its each point is combination of price and quantity (Varian, 2003). Each point shows that at a specific price so much amount producer or seller would be ready to sell. Changes in supply or shifts in supply occur when one of the elements of supply other than price varies. In the markets, when high price of products is offered to sellers they enhance the supply of these commodities, and on the other hand when the level of prices come down, the traders decrease the quantity supplied. This course of action by the producers is called law of supply. There is positive relationship between price and amount supplied of a product.

3.4.1. Assumptions of Law of Supply

3.4.1.1. No Change in Cost of Production

It is assumed that there is no variation in the cost of production as there is an increase in the cost of production, profits of the producer will decrease. If prices of products decrease and cost of production moves in the same direction, then quantity supplied will not decrease and profit margin will remain constant.

3.4.1.2. No Variation in Technology

It is also expected that method of production does not vary overtime. In the long run, if new method of production is developed, profit rises at the earlier price levels. The traders and suppliers increase the supply and law of supply does not function properly.

3.4.1.3. No Variation in Climate

There is no variation in the environmental conditions, like abnormal and extreme meteorological events, as earth quake and floods. The supply of goods goes down at that place at previously prevailing price.

3.4.1.4. No Variation in Prices of Substitutes

If the prices of alternative product will go down, then the customer will move to the other product that are sillier to that specific item. In this way supply of product will fall without any change in price.

3.4.1.5. No Variation in Natural Resources

If the amount of natural resources like, minerals, gas, coal, oil etc. increases, then the cost of production will go down.

3.4.1.6. No Variation in price of Capital Goods

These are raw material, machinery, tools etc. The cost goes up due to increase in the prices of capital goods and it can cause reduction in amount supplied.

3.5. Supply Versus Quantity Supplied

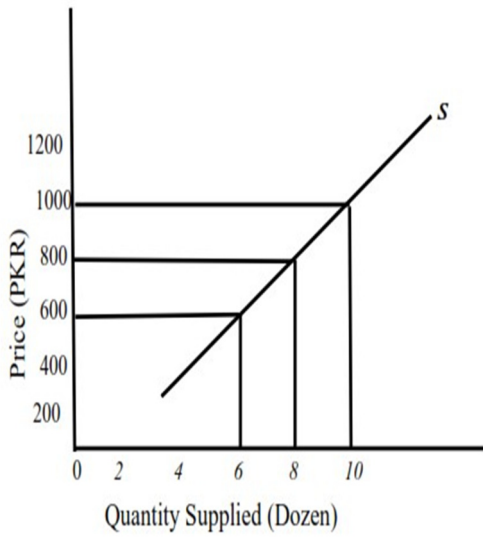
Like demand versus quantity demanded, variation in quantity supplied depicts the change of supply curve, and change in supply means a movement of curve, triggered by variation in the supplementary things, other than price.

3.5.1. Supply Schedule and Supply Curve

Table is a description of a variety of quantities of commodities presented for sale at price level. We draw the supply curve with the help of this schedule.

3.5.2. Individual supply schedule and curve

In this table, there are several combinations of an input price and its required amounts of a given goods offered for trade by an individual supplier or merchant.



Price/ dozen (in Rs.)	Quantity supplied of Commodity X (in dozens)
300	3
600	6
900	9
1200	12

Fig. 3.3 Individual supply schedule and curve

It is observed that is seen that when the price is Rs. 400 then 3 dozen will be available for sale. As the price goes up, amount for supply will also go up. Supply schedule helps in constructing the supply curve SS (Figure 3.3). It has a positive slope and moves upward. The price of the commodity and quantity supplied are directly related to each other.

3.5.3. Market supply schedule and curve

By adding up the amount of supply at certain prices by all sellers in the market, we can get market supply schedule. Market supply curve is the lateral summation of the individual supply curves of all the producers in the market.

3.5.4. Movement along the supply curve or expansion and contraction of supply curve

When extra amount is supplied at a higher price, it is called 'expansion of supply'. When less units are supplied at a lower price, it is called 'contraction in supply'. It is illustrated in Figure 3.4

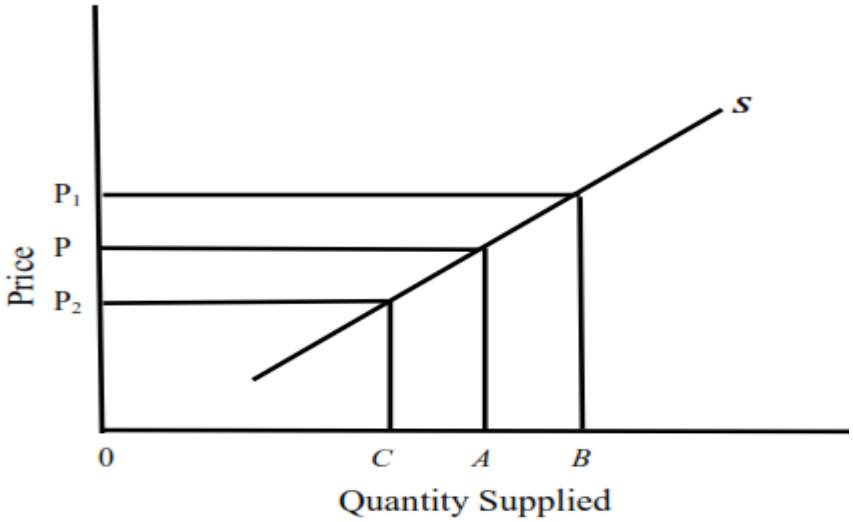


Fig. 3.4 Expansion and contraction of supply curve

If the price is OP, and OA is quantity supplied, as the price goes up from OP to OP_1 the manufacturer will offer OB amount. This shift in supply curve from OA to OB and it indicates the increase in supply. Actual price is OP, and OA is actual amount of supply. When price falls at OP_2 point, the producer will supply OC units. The supply has contracted from OA to OC point, as shown in the Figure 3.4.

3.5.5. Shifts in supply / increase or decrease in supply

Movement of supply is the reason of shifts in the supply curve. It can be due to other factors but not the price of that product. As depicted in the Figure 3.5 at the price level of OP, the supply curve before the change in variables is SS.

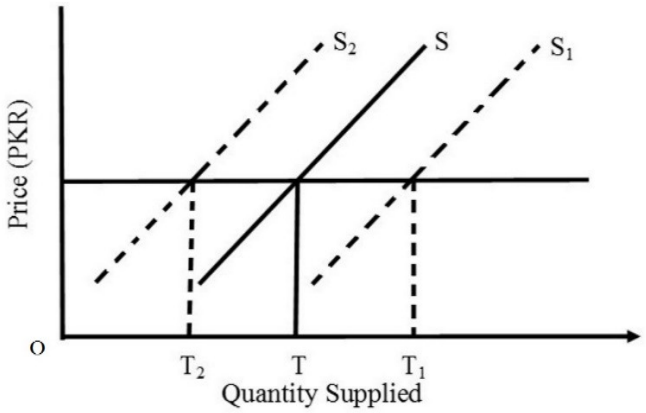


Fig. 3.5 Increase or decrease in supply

Here, S_1 indicate as rise in the supply and TE moves to OT_1 and S2 shows a decrease in supply because at the same price OP or TE, less is offered for sale i.e., OT2.

3.6. Factors Determining Supply

3.6.1. Production technology

Technology being used for production affects the supply function very significantly. Supply will increase ultimately, if the advanced technology is adopted on larger scale in the country. Conversely, old and less developed technology will not increase the production capacity of country and the supply.

3.6.2. Factors Prices

As the cost of input increase, it will increase the cost of the production of firms that causes lower productivity.

3.6.3. Prices of other products

Variation on the price level of other parallel good could also impact the supply of any specific item. An increase in prices of other commodities will stimulate the producer to change his production in favor of that commodity. Availability of actual commodity will suffer due to change of interest by the producer.

3.6.4. Number of producers or firms

If the number of manufacturers of a same commodity will increase, the quantity supplied of that commodity will also go up in the market.

3.6.5. Future price expectations

If manufacturers predict that in the future price of specific commodity will go up, then they will stop of reduce the supply of their product for sale.

3.6.6. Taxes and subsidies

Taxation by the state also reduce the supply of commodities. It acts indirectly, due to tax on input, cost of production increase and ultimately supply go down. When, subsidy which is negative tax is fetched to manufactures, it will inspire them to increase supply, because a portion of cost of production is paid by the state to the producer.

3.6.7. Non-economic factors

Non-economic factors like, war, political climate and natural calamities create shortage in supply.

Box 3.1 High cost of production: Pakistani potato exports comes to a halt

"Due to bumper Indian crop available at comparatively low cost in the international market, Pakistani export of the vegetable during the 2012 year has come to a virtual halt causing millions of dollars' worth of monthly loss to the national exchequer. Previous year on account of bumper crop, Pakistan exported around 350,000 tons of potato. The dismal situation may be attributed owing to bumper Indian crop, which is priced around Rs 3 to Rs 4 per kg at the wholesale level, which is far low compared to Pakistani price of Rs 8 to Rs 10 at the wholesale level clearly manifesting a price difference of Rs 5 to Rs 6 per kg. Major importing countries of Pakistani potato were Sri Lanka, Singapore, Gulf countries, Iran and Malaysia but owing to lower prices of Indian potato, they appear keen to buy Indian product. Low priced Indian potato on account of minimum production charges especially low prices of diesel, free provision of seed and electricity besides availability of low cost tractors as major reason for low cost Indian product. On the other hand, these costs are very high in Pakistan.

Due to utilization of better quality of seeds by growers and farmers, improved storage facilities made available by the individual efforts of exporters and growers at their respective places are the factors causing better yield. It was estimated out of total annual domestic production, 28, 0000 metric tons was used as seed and 1.8 million metric tons was available for consumption after post-harvest losses. Seed contributes to about 35 to 40 percent of the total cost of production in the country. Formal certified seed production is limited and faces technical, economical and managerial problems. Lack of availability of sufficient quantities of good seed and low purchasing power of the farmers forced them to rely on seed sources of low quality or own production for which most of them do not have the proper skills".

Source: *Daily Times (2012)*

3.7. Supply Elasticity

Law of supply states that quantity supplied changes with the change in the price of that product. The idea tells us about the degree of responsiveness of change in supply with the variation in price level (Mankiw 2006). It is represented mathematically by below formula,

$$\text{Elasticity of supply} = \frac{\text{Proportionate change in quantity supplied}}{\text{Proportionalte change in price}}$$

$$\text{ep} = \frac{\Delta qs/qs}{\Delta p/p} \qquad (3.2)$$

In Equation 3.2, q denotes the quantity supplied, p indicate price, Δ is change. Elasticity of supply may be defined as the degree of responsiveness of change in supply to change in price on the part of sellers.

Box 3.2 Targets of National Power Policy

"Pakistan has set key targets in terms of the demand-supply gap, affordability, and efficiency. The extent to which the policy can meet these targets will measure the success of the policy and the nation's ability to overcome the key problems afflicting the power sector.

Supply Demand Gap: To build a power generation capacity and to create a culture of energy conservation supply demand, gap will be decreased from 4500 - 5000 MW today to 0 by 2017

Affordability: In order to ensure the generation of inexpensive and affordable electricity, cost of generation will be decreased from 12c / unit today to ~10c / unit by 2017

Efficiency: In order minimize pilferage and adulteration in fuel supply, to promote world class efficiency in power generation, to create a cutting edge transmission network and to minimize inefficiencies in the distribution system transmission and distribution, losses will be decreased from ~23-25% to ~16% by 2017."

Source: *GOP (2013)*

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