Mid Term Assignment

ON

DEMAND, SUPPLY & MARKET EQUILIBRIUM

OF

Subject: Micro & Macro Economics

SUBMITTED TO

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History

Coca-Cola (also known as Coke) is a popular carbonated soft drink sold in stores, restaurants and vending machines in over two hundred countries. It is produced by The Coca-Cola Company, which is also occasionally referred to as Coca-ColaorCoke**.** It is one of the world's most recognizable and widely sold commercial brands. Coke's major rival is Pepsi. Although Coke has been the target of urban legends decrying the drink for its supposedly copious amounts of "acid", or the "life-threatening" effects of its carbonated water but still it is the most in-style soft drink. About its safety and the ethics of the company that produces it, it is widely accepted as the most dominant soft drink in the world today.

Originally intended as a patent medicine when it was invented in the late 19th century, Coca-Cola was bought out by shrewd businessman Asia Griggs Candler, whose aggressive marketing tactics led Coke to its dominance of the world soft drink market throughout the 20th century. Although faced with accusations of perverse side-effects on the health of consumers and monopolistic practices by its producing company, Coca-Cola has remained a popular soft drink well into the first decade of the 21st century.

The Coca-Cola Story

Coca-Cola was invented by John S. Pemberton in 1886 in Columbus, Georgia, originally as a coca-wine called Pemberton's French Wine Coca. It was initially sold as a patent medicine for five cents a glass at soda fountains, which were popular in America at the time thanks to a belief that carbonated water was good for the health. It was re-launched as a soft drink to counter Prohibition.

The first sales were made at Jacob's Pharmacy in Atlanta, Georgia on May 8, 1886, and for the first eight months only thirteen drinks were sold each day. Pemberton then ran the first advertisement for the beverage on May 29 of the same year in the Atlanta Journal.As a Griggs Candler bought out Pemberton and his partners in 1887 and began aggressively marketing the product — the efficacy of this concerted advertising campaign would not be realized until much later. By the time of its 50th anniversary, the drink had reached the status of a national symbol. Coca-Cola was sold in bottles for the first time on March 12, 1894 and cans of Coke first appeared in 1955.

The first bottling of Coca-Cola occurred in Vicksburg, Mississippi at the Biedelharn Candy Company in 1891. Its proprietor was Joseph A. Biedelharn. The original bottles were Biedelharn bottles, very different from the much later hobble-skirt design that is now so familiar. As a Candler was tentative about bottling the drink, but the two entrepreneurs who proposed the idea were so persuasive that Candler signed a contract giving them control of the procedure. However, the loosely-termed contract proved to be problematic for the company for decades to come. Legal matters were not helped by the decision of the bottlers to subcontract to other companies — in effect, becoming parent bottlers.

Basic Concept of Demand and Supply

Supply and demand is perhaps one of the most fundamental concepts of economics and it is the backbone of a market economy. Demand refers to how much (quantity) of a product or service is desired by buyers. The quantity demanded is the amount of a product people are willing to buy at a certain price; the relationship between price and quantity demanded is known as the demand relationship.

Supply represents how much the market can offer. The quantity supplied refers to the amount of a certain good producers are willing to supply when receiving a certain price. The correlation between price and how much of a good or service is supplied to the market is known as the supply relationship. Price, therefore, is a reflection of supply and demand.

The relationship between demand and supply underlie the forces behind the allocation of resources. In market economy theories, demand and supply theory will allocate resources in the most efficient way possible. Let us take a closer look at the law of demand and the law of supply.

Demand

Demand means desire to purchase a commodity for which the consumer has the power to purchase. So demand has two conditions:

1. Desire to purchase
2. Purchasing power

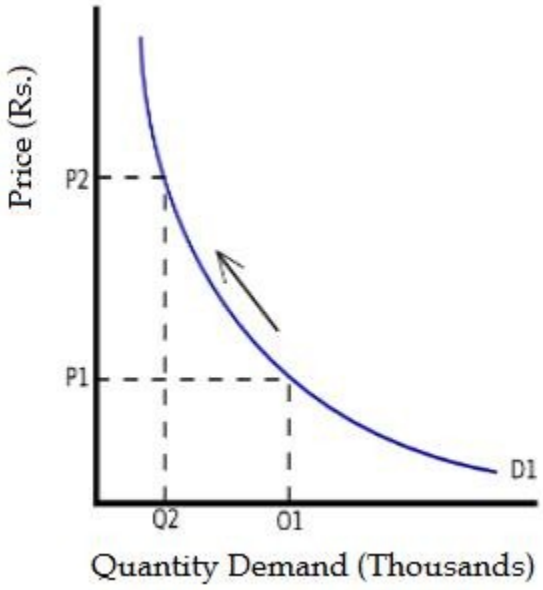
Law of demand:

At higher prices, a lower quantity will be demanded than at lower prices, other things being equal. Alternatively, at lower prices, a higher quantity will be demanded, other things being equal.Reasons why observe law of demand:

1. Substitution effect: tendency of people to substitute in favor of cheaper commodities
2. Real-income effect: change in purchasing power that occurs when the price of a good changes

DEMAND CURVES

Demand curve refers to the quantity of the good that a customer is willing to buy and able to purchase over a period of time, at a certain price is known as the quantity demanded of that good.

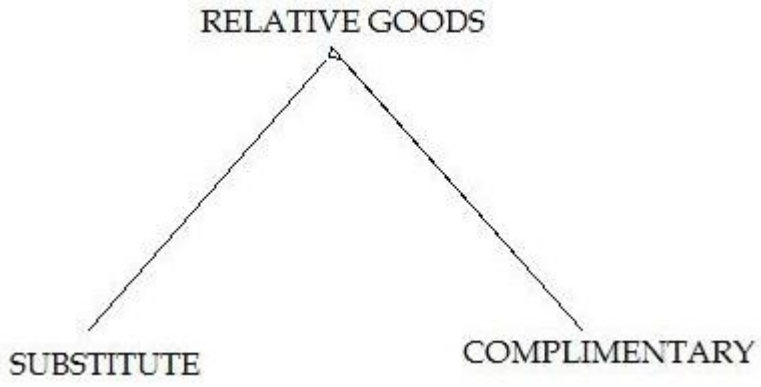


From the figure we can say that when the price of product increases demand decreases & vice versa, when the price was P1 quantity demanded was Q1, but when the price increases to P2 then quantity decreases to Q2.

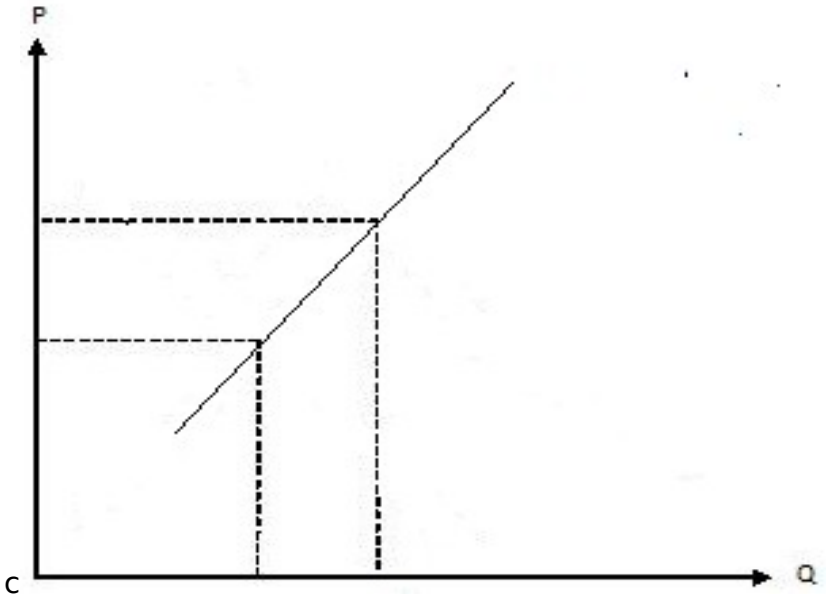
FACTORS AFFECTING DEMAND

Price of relative goods:

Demand for coca cola is also influenced by the change in price of relative goods.



In case of coca cola there are number of substitute goods available in the market, we have Pepsi, Miranda,Gorment, etc. now if the price of coca cola increases from Rs 12 to Rs 22 whereas the price of other aerated drinks remain the same then the demand for coca cola will fall down.



Quantity demanded coca cola

Income of the Consumer:

There is a direct relationship between income of consumer and demand. Now coca cola being a normal good, if there's an increase in income, the demand will increase and vice versa.

Taste and preference:

Taste and preferencesof the consumers also influence the demand to greater extent. In case of coca cola, if there are hard core consumers who prefer the taste of coca cola, even if the price of coca cola increases, the demand will remain the same. But if the consumers have no taste or preference of coca cola, then if the price increases the demand decreases.

price of coca cola

Government Polices

As the study shows, there was a steep reduction in the demand of coca cola when the pesticides were found in few samples of coca cola. As a result consumer was shifting from coca cola to other natural drinks so therefore the demand for coca cola decreased.

Time:

Time is an important factor that affects the demand of coca cola e.g. the demand for coca cola goes up during festive seasons and during summers

Age of the population:

This product is meant for the children, adults and also for the old people so the age groups are not much affected the demand of the product so demand remain same and by the increase in the population, the demand of the product also increases.

SHIFT IN DEMAND CURVES

Shift in demand curves refers to the change in demand due to change in factors other than price.

Shift can be of 2 types:

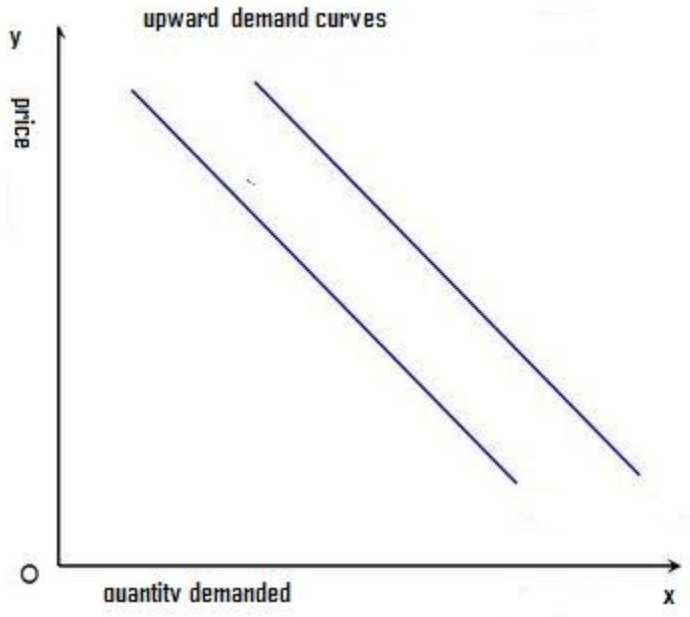
1) Upward shift.

2) Downward shift.

Upward shift:

When the demand for product increases, price being constant, due to change in other factors e.g. Increase in income.

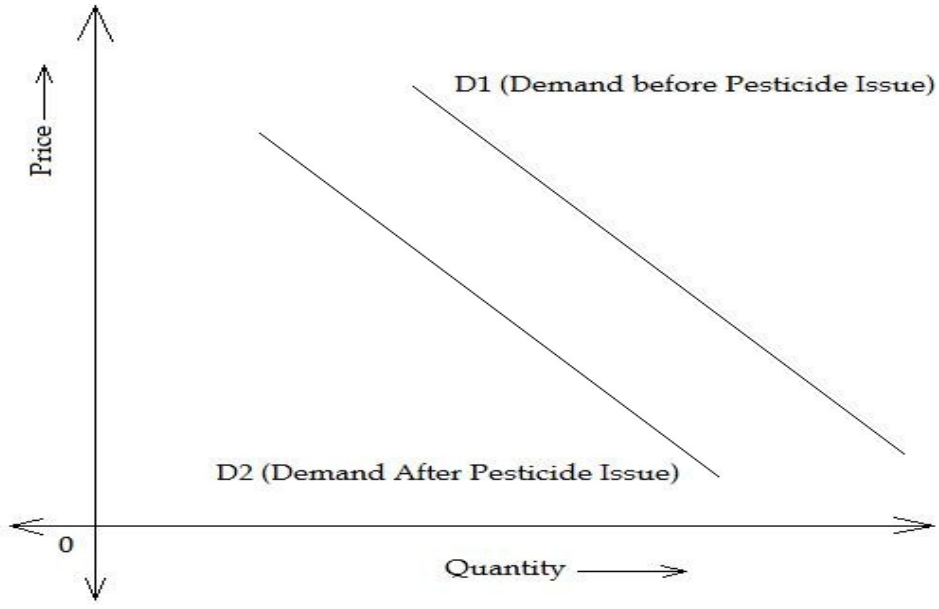
If there's an increase in the income of consumers in the future, then there's a possibility that the consumer will shift from local drinks in the market to coca cola.



From this figure we can see that when the income of the consumer increase in the future then the demand for coca cola increases.

Downward shift:

When the demand for the product decreases at same price.eg the demand for coca cola reduces when people found that there were pesticides found in few samples of coca cola.



SUPPLY

Supply means the quantity of a commodity offered for sale in a market at a certain price during a given period of time.

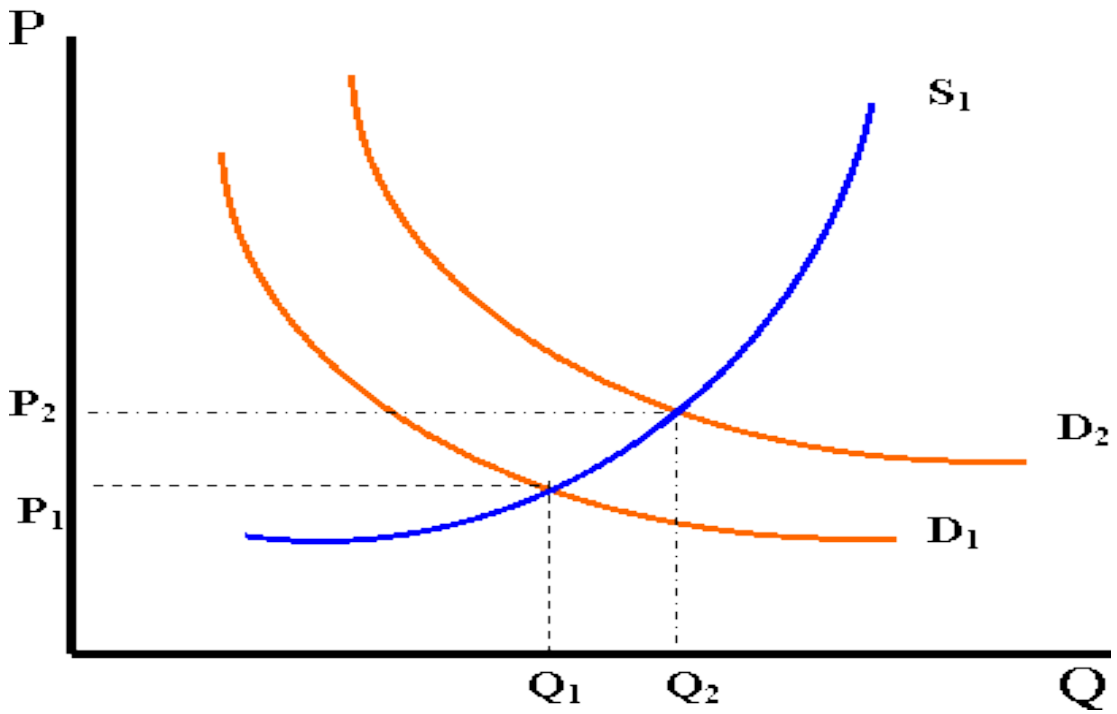
LAW OF SUPPLY:

It states that if the price of a product increases, quantity supply will increase as the supplier will be willing to supply more to earn more profit.

Reasons why observe supply law:

1. higher prices increase incentives for increasing production
2. the law of increasing costs

The law shows that there is a positive relationship between price and quantity supply.



As shown in the figure when the price of the product. P1 then the quantity supply is Q1, whereas if the price increases to P2 the quantity supply also increases to Q2. This show as the prices increases the producers are willing to supply more to earn more profit.

In case of coca cola this holds true as the price of coca cola increases there will be increase in supply up to a certain level as there are other constrain like easy availability of closed substitute.

In the long run if the producer continuously increases the price of coca cola then the demand for coca cola will fall down because of various substitutes available in the market.

DETERMINANTS OF SUPPLY:

Price:

As stated in the law of supply, the price is positively related with quantity supplied for coca cola, in short run if there is an increase in the price of coca cola, the producers will be willing to produce more of the product.

State of technology:

Due to change in the state of technology in the production process, the cost of production will reduce; as a result supplier will be able to supply more at same price

Number of consumer:

In the case of coca cola there are large number of consumer, as a result the supplier are willing to supply more to cater the needs for the large number of customer.

Price of inputs:

Includes labour cost, machinery etc. if there is no scarcity in the supply of these factors so the cost for these factors will reduce as a result the producer is willing to supply more products at same price.

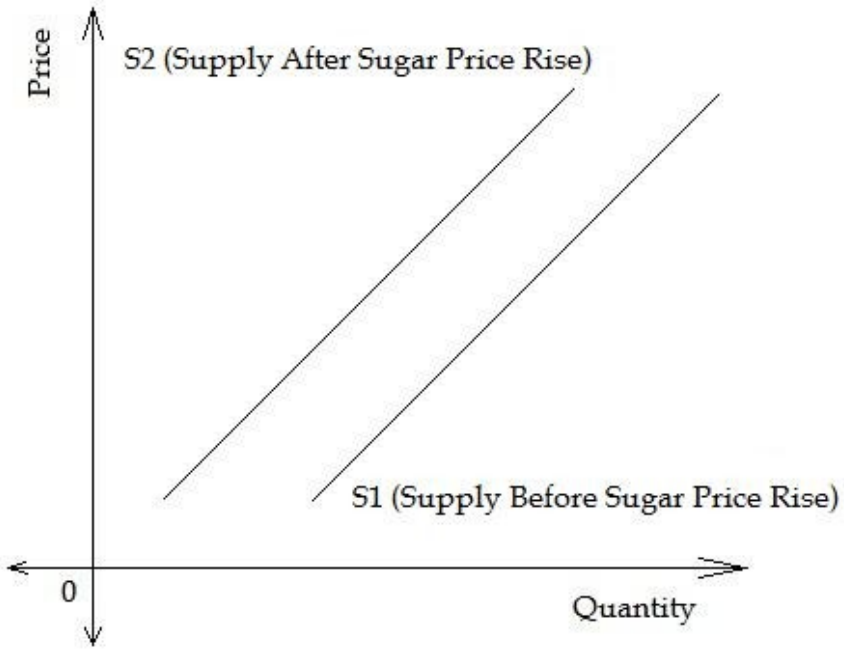
Shift in Supply Curve:

Shift in supply curve means change in quantity supplied due to others factors while price remains the same.
Sift of supply can be two types:

1) **Upward shift.**
2) **Downward shift.**

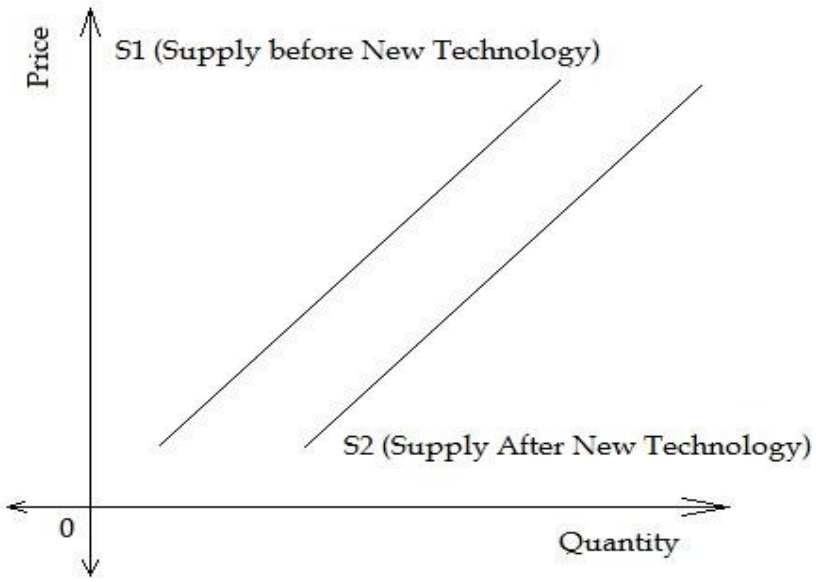
Upward Shift:

Upward shift takes place when the supplier is able to supply at less at a same price.
E.g. decrease in the supply of sugar due to increase in price and excessive exports of sugar results in decrease in production of coca cola.



Downward Shift:

Downward shift takes place when the suppliers are willing to supply at same price.e.g. due to improvement in technology the cost of production decreases and the suppliers are willing to supply more at the same price.


Price
S1 (Supply before New Technology)
S2 (Supply After New Technology)
0
Quantity

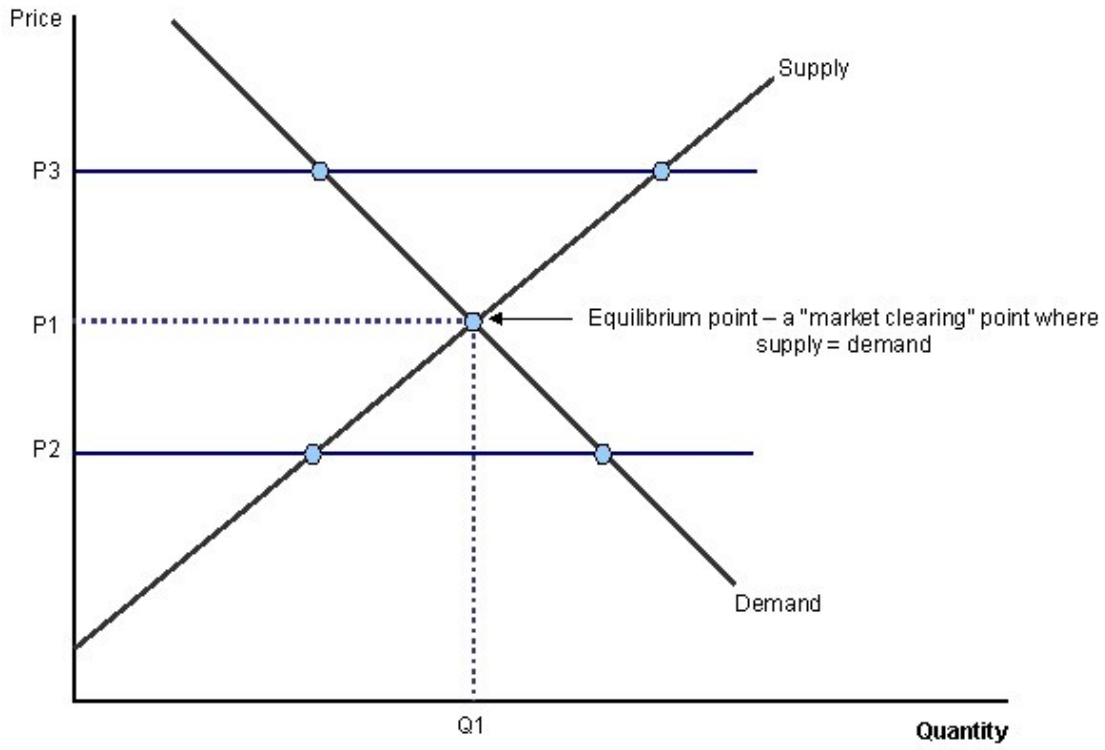
Market Equilibrium

Equilibrium means that there is no further tendency to change. When something is at equilibrium, it is at rest, not changing. Like a pendulum. When it is swinging, it is changing. We call this disequilibrium. Eventually, it will stop swinging and achieve equilibrium.

Prices do something similar. They move toward an equilibrium where they come to rest and don't change. But just like you can push a pendulum and cause it to swing and then slow down and achieve equilibrium again, prices can be "pushed" and they will change to a new equilibrium. It is the non-price determinants of demand and supply that "push" prices to a new equilibrium. We call this "market equilibrium".

The equilibrium price is the price where the quantity demanded equals the quantity supplied.

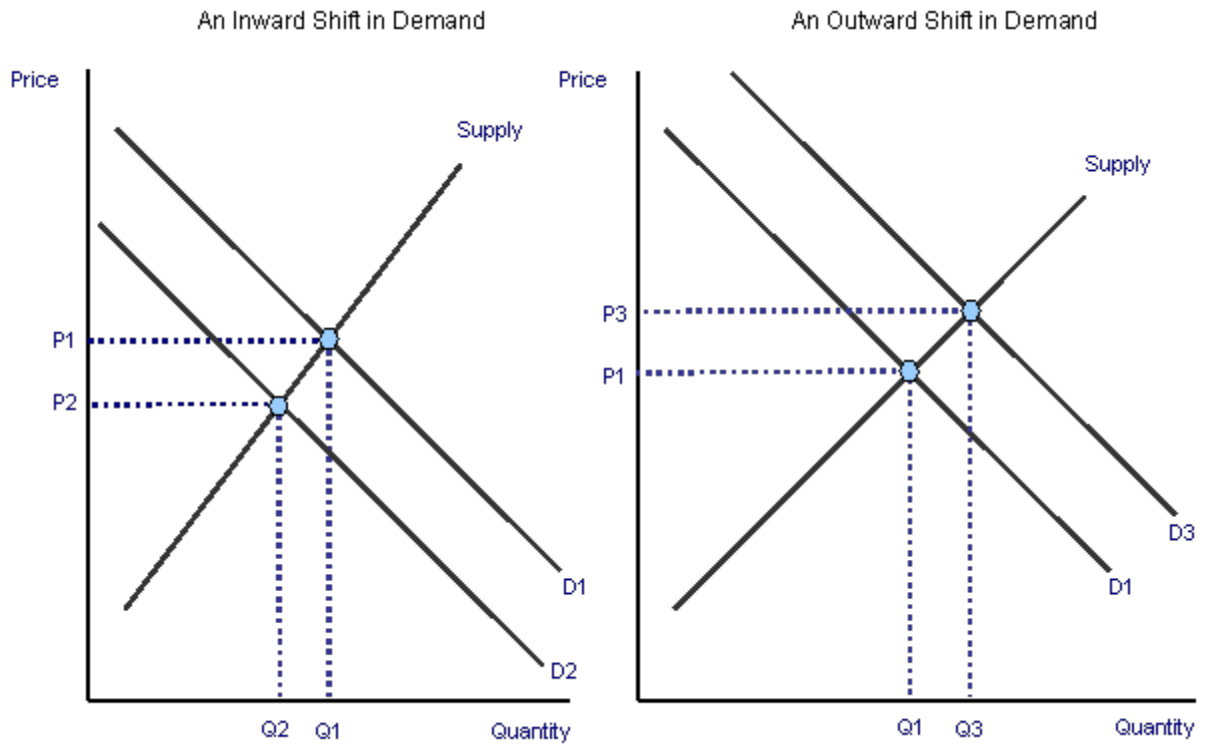
Qd = Qs



Equilibrium means a state of equality or a state of balance between market demand and supply. Without a shift in demand and/or supply there will be no change in market price. In the diagram above, the quantity demanded and supplied at price P1 are equal. At any price above P1, supply exceeds demand and at a price below P1, demand exceeds supply. In other words, prices where demand and supply are out of balance are termed points of disequilibrium.

Changes in the conditions of demand or supply will shift the demand or supply curves. This will cause changes in the equilibrium price and quantity in the market.

Changes in Market Demand and Equilibrium Price



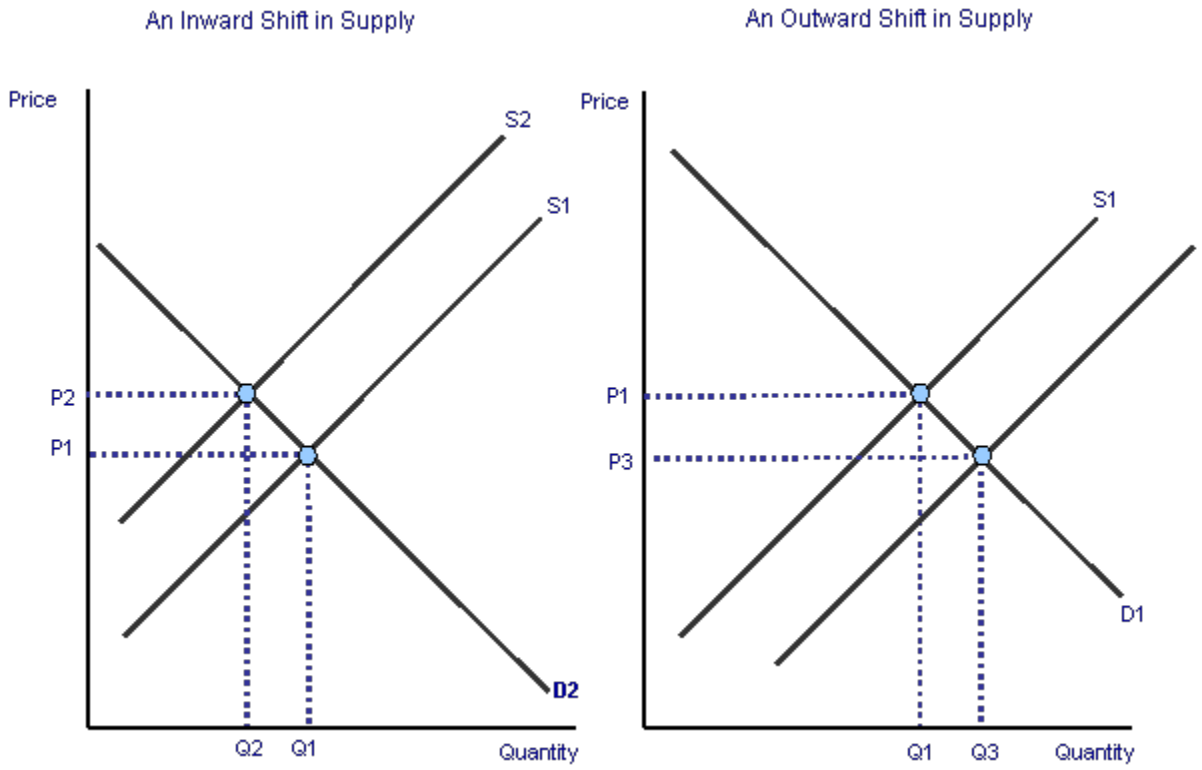
The demand curve may shift to the right (increase) for several reasons:

1. A rise in the price of a substitute or a fall in the price of a complement
2. An increase in consumers' income or their wealth
3. Changing consumer tastes and preferences in favour of the product
4. A fall in interest rates (i.e. borrowing rates on bank loans or mortgage interest rates)
5. A general rise in consumer confidence and optimism

The outward shift in the demand curve causes a movement (expansion) along the supply curve and a rise in the equilibrium price and quantity. Firms in the market will sell more at a higher

price and therefore receive more in total revenue. The reverse effects will occur when there is an inward shift of demand. A shift in the demand curve does not cause a shift in the supply curve.Demand and supply factors are assumed to be independent of each other although some economists claim this assumption is no longer valid!

Changes in Market Supply and Equilibrium Price



The supply curve may shift outwards if there is

A fall in the costs of production (e.g. a fall in labour or raw material costs)

A government subsidy to producers that reduces their costs for each unit supplied

Favorable climatic conditions causing higher than expected yields for agricultural commodities

A fall in the price of a substitute in production

An improvement in production technology leading to higher productivity and efficiency in the production process and lower costs for businesses

The entry of new suppliers (firms) into the market which leads to an increase in total market supply available to consumers

The outward shift of the supply curve increases the supply available in the market at each price and with a given demand curve, there is a fall in the market equilibrium price from P1 to P3 and a rise in the quantity of output bought and sold from Q1 to Q3. The shift in supply causes an expansion along the demand curve.

A shift in the supply curve does not cause a shift in the demand curve. Instead we move along (up or down) the demand curve to the new equilibrium position.

A fall in supply might also be caused by the exit of firms from an industry perhaps because they are not making a sufficiently high rate of return by operating in a particular market.

Data Description

The following table shows the data pertaining sale, demand, supply, expenditure, and substitute price (Pepsi cola). The data is expressed in millions,

Sale	Demand	Supply	Expenditure	Substitute price
2.30	1.60	3.00	4.30	3.20
4.00	3.40	3.40	4.10	3.50
3.00	2.50	2.40	3.23	3.90
3.60	2.90	4.30	3.45	2.80
3.80	3.10	3.80	3.80	3.70
3.50	3.20	2.80	2.98	3.70
3.90	3.00	2.67	3.89	2.60
4.00	3.60	3.10	3.78	3.00
4.30	3.80	3.40	3.50	4.00
4.20	2.40	2.80	1.60	3.00
3.80	3.90	3.60	3.40	3.40
4.20	5.00	3.80	2.50	2.40
2.80	4.30	3.00	3.00	3.20
3.60	3.20	3.90	3.10	3.60
3.43	3.80	4.10	4.20	2.80
3.20	4.20	4.30	3.00	3.40
3.60	3.60	3.20	2.97	3.10
3.20	3.60	3.80	3.80	2.80
4.30	2.90	4.20	2.40	2.80
4.50	3.20	3.60	2.70	3.60
3.10	3.60	3.20	3.70	3.80
2.76	3.50	4.30	4.30	3.00

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

1	.511[a]	.261	.087	.55185	1.814

a. Predictors: (Constant), Substitite.Supply, Expenditure, Demand, Supply
b. Dependent Variable: Sale

The coefficient of correlation determines the overall strength of the relationship between the variables included in the model. While the r-square value determines the goodness of fit of the model a low value of square i.e 0.261 indicates that model needs to be more precisely specified.

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.827	4	.457	1.500	.247[b]
	Residual	5.177	17	.305		
	Total	7.004	21			

a. Dependent Variable: Sale
b. Predictors: (Constant), Substitite.Supply, Expenditure, Demand, Supply

The ANOVA table shows that the overall model is insignificant i.e the null hypothesis is accepted at 5 %

Model	arity Statistics	
	ce	VIF
1	364	1.157
	312	1.232
	967	1.034
	914	1.094

a. Dep

level of significance

$$Y = \alpha_o + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4$$

$$Y = Sale$$
$$X_1 = Demand$$
$$X_2 = Supply$$
$$X_3 = Expenditure$$
$$X_4 = Substitute\,\mathrm{Price}$$

The estimated model is as followed

$$Y = 4.291 + .096X_1 + 0.098X_2 - 0.405X_3 - 0.002X_4$$

Collinearity Diagnostics

		Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Demand	Supply	Expenditure	Substitute Price
1	1	4.903	1.000	.00	.00	.00	.00	.00
	2	.045	10.385	.00	.38	.03	.29	.03
	3	.028	13.298	.01	.00	.08	.42	.31
	4	.019	16.033	.01	.55	.61	.23	.00
	5	.005	32.235	.98	.06	.28	.05	.66

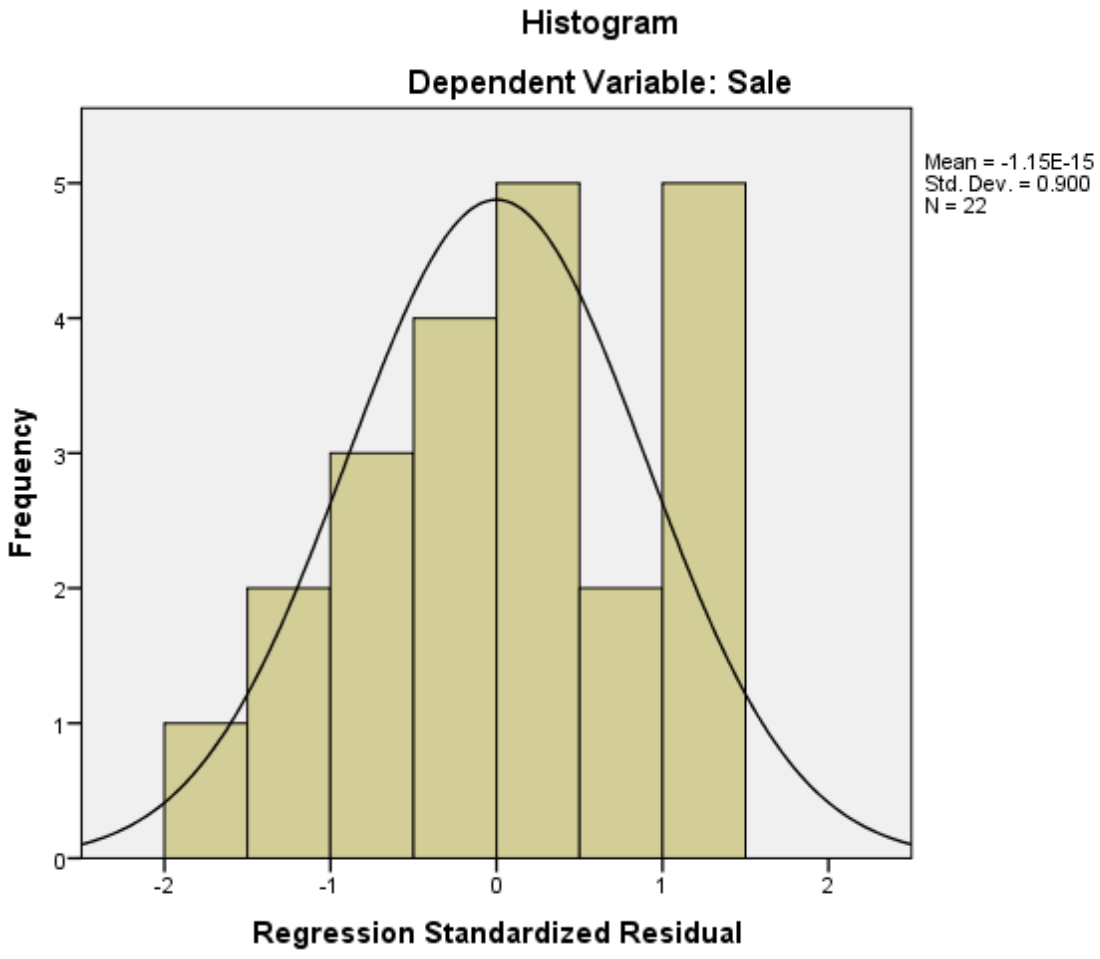
a. Dependent Variable: Sale

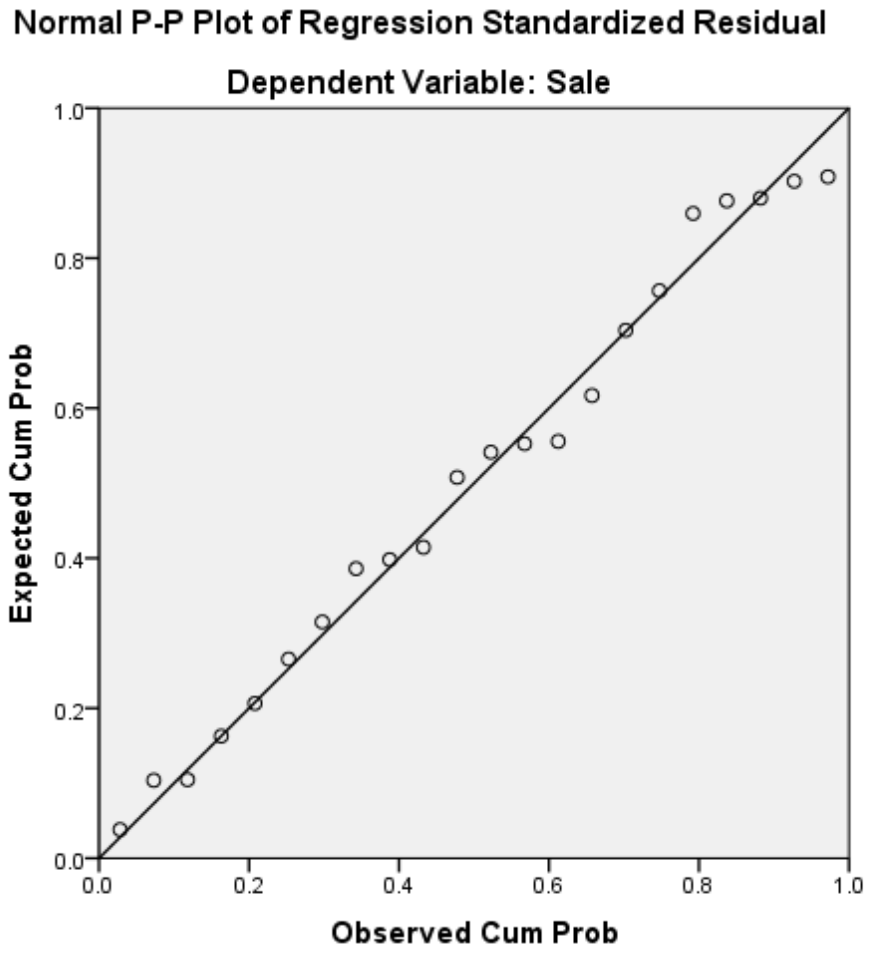
Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.9925	4.1429	3.5950	.29494	22
Residual	-.97776	.73486	.00000	.49652	22
Std. Predicted Value	-2.043	1.858	.000	1.000	22
Std. Residual	-1.772	1.332	.000	.900	22

a. Dependent Variable: Sale

Residuals are used to estimate the outliers present in the data





The above graph shows the normality of the data

Recommendations:

From the above model one can see that the expenditure and substitute price has a negative impact on sale of Coca Cola. So that the evaluation of alternate price should be studied in detailed. Some undefined factors are also needed to be identified whose effect is considered in the error term. The value of r square indicates only 52 % of variation explained by the factors including in the model.